BASIC COMPUTER LITERACY SKILLS EXPECTED OF STUDENTS BY INSTRUCTORS AT WISCONSIN INDIANHEAD TECHNICAL COLLEGE

By

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ABSTRACT

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This study examined the basic computer literacy skills expected of first year students at Wisconsin Indianhead Technical College (WITC) in the Fall 2000 semester. Instructors at WITC were asked their current and future (2 year) expectations of entry-level students' basic computer literacy skills through an online survey. The survey questionnaire followed the computer literacy classifications of Clyde (1997) in the following five areas: hardware or equipment, operating system, applications software, use of the information system, and using information contained within the system with a 5-point Likert scale response format.

The study was conducted online. Each program instructor at WITC was sent an email describing this research along with a hyperlink to the questionnaire

web page. UW-Stout Academic Computing Service processed the survey results for data analysis. Trends of current and future basic computer literacy skills expected of first year students are examined along with consideration for further studies.

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Chapter 1: Introduction

Background of the Problem

Demands for information technology and computer literacy

Information technology in the form of computers, communications, digital information, and software has become an integral part of our daily lives (Lin[b], 2000). Demands for people with knowledge and aptitude for modern technology are high with the highest rewards going to workers with knowledge and skills relevant to the workplace (Judy & D'Amico, 1998, pp. 84-85). The workplace is not the only area affected by the presence of information technology as it is also used by government agencies and citizens in their homes, at their schools and in colleges (Lin[b], 2000; Minter Gilstrap, 1998).

Wisconsin Indianhead Technical College (WITC) is one of the 16 districts in the Wisconsin Technical College System. The WITC district is 10,000 square miles in Northwest Wisconsin with over 250,000 residents (WITC, 2000b, p. 13). WITC addresses emerging technologies in the values part of their mission statement: "We utilize innovative methods and emerging technologies to address challenges, solve problems, and create pathways to success" (WITC, 2000b, p. 12). As WITC looks toward the future, over half of the top twenty "Core Trends" identified by the college were shaped around the influence of information technology and computer literacy (http://www.witc.tec.wi.us/edfuture/2000coreimpact.htm).

Integration of computer technology into education

Knowing how to read and write well has been an expectation since the development of the printing press. New technologies of our time are creating higher expectations for literacy (Walker, 1999). The mode of communication has undergone major changes; it is not limited to printed material anymore. Along with printed materials, visual, video, audio and electronic mediums are used for communication as well. Computing is growing at a rate that is exponential. “A generation, technologically speaking, is no longer 20 years or so; it’s a mere three or four years” (Rawlins, 1999, p. 26). Due to the expanding technologies, the meaning of literacy is changing (Rafferty, 1999).

In 1983, the National Commission on Excellence in Education released a report that recognized our society’s transformations with regard to advancements in technology and that computers were becoming an integral part of our lives. A call was made to prepare all high school graduates with an understanding of computers and related technologies. The incorporation of computer technology has been included in school standards. For example, the National Council of Teachers of Mathematics states, "Technology is essential in teaching and learning mathematics; it influences the mathematics that is taught and enhances students' learning." (NCTM, 2000, p. 24). Many school districts consider computer literacy a top educational goal (Ediger, 1997). An analysis of educational technology by Plotnick (1996) found that virtually every student in the K-12 schools has access to a computer. Computer technology is being integrated with learning at all levels. The computer is essential for quality education for all (Withrow, 1997).

In order to provide students a modern education, WITC utilizes computer technology throughout its curricula. Courses that make intensive use of computer technology have course prerequisites and/or corequisites. Other courses note skills that are either desired or highly recommended. In order to provide students with access to the current technology, computer labs are available for student use at all of the four campus locations and at the five off-campus learning centers (WITC, 2000b, pp. 55-56).

Studies of computer skills of first year college students

Many studies have been conducted to determine the computer skill levels of first year college students. The computer skill levels of students entering post-secondary programs vary depending on where they attended high school, their past work experience and their interest in computers (Smith & Furst-Bowe, 1993). A 1993 study of first-year students entering University of Wisconsin - Eau Claire found that 97 percent of the students gained computer experience through high school (Larson & Smith, 1994). There is also a trend of older adults that are returning to further their education (Imel, 1997). The high percentage of high school graduates with computer experience is not the same for all students enrolling into technical colleges.

Of the 24,000 students served at WITC each year, 82 percent are 22 years of age or older (WITC, 2000b, p. 13). Some of the older students that are entering programs at WITC did not have the opportunity to gain computer experience through the public school system. More nontraditional students are returning to

the technical college to upgrade skills or make a career change (http://www.witc.tec.wi.us/edfuture/2000coreimpact.htm).

Computer skills of faculty members

In order to be fully effective at integrating computing technology into the classroom, instructors must have training with the new technology and have a willingness to incorporate it into the curriculum (Halpin, 1999; McKenzie, 2000; Hirschbuhl & Faseyitan 1994). Hirschbuhl & Faseyitan (1994) suggest that faculty are in need of appropriate training to overcome their fears of using computers and increase their technological literacy. Once instructors increase their technological literacy, they will be able to incorporate and use computers for meaningful learning applications (McKenzie, 2000). Training is necessary for instructors at all levels of teaching experience because of the rapid changes in computing technology.

Technological skills are part of the job requirements of faculty at WITC. All new faculty are required to be knowledgeable of computing technology. Professional development opportunities in the area of new technologies are provided for all faculty. Technology skills are integrated into the core competencies for the faculty so that the same core competencies will in turn be incorporated across the curricula for all students to ensure technological proficiency in all program graduates (http://www.witc.tec.wi.us/edfuture/2000coreimpact.htm). Since information technology and computers are an integral part of programs at WITC, faculty

should expect some basic computer literacy skills of students who are entering the college.

Expected computer literacy skills of students prior to matriculation

The definition of literacy for our society must expand to include science, mathematics and technology (Nelson, 1999). In order for one to understand information encoded in certain medium, a working knowledge of the tools that decode it is necessary. To keep up with the changes of computer technology, educational systems should examine and address the concepts of basic computer literacy in terms of its current and future use.

The way to ensure that all aspects of computer literacy have been achieved by a student is by first delineating the basic computer literacy skills (Eisenberg & Johnson, 1996). After the skills are listed, a student plan that includes meeting all the necessary computer literacy skills may be made and followed.

The admissions process at WITC includes a skills assessment along with a counseling session to evaluate the prospective student's ability to succeed academically in the programs offered. Opportunities to upgrade basic skills are available at WITC's Student Success Centers for those that fall below the established entry skill levels for program success. WITC has Student Success Centers at each of the four campuses and at five off-campus learning centers.

Part of the Student Success Center's function is to help prepare students for enrollment into programs by upgrading basic skills in reading, writing, mathematics and basic computer literacy. (WITC, 2000b, p. 58). The required

skills assessment through the admissions process determines the reading, writing and mathematics levels of the applicant. The results are used to develop an educational plan for those that need remediation in any of those areas. However, the level of basic computer literacy is not addressed in WITC's admission assessment. Currently, the development of basic computer skills in the Student Success Center is addressed through integration with the other subject areas as an optional delivery method.

