The Perceptions and Experiences of Students in a Paperless Accounting Class

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Abstract

Although financial accounting practices in business have capitalized on the use of technology, this technology has not been fully integrated in higher education for accounting students. While traditional accounting courses laboriously involve rote transcription of debits and credits, educational technology in accounting courses may prove inherently beneficial. Faculty members at one U.S. institution designed and offered a paperless accounting course that utilized a variety of technologies. This study explored student perceptions regarding the satisfaction and effectiveness of three of these technologies: 1) the Classroom Performance System (CPS) response pad (clicker) from eInstruction.com, 2) Tablet PC (teacher use); and 3) a course management system. This study analyzes the reflective journals of sixty-two (62) students from two sections to find perceptions of satisfaction and effectiveness as well as initial feelings towards the use of educational technologies in the classroom. Within these findings key themes are discovered and discussed.

Keywords: Accounting Education; Teaching and Learning; Educational Technology; Course Management System.

Technology has been integrated into financial accounting practices in business for years (Nearon, 1999); however, higher education has not fully capitalized on technology in the classroom for accounting students. According to De Lange, Suwardy, and Movondo (2003), "while commercial enterprise are generally the first to adopt new technologies, educators and their institutions have also seen the necessity to remain abreast of change in information technology" (p. 1). The need for the integration of technology and education appears to be clear. Specifically, the accounting profession (American Accounting Association; Accounting Education Change Commission, and academics) and others concede that there is a need for new technologies to be incorporated into the classroom (De Lange et al., 2003). Because technology is continually changing the way businesses operate, these advancements also force educators to re-examine and modify their delivery methods.

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Although the need for higher education to make changes in the accounting curriculum is apparent (Bryant, 2001), higher education has been slow to respond. Craig and Amernic (2002) purported,

> How can we properly teach accounting, management control, and financial reporting, until we comprehend how the context of such accounting has been altered, and in turn how accounting and context reconstitute each other? The problem seems to be that whereas the practice of accounting is mutating, accounting education is not responding to the emergent changes in a timely fashion. (p. 154)

According to Ainsworth (2001), most accounting educators believe this change is needed, but they disagree about the depth and breadth of needed change. Nevertheless, educators must continue to develop new programs, approaches, and pedagogies as well as evaluate their success or failure against institutional learning objectives (Ainsworth, 2001).

In 2000, Bryant and Hunton claimed that the accounting literature offered little research on the pedagogical benefits of delivering instruction through the use of technology. However, in the educational technology research arena (at least in the early 1990s), studies had focused on evaluation research, media-comparison, intra-medium, aptitude-treatment interaction, and alternative research designs (Thompson et al., 1992). De Lange et al. (2003) agreed that the need for research and evaluation is now more pressing as "technological advancements are increasing at an ever faster pace especially with respect to telecommunications and multimedia" (p. 11). Bryant and Hunton (2000) stated that, among other foci, research in accounting education needs to be conducted (and assessments created) regarding student satisfaction and attitudes regarding classroom technologies. Finally, Boyce (1999) and Lane and Porch (2002) stated their concern over the lack of research to substantiate the views that educational technology specifically in accounting education enhances student learning.

It is also important to note that the discipline of accounting has evolved to include a worldwide audience. In addition, an interest in improving and expanding accounting education has also received international attention among educators. Educators will ultimately have the opportunity to capitalize on the use of technology in the classroom. Currently, nearly anyone (instructor or student) who has access to the web also has the availability of a high-tech classroom. Many online classes are now becoming virtually paperless. The advantage for online accounting education is the electronic homework feature, available to any student worldwide, which now ties together electronic texts, PowerPoint, practice exercises, practice quizzes, and article links. Virtual training and education can now be managed anywhere in the world, and international virtual presentations are being implemented successfully. Many publishers appear to be in tune with the international market and are committing more resources to make these products widely available. Fortunately, among accounting educators throughout the world there is agreement that the need for research into the integration of technology and education is now more pressing than ever before. Inasmuch as students are increasingly using cutting-edge technology, it is important to ascertain their satisfaction with and attitudes about the technologies utilized in accounting classrooms (Bryant & Hunton, 2000).

