

Student Perceptions of the  
Effectiveness of Online Tools Used With Accounting Program Students  
at Northcentral Technical College

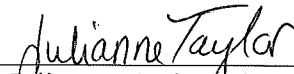
by

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ABSTRACT

Since the invention of the computer, the field of accounting has become more dependent on it. Use of technology in the field means that professionals need experience with technology as they prepare for accounting jobs.

Instructors have more options in teaching students accounting concepts, generally accepted principles, and competencies because of the availability of technology. Many accounting instructors at Northcentral Technical College are finding new uses for technology in their face-to-face courses by using online tools in their lessons. The need of industry to incorporate technology into face-to-face accounting courses has made it important to explore the perceptions of instruction using online tools and has made it important to explore the problems of instruction using online tools.

The purpose of this study was to determine the perceived value of online tools for students in face-to-face accounting courses at Northcentral Technical College through a survey conducted in the fall semester of the 2008-2009 academic year. The survey was emailed or given to 137 students that were enrolled in accounting courses. Of this population of the survey, 63 students participated.

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## Chapter I: Introduction

### *Background*

New technologies are changing the environment in today's accounting practice. Accountants must possess a broader set of knowledge, skills, and abilities than prior generations (Kelly, Medlin, & Roberts, 2007). Almost all companies use computers for keeping their books, tracking inventory, and most other business operations. Computers are widely used in accounting and auditing. With the aid of special computer software packages, accountants summarize transactions in standard formats for financial records, calculate projected financial ratios, or organize data in special formats for financial analysis (Skyline College, 2008). Most companies use computers for keeping their books, tracking inventory, and other business operations (Albrecht & Sack, 2000). Technology has invaded all aspects of an accountant's professional life and individuals entering the profession must have the necessary skills to use technology effectively. In the accounting profession it is a requirement to know how to use a computer. The profession has recommended significant changes in accounting education to keep up with technology changes (Kelly, Medlin, & Roberts, 2007).

"Accounting students are not exposed to a sufficient amount of technology that businesses use" (Albrecht & Sack, 2000). In other words, students may not understand how technology can be used to make business decisions. Today, Electronic Commerce (the use of the Internet for commercial transactions) is being used by Accountants. This includes online banking, reporting wages to government agencies, online sales and other accounting activities. "With the rapid growth of the World Wide Web, the Internet has become the new medium for commercial transactions" (Rutgers, 2008). Technology such

as Data Interchange and the World Wide Web are providing solutions to challenges and problems of today's business environment. The accessibility to technology and a computer for students seems to be of little issue. According to the Educause Center for Applied Research (ECAR) Study of Undergraduate Students and Information Technology (Borreson, Caruso & Salaway, 2007), almost every respondent (98%) owned at least two technology devices, consisting of some type of a cell phone and a computer. Based on this study, technology could easily be incorporated into assignments and instruction of any curriculum.

Research suggests there are barriers when implementing technology in all classrooms throughout the United States (Chen, 2007). The challenge for postsecondary institutions is in using technology effectively for learning. According to Borreson, Caruso & Salaway, students identified four categories about technology as a barrier to learning. They are as follows:

- "There are problems with technologies themselves and their institution implementations and support.
- The proliferation of technology has created a more complex learning environment.
- Poor use of technology by faculty (underuse, overuse, inappropriate use, or over dependence of technology) detracts from the learning experience.
- Instructors sometimes overestimate student comfort with or access to technology resources" (Borreson, Caruso & Salaway, 2007, p. 13-14).

Technology can be used in classrooms through the use of various online tools. An online tool is a learning object. A definition of learning objects adapted by the Wisconsin Online Resource Center is:

- "Learning objects are a new way of thinking about learning content. Traditionally, content is chunked in blocks of hours. Learning objects are much smaller units of learning, typically ranging from 2 minutes to 15 minutes. They are self-contained – each learning object can be taken independently.
- Are reusable – a single learning object may be used in multiple contexts for multiple purposes .
- Can be aggregated – learning objects can be grouped into larger collections of content, including traditional course structures.
- Are tagged with metadata – every learning object has descriptive information allowing it to be easily found by a search" (Center of International Education, 2007, p. 1).

A widely used definition of a learning object is "any entity, digital or non-digital, which can be used, re-used or referenced during technology supported learning" (Wiley, 2000, p. 4). Learning objects are a main component of a whole new courseware design paradigm which requires a radical change in the way that instruction is designed. It is changing the way instructors deliver their lessons (Kilby, 2007). The e-learning industry has been looking forward to the day when learners could assemble on the fly and access e-learning on demand. "Development teams would be able to build content a single time,

store it electronically, reuse it, and deploy it in different formats with a simple button click” (Mortimer, 2002, p. 1).

Online tools offered by many textbook companies supply a service that can be bought along with textbooks. For example, McGraw-Hill/Irwin offers a service that can be purchased with their Survey of Accounting text. The Online Learning Center includes excel spreadsheets, spreadsheet tips, text updates, glossary, key term flashcards, chapter learning objectives, interactive quizzes, e-lectures (audio-narrated slide presentations), additional check figures, mobile resources, and a homework manager (Edmonds, et al., 2007). These online tools are designed around the assignments in the textbook and can be used in the delivery of instruction or for students to review content.

Several universities and colleges are also incorporating real-time financial data into business curricula from online. This is often in the form of business financial websites and financial data. In many cases, faculty and students have to learn how to access and manipulate real-time data using the software tools provided by each vendor. However, “such tools are typically not user friendly and are aimed at professionals, possibly specialists in the financial services industry” (Holowczak, 2005, p. 4).

Another online tool used to supplement instruction is podcasting which is basically the creation and distribution of amateur radio (Richardson, 2006, p. 112). All that is needed to create a podcast is software to create (MP3), some server or personal computer space to host the file, and a script (Richardson, 2006).

The Wisconsin Technical College System (WTCS) is finding new ways for teachers to develop curriculum through the use of learning objects on their website called Wisc-Online. “Wisc-Online was cited for its high quality, cost effectiveness, timeliness,

efficiency, creativity, and its ability to replicate learning materials in a new, dynamic format” (Wisconsin Technical College System, 2007, p. 1).

Some students at Northcentral Technical College in Wisconsin are using learning objects and WISC-Online, websites developed for use with the textbook and use of real-time financial data, podcasting and other online tools in their face-to-face classes.

Northcentral Technical College (NTC) is one of the 16 technical colleges in the state of Wisconsin Technical College System. NTC encourages instructors to provide students with current technology in each curriculum area. In today's increasingly high-tech world, employee training and continuing employee education is a necessity for businesses.

Northcentral Technical College hopes to survive and thrive in a constantly changing global marketplace with the use of technologies (Northcentral Technical College, 2006).

David Clancy (2007), President of WTCS, said, "businesses are relying more on the flexibility, responsiveness, and agility of the technical colleges to prepare their employees and help them remain competitive in the world economy." More innovative ways of educating students has become important for WTCS since new technology enables businesses to create a safer and more productive workplace. They need to meet market demands for affordability and quality.

Although, some accounting instructors at NTC are using online tools in their face-to-face courses, Northcentral Technical College has not established criteria or guidelines for the use of online tools for instructional delivery. Likewise, as the Accounting Department at Northcentral Technical College continues to find new uses for technology in their face-to-face courses, little has been done to determine how these technologies impact student learning. The Accounting Department at Northcentral Technical College

(NTC) is seeking more innovative ways of using of the computers in face-to-face courses to meet the needs and wants of the accounting profession and to assist in student learning of accounting principles. Therefore, students perceptions of online tools used in face-to-face accounting courses at Northcentral Technical College should be examined.

### *Statement of the Problem*

Using online tools in lessons is one way for students to be introduced to the use of technology and Accounting instructors at Northcentral Technical College have begun to incorporate a number of online tools in their face-to-face course delivery. However, the student perceptions of the online tools has not been evaluated.

### *Purpose of the Study*

The purpose of this study was to determine the perceived value of online tools for students in face-to-face accounting courses at Northcentral Technical College through a survey conducted in the fall semester of the 2008-2009 academic year.

### *Research Questions*

The following are the research questions relating to the use of online tools in instruction of face-to-face accounting courses at Northcentral Technical College:

1. What online tools are being used in face-to-face accounting courses?
2. To what extent do students use online tools in their face-to-face accounting courses?
3. What concepts of accounting (accounting equation, debits and credits, financial statements, accounting cycle, journalizing entries, adjusting entries, auditing, closing entries, banking procedures, cost accounting, payroll income and tax accounting) do students feel they better understand and do they feel

they learned generally accepted accounting principles with the use of online tools?

4. To what extent do students perceive course competencies have been met through utilization of online tools?
5. What are the successes or difficulties students have with the use of online tools?
6. What are the demographics of students who have used online tools in their face-to-face accounting classes?