Statement of the Problem

Problem Under Investigation

The approach to gaining computer literacy at Wisconsin Indianhead Technical College Student Success Centers is through its integration with other basic skill areas. Computer literacy skills are being achieved indirectly even though they have not been explicitly identified. The entry-level basic computer literacy skills required for success as expected by faculty at Wisconsin Indianhead Technical College need to be specifically identified.

Investigative Purpose

Instructors at WITC were surveyed about their current and near future expectations of basic computer literacy skills expected of students entering programs during the Fall 2000 Semester. This study was to define computer literacy as it pertains to entry-level students at each WITC campus. Once computer literacy is defined, a basic skills course for computer literacy may be developed. Students that are studying basic skills for program entry will also be

able to study all aspects of computer literacy before beginning their programs. Since the concept of computer literacy is continually changing along with the advancements in computer technology, both current and future computer literacy expectations were examined.

Research Questions

The research questions of this study were to define the current and near future basic computer literacy skills required of students at WITC. The study addressed the following research objectives:

1. Identify the computer literacy skills expected by WITC instructors for all of the courses.

2. Determine if there is a difference in expected computer literacy skills identified by instructor demographics. Campus location, program subject, frequency of computer usage, number of years instructing, gender, and highest educational level of degree obtained were identified as the instructor demographics.

Significance of the Study

1. Currently, Wisconsin Indianhead Technical College does not have a basic skills course for computer literacy skills. According to the WITC's Dean of Instructional Operations, basic skills course offerings for computer literacy will be available soon. The results of this study may be used for developing computer literacy curriculum for basic skills.

2. Identification of the computer literacy skills might be of use to the content area instructors. If they realize what is being addressed, they may coordinate more with the basic skills centers.

3. Data from this study may be used by other basic skills centers.

Summary

The study was designed as a descriptive research study to determine the basic computer literacy skills expected of entry-level students at Wisconsin Indianhead Technical College. The instructors were surveyed for both their current expectations of computer literacy of entry-level students and desired expectations of entry-level students in the future.

Chapter 2: Review of Literature

Introduction

The problem that this research is attempting to answer is the identification of entry-level basic computer literacy skills expected of students entering Wisconsin Indianhead Technical College (WITC). The results of this study may then be used to help students that are currently studying basic education skills prepare for program entry at WITC by obtaining the expected basic computer literacy skills. This review of literature will begin by examining the meaning of literacy and how its meaning changes in order to include the advances of technology. Next the current availability of computer technology for potential students will be examined. Longitudinal trends of computer use and ownership will be viewed along with suggestions of relevant disparities. Some of the disparities are categorized by gender, race, age, educational attainment and family income. Previous studies of computer literacy skills will be examined. A review of the instruments and procedures used will be related to this study. The integration of computer technology into education will be reviewed. Lastly, an examination of the current computer technology uses at WITC will be related to the emerging changes in basic computer literacy skills.

Meaning of Literacy

The most general definition of the word "literacy" is to be educated or able to read and write (Mish, 1994). Furthermore, literacy is also a term that describes the level of ability for a person to function in society (Reinking, 1998). In looking at this general definition, one may ask questions such as: "to be educated in what?" or "to be able to read what?" or even "how does one write?". Throughout history, the answers that have been given to questions of this type are either augmented or changed by the influence of changes in technology (Tyner, 1998). Recent attempts to answer such questions has led to multiple views of literacy or "multiliteracies" such as technology literacy, information literacy, visual literacy, and media literacy (Tyner, 1998). These multiliteracies are just a small sample of the new types of literacy that are being defined but are ones that are influenced by advances in technology.

The new types of literacy have been addressed by the Wisconsin Department of Public Instruction with this definition for information and technology literacy together:

> Information and Technology Literacy is the ability of an individual, working independently or with others, to use tools, resources, processes, and systems responsibly to access and evaluate information in any medium, and to use that information to solve problems, communicate clearly, make informed decisions, and construct new knowledge, products, or systems (Wisconsin Department of Public Instruction, 1998).

The definitions were also defined separately where technology literacy involves using, managing and understanding of technology where information literacy deals with accessing, evaluating and using information from a variety of sources (Wisconsin Department of Public Instruction, 1998). A similar definition of information literacy is given by the National Forum on Information Literacy as being the ability to know when there is a need for information, to be able to identify, locate, and effectively use that information for the issue or problem at hand (Breivik, 2000). While there is a difference in the definitions of information literacy, they both carry the same theme in finding and using information. Moreover, with the predominance of information stored in electronic form, technology literacy goes hand in hand with information literacy because it relates to the tools that are used to store and retrieve information.

Visual literacy and media literacy are closely related to each other as well. Visual literacy is defined as the ability to recognize and understand ideas conveyed through visible actions or images (Wisconsin Department of Public Instruction, 1998). A broader definition of visual literacy also includes the creation of images in a variety of media as well as incorporating the competencies of reading and writing (International Visual Literacy Association, 1998). Media literacy is closely defined as the ability to conduct a critical analysis of images and the sounds, special effects, and text that accompany them. Media literacy also aims to provide students with the ability to create media and multimedia products for specific purposes and audiences (Wisconsin Department of Public Instruction,

1998). A summarization of media literacy as compared to the other newer types of literacy was made by Kathleen Tyner:

> In the United States, the term media literacy is often used interchangeably with information literacy and visual literacy, and many of their aims are inseparable. In addition, they overlap with those of the tool literacies, that is, computer, network, and technology literacies, and so on. All of these terms are provisional and in flux (Tyner, 1998, p. 93).

In the view of the multiliteracies being so interrelated, the terms technology literacy, information literacy, visual literacy and media literacy will be described as basic computer literacy in this research.

Changes in Literacy

The focus of the October, 1999 issue of Educational Leadership, a professional journal published by the Association for Supervision and Curriculum Development, entitled "Redefining Literacy," (Scherer, Ed.) was to examine the recent changes in defining literacy along with its educational implications. One article described how the definition of literacy is changing not only with response to the advances of how information is being stored but also to local concerns on what is considered literacy at each school district (Rafferty, 1999). Also, within schools, each grade level or subject area may have specific descriptions of literacy expectations. An example is the literacy expectation of letters and sounds for someone learning to read (Bodrova, Leong, & Paynter, 1999). The same is true for learning at all levels.

Wisconsin's Department of Public Education (1998) addressed these concerns in their academic standards for information and technology literacy by developing content, performance and proficiency standards that students should meet by the end of grades four, eight and twelve. Part of the rationale used to describe the importance of incorporating information and technology literacy skills across the curriculum included this statement:

> Community members need these skills to function as responsible citizens. Employers prize those employees who demonstrate these skills because they are people who can continue learning and connect what they have learned to the requirements of a job. College and university faculty recognize the need for these skills as the means of developing the level of understanding that separates the expert from the beginner (Wisconsin Department of Public Instruction, 1998).

This reasoning explains how important information and technology literacy skills are throughout all of society; it is part of being a citizen, an employee, and used in the course of continued education. An illustration of needing these skills may be found by using a public library.

The library has undergone dramatic changes within the past decade (O'Grady, 1999). The existence of a physical card catalog has now been replaced with an online card catalog and the magazine index now resides on a CD-ROM. In order to utilize the new high-tech libraries, one must be able to operate, find, evaluate and use information from the computer-based information systems (O'Grady, 1999). A person with a home computer and an Internet connection may

access information from networked libraries around the world (Tyner, 1998, pp. 10-11). Similar changes have occurred in the resource centers at the Wisconsin technical colleges.