This article reports qualitative findings regarding a newly designed and implemented paperless accounting classroom which utilized a variety of in-class and online technologies. A secondary purpose of this paper is to extend the dialogue about teaching, curriculum, and pedagogy in the area of accounting education and technology. A paperless accounting course (Financial, Managerial, Cost Accounting) was designed and offered to business and technology management students at an undergraduate U.S. institution during the fall of 2004. The goal of this course remained to familiarize students with the process of systematically evaluating, recording, and interpreting business activities through the application of generally accepted accounting principles. The instructors wanted to identify and implement the teaching strategies that would provide students with the most beneficial learning experiences. This course was designed to use the following technologies: tutorial software, online textbook resources, electronic homework system, course management system, student clicker system, Tablet PC, electronic slides, and a computer testing device (examinations) (see Table 1 for descriptions).

This paper focuses on the CPS system, the Tablet PC, and a course management system. The instructors were optimistic about this teaching methodology. They deemed it beneficial to investigate its advantages and disadvantages (a type of cost-benefit analysis) to provide the data to consider in future utilization decisions related to the redesign of this and other accounting courses in the business school.

Hence, the primary purpose of this research study was to explore student satisfaction and attitudes regarding cutting-edge classroom technologies. This research asks the overarching question, "What are the student perceptions of satisfaction and effectiveness before and after completing an undergraduate paperless financial accounting course?" More specifically, this report focuses on the following research questions used to drive this study:

1. What are the initial (beginning-of-semester) perceptions and expectations of college students regarding the use of various educational technologies in this paperless accounting course?
2. What are the students' semester-end attitudes, satisfaction, and perceived learning from their experiences in using the CPS system?
3. What are the students' semester-end attitudes, satisfaction, and perceived learning from the use of the Tablet PC in their classroom?
4. What are the students' semester-end attitudes, satisfaction, and perceived learning from their experiences in using the course management system?

Theory and Literature

Cognitive learning theory provides a theoretical foundation for this study. This theory argues that the learner's degree of interactive participation is highly influential in enhancing learning outcomes (Bryant & Hunton, 2000; Thompson et al., 1992). Thompson et al. (1992) explained that when students actively and interactively participate in the learning process (understanding and interpreting), the learning experience is heightened. This theoretical perspective on learning, according to Bryant and Hunton, indicates that educa-

Table 1. Course Technologies

Technology	*Product*	*Description*	*Uses in this course*
Tutorial software	Topic Tackler (McGraw-Hill)	A tutorial (video clips, PowerPoint slides with animation, drag-and-drop, fill-in-the-blank exercise, self-test quizzes) that focuses on problem areas	Supplement in book to help them study
Online textbook resources	Online Learning Center (OLC)	An online learning aid that follows the book. Includes tutorial, glossary, flashcards, overviews, quizzes, links, presentations, updates, magazine articles	Practice quizzes, vocabulary, resources
Electronic homework	Homework Manager (McGraw-Hill)	A web-based study and review aid that students can use to obtain, complete, and submit assignments to the publisher's website where it is graded. Grades are automatically submitted to the student's and instructor's grade book	Student homework
Course management system	WebCT	A provider of e-learning systems for educational institutions with a complete set of teaching and learning tools for course preparation, delivery, and management.	Grading, case discussion groups, and reflections
Student response system	The Classroom Performance System (CPS)	A wireless response system that provides students and the instructor with immediate feedback; gathers assessment data during class; exercises reinforce learning objectives and skills taught	Attendance, practice quizzes, graded quizzes
Tablet PC	Tablet PC	Tablet PC for a chalkboard. Lectures can be saved and put online.	Class lectures
Electronic slides	PowerPoint	A tool to help instructors create and use dynamic and professional-looking visual presentations.	Class lectures
Computer testing system	Digital Desk	Tests in testing center (reliability not good); electronic testing; he can write this test at the desk.	Examinations in the campus testing center

tional technology is "likely to be most effective if it provides for a dual exchange between the technology and the learner" (p. 137). Cognitive learning theory outlines eight primary components or elements (Bryant & Hunton, 2000; Thompson et al, 1992). The perspective of cognitive theory as contrasted with traditional/behavioral theory is presented in Table 2.