*Importance of the Study:*

This study was conducted in order to measure student perceptions of online tools used in accounting courses at Northcentral Technical College. It is important for the following reasons:

1. This study can be used by Northcentral Technical College instructors to make decisions about using technology for teaching accounting principles because perceived learning of students through the use of online tools will be documented.
2. The results can be used by Northcentral Technical College instructors to discover the students' successes and difficulties encountered while using online tools. Understanding student challenges will help faculty/staff make decisions about the integration of technology in the curriculum. It is important to improve curriculum, so students have the necessary technology skills needed in their future careers.

3. The results of this study may be utilized by Northcentral Technical College instructors to enhance learning experiences for students in face-to-face accounting classes.

#### *Limitations of the Study*

This study was conducted by an instructor of the Accounting Program at Northcentral Technical College and therefore has the following limitations:

1. The method used to collect the data for this study is limited, since the researcher developed the research instrument. Reliability tests were not conducted on the instrument nor was the survey piloted.
2. The population included in this study was limited to students in accounting courses at Northcentral Technical College. This sample group was not chosen by random and was determined by student registration records for students enrolled in an accounting program at a given time.
3. Participants were enrolled in courses at Northcentral Technical College and may or may not have elected accounting as their major. The survey instrument did not include a demographic question to separate accounting majors from non-majors.
4. Some instructors may use a great deal of technology for delivery of course content, while others do not use much technology. The survey instrument did not include a demographic question that distinguished teaching method variations of instructors in the department.

### *Definition of Terms*

The following terms have a particular meaning in relationship to content of this study.

*E-learning* is the delivery of a learning, training or education program by electronic means. E-learning involves the use of a computer or electronic device (e.g. a mobile phone) in some way to provide training, educational or learning material (Stockley, 2003).

*Electronic Commerce* is the use of the World Wide Web for commercial transactions (Rutgers, 2008).

*Learning objects* are a new way of thinking about learning content. Content comes in a several hour chunk. Learning objects are much smaller units of learning. Typically, they range from 2 minutes to 15 minutes long. Each learning object can be taken independently. Learning objects are reusable and can be used in multiple contexts for multiple purposes. Also, learning objects can be grouped into larger collections of content, including traditional course structures (Rutgers, 2008).

*Microblogging* is a new form of communication in which users can describe their current status in short posts distributed by instant messages, mobile phones, email or the Web (Java, Song, & Tseng, 2008).

*Online tools* refer to online teaching resources. This includes websites, learning objects, teaching supplements, and other information found on the Internet for use in instruction of a class. Online is being connected to, served by, or available through a system and especially a computer or telecommunications system (as the Internet) and

tools are something used in performing an operation or necessary in the practice of a vocation or profession (Merriam Webster, Inc., 2008).

*Pedagogical principles* are the concepts of teaching in this report. Pedagogy is the art, science, or profession of teaching and principles is an ingredient (Merriam Webster, Inc., 2008).

*Podcasting* refers to the creation and distribution of amateur radio through the use of an MP3 file and the Internet (Richardson, 2006, p. 112).

*Technology* refers to the development of new ideas and capabilities, which includes the use of the Internet. Technology is the advancements made by applying and expanding on previous knowledge. Technology is not limited to the developments made with the use of the Internet. Technology is the practical application of knowledge especially in a particular area (Merriam Webster, Inc., 2008).

*Toolbox* describes the many tools that can be used in teaching that are available on the Internet (Richardson, 2006).

*Web tools* is another way to describe the many online tools that are available on the Internet (Richardson, 2006).

*WebQuest* is an inquiry-oriented lesson format. Learners receive information for their coursework from the web (WebQuest, 2007, p. 1). Learners search the web to receive information for their lesson.

*Wisc-Online* is a website designed by the Wisconsin Technical College System. It is a collection of instructional tools that were developed by instructors of the Wisconsin Technical College System (Wisconsin Technical College System, 2007, p. 1).

## Chapter II: Literature Review

### *Introduction*

This chapter addresses the history of the computer, history of the Internet, the use of the computer in the accounting profession, and items that can be used in teaching accounting from the Internet (toolbox). This chapter concludes with the advantages and disadvantages of the use of the computer in instruction.

### *History of the Computer*

A computer is a computational device and there is a long history of computational machines that inspired its birth. The first device came around 3000 BC, which was a mechanical counting device known as the abacus (Cerro Coso Community College, 1997). It is a wooden rack holding parallel wires on which beads are strung and it was used to perform calculations. It is still in use today. Another mechanical device was created in 1642 called the Pascaline. Gears and wheels were used to perform calculations (Cerro Coso Community College, 1997). The concepts of this device were used in calculators until the 1960s.

Early in the 20<sup>th</sup> century, the word computer came about to help people solve mathematical equations. Clerks manually performed data processing even after the first computer was developed (Ceruzzi, 1998). It was done this way until the modern computer was born in about 1950. Shortly after 1920, when the first calculator was mass-produced, Charles Babbage began to invent a programmable machine (Golden Ink, 2008). He invented a difference engine and Ada Lovelace was the first programmer. It was not until twelve years later that computer science was truly born.

In 1854, George Bolle wrote *An Investigation of the Laws of Thought*. He was given the title of father of computer science (Golden Ink, 2008). Thirty-six years later, the predecessor to the electronic computer was developed by Herman Hollerith by punching cards and keeping track of the count for the United States Census of 1890 (Campbell-Kelly & Aspray, 1996). This would cut down the time that was spent on the United States census.

Before the computer, offices contained only two office machines. The computer age actually began in the mid 1940s (Cerro Coso Community College, 1997). In 1943, development of the Electronic Numerical Integrator Analyzer and Computer (ENIAC) began and was assembled in England (Golden Ink, 2008). This was the first computer that introduced the concept of stored programs and was used by the United States Army (Cook, 1989).

In 1946, Mauchly and Eckert formed a corporation to build computers for commercial use. This computer was known as UNIVAC and was the first electronic computer used by large business firms (Cook, 1989). This was the beginning of computers in business and industry. These first computers used vacuum tubes and were known as the first generation of computers.

The second generation of computers used transistors. These replaced the large, cumbersome vacuum tubes. John Bardeen studied substances that permitted a limited amount of electricity through them which were known as semiconductors (Cook, 1989). At this time computers were used in business, universities, and government. By 1965, a second generation computer was used by most large businesses for financial information (Gersting, 1988). It was more cost effective and productive for businesses to use these

computers. COBOL (Common Business-Oriented Language) and FORTRAN (Formula Translator) were developed. They were more sophisticated, high-level computer languages. Today, they have been expanded. These languages replaced cryptic binary machine code with words, sentences, and mathematical formulas (Gersting, 1988). It became easier to program a computer.

In 1958 the third generation of computers started. The integrated circuit (IC) developed by Jack Kilby, an engineer with Texas Instruments, was the greatest development during the third generation. The IC combined three electronic components onto a small silicon disc which was made from quartz. Scientists could fit more components onto a single chip. Also in the third generation, an operating system that allowed machines to run many different programs at once using a central program to monitor and coordinate the computer's memory was implemented into computers (Gersting, 1988).

The fourth generation aimed at the reduction of the overall size of a computer. The Intel 4004 chip was developed in 1971. It took the integrated circuit one step further by locating all the components of a computer (central processing unit, memory, and input and output controls) on a minute chip (Gersting, 1988). These were called microprocessors and are still used in many household items.

In 1981, IBM introduced its personal computer (PC). It was for use in the home, office and schools (Golden Ink, 2008). It became very affordable to own a personal computer. The number of personal computers in use more than doubled, from two million in 1981 to over five million in 1982 (Golden Ink, 2008). Computers became smaller and could hold more information. In 1984, Macintosh offered an operating

system that allowed users to move screen icons instead of typing instruction. Users controlled the screen cursor using a mouse. This device duplicates the movement of one's hand on the computer screen (Golden Ink, 2008).

New ideas were developed to use the computer and they became networked. They could share memory space, software, information, and communicate with each other. Networks were created by using direct wiring called Local Area Network (LAN), or telephone lines. These networks could reach enormous proportions. The Internet, a global web of computer circuitry, links computers worldwide into a single network of information was born (Golden Ink, 2008).

### *History of the Internet*

In the 1960s, J.C.R. Licklider published his ideas about the future role of multi-access interactive computing. Computers could contribute to a person's ability to formulate new insights and decisions by performing numerous routine tasks on demand (SRC, 1990). In 1962, Licklider joined the Advanced Research Projects Agency (ARPA) of the United States Department of Defense, where he would help invent the Internet. ARPA's role was to foster the civilian space program and later screen new military technologies to gain technological advantages over the Soviet Union (Smith, 2007). Licklider conducted research along with members of ARPA, corporate contractors, Stanford, UCLA, and Berkeley universities. His vision was that everybody could use computers anywhere and get data anywhere in the world.