Trends of Computer Use and Ownership

A study of the trends in computer use and ownership may help to understand the basic computer literacy skills of potential students. The United States Census Bureau has collected computer use data in October of 1984, 1989, 1993 and 1997 as part of the Current Population Survey. The most recent report, compiled from the 1997 data, was issued in 1999 by Eric Newburger. The results of this survey as compared to previous surveys show many longitudinal trends. Three significant trends show the increasing use of computers. In 1984, only 8.2 percent of households had computers. The percentage steadily increased to 36.6 so that slightly over one-third of households had computers in 1997. The percentage of adults that use computers at home, school or work steadily increased from 18.3 in 1984 to 47.1 in 1997. The number of children that use computers at home or at school has also increased from 30.2 percent in 1984 to 74.4 percent in 1997 (Newburger 1999). An extrapolation of these trends to the year 2001 would have about 52 percent of households with computers, 58 percent of adults using computers at home, work or school and 90 percent of children using computers at home or at school. The combined message of the trends shows the increasing availability of computing technology shared by everyone.

Conversely, there is still a large portion of the population that has yet to embrace computers, namely about 42 percent of the adults and 10 percent of children.

A majority of the adults that graduated high school in the 1980's or before had little if any computer use in high school before graduation. As the presence of computers increases in the home, at school and at work, adults are in need of gaining and maintaining computing skills. Unfortunately, according to the demographic data collected, some groups of people have not had access to computers in order to achieve necessary basic computer skills.

Disparities in Computer Ownership and Usage

When the characteristics of the households with computers are examined, such as gender, race, age, educational attainment and family income, disparities of computer ownership are identified. Almost 76 percent of households with a yearly family income over $75,000 had a computer while only 15.6 percent of households with incomes below $25,000 had one. The disparity related to educational attainment is similar as 63.2 percent of householders with a bachelors degree or more have computers compared with 9.1 percent of householders with less than a high school diploma. Householders in the age range of 35 to 54 has the highest percentage of computer ownership at 48.6 percent. Householders in the age range of 18 to 34 years have computers at 37.3 percent. The age group with the lowest computer ownership percentage, 21.0 percent, is 55 years and over. The percentage of householders with computers that are non-Hispanic white are more than double the percentage of other races. Lastly, the percentage of

householders that are female, 28.7 percent, is about two-thirds that of the percentage for males, 42.1 percent (Newburger 1999). The disparity relating to gender is not only for computer ownership but it applies to computer usage as well.

Weinman and Cain (1999) view the use of computer technology as the new "gender gap" where female students are being shortchanged. Simply having access to computers is not enough to rectify the problem. Currently male students will use computers to program and problem solve while females use them more for word processing (Weinman & Cain, 1999). This trend continues with females in higher education as seen with only 13 percent pursuing technical disciplines in science and engineering programs while they make up 51 percent of the school-age population (Cetron, 1997). Even though this gap exists, most adults are capable to learn basic computer knowledge and skills regardless of gender, age, race or previous educational experience (Clarke, 1998).

One consideration, which needs to be made about those that either own or have access to computers, is that computer availability and use does not equal overall computer proficiency or having basic computer literacy skills (Monroy, 2000). One may be able to operate a particular software with great proficiency but yet be unable to perform other basic tasks. For example, 63 percent of computer owners are connected to the internet (Monroy, 2000), many of whom may be proficient in sending and receiving email but may have no understanding of email attachments.

Studies of Computer Literacy

Many studies have examined computer literacy skills that people have attained. Several of this type of study will be looked at in this review to see what type of questions were asked and in what format. A study of computer skill expectations of employers will be looked at too because of its close parallel to this study of computer literacy expectations of instructors at WITC.

The study of computer skills expected by employers was carried out by William Perry (1998). The study targeted employers looking to fill computer-related vacancies. A Likert Scale was used to rate the various computer usage skills on a scale from "1-useless" to "5-very essential." The computer skills examined were in the categories: operating system, graphical user interface, word processing, spreadsheet and database. The category of internet skills was not included in the study. The results of the study revealed that employers rated each group of skills as being between "4-essential" and "5-very essential" with only seventeen-hundredths (0.17) of a point separating the lowest mean from the highest. One of the recommendations from the study was to further examine postsecondary curricula for evidence of an appropriate level of emphasis being put on attaining practical computer productivity software skills. Another recommendation suggested measuring the perceptions of postsecondary institutions with regard to computer productivity skills as to compare the attitudes with the results of employers.

The intent of Perry's study, to find the computer skills wanted by employers in their new employees, parallels the intent of this study -- to

determine the basic computer skills desired by instructors in entry-level post-secondary students. A comparison of the results between the studies would need to be made with the understanding that the perceptions are being formed with a different target population in mind. The employers are looking at program graduates as potential employees in Perry's study where, in this study, students entering programs are targeted.

A comprehensive study was conducted to determine the desired computer skills for graduates of the University of Wisconsin-Stout (UW-Stout TQM Team Report, 1994). The team surveyed students at UW-Stout to identify their current computer skills while, at the same time, surveyed program directors, alumni, and employers to find their expectations of computer skills for students and graduates of UW-Stout. The computer competencies of the study were grouped into six categories: basic computer skills, word processing skills, spreadsheet skills, database skills, graphics/multimedia skills, and information retrieval/telecommunications. The survey instruments were distributed to the students in the classroom and sent by either campus mail or the U. S. Postal Service to the other research groups. The survey listed 43 competencies in the six skill categories and requested responses of "yes," "no," or "unsure" as to either having or expecting the corresponding skill. The mean percent of "yes" responses for each competency were reported for each group. The "no" and "unsure" responses were not differentiated in the results of this study; only "yes" responses were reported. The study of student computer competencies has been continued at UW-Stout through another study.

A similar study of UW-Stout student computer competencies was conducted five years after the first study (Sedlak, 1999). Most interesting in the subsequent study were the additional questions, additional areas questioned and delivery of the questionnaire. The areas of basic computer skills, word processing skills, spreadsheet skills, and database skills had the same questions but the graphics/multimedia skills, renamed presentation skills, and information retrieval/telecommunications areas were updated to include advances in those areas. Web page development/creation and peripheral use were two new areas included in the study. An important note about the subsequent study is how much the questionnaire changed within five years to reflect the current state of expected computer competencies.

The delivery method of the subsequent study is also noteworthy. The survey was distributed to all enrolled UW-Stout students via email with all responses returned over the web (Sedlak, 1999). The use of this method assumes that all students have enough basic computer literacy skills to receive and respond to the survey otherwise a portion of the sample group would not be included. The current study will incorporate this delivery method as all instructors at Wisconsin Indianhead Technical College use electronic communication.

The UW-Stout studies targeted students at all stages of post-secondary but this study is looking at desired basic computer literacy skills expected of entry-level students. Computer literacy skills of college freshmen were studied by Smith & Furst-Bowe (1993) and Larson & Smith (1994). Both studies looked at the students' computer skills, source of computer experience, and attitudes toward

using computers. First, both studies found that about 90 percent of the students had some computer experience with about the same percentage having experience with word processing. There was a sharp decline in experience with all the other computer applications. Second, almost all the students listed high school as the main source of computer experience at 94 percent and 97 percent respectively. Lastly, results of the attitudes toward computers were mixed. Depending on the study and location the results showed favorable attitudes toward computers for some and unfavorable for others. The mixed results show an area for concern in the attitudes toward using computer technology.