Educators and researchers (e.g., Albrecht & Sack, 2000; Bhattacharjee & Shaw, 2001; Bryant, 2001) have addressed the criticism that the traditional accounting and management curriculum is falling short of providing many of the critical skills required by the accounting profession (Bryant, 2001). Skill areas that graduates were found to be deficient in include written and oral communication, analytical/critical thinking, decision-making, problem solving, teamwork, leadership, continuous learning, interpersonal, project management, professional demeanor, and computing technology. With regard to the latter (the focus of this paper), Albrecht and Sack (2000) used the term *technological adeptness* as a student's ability to "utilize and leverage technology in ways that add value to clients, customers, and employers" (p. 56).

In today's ever changing workplace environments, successful students graduating in nearly all fields of study must be literate in various modes of information technology (Mabey, Topham, & Kaye, 1998). In fact, there is a continuing trend for institutions of higher education to incorporate certificates in information technology literacy for all their graduates. According to Stoner (1999), there also appears to be a general consensus by educators that training and education in information technology skills be integrated within the accounting curriculum. In addition, Bhattacharjee and Shaw (2001) suggested that accounting students learn and use different types of technology to obtain information from various sources.

Over a decade ago, Bromson, Kaidonis, & Poh (1994) argued that computers in accounting education should be acknowledged as a part of a process that should be understood and influenced. Nicholson and Williams (1994) warned that the way technologies are used in accounting and management teaching settings needs to be carefully scrutinized to make certain they are achieving meaningful and worthwhile educational objectives (Mabey et al., 1998). Another important element of teaching and learning through information technology is the discovery of how technology has reshaped what we do (Albrecht & Sack, 2000).

A vast amount of educational research discusses "what good teaching looks like and what constitutes the underlying principles that inform it" (Evans & Foster, 1997, p. 244) (e.g., enthusiasm about the topic/content, ability to explain concepts clearly, concern and respect for and of students, need for students to see clear goals and be intellectually challenged, and student recognition that they must be engaged with the content). Implementation of classroom technology should enhance these good teaching practices, and educational objectives and goals must be considered in educational design. Evans and Foster (1997) explained that students and educators can be benefited by a more informed match between appropriate technology and educational objectives. However, Mabey et al. (1998) informed match between appropriate technology and educational objectives.

Table 2. Primary Components of Learning[‡]

Primary Components of Learning	*Traditional/Behavioral Theory*	*Cognitive Theory*
1. How is a learner viewed?	Learners are seen as passive and reactive to the environment.	Learners are seen as active and mastering the environment.
2. What is learning?	Learning is solely an interaction among or between the stimuli and response.	Learning occurs when the learner actively tries to understand the environment.
3. What is knowledge?	Knowledge consists of learned sets of associations.	Knowledge is presented as organized mental structures and procedures.
4. What does learning consist of?	Learning is considered as the acquisition of new associations.	Learning is a change in mental structures through mental reasoning.
5. What is the importance of prior knowledge?	Prior knowledge influences new learning primarily through indirect processes, such as positive or negative transfer because of similarity of stimuli between situations.	New learning is based on using prior knowledge to understand new situations and changing prior knowledge to deal with new situations.
6. Discussion of activities of the mind (as in psychology)	Is not particularly encouraged.	Is encouraged, as opposed to other learning theories.
7. Verification of theories	Theories can only be verified through strong experimental research.	Various kinds of research—such as observation, thought, experiments, and logical analysis—can be used.
8. What does the process of education consist of?	Education consists of arranging stimuli.	Education consists of allowing and encouraging "active mental exploration of complex environments".

However, Mabey et al. (1998) warned that as the use of computer-based learning in accounting courses becomes more commonplace and acceptable, professional educators should carefully consider applicable design criteria.

Studies (e.g., Mabey et al., 1998; McInnes, Pyper, Van der Meer, & Wilson, 1995) examining the impact of using computer-based course materials have primarily concentrated on the learners' experiences, attitudes, and motivations as well as its possible value as an alternative to traditional teaching methods. Generally, findings have concluded that sup-

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[‡] Adapted from information found in Bryant & Hunton (2000) and Thompson et al. (1992).

plementing conventional teaching with computer-based instruction can offer a practical educational alternative. De Lange et al.'s (2003) research suggested that the "use of IT to support delivery of an introductory accounting subject has potential to improve students' motivation and satisfaction with the subject. This improved motivation may results in enhanced learning outcomes" (p. 11). Butler and Mautz (1996) noted that "multimedia computer-aided presentations can enhance learning if the unique characteristics of the technology influence the ways in which individuals represent and process information" (p. 263). Other research also supports the premise that students are motivated by new and innovative presentation media especially when it is interactive. Therefore, the challenge for educators is to ensure that the novelty effect does not wear off.