The network (ARPANET), implemented in 1969, grew to 46 members by 1974, and 213 by 1981. Approximately, every twenty days there would be a new host that would join (Smith, 2007). Once ARPANET became international, it was renamed the

Internet. It wasn't until 1984 that ARPANET traffic levels were such that it became more cost-effective to lease T1 lines. The increasing connection speed of T1 lines brought with it increased demand, particularly from private sector businesses (Congressional Digest, 2007, p. 37).

In 1991, all restrictions were taken off of the Internet. The private sector was responsible for any further maintenance of the Internet. The World Wide Web, in 1993, became affordable with a limited access of 56 kbps modems operating over public phone lines. Broadband products and services are now offered to North American households, giving them more speed to get onto the Internet (Congressional Digest, 2007).

#### *Use of the Computer in Accounting*

Before computers, the common method of keeping the financial records of a company was manually. Years later, an accounting machine was developed to perform normal bookkeeping functions (Cook, 1989). It was designed to typewrite names, addresses, multiply, compute discounts, to total amounts, post data to their proper accounts and to prepare a customer's bill. The computer upgraded this process. The processing of the general ledger, payroll, or other accounting tasks became more efficient. Without an employee leaving their desk they could receive an in house balance sheet, an income statement, or other accounting reports (Cook, 1989).

Electronic spreadsheets have made calculations error free, if all amounts are entered correctly. Spreadsheets were primarily designed for managers who do "what if" calculations in the process of planning. Electronic spreadsheets have found their way into small businesses and to homes. A typical integrated double entry accounting system

could include accounts receivable, accounts payable, general ledger, inventory, order entry, payroll, and billing (Cook, 1989).

As the computer developed, businesses developed of programs to process more financial information. In 1983, Lotus 1-2-3 was introduced. This program was used to prepare spreadsheets, create graphs, and manage data. In the third generation of integrated business software, it became possible to display multiple windows (Cook, 1989). With these programs, each window can contain a different application.

The most important advantage of using a computer for accounting is the speed in which calculations or accounting functions can be done. Posting to the ledger can be done automatically when done through special purpose modules like accounts payable or accounts receivable. With an accounts receivable module, you just need to enter the actual cash totals of items purchased and the software distributes these amounts to the general ledger so they become credits to corresponding revenue accounts. An offsetting entry is made automatically to the accounts receivable account at the same time (Cook, 1989). Unskilled workers can be used to enter accounting data into a computer. Another advantage is that financial information can be shared between accounting staff and managers through the use of the computer without leaving your desk.

There are disadvantages by using a computer for accounting procedures. There is a possibility of loss of information as a result of hardware or software failure or damage. A computer cannot detect errors that a human may make in entering data. There could be loss of data due to accidents like fires, vandalism, sabotage, fraud, or embezzlement. It is economically unachievable to have total security and never have some failures. The right level of expenditure on security measures will minimize the sum of the cost of the

measures and the expected loss. A computer can be used as a means of attacking an organization's funds (Cook, 1989).

### *The Use of the Computer in Teaching Accounting*

There is an enormous potential for strengthening instruction in the traditional classroom by the use of technology (Maeroff, 2003). An effective classroom using web tools (Internet toolbox) should do the following:

- "Provide the tools that learners can use out of the classroom. An instructor should explain where these tools are located.
- Create an environment beneficial to learning.
- Allow students and instructors to share information and exchange ideas found on the Internet.
- Allow learners the freedom to experiment, test their knowledge, practice completing tasks. They can apply what they have read or discussed.
- Provide ways to evaluate performance.
- Provide a safe haven in which learning can take place" (Porter, 2002, p. 24).

This could include the instruction of accounting courses as well.

As previously mentioned, learning objects, publisher companion software that can be purchased with the textbook used in the classroom, real-time financial data, and Wisc-online and podcasting are just a few online tools in this toolbox of items from the Internet can be used in instruction of accounting. In this toolbox there are other items that can be used such as a school media, WebQuest, Weblogs, audio and video clips, streaming video, streaming audio, and many more.

The use of a software and media such as PowerPoint slides, videos, software, excel spreadsheets, and documents used in class can be displayed for future use by the student. Spreadsheets can be designed for students to enter numbers and email them back to the instructor. Review and test questions can be placed on a course management system as well as grading. Communication with students as well as discussions between students and instructor can be done through the Internet.

WebQuests are another technology tool that can be used for instruction. WebQuests are an inquiry-oriented lesson format in which learners receive information for their coursework from the web. According to Webquest, "Tens of thousands of teachers have embraced WebQuests as a way to make good use of the Internet while engaging their students in the kinds of thinking that the 21st century requires" (WebQuest, 2007, p. 1). WebQuests can potentially help students develop the research skills that are required for individuals to be successful in the accounting profession.

Another technology that can be used in teaching is Weblogs. Using a Weblog, a class portal can be built to communicate information about the class and archive course materials. Students can create a class portfolio. Weblogs can be used to get students' reactions to thought-provoking questions or get their ideas and opinions about topics discussed in the classroom.

Also, the toolbox contains streaming video, and streaming audio. Students can enjoy the possibility of examining each other's data via these devices and sharing graphics, slides, and spreadsheets while connected by telephone wires (Maeroff, 2003, p. 72). The toolbox supplied by the Internet creates a different vision of the traditional classroom. In a traditional classroom, most student work is done in isolation. They never

find connection to a larger whole that might be produced by the class in its entirety (Richardson, 2006). Video and audio clips can also be used to enhance instruction. The AICPA has video clips that may be used in accounting instruction or instructors can create their own video and audio clips to capture lectures or give students other information.

Microblogging is a new form of communication in which can be used in education. Users can describe their current status in short posts distributed by instant messages, mobile phones, email or the Web. Twitter, a popular microblogging tool has seen a lot of growth since it launched in October, 2006 (Java, Song, & Tseng, 2008). It could be used for a way for students to share information. Other popular microblogging tools are Plurk, Pounce or Spink.

#### *Advantages of the Use of Online Tools in the Instruction of Accounting*

Deano Page offered many advantages of using online tools in classrooms which could include accounting classes. He stated the use of technology breaks down some of the barriers to the current students. It engages the students and gets them excited about learning. He claimed today's students are multi-taskers, read online, and like to have a social presence online since they will not be judged by their appearance (Page, D., personal communication, March 28, 2008).

Students learn how to use online tools to find, organize, analyze, and apply information to create class projects. Books become outdated and new information is being placed on the World Wide Web daily. Online tools can be used as valuable tools to teach students valuable new information (Bates & Poole, 2003). Students develop the skills to teach themselves through the use of online tools and learn how to collaborate and

cooperate in team efforts. They can learn how to communicate by using a variety of media and formats (ISTE, 2000).

The use of online tools can make the concept more interesting. It motivates students to ask questions about the concepts being taught. The use of online tools can motivate students to learn understanding instead of memorization (Collier & LeBaron, 2001). Online tools can create a more active learning environment with more diversified teaching methods, students having better attention, and more visual simulation (Centre for University Training, 2006).

More authentic assessment of student learning can be created. "Rather than all students turning in a five-page paper, various groups may turn in a video, or multimedia computer presentation. Technology has made it possible for students to create projects instead of a paper-and-pen test" (Doggett, 2000). Technology has allowed students to take ownership of their own projects.

Another advantage of online tools is updatability of information for classes. Instructors have accessibility to up-to-date resources that can create an interactive lesson which can combine problem solving, critical thinking, discovery, and exploration (Ebiefung, 2000). Students are using current information for their projects instead of or in addition to textbooks which can quickly become outdated.

The last advantage is preparation of future careers. "Many businesses have Web sites and some require computer skills for employment. Using the Internet in the classroom makes it possible for students to easily adapt to the work environment" (Ebiefung, 2000).

### *Challenges of the Use of Online Tools in the Instruction of Accounting*

One challenge is that an instructor might encounter plagiarism when using some of these technologies. "When students research of the web to produce research papers, it is difficult for teachers to tell if it is plagiarized" (Kelly, 2009). Students should be required to list resources. Many students find ways to cheat on computerized test or quizzes. "There is nothing stopping students from cheating with each other while on the internet, especially if you are giving online assessments" (Kelly, 2009). Students must be made aware of copyright laws. "Some authors or publishers who hold copyright to creative works are not willing to give away their work without compensation" (Doggett, 2000). The computer makes it too easy for students to take others creations and make them their own.

Privacy is an issue when using online tools. "Criminals, marketers, and other persons can easily get information from students when they are online. These could pose danger to students' lives or may even lead to litigation against the school" (Ebiefung, 2000). Students should be educated on the dangers of giving information about themselves through the use of the Internet.