The implications of the previous studies are many. First, proficiency in a specific computer based application is not enough for computer literacy (Monroy, 2000). Computer literacy cannot be based solely on the knowledge of word processing; multiple computer skills are necessary. Next, with high school as being the primary source for computer experience, non-traditional students may not have had the opportunity to use computers in high school; consequently, they may be lacking in basic computer skills. Lastly, the ability to use computing technology is not just an option anymore. Even if some students dislike using computers, all students should be able to use computer technology in post-secondary school. Many institutions advise prospective students to be "prepared to travel down the Information Superhighway" (Evans, 1999).

Integration of Computing Technology into the Classroom

In order to be fully effective at integrating computing technology into the classroom, instructors must have training with the new technology and have a willingness to incorporate it into the curriculum (Halpin, 1999; McKenzie, 2000; Hirschbuhl & Faseyitan 1994). Hirschbuhl & Faseyitan (1994) suggest that faculty are in need of appropriate training to overcome their fears of using computers and increase their technological literacy. Once instructors increase their technological literacy, they will be able to incorporate and use computers for meaningful learning applications (McKenzie, 2000). Training is necessary for instructors at all levels of teaching experience because of the rapid changes in computing technology.

The next generation of teachers, by 2005, will be those that have grown up with computers and have used them throughout their schooling (Cetron, 1997). A study by Halpin (1999) was made to see what is the best way to train pre-service teachers in learning computer technology. Halpin's study concluded that teachers that had computer instruction that was integrated with the teaching methods courses were more likely to incorporate the use of computer skills into the classroom. The results of Halpin's study could be generalized for all students learning computer technology in that computer skills are more easily remembered and used by the student when it is taught in conjunction with other materials. The generalization is not contrary to the purpose of this study since this study is identifying basic computer literacy skills and not advocating the instruction of these skills in isolation.

As instructors incorporate computing technology into their classes, a paradigm shift must be made from teacher-centered instruction to a learner-centered format (Sullivan, 1997; Lever- Duffy, 1993). A new educational trend is one of offering programs that are time-, pace- and place-free in order to meet the needs of adult students in higher education (Sullivan, 1997). The learner-centered instructional model includes three formats: the traditional format, the on-campus facilitated format, and the off-campus distance learning format (Lever- Duffy, 1993). Each of the three delivery formats may make use of computer technology which, in turn, requires students to have the necessary computer skills for success in the course.

Many older adults that are either staying in the workforce or continuing their education are in need of learning computer skills (Imel, 1997). The older adults are able to learn computer skills but may require specialized training that includes learning at a slower pace (Filipczak, 1998). Teaching methodologies that are non-threatening and self-paced and make use of peer tutors are recommended for older adult students learning to use computer technology (Imel, 1998).

Computer Technology Use at WITC

The Wisconsin Indianhead Technical College Board of Trustees developed End Statements which provide overall direction in the college's operation. One of the five End Statements addresses information technology in that WITC will use information technology to deliver, support, and enhance

learning and to manage college operations. The use of information technology in the learning process are to achieve these results:

1. WITC will offer multiple learning and service delivery methods that empower learners to access services and work in learning at times, places and paces appropriate to their needs.
2. WITC faculty will be more creative and effective in teaching.
3. Faculty and students will have significantly expanded access to learning resources throughout the world through implementation of a virtual library (Wisconsin Indianhead Technical College Board of Trustees, 2000).

The reason that the Board placed emphasis on the use of information technology in learning was to create an image for all WITC customers that WITC models exemplary use of information technologies to meet students needs and to prepare tomorrow's workforce (Wisconsin Indianhead Technical College Board of Trustees, 2000).

The Learning Resource Centers (LRC's) at each WITC campus utilize computing technology in their array of services and tools available and have created a virtual library. The LRC on each campus is linked to the others by an online catalog (WITC, 2000b, p. 56) which is accessible through the Web at http://www.witc.tec.wi.us/library/index.htm, the Library Resources homepage. The LRC also has availability to the Readers Guide to Periodical Literature access through the Wilson Web online database (WITC, 2000b, p. 56). Services utilizing computer technology offered through the LRC include computer software, computer lab with printers, Internet access, and availability to electronic books

(ebooks) that are accessed through the Web. WITC also has computer labs located in or near each LRC. The computers are loaded with software programs that are utilized throughout the curriculum offered at WITC (WITC, 2000b, p. 56).

The use of computer technology is not limited to students on campus but is also valuable for students off-campus as well. WITC offers programming in the form of a Virtual College with online courses from General Education to Computer Programming including the entire online programming for a degree in Computer Programming (WITC, 2000b, p.54). WITC offers 700 WebCourse computer-based training (CBT) modules for credit that are accessible through the website http://www.witc.tec.wi.us/cbt/index.htm. Without question, WITC has followed the Board's direction to utilize information technology as an essential part of the educational process.

Information technology use related to basic computer literacy

Students entering WITC should have some basic computer literacy skills so they may use the information technology available at the college in the most effective manner. An effective use of the information technology is not limited to just knowing how to use the tools but also the ability to find, evaluate and judge information as well as to create and distribute information and knowledge (Fulton, 1998). Furthermore the higher order information skills are dependent upon the student's ability to use the computing tools. In categorizing the different areas of knowledge and skills required to use computer-based information sources, Anne Clyde (1997) used the following:

1. Hardware or equipment-related knowledge and skills, including the ability to use a mouse and keyboard;
2. System knowledge and skills, including knowledge of network procedures, and of the DOS, Windows or Macintosh system interfaces;
3. Applications software knowledge and skills, including word processing, electronic mail software and Internet software such as Netscape;
4. Knowledge and skills associated with the use of information system itself – the way in which information is stored in the system, research procedures needed (keyword, Boolean, truncation and so on) and access techniques;
5. Knowledge and skills associated with using the information that is contained in the source or service.

These categories represent the skills described by the new multiliteracies of basic computer literacy with technology literacy included in the first four, information literacy in the middle three, visual literacy in the second, third and last and media literacy in the third and the last. With all areas of basic computer literacy skills being covered in this list, it will be used as the underlying structure for the survey questionnaire in this research. The categories will be tailored to mirror the information technology used at WITC. For example, the use of DOS or a Macintosh system will not be addressed because a Windows-based system is

used throughout the college and that is the system that students need to be able to operate whether or not they have had experience with other systems.

Summary

The intention of this review was to examine the meaning of literacy and how its meaning is changing in relation to the advances in computing technology. The changes in literacy are being incorporated into the educational system at all levels, including at the technical colleges. The availability and use of computers outside the educational system is continually increasing but there are noted disparities for many. Prior studies of computer literacy were examined for instruments and procedures used and how they would relate to this study.

The following chapter explains the methodology of this study. The subjects, instruments, procedures, unknowns and limits of the study are examined in the next chapter.

Chapter 3: Methodology

Subjects

This study was to determine the basic computer literacy skills required of program entry-level students at Wisconsin Indianhead Technical College (WITC). Of the 158 instructors WITC employs fulltime, 148 instructors of program courses were included in this study. Ten instructors were excluded from this study because they teach pre-program students in the Student Success Centers. The list of program instructors and email addresses for the Fall 2000 semester was obtained from WITC's (2000a) Staff Directory.