Bryant and Hunton (2000) explained that, among other areas, accounting education research needs to focus on student satisfaction and attitudes regarding classroom technologies. Limited research in these aspects of accounting education has been reported. However, Angelo and Cross (1993) did confirm that students must have positive perceptions of their technological ability to have successful expectations (as cited in Bhattacharjee & Shaw, 2001). Their findings validate that self-efficacy and outcome expectations affect a student's reactions and interactions with information technology. Further, Lane and Porch (2002) studied changes in performance, attitudes, and perceptions of non-specialist accounting students towards Computer Aided Learning and accounting. Bhattacharjee and Shaw (2001) studied students who participated in a financial analysis project where independent research primarily on the Internet was required. Students responded to various questions on their Internet skills and perceptions both before and after the project. These researchers found that "enhancing an existing teaching tool like a company analysis research project can not only develop computer-based skills but, more crucially, improve perceptions toward technology" (p. 96). Bhattacharjee and Shaw concluded that "while today's students have many opportunities to develop their technology-related skills, improving their perceived abilities to use technology is vital to ensure the successful utilization of computers in the workplace" (p. 96). They determined that technology can be effectively used to supplement the traditional education process and help teach technological skills and perceptions.

Although the use of technology for educational purposes has succeeded and continues to be promising, accounting educators and researchers have noted several limitations (McCourt Larres & Radcliffe, 2000):

- There is a decrease in motivation and ability with increased reliance (Boyce, 1999);
- Students do not acquire problem-solving and critical thinking skills (Helmi, 1986; Leidner & Jarvenpaa, 1995);
- There is a lack of learning of underlying principles and concepts (Togo & McNamme, 1997); and
- Software may be technically insufficient (McCourt Larres & Radclifee, 2000).

Interestingly, even with these concerns, 74 percent of McCourt Larres and Radcliffe's (2000) students felt computer-based instruction should be included in the course in future

years. Some researchers recommend that this type of instruction not be used as a supplement to face-to-face teaching methods (Boyce, 1999; McCourt Larres & Radcliffe, 2000).

Other research focuses on the technological teaching methodologies of programmed learning, expert systems, interactive video, simulations, intelligent knowledge-based tutoring systems, second-generation interactive video, and reflective analytical tools (e.g., Bryant & Hunton, 2000; Mabey et al., 1998). However, because the technology used in this research study is not specifically related to these technologies, the literature will not be reviewed at this time.

Purpose and Method

This study included 62 students who were primarily computer science, technology management, and business management majors. Demographic data was not compiled for this class but the age of these primarily non-traditional students ranged from 20 to 57 years old. Approximately 25 percent were women and over half were married and many had children. Most students were juniors and seniors and most were employed part-time or full-time in addition to attending school full-time. Notably, this was the first paperless course experience for nearly all of the students. The two sections were taught by different instructors, one professor and one adjunct instructor. The professor designed the course and reflection assignments, and then worked closely with the adjunct instructor throughout the semester on all related issues.

Students were given 15 open-ended probing questions at week one and week sixteen. These questions were designed to extract information about the students' experiences and perceptions of the educational technologies used. Qualitative data were collected through the three written reflection assignments. Students were awarded points for completion and not content of these assignments. Reflection questions were posted on the course management system and students were asked to use the *Mailbox* or *Assignment* function to submit responses via confidential submission directly to the instructor. The instructors read the responses for grading purposes. A research assistant downloaded the responses into a structured word processing document for further analysis.

A number of steps were utilized to analyze the data. First, all written reflections were transferred into a word processing document for further analysis by a research assistant. The course instructors were not involved in this step. Second, after each reflection was read and reread key ideas and phrases (typically two to four) about their perceptions and experiences were extracted from each response. With 15 reflective questions, approximately 30 to 50 phrases (in total) were extracted from each student. Third, all phrases or statements were grouped by topic (most often by question). Fourth, phrases were analyzed and primary answers and themes emerged. Finally, similar responses were counted and tracked for some general quantitative results. These results originated from four of the questions. It is important to note that the analysis was conducted by a faculty researcher/colleague who had not used these technologies or even visited the actual paperless classroom.