The next challenge an instructor might encounter is determining the information they want to make available to the students. The technology being used should enhance the lesson. It should give the student more understanding of the lesson (Page, D., personal communication, March 28, 2008). "Internet assignments or projects should not be over complicated, boring or too demanding" (Ebiefung, 2000). Online tools cannot be incorporated into every lesson. An instructor should make appropriate decisions on when online tools can add to the lesson.

Another challenge to overcome is frustrations from learning free software programs for both the instructor and the student (Woodwary, N. & Kuckkahn, P., personal communication, March 28, 2008). They suggested that instructors do not introduce a whole bunch of items at once to the class, but introduce slowly. Adults, including educators are newcomers to the technical arena, they may feel more frustration. Younger students have more experience and there is a technological generation gap emerging (Palloff & Pratt, 2007). An instructor needs to experiment and find out if there are any technical problems when using some of this software.

A fourth challenge is that instructors experience a new set of physical, emotional, and psychological issues along with the educational issues when using technology (Palloff & Pratt, 2007). Physical problems can include carpal tunnel syndrome, back problems, and headaches. Many individuals do not use the appropriate ergonomics when they are sitting at a computer. Some students can become addicted to the use of technology. Students and faculty need to learn a new way of communicating online where personal connections or face-to-face interactions may be limited. It takes time to find resources to use with curriculum that enhance learning (Kelly, 2009). Instructors should not spend a great deal of time at once integrating multiple online tools, since this may cause frustration to students.

Another challenge instructors have when using online tools is they need to rethink pedagogy, redefine learning objects, reevaluate assessment, and redefine their role and culture (Palloff & Pratt, 2007). Instructors need to determine what they want the students to learn, how can they use a online tools in their instruction and how they will assess students gained knowledge of the concept. In some cases of using online tools, new

guidelines or rules may have to be created. When incorporating online tools, issues such as netiquette and proper use of the Internet should be considered.

Then, the Internet is full of all sorts of information; some of this information is factual and some not. Instructor and students need to sort out the information based on credibility to determine whether or not it is useful. Instructors may need to teach students on how to analyze credibility of online resources. "Quality on the internet is not guaranteed. It is easy to run a biased and inaccurate website with no regulation whatsoever" (Kelly, 2009).

Problems of access to online tools, lack of technology support, and lack of time for instructors to incorporate online tools into their curriculum. Many schools lack funding for new technology and computer equipment (Kelly, 2009). There are monetary costs for computers, network hardware and software, installation cost, hardware and software upgrades, support personnel for hardware and software installation, repair and maintenance, support personnel and facilities for training and support for instructors and students users. Computer labs take space, so there are space costs. Also, the environment of technology is rapidly changing. Computers become obsolete within 18 to 24 months (Doggett, 2000).

There are costs that are associated with time for training instructors on new technology and online tools, less time spent on instruction of actual concepts (Hajjar, 2008). Also, instructors need to make backup plans when computers or software does not work.

*Summary*

As computers and the Internet have developed, uses for the computer in accounting has grown. New ways to use the Internet are created every day. Therefore, industry and business has demanded more technology in the instruction of Accounting. As a result, the need for students in accounting courses to learn new technologies has increased. Instructors are finding ways to incorporate some of these demanded technologies into their classrooms. Online tools have advantages and disadvantages when used for the instruction of accounting. We should not ignore technology in our teaching; instructors and students need to understand the strengths and the weaknesses of it (Bates & Poole, 2005). We need to learn what is useful and what is not in teaching accounting concepts. As online tools are being used, there is a need to examine the students' perceptions of the use of these online tools in face-to-face accounting courses.

## Chapter III: Methodology

### *Introduction*

This chapter includes information about how the sample was selected, a description of the sample, and the survey instrument that was used. Also, data collection and data analysis procedures are discussed. This chapter concludes with limitations of the methodology of the research.

### *Subject Selection and Description*

Northcentral Technical College was initially contacted and approved this study on August 15, 2008. NTC's Vice President of Human Resources approved the study on August 18, 2008. A copy of her approval to secure participant names from the Dean of Business and International Education is in Appendix A. A list of students in the Accounting Program was obtained from Northcentral Technical College on October 15, 2008. This list did not break down which course or courses each student was taking thereby eliminating duplication of students, since some students may be in more than one accounting course. This list excluded non-accounting majors, such as students enrolled in Accounting Fundamentals (an accounting course for students in majors other than Accounting) or students who have selected programs other than Accounting as their program of study at Northcentral Technical College. The average age of the NTC student is 34, with 65% of students aged 25 or older (Northcentral Technical College, 2006). The accounting courses within the accounting program at Northcentral Technical College are 10-10-1111 Accounting I, 10-10-1135 Payroll Accounting, 10-10-1113 Accounting 2, 10-10-1125 Cost Accounting 1, 10-10-1178 Accounting Computer Applications, 10-10-1115 Accounting 3, 10-10-1121 Individual Tax Accounting, 10-10-1122 Cost Analysis

(Cost Accounting 2), 10-10-1120 Accounting 4, and 10-10-1124 Auditing. The researcher was unaware of the number of students in each course, but the total number of students in all courses was 137.

### *Instrumentation*

The survey was designed using Microsoft Word. The survey was to be convenient for students and would take about five minutes to fill out according to Dillman's (2000) web-based survey guidelines having a logical order and groups questions with similar components together. The first question was chosen carefully, applied to all participants and was easy to answer. The survey contained simple words and simple phrasing, avoiding uncommon abbreviations and uses complete sentences. There were an equal number of positive and negative categories. The survey avoided double negatives, double-barreled questions and unnecessary calculations (Fanning, 2005).

The Institutional Review Board for Protection of Human Subjects in Research was completed and submitted to UW-Stout on November 12, 2008. The Institutional Review Board for the Protection of Human Subjects Board determined that this research was exempt from review on November 17, 2008.

All students from the list provided by Northcentral Technical College were emailed a letter indicating the intent of the study and their request to participate (Appendix B). The survey was attached to this email. They were asked to return the survey by email.

Because this survey was constructed exclusively for this study, there are no measures of reliability according to the research advisor. A copy of the finalized survey

is located in Appendix D. The survey was designed to answer the research questions found in Chapter I (see Table 1) and establish face validity. “Face validity is that the instrument appears to be measuring what it intends to measure (Lodico, Spauling & Voegtle, 2006, p. 111-112). On the surface, the questions seem to coincide with the purpose of the survey.

Table 1

*Research Questions Addressed by Survey*

Research Question	Survey Question
1. What online tools are being used in face-to-face accounting courses?	4
2. To what extent do students use online tools in their face-to-face accounting courses?	3
3. What concepts of accounting (accounting equation, debits and credits, financial statements, accounting cycle, journalizing entries, adjusting entries, auditing, closing entries, banking procedures, cost accounting, payroll income and tax accounting) are being taught or supported by the use of online tools?	5 and 6
4. To what extent do students perceive course competencies have been met through utilization of online tools?	7
5. What are the successes or difficulties that students have with the use of online tools?	8, 9 and 10
6. What are the demographics of students that have used online tools in their face-to-face accounting classes?	1 and 2

### *Data Collection*

Data collection occurred during the fall semester of the 2008-2009 school year. The survey was emailed to all 137 students enrolled in the accounting courses previously listed on November 24, 2008. Due to limited response to the email survey (11 received), surveys were placed in instructors' mailboxes (on December 8, 2008) to distribute to classes. Instructors distributed paper surveys between December 8, 2008 through December 11, 2008. A total of 45 students were not included because instructors elected not to assist with distribution. Since the survey was handed out at this time, students who have not declared their major may have participated. Instructors placed completed surveys in the researcher's mailbox at Northcentral Technical College. The survey was closed on December 12, 2008. Total number of survey completed was 63.

### *Data Analysis*

The data was entered into an Excel spreadsheet by the researcher on December 20, 2008. It was then emailed to Budget, Planning & Analysis Research Services at UW-Stout on December 21, 2008. The researcher is unaware of the software that was used. The Budget, Planning & Analysis Research Services at UW-Stout emailed SPSS output tables to the researcher on January 20, 2008. The data was analyzed using frequencies for Question 1 and 2 of the survey since this information was nominal. Crosstabs and chi-square were used on Questions 3, 4, 5, 9, and 10 by both gender and semester in the accounting program to determine whether there were significant differences in responses based on demographics. Independent sample t-test were used on questions 6, 7 and 8 to determine whether there were significant differences between the means of the two groups of students (those in semester 1-2 and those in semester 3-4).

## Chapter IV: Results

This study was conducted in an attempt to determine the perceived value of online tools for students in face-to-face accounting courses at Northcentral Technical College.