The entire group of program instructors was included for this study because an even distribution for each program category required the entire population to be surveyed in order to generalize this study's results.

Respondents

Of the 148 email messages sent, five were returned as being undeliverable because the destinations were not found. The five returned addresses were spelled according to the staff directory and not resubmitted. From the initial 143 email messages that were delivered, there were 29 responses to the survey. Three more responses were obtained after extending the survey for another week for a total of 32 respondents. This yields a response rate of 22 percent. A much higher response rate was desired for this study.

Instruments

An email message was sent to the participants in the study. The email explained the purpose of the study and requested full participation from everyone in the study. Confidentiality for each response was also addressed in the message as being protected so that no identifying information would be compromised. The email contained a hyperlink to the survey web page. Appendix A contains a copy of the email messages.

The survey questionnaire followed the classification of computer literacy skills as defined by Clyde (1997): (a) hardware or equipment-related knowledge and skills, (b) operating system knowledge and skills, (c) applications software knowledge and skills, (d) knowledge and skills associated with the use of the information system itself, and (e) knowledge and skills associated with using the information that is contained in the source or service. Specific questionnaire items were drawn together from studies and reports by UW-Stout TQM Team Report (1994), Furst-Bowe, Boger, Franklin, Polansky, and Schlough (1995), Karsten and Roth (1998), and Evans (1999). The items selected for the questionnaire were chosen according to current technological advances along with balancing both depth and breadth of the topic against a manageable sized survey instrument.

The survey instrument was pilot tested by both faculty and administration with subsequent corrections for all indicated concerns. Since the researcher for this study developed this instrument, the reliability of the instrument has not been established. The survey instrument does have content validity as its design and items were derived from researched studies and reports.

A Likert scale was used for the questionnaire's response format. The numeric scale of 1 to 5 corresponded to the item's demand with the higher number equating to the higher demand. The descriptions of demand on the 1 to 5 scale were: Not Required, May be Required, Seldom Required, Frequently Required, and Absolutely Required. Each item in the questionnaire was to be rated twice, once for current expectations and again for future expectations. The format used for indicating two responses for each questionnaire item mirrored the format used in the Global Assessment of Technology in Education Scale (Joyce & Faranga 1997). A reproduction of the survey instrument, not the actual web page, is included in Appendix B.

A follow-up email was sent to the participants to thank those who responded to the survey. The message also informed those that had not responded that the survey would be extended for another week for them. A hyperlink to the survey web page was included in the message. Appendix C contains a copy of this message.

Procedures

On Monday, August 21, 2000, the researcher shared the ideas of this study with some of the faculty and administration at an all-staff meeting at WITC-New Richmond. One part-time instructor/network technician and one dean of student services volunteered their time to pilot test the survey instrument. They were each sent a link to the survey web site. Their input about the survey instrument were addressed and incorporated.

The initial email messages were sent to all of the instructors participating in this study after the Thanksgiving Recess on Monday, November 27, 2000. Follow-up email messages were sent on Sunday, December 10, 2000. All responses submitted by the end of the semester, Friday, December 22, 2000 were sent to the Academic Computing Services for data analysis.

Analysis

All data for this web-based survey was recorded online on the UW-Stout server. A data file of the results was sent electronically to the computing center at UW-Stout along with descriptors of each data element. The data was translated into an ASCII text file with delimiters and imported into an SPSS data spreadsheet.

The analysis was conducted on the data using SPSS. The analysis obtained values of frequency counts, percentages, means and standard deviations for the items on expectation of computer literacy. Values of frequency counts and percentages were obtained for the demographic items. Lastly, a cross tabulation analysis of frequency counts and percentages was generated for the items on current expectation of computer literacy compared to future (2 year) expectation.

Unknowns and Limitations

1) This study only looked at the computer literacy skills required of students that are planning to continue their education by taking program courses at Wisconsin Indianhead Technical College (WITC).

2) The data collected for this study were obtained from WITC instructors. The study did not obtain information from other post-secondary institutions nor from the workplace for definition of basic computer literacy skills.

3) The survey instrument was developed by the researcher. The validity and reliability of the instrument have not been determined.

4) The researcher is employed by WITC and may influence a bias on either the data collection or on the conclusions of the study.

5) The low response rate diminishes the external validity of the study as a higher rate is required for making generalizations of the results.

Chapter 4: Results

Introduction

The research questions of this study were to define the current and near future basic computer literacy skills required of students at WITC through identifying the computer literacy skills expected of first year students by WITC instructors and determine if there is a difference in expected computer literacy skills identified by instructor demographics. This chapter contains the results of the study in terms of expectations obtained from the submitted questionnaires and descriptive statistics on the results of the demographics. Questionnaire items on expectations of computer literacy used an interval scale of measurement in a five-point Likert scale. The arithmetic mean and standard deviation for each questionnaire item are reported for both current and future expectations along with the change in the means indicated as an increase from current expectations to future expectations. Composite data for each computer literacy skill area is given as the arithmetic means of both means and standard deviation for each. The demographics data used a nominal scale of measurement in a multiple-choice format with the number and percentage reported for each group of respondents.

Expectations of Computer Literacy

The questionnaire items on expectations of basic computer literacy were arranged in five groups of classification and sought both current expectations and expectations two years from now. A 5-point Likert scale described as 1 (not required), 2 (may be required), 3 (seldom required), 4 (frequently required) and 5

(absolutely required) was used to gain information on each item. The arithmetic mean, standard deviation and change in the mean as indicated as an increase in expectation for each item are listed according to classification in the following five tables. A chart of the means of the groups of classification is given in Figure 1.

Table 1

Hardware or Equipment-Related Knowledge and Skills

Item	Now	2 Years	Change
1. Turn on/off a computer, monitor and printer.			
M	4.31	4.81	0.49
SD	1.20	0.76	
2. Have keyboarding skills beyond 10 words per minute.			
M	4.03	4.28	0.25
SD	1.20	1.13	
3. Have keyboarding skills beyond 20 words per minute.			
M	3.69	4.07	0.38
SD	1.28	1.28	
4. Operate a mouse with click, double click and click and drag.			
M	4.16	4.76	0.60
SD	1.19	0.79	
5. Connect and use a modem.			
M	3.06	3.85	0.79
SD	1.12	1.32	
Group Mean and Change			
M	3.85	4.35	0.50

Table 2

System Knowledge and Skills

Item	Now	2 Years	Change
6. Use the Windows operating system.			
M	3.66	4.55	0.89
SD	1.29	0.83	
7. Format a floppy disk.			
M	3.16	3.83	0.67
SD	1.42	1.28	
8. Manage a hard drive (using folders and directories).			
M	2.94	4.07	1.13
SD	1.24	1.20	
9. Save or copy files to hard drive and floppy disk.			
M	3.63	4.62	0.99
SD	1.34	0.86	
10. Start a software program.			
M	3.72	4.66	0.94
SD	1.33	0.81	
11. Install a new software program.			
M	2.34	3.47	1.13
SD	1.21	1.33	
12. Scan disks for viruses.			
M	2.81	4.07	1.26
SD	1.49	1.17	
13. Use Windows online Help feature.			
M	2.94	4.03	1.09
SD	1.37	1.12	
Group Mean and Change			
M	3.09	4.17	1.08