Table 3. Initial Perceptions (Week 1)

Initial Feelings	*Perceived Benefits*	*Initial Concerns*
Anxiety	Acquiring new technological skills	A hassle
Apprehensive	Applicability to other courses	Electronic may be different than text
Comfortable	Convenient to use	Harder for students without a tech background
Excited (positive perceptions)	Easier for students	
Expect a good experience	Effective for students at all levels	Have to learn content and technology in one semester
Fear	Eliminates error	
Good idea	Flexible	Lack of confidence
Interested to see results	Growing and learning experience	Learning curve
Intriguing		Less time with teacher
Like the combination (classroom and online)	Help me get a good job	May take more time at first
	Interactivity in class	
Mixed feelings	Knowledge and skills will transfer into the workplace	May not be reliable
Nervous (assignments getting lost, things happening that are not in my control)		Nervous about keeping up
	Learn better this way	Prefer traditional course
	Learn technological skills	Some students don't have internet at home
No expectations	More effective course	
Not excited	More interesting in class	Still need to learn to do accounting without tech (just in case)
Nothing new	Push us to learn to adapt like you do in the workplace	
Okay		
Optimistic	Reduces clutter	Take more time
Skeptical	Saves time for the teacher (can use time helping students)	Teacher and students must be patient with glitches
Unsure		Waste of money
	Saves time for the students (can use more time understanding and studying)	
	This is the way things are going anyway	
	Timely feedback	
	Valuable	
	Will keep me keep up-to-date with technology	

Findings and Discussion

Initial Perceptions

The first reflection assignment asked students about their perceptions of the paperless class. During the first week of class, the instructors outlined the technology and how it would be integrated into the class. One student exclaimed,

> I am very excited for this new "high tech" approach. I think that when technology is creeping into every corner of our lives, it only makes sense to make use of it when we can in our educational experience. I think it is a perfect time to use it in a setting like this. It can only help the learning experience.

Although many students felt the same way, some did not and had a variety of responses. Table 3 summarizes the responses from the first reflections.

Of the 58 students who submitted the first reflections, 27.6 percent mentioned initial excitement, 15.5 percent thought it would be a good learning experience, 17.2 percent felt it made sense, 22.4 mentioned the word "positive perceptions", 19 percent were concerned about internet/computer challenges, 29.3 mentioned technology concerns, 8.6 percent were not excited, 2 students felt it would be a hassle, 19 percent had high expectations, 13.8 percent felt it would help prepare them for their careers, nearly 25 percent mentioned that it would save them time while 12 percent stated it would waste their time and money, 10 students talked about instant and accurate feedback being a benefit, 4 students noted that it would help them increase their computer proficiencies, 15.5 percent felt it would be more convenient, and 41.4 percent of the students said they were apprehensive. Overall, most of the students made positive statements regarding the heavy use of technology in this course and, interestingly, many of these students also expressed some apprehension or concern as well. Although there were some initial concerns among students, most of the students were positive as they anticipated the benefits of the paperless accounting classroom experience.

Semester-end Perceptions

During the last week of the semester, students were asked to reflect on their experiences related to three of the technologies used in this course: clicker (CPS system), the use of a Tablet PC by one of the instructors, and the course management system.

CPS. Questions asked about the CPS system included the following: 1) How do you like the CPS system? 2) Has the system enhanced your learning, and if so, how? 3) Would you recommend that we keep using this system in future classes? Is it worth the additional cost? Do you have any recommendations for future use? Fifty students responded to these items but the responses from the two sections of the course were very different. Hence, we separated the student's responses by section and instructor. One instructor was a full professor and spent a great deal of time and effort ensuring that the technology

worked well; he also utilized it often. It was apparent by the student responses that the adjunct instructor did not.