A survey was conducted in the fall 2008 at NTC to determine if students feel that they are learning accounting concepts through the use of online tools.

### *Item Analysis*

*Response Rate.* A total of 63 students completed the survey for a response rate of 46 percent.

*Gender.* The first survey question asked participants to indicate their gender. Of the 63 students in the accounting program who responded to the survey, 53 (or 84.1%) were female. The remaining 10 (or 15.9%) were male (see Table 2).

Table 2

### *Gender*

Gender	Frequency	Percent
Female	53	84.1
Male	10	15.9
Total	63	100.0

*Semester of Enrollment.* The second survey question asked participants which semester they were enrolled in the Accounting Program. Of those that participated in the survey, 23 (or 36.5%) were in their 1st semester, 16 (or 25.4%) in their 2nd semester, 13 (or 20.6%) in their 3rd semester, and 11 (or 17.5%) in their 4th semester of the Accounting Program (see Table 3).

Table 3

*Semester of Enrollment in Accounting Program*

Semester	Frequency	Percent
1st semester	23	36.5
2nd semester	16	25.4
3rd semester	13	20.6
4th semester	11	17.5
Total	63	100.0

*Face-to-face Accounting Courses Using Online Tools.* The third survey question asked participants how many of their face-to-face accounting courses have used online tools. No one skipped Question 3 of the survey; all 63 surveyed had been exposed to online tools in their accounting classes. More than 4 courses was the selection chosen by 33 (or 52.4%) of the participants. Only 3 participants (or 4.8%) chose 3 classes. Table 4 shows the frequency distribution of this question. There were not enough people in each group to be able to do crosstabs and chi-square on this question.

Table 4

*Face-to-face Accounting Courses Using Online Tools*

Courses	Frequency	Percent
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more than 4 classes	33	52.4
2 classes	16	25.4
4 classes	7	11.1
1 class	4	6.3
3 classes	3	4.8
Total	63	100.0

*Online Tools Encountered in Face-to-face Accounting Classes.* The fourth survey question asked participants what online tools they had encountered in their face-to-face accounting classes. The online tools that are being used according to those who participated in the survey are podcasts, chats, Wisc-Online, web links to their assignments, supplemental readings, class activities, online quizzes/tests, video clips/PowerPoints, discussion boards, web quests and submission of assignments. Also, Blackboard was included, but this is only a course management system that helps instructors make elements of their curriculum available electronically. The top three tools being used are online quizzes/tests 58 (or 92.1%), web links for assignments 49 (or 77.8%), and video clips/PowerPoints online 35 (or 55.6%). None of the participants (or 0%) selected web blogs or other. Table 5 shows the frequency distribution of online tool usage.

Table 5

*Online Tools Encountered*

Online Tool Selected	Frequency	Percent
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Online Quizzes/Tests	58	92.1
Web links for assignments	49	77.8
Video clips and PowerPoints online	35	55.6
Web links for class activities	30	47.6
Web links for supplemental readings	26	41.3
Discussion boards	22	34.9
Wisc-Online	8	12.7
Webquest	4	6.3
Podcasts	2	3.2
Chats	1	1.6

A frequency count of the number of tools per participant was conducted. In this survey question, four people chose only one option and twelve people chose a total of five options (see Table 6). Fourteen respondents (or 22.2%) selected two tools while twelve respondents (or 19%) indicated exposure to three and five online tools. Seven respondents indicated they have been exposed to 3 of the online tools listed.

Table 6

*Number of Online Tools Encountered Per Participant*

Number of options chosen	Frequency	Percent
--------------------------	-----------	---------

2	14	22.2
3	12	19.0
5	12	19.0
4	11	17.5
6	7	11.1
1	4	6.3
7	3	4.8
Total	63	100.0

There were no statistical differences by gender using Cross Tabulation and Pearson Chi-Squared (see Table 7). In order to reject the null, results need to be statistically significant. The results would have to be less than or equal to .05 in order to have statistical significance (or 95% or better confidence in the results).

Table 7

*Online Tools by Gender*

	Cross Tabulation	Pearson Chi-Squared
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Online Tool					Test		
	Females		Males		Value	df	Asymp. Significance (2 sided)
	Yes	%	Yes	%			
Online Quizzes/Tests	50	94.3	8	80.0	2.368	1	.124
Web links for assignments	42	79.2	7	70.0	.416	1	.519
Video clips/PPT online	31	58.5	4	40.0	1.165	1	.280
Web links for class activities	25	47.2	5	50.0	.027	1	.869
Web links for supplemental readings	24	45.3	2	20.0	2.219	1	.136
Discussion boards	18	34.0	4	40.0	.135	1	.713
Wisc-Online	8	15.1	0	0.0	1.729	1	.189
Webquest	3	5.7	1	10.0	.266	1	.606
Podcasts	1	1.9	1	10.0	1.802	1	.180
Chats	1	1.9	0	0.0	.192	1	.661

But, when these tests were done by the semester that the student was in there were significant differences. Crosstabs and chi-squared were conducted on this question by using two groups which was 1-2 semester 39 (or 61.9%) and 3-4 semester 24 (or 38.1%). Web links for supplemental readings, for those in 3-4 semester 15 (or 62.5%) chose this more often than those with 1-2 semester 11 (or 28.2%). Video clips/PowerPoints online, for those students with 3-4 semester 20 (or 83.3%) chose this more often than those in

1-2 semester 15 (or 38.5%). For all other answers there were no statistical differences (see Table 8).

Table 8

*Online Tools by Semester*

Online Tool	Pearson							
	Cross Tabulation				Chi-Squared Test			
	3rd and		1st and		Value	df	Sig.	Asymp. (2 sided)
	4th		2nd					
Yes	%	Yes	%					
Online Quizzes/Tests	22	91.7	36	92.3	.008	1	.927	
Web links for assignments	20	83.3	29	74.4	.692	1	.405	
Video clips/PPT online	20	83.3	15	38.5	12.115	1	.001	
Web links for class activities	13	54.2	17	43.6	.666	1	.414	
Web links for supplemental readings	15	62.5	11	28.2	7.209	1	.007	
Discussion boards	11	45.8	11	28.2	2.032	1	.154	
Wisc-Online	3	12.5	5	12.8	.001	1	.970	
Webquest	3	12.5	1	2.6	.2467	1	.116	
Podcasts	1	4.2	1	2.6	.124	1	.725	
Chats	0	0.0	1	2.6	.625	1	.429	

*Accounting Concepts.* The fifth survey question asked what accounting concepts participants felt understood better with the use of online tools. The respondents answered that they learned the accounting equation, debits and credits, financial statements, the accounting cycle, journalizing, adjusting, and closing entries, auditing, banking procedures, cost accounting, payroll, income tax accounting, and cash flow. Of these

items the top three responses were financial statements 41 (or 65.1%), accounting equation 35 (or 55.6%) and adjusting entries 33 (or 52.4%). When performing crosstabs and chi-square by gender, there were no statistical differences for this question. But when crosstabs and chi-square were performed by semester in program, there were statistically significant differences (see Tables 9 through 11).

Table 9

*Accounting Concepts*

Yes		
Accounting Concept	Number	Percent
Financial Statements	41	65.1
Accounting Equation	35	55.6
Adjusting Entries	33	52.4
Debits and Credits	30	47.6
Journalizing Entries	30	47.6
Closing Entries	28	44.4
Cost Accounting	27	42.9
Accounting Cycle	21	33.3
Banking Procedures	14	22.2
Payroll	14	22.2
Auditing	12	19.0
Income Tax Accounting	8	12.7
Cash Flow	6	9.5

Table 10

*Accounting Concepts by Gender*

Accounting Concept	Cross Tabulations				Pearson Chi-Squared Test		
	Females		Males		Value	df	Asymp. Sig. (2 sided)
	Yes	%	Yes	%			
Financial Statements	36	67.9	5	50.0	1.189	1	.275
Accounting Equation	31	58.5	4	40.0	1.165	1	.280
Adjusting Entries	30	56.6	3	30.0	2.387	1	.122
Debits and Credits	25	47.2	5	50.0	.027	1	.869
Journalizing Entries	26	49.1	4	40.0	.277	1	.599
Closing Entries	27	50.9	2	20.0	2.877	1	.090
Cost Accounting	21	39.6	6	60.0	1.426	1	.232
Accounting Cycle	19	35.8	2	20.0	.951	1	.329
Banking Procedures	13	24.5	1	10.0	1.027	1	.311
Payroll	14	26.4	0	0.0	3.396	1	.065
Auditing	9	17.0	3	30.0	.925	1	.336
Income Tax Accounting	8	15.1	0	0.0	1.729	1	.189
Cash Flow	5	9.4	1	10.0	.003	1	.955