Table 3

Applications Software Knowledge and Skills

Item	Now	2 Years	Change
14. Create a document with a word processor.			
M	3.69	4.73	1.04
SD	1.35	0.78	
15. Enter data into an existing spreadsheet.			
M	2.75	3.80	1.05
SD	1.55	1.47	
16. Create a new spreadsheet.			
M	2.42	3.50	1.08
SD	1.41	1.55	
17. Create charts and graphs from a spreadsheet.			
M	2.22	3.40	1.18
SD	1.41	1.50	
18. Enter data into an existing database.			
M	2.53	3.60	1.07
SD	1.48	1.40	
19. Create a new database.			
M	2.25	3.37	1.12
SD	1.41	1.59	
20. Create a database report.			
M	2.22	3.41	1.19
SD	1.39	1.50	
21. Draw simple graphical shapes and objects.			
M	2.16	3.03	0.87
SD	1.13	1.35	
22. Create a multimedia presentation.			
M	2.47	3.53	1.06
SD	1.48	1.46	
23. Access the Internet using a Web browser.			
M	3.59	4.80	1.21
SD	1.46	0.76	
24. Send and receive e-mail messages.			
M	3.47	4.67	1.20
SD	1.46	0.92	
25. Send and receive e-mail messages with attachments.			
M	3.22	4.57	1.35
SD	1.48	0.94	

26. Download files from the Internet.			
M	2.94	4.13	1.19
SD	1.44	1.31	
27. Communicate through a class mailing list or web site.			
M	2.58	4.17	1.59
SD	1.46	1.05	
Group Mean and Change			
M	3.16	4.47	1.31

Table 4

Knowledge and Skills Associated with the Use of the Information System Itself

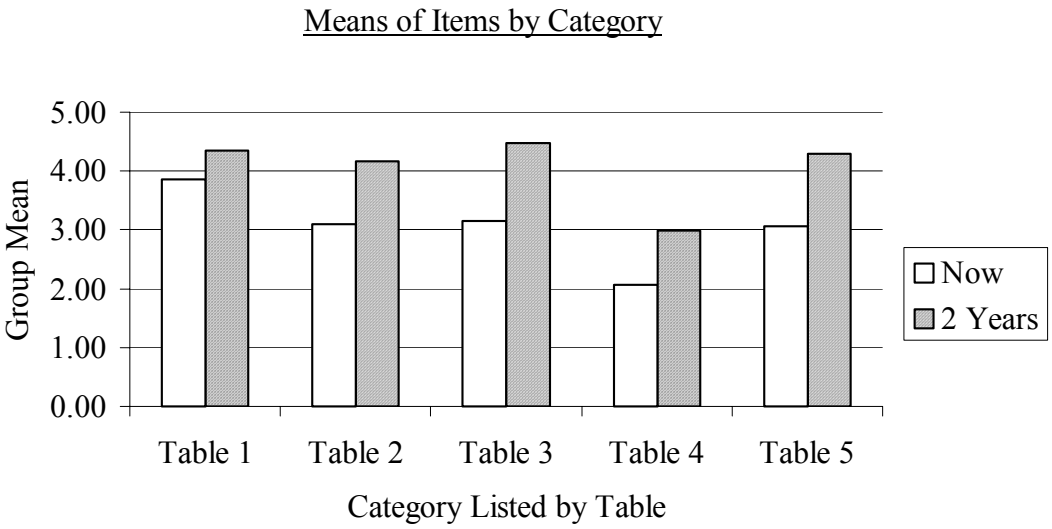
Item	Now	2 Years	Change
28. Understand three character file types and properties.			
M	2.06	3.10	1.04
SD	1.24	1.32	
29. Ability to associate file types with applications.			
M	2.26	3.20	0.94
SD	1.21	1.32	
30. Understand the way that information is stored--Binary numbering system.			
M	1.66	2.41	0.75
SD	1.15	1.43	
31. Knowledge of acronyms such as CPU, RAM, and MB.			
M	2.28	3.24	0.96
SD	1.44	1.60	
32. Maintenance of computer system.			
M	2.06	3.00	0.94
SD	1.22	1.39	
Group Mean and Change			
M	2.06	2.99	0.93

Table 5

Knowledge and Skills Associated with Using the Information that is Contained in the Source or Service

Item	Now	2 Years	Change
33. Find information from a variety of sources.			
M	3.19	4.43	1.24
SD	1.42	0.97	
34. Evaluate information and selecting relevant data.			
M	3.16	4.37	1.21
SD	1.49	1.00	
35. Organize the information from multiple sources.			
M	3.03	4.20	1.17
SD	1.43	1.06	
36. Present the information utilizing computer technology.			
M	2.88	4.17	1.29
SD	1.45	1.10	
Group Mean and Change			
M	3.07	4.29	1.23

Figure 1



Descriptive Statistics

Of the 143 requests for participation in this study emailed to WITC program instructors, 22% (N=32) were completed and submitted. The demographic information examined six categories which were campus location, program subject, computer usage, teaching experience, gender and educational level. The following six tables, Table 6 to Table 11, contain both the number and percentage of responses for each demographic category item. Discrepancies in some tables for total number not equal to N=32 and percentage not totaling 100% is due to missing data on the item questioned.

Table 6

Response Rate per Campus Location

	N	%
Ashland	2	6.3
New Richmond	13	40.6
Rice Lake	10	31.3
Superior	7	21.9
Off-Campus	0	0.0

Table 7

Response Rate per Program Subject Category

	N	%
Agriculture	1	3.1
Business	10	31.3
Computers and Electronics	5	15.6
Construction and Building	0	0.0
Engine and Equipment Service and Repair	0	0.0
General Education	6	18.8
Health and Child Care	4	12.5
Manufacturing Technology	3	9.4
Professional and Legal Support Services	0	0.0
Telecommunications	0	0.0
Other	2	6.3

Table 8

Response Rate per Frequency of Computer Usage

	N	%
Less than daily	1	3.1
Daily	7	21.9
More than twice daily	24	75.0

Table 9

Response Rate per Number of Years Teaching

	N	%
4 Years or Less	4	12.5
5 to 9 Years	6	18.8
10 to 14 Years	9	28.1
15 to 19 Years	4	12.5
20 Years or More	7	21.9

Table 10

Response Rate per Gender

	N	%
Male	17	53.1
Female	14	43.8

Table 11

Response Rate per Highest Level of Degree Obtained

	N	%
Less than Associates	0	0.0
Associates	1	3.1
Bachelors	6	18.8
Masters	22	68.8
Education Specialist	3	9.4
Doctorate	0	0.0

Chapter 5: Discussion

Introduction

The research questions of this study were to identify the current and near future (2 year) basic computer literacy skills expected of first year students by WITC instructors and determine if there is a difference in expected computer literacy skills identified by instructor demographics. Due to the low response rate of 22% (N = 32), generalizations cannot be made from this study; therefore, the trends examined here will relate only to the group that responded to the survey. Furthermore, instructor demographic trends of those responding will be analyzed without relation to expected computer literacy skills.

This chapter examines and discusses the results obtained from this study. First, the trends represented by the respondents are examined for current and future expectations of basic computer literacy skills along with the respective changes in emphasis. Next, trends of instructor demographic data are discussed. Then the response rate of the online survey format is examined in an attempt to understand the rate of response to the survey. Finally, a consideration of future studies is examined.