In the professor's section, 96 percent of the students who responded (n=28) said that they enjoyed or liked the CPS system, and 93 percent of the respondents commented that the *immediate feedback* was a major reason for their satisfaction. Fifty-seven percent commented that they would recommend the CPS system to other professors and students, and 32 percent stated that more teachers should use this system in their classrooms. No student said they would not recommend it. Although they liked it, 21 percent cited cost as an issue or concern while 54 percent said cost was not an issue. Nearly 30 percent of the students stated that the CPS system enhanced their learning, 21 percent felt it made learning easier, and 14 percent noted slight problems with the CPS system which did not detract from its benefit. One student stated:

> I've really enjoyed using the CPS system. It is useful for keeping track of attendance. I loved the quizzes. It provides instant feedback on our understanding and comprehension. Taking quizzes in class and being able to see the results helps me to see what I really know. It is worth paying the extra money, especially since it can be used in other classes. It is definitely a system that I feel works well, and more classes should use it.

Another explained,

> I think this system was great. We never had problems with it, and it was a great tool to get immediate feedback. In other classes I sometimes find out my scores on quizzes too late to learn anything from them. Using the CPS for quizzes allowed me to use them as a learning tool instead of just a testing tool.

The second section's results were quite different (n=22). While 45 percent wrote that they could see some helpful aspects of the CPS, including immediate feedback (23 percent), only 14 percent said they would recommend it. Sixty-eight percent reported that the cost was an issue or a waste primarily because the instructor only used it three or four times during the whole semester. They resented spending money and not having the instructor utilize it. Interestingly, 77 percent of the students felt that they could obtain benefits from this system if it were used correctly. Over half of the respondents noted that the system should have been used more often, and 32 percent stated that the instructor wasted time getting the CPS set up each class period. Students said that the adjunct instructor "needed more training" on the system. Over 60 percent noted problems stemming from the instructor not taking the technology "seriously" or his lack of preparation to use such a technology tool.

Reflections made by students during the last week of the semester revealed a significant interaction component in the study. Thus, student responses differed considerably between the two sections. Indeed, the students taught by the fulltime professor were unanimously impressed with the system. They enjoyed the experience and none of these students said they would not recommend it. They especially appreciated the immediate

feedback provided on quiz results. On the other hand, of the students taught by the adjunct instructor, only 14 percent said they would recommend it. It is apparent that for the paperless accounting approach to be successful, the classroom instructor must be committed to invest adequate time in becoming well-trained in its use.

Tablet PC. There were three questions asked about the Tablet PC: 1) What is your reaction to the use of the Tablet PC in the classroom versus using a traditional chalkboard? 2) Have the presentations been easy to follow? 3) Do you have any recommendations? Only one instructor (the full professor) used the Tablet PC in his classroom.

Twenty-six students responded to these questions at the end of the semester. The responses show that this technology was a successful tool for teaching these students. All students said that they liked it, enjoyed it, or thought it was "awesome" or "great". One student explained, "The Tablet PC was the most influential of all the technologies in my learning. It was easy to follow." Another stated,

> I really enjoyed the Tablet. I felt that the lectures were much more effective than using the white board. By using the Tablet, the instructor was able to add to the lecture charts, graphs, and other important information. It helped me pay attention as well.

A third said,

> I have really enjoyed how our instructor has used a Tablet PC to show slide shows and to make notes on the slides while discussing difficult concepts. It has made a big difference to me (even more than I thought it would) in my ability to understand the material. It has felt more organized to me than would the use of a traditional chalkboard. I like having the presentations and annotations together. It has been much easier to follow.

Fifty percent of the students found that that the Tablet PC saved class time and was easy to follow (54 percent). Twenty-seven percent explained that it helps the instructor interact with the students, and 27 percent said that more instructors should use it. All students said they would recommend that the professor continue to use this technology. A few provided suggestions for improved visibility of the screen from the back of the classroom.

In conclusion, we found a strong positive reaction to the use of the PC Tablet. In fact, all of the students in the classroom responded enthusiastically to its use. They felt that it was much more effective than traditional use of a chalkboard. It enabled the instructor to add significantly to his presentation and discussions. Students enjoyed their involvement.

Course Management System. The course instructors used six primary components of the integrated course management system: grades, chat rooms, emails, reflection submissions, announcements, and discussions. Three questions were asked regarding the student's perceptions, satisfaction, and challenges related to the system: 1) What is your re-

action to this course management system as a learning/classroom management tool? 2) Is it effective? 3) What do you like most and least about this product?