Table 11

*Accounting Concepts by Semester*

Accounting Concept	Cross Tabulation				Pearson Chi-Squared Test		
	3rd and 4th		1st and 2nd		Value	df	Asymp. Sig. (2 sided)
	Yes	%	Yes	%			
Financial Statements	16	66.7	25	64.1	.043	1	.836
Accounting Equation	14	58.3	21	53.8	.121	1	.728
Adjusting Entries	10	41.7	23	59.0	1.784	1	.182
Debits and Credits	8	33.3	22	56.4	3.172	1	.075
Journalizing Entries	7	29.2	23	59.0	5.292	1	.021
Closing Entries	6	25.0	22	56.4	5.937	1	.015
					16.35		
Cost Accounting	16	66.7	9	23.1	6	1	.000
Accounting Cycle	5	20.8	16	41.0	2.726	1	.099
Banking Procedures	4	16.7	10	25.6	.692	1	.405
Payroll	5	20.8	9	23.1	.043	1	.835
Auditing	9	37.5	3	7.7	8.561	1	.003
					14.89		
Income Tax Accounting	8	33.3	0	0.0	1	1	.000
Cash Flow	3	12.5	3	7.7	.399	1	.528

*Accounting Principles.* The sixth question asked participants to what extent they felt they learned generally accepted accounting principles through the use of these online tools. Of the 63 students that participated in the survey, 27 (or 42.9%) responded some

of the time and 20 (or 31.7%) participants responded most of the time that they felt they learned generally accepted accounting principles through the use of these online tools (see Table 12).

*Competencies Met With Use of Online Tools.* The seventh question asked participants to what extent they felt they meet competencies in their face-to-face accounting courses with the use of these online tools. Of the 63 that participated in the survey, 28 (or 44.4%) responded almost all of the time and 23 (or 36.5%) responded some of the time that they felt that they had meet the competencies with the use of online tools in their face-to-face accounting classes (see Table 12).

Table 12

*Accounting Principles and Competencies Met with Use of Online Tools*

	Not at all	Hardly at all	Some of the time	Most of the time	All of the time
<b>Accounting Principles</b>					
Frequency	5	5	27	20	6
Percent	7.9	7.9	42.9	31.7	9.5
<b>Competencies Met With Use of Online Tools</b>					
Frequency	1	3	23	28	8
Percent	1.6	4.8	36.5	44.4	12.7

There were no statistically significant differences for the question when performing independent sample t-test for both gender and semester student was in

Accounting Program (see Tables 13 and 14). The scale used for the means was that not at all was 1 and all of the time was five. Some of the time was the average answer of question. The standard deviation for females over 1 means disparity in distribution of responses. For 1-2 semester, the standard deviation over 1 means disparity in distribution of responses.

Table 13

*Accounting Principles by Gender*

Gender	Number	Mean	Std. Deviation
Female	53	3.26	1.077
Male	10	3.30	.675

Table 14

*Accounting Principles by Semester*

Group by Semester	Number	Mean	Std. Deviation
3rd and 4th Semester	24	3.54	.721
1st and 2nd Semester	39	3.10	1.142

There were no statistically significant differences for this question (see Tables 15 and 16).

Table 15

*Competencies Met with Use of Online Tools by Gender*

Gender	Number	Mean	Std. Deviation
Female	53	3.70	.845
Male	10	3.20	.632

Table 16

*Competencies Met with Use of Online Tools by Semester*

Group by Semester	Number	Mean	Std. Deviation
3rd and 4th Semester	24	3.63	.647
1st and 2nd Semester	39	3.62	.935

*Performed Task.* The eighth question asked participants how they felt they were able to successfully perform tasks using online learning tools. None of these 63 students stated that they could not perform the task (see Table 17). There were no statistically significant differences for this question both by gender or semester student was in the Accounting Program. The standard deviation for females over 1 means disparity in distribution of responses (see Table 18). For 1<sup>st</sup> 2<sup>nd</sup> semester, the standard deviation over 1 means disparity in distribution of responses (see Table 17).

Table 17

*Performing Tasks*

	Frequency	Percent
Almost all of the time	22	34.9
Most of the time	18	28.6
Always	12	19.0
To some degree	11	17.5
Total	63	100.0

Table 18

*Performing Tasks by Gender*

Gender	Number	Mean	Std. Deviation
Female	53	3.62	1.004
Male	10	3.20	.919

Table 19

*Performing Tasks by Semester*

Group by Semester	Number	Mean	Std. Deviation
3rd and 4th Semester	24	3.54	.779
1st and 2nd Semester	39	3.56	1.119

*Online Tools Helping Participant.* The ninth question asked participants if online learning tools helped them to gain additional knowledge about accounting, knowledge about the use of spreadsheets, experience using a computer, experience with real-world applications and to list others. Of the students surveyed, 39 (or 61.9%) of the them

answered by selecting that they gained additional knowledge about accounting. Of the 63 students, 31 (or 49.2%) felt online tools helped them to gain knowledge about the use of spreadsheets, using a computer, and experience with real-world applications. One student did respond in stating that it did not help him/her in any of these items (see Table 20).

Table 20

*Online Tools Helping Participant*

Answer Selected	Frequency	Percent
Accounting Knowledge	39	61.9
Knowledge on Use of Spreadsheets	31	49.2
Computer Experience	30	47.6
Real-world applications	28	44.4
Other	3	4.8

When crosstabs and chi-squared using gender were performed on this question, there were no statistical differences. But when crosstabs and chi-square were used by semester in program, there were some statistically significant differences. Gained knowledge about the use of spreadsheets was chosen by 3-4 semester 16 (or 66.7%) compared to 1-2 semester 15 (or 38.5%). Gained computer experience was chosen by 3-4 semester 17 (or 70.8%) compared to 1-2 semester 13 (or 33.3%). No Pearson chi-squared test was used on other category (see Tables 21 and 22).

Table 21

*Online Tools Helping Participant by Gender*

	Cross Tabulation				Pearson Chi-Squared Test		
	Females		Males		Value	df	Asymp. Sig. (2 sided)
	Yes	%	Yes	%			
Accounting Knowledge	31	58.4	2	20.0	1.650	1	.199
Knowledge on Use of Spreadsheets	26	49.1	5	50.0	.003	1	.956
Computer Experience	28	52.8	5	50.0	.027	1	.869
Real-world applications	23	43.4	5	50.0	.149	1	.700
Other	3	5.7	0	0.0			

Table 22

*Online Tools Helping Participant by Semester*

	Cross Tabulation				Pearson Chi-Squared Test		
	3rd and 4th		1st and 2nd		Value	df	Asymp. Sig. (2 sided)
	Yes	%	Yes	%			
<i>Accounting Concept</i>							
Accounting Knowledge	17	70.8	22	56.4	1.311	1	.252
Computer Experience	17	66.7	26	61.5	8.376	1	.004
Knowledge on Use of Spreadsheets	16	70.8	24	66.6	4.729	1	.030
Real-world applications	7	29.2	23	59.0	14.660	1	.000

*Difficulties.* The tenth question asked participants what difficulties they encountered in the use of online tools in their face-to-face accounting classes. Of the students surveyed, 33 (or 52%) answered this question by making comments other than the choices they were given. These comments included loss of websites and work erased, quizzes had incorrect answers, some material had not been covered in class, answers to online homework were incorrect, system lockups, classroom computers didn't always work, and that the student felt they learned more through instructor lecture. Otherwise, 12 students (or 24%) stated that they didn't have access to a computer (see Table 23).

Table 23

*Difficulties*

Difficulty Selected	Frequency	Percent
Other	33	52.4
Computer Access	12	19.0
Could Not Find Website	9	14.3
Difficulty Using Online Tool	5	7.9
Difficulty Understanding Instructions	5	7.9
Difficulty Using the Computer	2	3.2

When crosstabs and chi-squared were performed by gender, there was some statistically significant differences. The first difference was that more male students 4 (or 40%) chose difficulty understanding instructions of the online tool than female students 1 (or 1.9%). The second difference was more male students 3 (or 30%) chose difficulty using online tool than female students 2 (or 3.8%). There were no statistically significant differences when comparing the two groups of semesters (see Tables 24 and 25). Pearson Chi-Squared Test was not performed on the selection of other.