Trends of current and future expectations of basic computer literacy

The main trend found in the data is in the change of current expectation to future (2 year) expectation of basic computer literacy. An increase in future expectation was indicated on every item in the questionnaire. This indicates the importance of increased basic computer literacy skills in first year students. A 5-

point Likert scale described as 1 (not required), 2 (may be required), 3 (seldom required), 4 (frequently required) and 5 (absolutely required) was used to describe the expectations of the basic computer literacy skills. The first group, "Hardware or equipment-related knowledge and skills," had the highest current expectation which was rated as being 'frequently required' but showed the smallest increase in future expectation as it remained in the range of being 'frequently required.' The second group, "System knowledge and skills;" third group, "Applications software knowledge and skills;" and fifth group, "Knowledge and skills associated with using the information that is contained in the source or service" were all rated with current expectations as 'seldom required' but showed high increases for future expectations resulting in all the groups becoming 'frequently required.' The third group ended up with the highest future expectations due to the high expectations in word processing, web browsing and email despite the lower overall expectations given to spreadsheet and database applications within the same group.

The fourth group, "Knowledge and skills associated with the use of the information system itself," was rated the lowest for both current and future expectations. Even though this group scored the lowest it did show an increase form being 'may be required' to becoming 'seldom required.' The fourth group examined questions on the order of how computers work which was not desired as highly as what may be accomplished with computers as indicated within the items in the other groups.

A cross tabulation which compared the results for each item's current expectations against future expectations was generated for each computer skill addressed in the study. The results of the cross tabulation show that all items either increase or maintain the same value in two years with the exception of one respondent on item 7, format a floppy disk, where a one step decrease was indicated. This shows that there is virtually no item in the study that is expected to be de-emphasized within the next two years.

Trends of instructor demographics

One of the research questions of this study was to see if there is any difference in expected computer literacy skills identified by instructor demographics. The data set collected in this study was too small to make generalizations to the group, therefore, trends represented by only the respondents were examined. The demographic information collected in the study looked at six categories of information which were: campus location, program subject, frequency of computer usage, number of years teaching, gender, and highest level of degree obtained.

The response rate per campus location had the majority of responses come from the New Richmond location which is the region that the researcher is most closely affiliated. The familiarity with the researcher from the region may have been the reason for the higher response rate from the New Richmond location. The response rate percentages from the Rice Lake and Superior campus locations followed about the same percentages as instructors surveyed from the locations.

The response rate per program subject category showed highest response rates from the categories of business, general education, and computers and electronics. These program areas make high utilization of computers within the programs which possibly made responding to this survey more professionally relevant to the respondents.

The response rate per frequency of computer usage predominantly indicated a high rate of computer usage by those responding to the survey. Only one of the respondents indicated a usage rate of less than daily. The one respondent with the low frequency of computer usage creates an interesting implication for the online survey format; subjects of an online survey do not need to be frequent users of computers in order to respond to the online survey.

The response rate per number of years teaching and response rate per gender were both fairly evenly distributed. An interesting trend here is the higher number of instructors with 20 years or more years teaching responded compared to the lower number of instructors with 4 years or less.

The response rate per highest level of degree obtained revealed that over three-fourths of the respondents have advanced degrees. A possible explanation for this imbalance could be that subjects with advanced degrees may be familiar with the process of conducting research projects and understand the importance of data collection in such a project.

Response rate

The survey format for this study was web-based with emails containing a link to the survey site sent to all program instructors. The program instructors were to follow the link to the survey, respond to the questions and submit their results over the web. A total of 32 responses were recorded from the 143 delivered email messages sent which yielded a response rate of 22%. A much higher rate of response was desired in order to make generalizations to the entire group surveyed. This rate of response is similar to the response rate of an online survey given to students attending UW-Stout in Fall, 1999 (Sedlak, 1999) where the 20% of students replied to the study. The online survey format may have yielded a lower rate of response as it could be easily put off and forgotten if not responded to immediately.

The online survey format has some inherent shortcomings that were noticed by the researcher. First, there is a lack of personal contact in this format. Without the personal contact between researcher and subjects, there may be a lack of motivation to participate in the study. Next, there is no tangible aspect to an online survey. A questionnaire on paper that is either handed out or mailed is less likely to be forgotten as its physical essence is a reminder for the subject to complete and return it. Lastly, there was no personal incentive for completion of the online survey. A chance at receiving a reward may have increased personal interest in completing the survey questionnaire.

Future studies

The change in current expectations to future (2 year) expectations as indicated by respondents in this study indicates a great shift in expected basic computer literacy skills. Due to the increased expectations over the next two years, future studies involving computer skills expected by instructors should be conducted. The future studies should incorporate future changes in computing technology into the studies to see how the changes will be used in the educational setting. Consideration should also be given to increasing the rate of response in order to collect a larger set of data.

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Appendix A

First Email to WITC Faculty

Dear WITC faculty,

As a WITC instructor at the Polk County Learning Center in Balsam Lake, I have an interest in preparing students for program readiness. I am currently pursuing a Master's of Science Degree in Vocational Education at UW-Stout and conducting an online research project this semester. The research project is of high interest to me and one of practical use to the college.

I am looking to determine the basic computer literacy skills expected of first-year students that are entering WITC programs. The results of this study may be used in three ways: curriculum development for Success Center courses, to better prepare students for program entry, and for improved coordination between the programs and Success Centers.

I am asking you to complete the following survey about your expectations of basic computer skills of current entry-level WITC students and your expectations of the skills of entry-level students two years in the future. Please take a few minutes to answer the questionnaire. It is located at:

http://www.uwstout.edu/survey/surveyb.html

I would like to have your response no later than Friday, December 8th. I hope to have as close to a perfect response rate as possible. Your help is greatly appreciated and necessary for this research.

All responses will be kept confidential so that no personal identifying information will be compromised.

Thank you for your response!

Yours truly,

Robert Pennings

Appendix B

WITC New Student Computer Skill Expectations Survey*

Human Research Subjects Consent Form

I understand that by returning this questionnaire, I am giving my informed consent as a participating volunteer in this study. I understand the basic nature of the study and agree that any potential risks are exceedingly small. I also understand the potential benefits that might be realized from the successful completion of this study. I am aware that the information is being sought in a specific manner so that no identifiers are needed and so that confidentiality is guaranteed. I realize that I have the right to refuse to participate and that my right to withdraw from participation at any time during the study will be respected with no coercion or prejudice.

NOTE: Questions or concerns about participation in the research or subsequent complaints should be addressed first to the researcher or research advisor and second to Dr. Ted Knous, Chair, UW-Stout, Menomonie, WI, 54751, phone (715) 232-1126.

Please read the following statements and questions. To the best of your ability, indicate your response to each. Rate each statement twice; the first answer should reflect your current expectations for entry-level students and the second answer should reflect your projected expectations for entry-level students two years from now. Be sure to click the "**Submit**" button at the very bottom of the page only once when you are finished.

All individual answers will be confidential; only composite results will be reported.