Most of the students (78 percent) found the course management system to be at least partially useful, while 31 percent did not like the major components of the system. Positive comments revolved around having a place to easily access grades and assignments (29 percent), easy communication with the instructor (12 percent), organizational benefits (10 percent), and convenience. Most students did not sound overly excited about the technology (compared to responses about the Tablet PC) but found the system at least somewhat useful. The students used this technology primarily to access grades, send emails to the instructor, and to submit their reflections for this study. They completed the discussions only because they were assigned, and they did not use the chat. It was clear that most students wanted to make the course as simple as possible and did not want to use any optional system elements.

Most of the students had suggestions for the improvement of the course management system. First, many students felt that the effectiveness of the technology resides in the consistency of its use. They didn't feel that the system in this course was utilized to its fullest because of the other technologies in use. Second, about one-fourth of the students mentioned e-mail issues. They wanted the instructor to add regular e-mail addresses to the system so they could be notified when course e-mails are sent. Some students didn't check the course management system often and sometimes found they had missed assignments. Third, the majority of the students felt that the system was not reliable enough. For example, they mentioned problems with submitting assignments when the system was not working. They wrote of having problems downloading assignments. Fourth, they felt that if more instructors would use the system it would be easier and more consistent. Many students said that this was their only class that utilized the course management system, so it was difficult to remember to access the site on a daily basis. Finally, respondents wrote about needing more training on how to use the system. They insisted that most instructors who use technology assume that their students already know how to use it. Only a few students suggested that the system was easy to navigate when first accessing and using it. Many said that once they were comfortable with the course management system they didn't have any problems.

Conclusion

It is important to note the limitations with this research study. First, because of the exploratory nature of this research, the findings of this study are not transferable to the general population; however, they do add to the body of knowledge concerning attitudes and perceptions of students taking accounting courses with regard to selected educational technologies. Second, there were different instructors for each section of the course. Absolute consistency in both sections would have been ideal. However, having different instructors did provide some interesting discussion on the CPS system. Third, this research did not take into account perceptions related to student technological ability when entering the course. This may have been an important determinant for satisfaction with various technologies. Fourth, another limitation is that data on the student's actual technology

proficiency prior to the class was not assessed. Technology proficiency would be expected to influence satisfaction levels. This was not addressed. Finally, the context in which this study was undertaken was the U.S.A. Therefore, it is important to consider possible cultural characteristics and differences that might be present in this student sample.

Although this paper describes research results based on one U.S. sample, understanding student perceptions of educational technologies can be helpful for educators throughout the world who are interested in creating effective learning experiences for their students. In addition, while this research was focused on individuals taking an accounting course, the participants were non-accounting majors. Hence, educators who teach in various business programs should consider these results when designing technology for use in various business school classrooms. In fact, many of the technologies presented in this paper are already being used in an array of business and non-business courses on college and university campuses.

As Lange et al., (2003) mentioned, "Further research exploring the impact of the use of technology in teaching will assist educators committed to enhancing learning outcomes" (p. 12), and we would agree. In-depth research on the effectiveness of these newer educational technologies has not been conducted and/or reported. Research in this arena needs to focus on quantitative and experimental methodologies to provide sound implications for educators. Research related to strategies and methods of training and educating instructors in the use of technology is needed. Many faculty members struggle with effective utilization of many technologies, but most are not given in-depth training. Many instructors struggle through semester-long pilot tests, yet few report on their findings. More candid qualitative and quantitative research discussing the design, implementation, learning, satisfaction, and other constructs would be most helpful.

Craig and Amernic (2002) stated that, "we need new and more-encompassing ways to thinking about accounting and accounting education in an Internet age – one that is replete with new metaphors and new gestalts. But all this new thinking should have a critical edge, and the ideologies thereby accepted and rejected should be made explicit, along with the consequences" (p. 153). To identify and understand this critical edge and these ideologies and consequences, educators throughout the world must carefully consider new technologies and their usefulness and effectiveness to accounting education. This study is at least a start in scratching this surface. Although educating adults is a complex phenomenon, the discovery of potentially effective strategies and pedagogies is most beneficial for those who love their profession and have the desire to make a difference at the grassroots level.

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