Table 24

*Difficulties by Gender*

Difficulty	Cross Tabulation				Pearson Chi-Squared Test		
	Females		Males		Value	df	Asymp. Sig. (2 sided)
	Yes	%	Yes	%			
Other	28	52.8	5	50.0			
Computer Access	11	20.8	1	10.0	.631	1	.427
Could Not Find Website	7	13.2	2	20.0	.317	1	.573
Difficulty Using Online Tool	2	3.8	3	30.0	7.919	1	.005
Difficulty Understanding							
Instructions	1	1.9	4	40.0	16.725	1	.000
Difficulty Using the							
Computer	2	3.8	0	0.00	.390	1	.532

Table 25

*Difficulties by Semester*

Difficulty	Cross Tabulation				Pearson Chi-Squared Test		
	3rd and 4th		1st and 2nd		Value	df	Asymp. Sig. (2 sided)
	Yes	%	Yes	%			
Computer Access	5	20.8	32	82.1	.080	1	.777
Could Not Find Website	5	20.8	4	10.3	1.357	1	.244
Difficulty Using Online							
Tool	3	12.5	37	94.9	1.105	1	.293
Difficulty Understanding							
Instructions	2	8.3	3	7.7	.008	1	.927
Difficulty Using the							
Computer	1	4.1	1	2.6	.124	1	.725

*Comments.* The tenth question asked participants what other comments they might have about the use of online tools in face-to-face accounting classes. Of the students surveyed, 18 of them chose to list additional comments. They included the comments listed in Appendix D.

## Chapter V: Summary, Conclusions, and Recommendations

In this section, an overview of the finding of this study will be provided. Included is a summary of the purpose, along with conclusions and recommendations for future study are included.

### *Summary*

This study was developed to determine the perceived value of online tools for students in face-to-face accounting courses at Northcentral Technical College. The importance of the study was that it could be used for Northcentral Technical College instructors to make decisions about using technology for teaching accounting principles. Instructors can discover the students' successes and difficulties encountered while using online tools. Understanding student challenges can help the faculty/staff make decisions about integrating technology into the accounting program curriculum. It is important to improve and enhance curriculum, so students have the necessary technology skills for the future.

A survey was developed using Microsoft Word. The survey asked participants what online tools they had encountered, what accounting concepts they felt they understood with the use of online tools, to what extent they learned generally accepted accounting principles and competencies, if they could perform tasks of online tools, and their difficulties and successes when using online tools. The survey was first emailed to population of 137, than later handed out by instructors due to limited response. Of this population, 63 students completed the survey.

*Research Question 1.* What online tools are being used in face-to-face accounting courses? The online tools that are being used according to those who participated in the

survey are podcasts, chats, Wisc-Online, web links to their assignments, supplemental readings, class activities, online quizzes/tests, video clips/PowerPoints, discussion boards, web quests and submission of assignments. The top three tools being used are online quizzes/ tests 58 (or 92.1%), web links for assignments 49 (or 77.8%), and video clips/PowerPoints online 35 (or 55.6%). None of the participants (or 0%) selected web blogs or listed others.

*Research Question 2.* To what extent do students use online tools in their face-to-face accounting courses? One key finding of this study was that 63 (or 100%) of the students who had participated in the survey were exposed to online tools. More than 4 courses was the selection chosen by 33 (or 52.4%) of the participants. Only 3 participants (or 4.8%) chose 3 classes. For those in 3-4 semester 15 (or 62.5%) chose Web links for supplemental readings, more often than those with 1-2 semester 11 (or 28.2%). Video clips/PowerPoints online, for those students with 3-4 semester 20 (or 83.3%) chose this more often than those in 1-2 semester 15 (or 38.5%). Twelve students had selected five different online tools that they had been exposed to. Students seem to be receiving a variety of online tools used in their accounting classes in the Accounting Program.

*Research Question 3.* What concepts of accounting (accounting equation, debits and credits, financial statements, accounting cycle, journalizing entries, adjusting entries, auditing, closing entries, banking procedures, cost accounting, payroll income and tax accounting) do students feel they better understand and do they feel they learned generally accepted accounting principles with the use of online tools? Of the items listed above, the top three responses were financial statements 41 (or 65.1%), accounting

equation 35 (or 55.6%) and adjusting entries 33 (or 52.4%). In the first and second semesters of the Accounting Program, it seems that more students are being exposed to online tools that teach them journal entry and closing entry concepts; whereas those in third and fourth semesters are being exposed to more online tools to learn auditing, cost accounting and income tax accounting. But, one has to keep in mind that auditing, cost accounting, and income tax accounting are accounting concepts that are taught in third and fourth semester.

*Research Question 4.* To what extent do students perceive course competencies have been met through utilization of online tools? Of the 63 that participated in the survey, 28 (or 44.4%) responded almost all of the time and 23 (or 36.5%) responded some of the time that they felt that they had meet the competencies with the use of online tools in their face-to-face accounting classes. For 1-2 semesters, the standard deviation over 1 means disparity in distribution of responses for this question.

*Research Question 5.* What are the successes or difficulties students have with the use of online tools? None (or 0%) of these 63 students who participated in the survey stated that they could not perform the tasks using online tools. Of the students surveyed 39 (or 61.9%) of them answered by selecting that they gained additional knowledge about accounting. Of the 63 students, 31 (or 49.2%) felt online tools helped them to gain knowledge about the use of spreadsheets, using a computer, and experience with real-world applications. Gained knowledge about the use of spreadsheets was chosen by 3-4 semester 16 (or 66.7%) compared to 1-2 semester 15 (or 38.5%). Gained computer experience was chosen by 3-4 semester 17 (or 70.8%) compared to 1-2 semester 13 (or 33.3%).

Of the students surveyed, 33 (or 52%) answered this question by making comments other than the choices they were given. These comments included loss of websites and work erased, quizzes had incorrect answers, some material had not been covered in class, answers to online homework were incorrect, system lockups, classroom computers didn't always work, and that the student felt they learned more through instructor lecture. Otherwise, 12 students (or 24%) stated that they didn't have access to a computer. They still found it hard to access a computer at Northcentral Technical College, even with the computer labs and library computers that are available. More male students 4 (or 40%) chose difficulty understanding the instructions of the online tool than female students 1 (or 1.9%).

*Research Question 6.* What are the demographics of students who have used online tools in their face-to-face accounting classes? Of the 63 students in the accounting program who responded to the survey, 53 (or 84.1%) were female. The remaining 10 (or 15.9%) were male. Of those that participated in the survey, 23 (or 36.5%) were in their 1st semester, 16 (or 25.4%) in their 2nd semester, 13 (or 20.6%) in their 3rd semester, and 11 (or 17.5%) in their 4th semester of the Accounting Program.

### *Conclusions*

This study documents that students perceive the use of online tools being helpful in the instruction of accounting. It is extremely important that student have learned generally accepted accounting principles by the time they graduate. Online tools can be used to reinforce traditional instruction of accounting. It is important to improve curriculum, so that students have the necessary technology skills needed in their future career. According to Albrecht and Sack (2000), most companies use computers for

keeping their books, tracking inventory, and other business operations and students are not exposed to a sufficient amount of technology that businesses use. As shown by this survey, the use of the online textbook websites seems to be an extremely popular tool for instructors to use. According to Chen (2007), research suggest there are barriers when implementing technology in classroom. As this study documents, 33 (or 52%) commented that there are loss of websites and work erased, quizzes had incorrect answers, some material had not been covered in class, answers to online homework were incorrect, system lockups, classroom computers didn't always work, and that the student felt they learned more through instructor lecture.

### *Recommendations*

For the Accounting Department at Northcentral Technical College, the results of this study means instructors/staff are incorporating new technologies to help expose students to them to expose students to technologies that they might be using in their futures in accounting courses. This study has discovered some of the student's successes and difficulties that are encountered while using online tools. Understanding the students' challenges should help faculty/staff make decisions about integration of technology in the curriculum. The results of this study may be applied to future projects to enhance learning experiences for students in their face-to-face accounting classes.

A study of the effectiveness of online tools in online courses should be conducted. These future studies should include testing of students and incorporate the perceived value of online tools by instructors. Through the use of testing, it could give instructors a way to access the students' knowledge gained of accounting concepts, generally accepted accounting principles, and accounting competencies through the use of online tools.

The response rate of this survey may have been diminished if this study would have been given at a time other than at the end of a semester when students and instructors are extremely busy with course projects, since the collection of data was limited by the willingness of instructors to hand out the survey. This survey could be given at a time other than around the holidays or handed out instead of emailed. The survey should be distributed so that participant confidentiality is maintained. Since the survey was emailed and later hand distributed, some confidentiality might have been lost.

According to Maecroff (2003), there is an enormous potential for strengthening instruction in the traditional classroom by the use of technology. According to this study, of the students surveyed 39 (or 61.9%) of them answered by selecting that they gained additional knowledge about accounting. Of the 63 students, 31 (or 49.2%) felt online tools helped them to gain knowledge about the use of spreadsheets, using a computer, and experience with real-world applications. Instructors could be encouraged to discover new available resources and use them in the instruction of accounting to provide students with required technology skills. Online tools can be used as another way to reinforce concepts in accounting. Accounting instructors should seek out these new innovations and ideas from the Internet that businesses might use that will enhance the instruction of their face-to-face classes. Using online tools can engage students and gets them excited about learning (Page, D., personal communication, March 28, 2008). Students learn how to use online tools to find, organize, analyze, and apply information to create projects (Richardson, 2006). They can learn how to communicate by using a variety of media and formats (ISTE). "Many businesses have Web sites and some require computer skills for

employment. Using the Internet in the classroom makes it possible for students to easily adapt to the work environment" (Ebiefung, 2000).