Indicate the numeric value of having the indicated skills using the Likert rating scale of:

1 = Not required

2 = May be Required

3 = Seldom Required

4 = Frequently Required

5 = Absolutely Required

Hardware or equipment-related knowledge and skills:

1. Turn on/off a computer, monitor and printer.

Now: O 1 O 2 O 3 O 4 O 5 In 2 years: O 1 O 2 O 3 O 4 O 5

2. Have keyboarding skills beyond 10 words per minute.

Now: O 1 O 2 O 3 O 4 O 5 In 2 years: O 1 O 2 O 3 O 4 O 5

3. Have keyboarding skills beyond 20 words per minute.

Now: O 1 O 2 O 3 O 4 O 5 In 2 years: O 1 O 2 O 3 O 4 O 5

4. Operate a mouse with click, double click and click and drag.

Now: O 1 O 2 O 3 O 4 O 5 In 2 years: O 1 O 2 O 3 O 4 O 5

5. Connect and use a modem.

Now: O 1 O 2 O 3 O 4 O 5 In 2 years: O 1 O 2 O 3 O 4 O 5

System knowledge and skills:

6. Use the Windows operating system.

Now: O 1 O 2 O 3 O 4 O 5 In 2 years: O 1 O 2 O 3 O 4 O 5

7. Format a floppy disk.

Now: O 1 O 2 O 3 O 4 O 5 In 2 years: O 1 O 2 O 3 O 4 O 5

8. Manage a hard drive (using folders and directories).

Now: O 1 O 2 O 3 O 4 O 5 In 2 years: O 1 O 2 O 3 O 4 O 5

9. Save or copy files to hard drive and floppy disk.

Now: O 1 O 2 O 3 O 4 O 5 In 2 years: O 1 O 2 O 3 O 4 O 5

10. Start a software program.

Now: O 1 O 2 O 3 O 4 O 5 In 2 years: O 1 O 2 O 3 O 4 O 5

11. Install a new software program.

Now: O 1 O 2 O 3 O 4 O 5 In 2 years: O 1 O 2 O 3 O 4 O 5

12. Scan disks for viruses.

Now: O 1 O 2 O 3 O 4 O 5 In 2 years: O 1 O 2 O 3 O 4 O 5

13. Use Windows online Help feature.

Now: O 1 O 2 O 3 O 4 O 5 In 2 years: O 1 O 2 O 3 O 4 O 5

Applications software knowledge and skills:

14. Create a document with a word processor.

Now: O 1 O 2 O 3 O 4 O 5 In 2 years: O 1 O 2 O 3 O 4 O 5

15. Enter data into an existing spreadsheet.

Now: O 1 O 2 O 3 O 4 O 5 In 2 years: O 1 O 2 O 3 O 4 O 5

16. Create a new spreadsheet.

Now: O 1 O 2 O 3 O 4 O 5 In 2 years: O 1 O 2 O 3 O 4 O 5

17. Create charts and graphs from a spreadsheet.

Now: O 1 O 2 O 3 O 4 O 5 In 2 years: O 1 O 2 O 3 O 4 O 5

18. Enter data into an existing database.

Now: O 1 O 2 O 3 O 4 O 5 In 2 years: O 1 O 2 O 3 O 4 O 5

19. Create a new database.

Now: O 1 O 2 O 3 O 4 O 5 In 2 years: O 1 O 2 O 3 O 4 O 5

20. Create a database report.

Now: O 1 O 2 O 3 O 4 O 5 In 2 years: O 1 O 2 O 3 O 4 O 5

21. Draw simple graphical shapes and objects.

Now: O 1 O 2 O 3 O 4 O 5 In 2 years: O 1 O 2 O 3 O 4 O 5

22. Create a multimedia presentation.

Now: O 1 O 2 O 3 O 4 O 5 In 2 years: O 1 O 2 O 3 O 4 O 5

23. Access the Internet using a Web browser.

Now: O 1 O 2 O 3 O 4 O 5 In 2 years: O 1 O 2 O 3 O 4 O 5

24. Send and receive e-mail messages.

Now: O 1 O 2 O 3 O 4 O 5 In 2 years: O 1 O 2 O 3 O 4 O 5

25. Send and receive e-mail messages with attachments.

Now: O 1 O 2 O 3 O 4 O 5 In 2 years: O 1 O 2 O 3 O 4 O 5

26. Download files from the Internet.

Now: O 1 O 2 O 3 O 4 O 5 In 2 years: O 1 O 2 O 3 O 4 O 5

27. Communicate through a class mailing list or web site.

Now: O 1 O 2 O 3 O 4 O 5 In 2 years: O 1 O 2 O 3 O 4 O 5

Knowledge and skills associated with the use of the information system itself:

28. Understand three character file types and properties.

Now: O 1 O 2 O 3 O 4 O 5 In 2 years: O 1 O 2 O 3 O 4 O 5

29. Ability to associate file types with applications.

Now: O 1 O 2 O 3 O 4 O 5 In 2 years: O 1 O 2 O 3 O 4 O 5

30. Understand the way that information is stored--Binary numbering system.

Now: O 1 O 2 O 3 O 4 O 5 In 2 years: O 1 O 2 O 3 O 4 O 5

31. Knowledge of acronyms such as CPU, RAM, and MB.

Now: O 1 O 2 O 3 O 4 O 5 In 2 years: O 1 O 2 O 3 O 4 O 5

32. Maintenance of computer system.

Now: O 1 O 2 O 3 O 4 O 5 In 2 years: O 1 O 2 O 3 O 4 O 5

Knowledge and skills associated with using the information that is contained in the source or service:

33. Find information from a variety of sources.

Now: O 1 O 2 O 3 O 4 O 5 In 2 years: O 1 O 2 O 3 O 4 O 5

34. Evaluate information and selecting relevant data.

Now: O 1 O 2 O 3 O 4 O 5 In 2 years: O 1 O 2 O 3 O 4 O 5

35. Organize the information from multiple sources.

Now: O 1 O 2 O 3 O 4 O 5 In 2 years: O 1 O 2 O 3 O 4 O 5

36. Present the information utilizing computer technology.

Now: O 1 O 2 O 3 O 4 O 5 In 2 years: O 1 O 2 O 3 O 4 O 5

Demographics

Campus Location:

____Ashland

____New Richmond

____Rice Lake

____Superior

____Off-Campus

Program Subject Category:

____Agriculture

____Business

____Computers and Electronics

____Construction and Building

____Engine and Equipment Service and Repair

____General Education

____Health and Child Care

____Manufacturing Technology

____Professional and Legal Support Services

____Telecommunications

____Other

Frequency of Computer Usage:

____Less than daily.

____Daily.

____More than twice daily.

Number of Years Teaching:

____4 years and less

____Between 5 and 9 years

____Between 10 and 14 years

____Between 15 and 19 years

____20 years or more

Gender:

____Male

____Female

Highest Level of Degree Obtained:

____Less than Associates

____Associates

____Bachelors

____Masters

____Education Specialist

____Doctorate

* This survey was given online in a web page. The response format for the computer skill items used radio buttons and demographic items used drop-down menus.

Appendix C

Follow-up Email to WITC Faculty

Dear WITC faculty,

Thank you to all that have responded to the survey questionnaire. Your input is greatly appreciated! My report will be made available to anyone that is interested in the results.

I have decided to leave to survey open for another week. If you have not yet answered and submitted the survey questionnaire, please take the time to answer the questions in order to help me obtain an accurate measure of basic computer literacy skills expected of first-year students at WITC. I truly desire to have everyone's input included in my research. Here is the link:

http://www.uwstout.edu/survey/surveyb.html

Thank you for your response!

Yours truly,

Robert Pennings