As mentioned in Chapter 2 of this study, instructors should be cautious of the challenges of using the online tools. Students must be made aware of copyright laws (Kelly, 2009). According to Deano Page (2008), technology should enhance the lesson. An instructor should make appropriate decision on when online tools can add to lessons. Problems of access of online tools, lack of technology support, and lack of time for instructors to incorporate online tools into their curriculum. According to Hajjar (2008), there are costs to training instructors on technology and online tools. Professional development in the area of technology should be encouraged to keep instructors up to date with technology. We should not ignore technology in our teaching; instructors and students need to understand the strengths and weaknesses of it (Bates & Polle, 2005).

Northcentral Technical College should always look at how they can improve some of the areas that students were concerned with. There are some problems that students had with the use of online tools mentioned in this study and they should be researched. As mentioned above in the above summary, participants commented that there are loss of websites and work erased, quizzes had incorrect answers, some material had not been covered in class, answers to online homework were incorrect, system lockups, and classroom computers didn't always work. Research should be done on how to improve classroom computer maintenance. Maintenance should be called in to fix these computers, so that students do not have any further problems with computers locking up or other problems. Northcentral Technical College should research how many students have limited or no access to a computer and how the situation can be improved.

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## Appendix A

Page 1 of 1

**From:** Jeannie Worden/Northcentral Technical College  
**To:** Dora Szemborski/Northcentral Technical College@is-notes  
**cc:** Russ Rothamer/Northcentral Technical College@is-notes  
**Date:** Tuesday, October 14, 2008 01:43PM  
**Subject:** Re: Survey on the Effectiveness of Online Tools in Accounting Classes  
**History:**  This message has been replied to.

Hi Dora,

Go ahead and work with Russ to get the names. Good luck on your thesis. It would be great to share your learning with others that teach on-line classes.

Jeannie Worden, SPHR  
 Vice President of Human Resources

Northcentral Technical College  
 1000 W. Campus Dr.  
 Wausau, WI 5440

Phone: 715-803-1070  
 Fax: 715-675-9824  
 Email: Worden@ntc.edu

Dora Szemborski---10/14/2008 01:22:36 PM---I am almost ready to do a survey on the the effectiveness of online tools in accounting classes that I had emailed you about in

**Dora  
 Szemborski/Northcentral  
 Technical College**

ToJeannie Worden/Northcentral  
 Technical College@is-notes

cc

SubjectSurvey on the Effectiveness of  
 Online Tools in Accounting Classes

10/14/2008 01:22 PM

I am almost ready to do a survey on the the effectiveness of online tools in accounting classes that I had emailed you about in April of this year. Is it possible to get a list of accounting students or who do I contact. Or is it easier through email?  
 I will appreciate your help.

Thank you,  
 Dora Szemborski

## Appendix B

### Consent to Participate In UW-Stout Approved Research

**Title:** The Effectiveness of the Use of Online Tools on Cognitive Achievement of Accounting Courses at Northcentral Technical College.

**Investigator:** Dora Szemborski, 4958 Thomas Hill Road, Edgar, WI, Phone: 715-352-7722

**Research Sponsor:** Juliann Taylor, 144 Home Ec. Bldg., Menomonie, WI 54751, Phone: 715-232-1443.

**Description:** This study is being conducted in order to measure the perceived effectiveness of online tools used in accounting courses at NorthCentral Technical College. It should determine successes and difficulties in the use of online tools in order to improve curriculum. It is to be used to improve delivery of content, development of future projects, enhance learning experiences for students. It is help the Accounting Program improve and evaluate, to provide the most up-to-date, real-life methods of instruction.

**Risks and Benefits:** Risks are potentially small. The Benefits are that the NorthCentral Technical College Accounting department will be informed of some of the perceived values of the use of online tools to improve their curriculum.

**Time Commitment:** The survey should take a very short time to complete. Appreciation is given to you for your time commitment.

**Confidentiality:** Your name will not be included on any documents. We do not believe that you can be identified from any of this information.

**Right to Withdraw:** Your participation in this study is entirely voluntary. You may choose not to participate without any adverse consequences to you. However, should you choose to participate and later wish to withdraw from the study, there is no way to identify your anonymous document after it has been turned into the investigator.

**IRB Approval:** This study has been reviewed and is **Exempt** from review by the Institutional Review Board for the Protection of Human Subjects. The project is exempt under **Category 2/3** of the Federal Exempt Guidelines and holds for 5 years. This project is approved from **November 20, 2008**, through **November 19, 2013**. The IRB has determined that this study meets the ethical obligations required by federal law and University policies. If you have questions or concerns regarding this study please contact the Investigator or Advisor. If you have any questions, concerns, or reports regarding your rights as a research subject, please contact the IRB Administrator.

**Investigator:** Dora Szemborski  
715-352-7722, [jauernigd@uwstout.edu](mailto:jauernigd@uwstout.edu)  
4958 Thomas Hill Road, Edgar, WI 54426

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**Advisor:** Julianne Taylor,  
Phone: 715-232-1443,  
Home Ec. Bldg., Menomonie, WI 54751  
[taylorju@uwstout.edu](mailto:taylorju@uwstout.edu)

**Statement of Consent:** By completing the following survey you agree to participate in the project entitled, The Effectiveness of the Use of Online Tools on Cognitive Achievement of Accounting Courses at Northcentral Technical College.

## Appendix C

## The Effectiveness of Online Tools

### Survey on the Effectiveness of the Use of Online Tools in Accounting Courses

Please select answer or answers that apply

**1. Gender**

- Female
- Male

**2. What semester are you in the Accounting Program?**

- 1st semester
- 2nd semester
- 3rd semester
- 4th semester

**3. In how many of your face-to-face accounting courses have you used online tools?**

- 1 classes
- 2 classes
- 3 classes
- 4 classes
- More than 4 classes

**4. What online tools have you encountered in your face-to-face accounting classes? Check those that apply.**

- |  |   |
|--|---|
| <input type="checkbox"/> Podcasts                            | <input type="checkbox"/> Web links for class activities |
| <input type="checkbox"/> Chats                               | <input type="checkbox"/> Online quizzes/tests           |
| <input type="checkbox"/> Wisc-Online                         | <input type="checkbox"/> Video clips/PowerPoints online |
| <input type="checkbox"/> Web links for assignments           | <input type="checkbox"/> Discussion boards              |
| <input type="checkbox"/> Web links for supplemental readings | <input type="checkbox"/> Webquest                       |
| <input type="checkbox"/> Web blogs                           | <input type="checkbox"/> Others -- please list          |

**5. What accounting concepts do you feel you understood better with the use of online tools? Check those that apply.**

- |   |  |
|---|--|
| <input type="checkbox"/> Accounting equation  | <input type="checkbox"/> Closing entries       |
| <input type="checkbox"/> Debits and credits   | <input type="checkbox"/> Banking procedures    |
| <input type="checkbox"/> Financial statements | <input type="checkbox"/> Cost accounting       |
| <input type="checkbox"/> Accounting cycle     | <input type="checkbox"/> Payroll               |
| <input type="checkbox"/> Journalizing entries | <input type="checkbox"/> Income tax accounting |
| <input type="checkbox"/> Adjusting entries    | <input type="checkbox"/> Cash flow             |
| <input type="checkbox"/> Auditing             | <input type="checkbox"/> Others -- please list |

**6. To what extent do you feel you learned generally accepted accounting principles through the use of these online tools?**

- Not at all
- Hardly at all
- Some of the time
- Most of the time
- All of the time

**7. To what extent do you feel you meet competencies in your face-to-face accounting course with the use of an online tool?**

- Not at all
- Hardly at all
- Some of the time
- Almost all of the time
- All of the time

**8. Do you feel you were able to successfully perform tasks using online learning tools?**

- No
- To some degree
- Most of the time
- Almost all the time
- Always

**9. Which of the following statements do you agree with? The use of online learning tools in my face-to-face accounting classes helped me . . .**

- Gain additional knowledge about accounting
- Gain knowledge about the use of spreadsheets
- Gain experience using a computer
- Gain experience real-world applications
- Other--please list

**10. What difficulties did you encounter in the use of online tools in your face-to-face accounting classes**

- Didn't have access to a computer
- Difficulty using the computer
- Difficulty understanding the instructions of the online tool
- Difficulty using the online tool
- Could not find the appropriate websites
- Other--please list

**11. What other comments do you have about the use of online tools in face-to-face accounting classes?**