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The Paperless Accounting Classroom: The Perceptions and Experiences of Students in a Newly Designed Course

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Running head: THE PAPERLESS ACCOUNTING CLASSROOM

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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 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) PC Tablet (teacher use); and 3) WebCT. 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 ET in the classroom. Within these findings key themes are discovered and discussed.

Keywords: Accounting education; teaching and learning; educational technology; WebCT, PC Tablet, CPS System

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Designed Course

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 to

incorporate new technologies into the classroom" (De Lange et al., 2003, p. 2). De Lange et al.

also stated that "technology continually changes the way businesses operate and this evolution

also forces educators to reassess and alter their delivery methods accordingly" (p. 2).

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 change needed" (p. 280). Nevertheless, educators

must continue to develop new programs, approaches, and pedagogies and, According to Ainsworth (2001), "assess their success or failure against the learning objectives established by our institutions" (p. 294).

In 2000, Bryant and Hunton claimed that the accounting literature offered little research on the "pedagogical benefits of using technology to deliver instruction" (p. 129). 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.

Hence, as Bryant and Hunton (2000) suggested, the primary purpose of this research study was to explore student satisfaction and attitudes regarding cutting-edge classroom technologies. 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.

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 educational 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 1.

[Insert Table 1 about here]

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 critical skills remanded by the accounting profession" (Bryant, 2001, p. 19). 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" (p. 56) 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 "recognized as a part of a process which we should understand and influence" (p. 101). While Nicholson and Williams (1994) warned that the way technologies are used in "accounting and management teaching contexts need to be carefully monitored to ensure they are achieving worthwhile educational objectives" (Mabey et al., 1998, p. 54). 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. Educational goals and objectives should be considered as educational design is envisioned (p. 55). Evans and Foster (1997) explained, "A better, more informed match between educational objectives and appropriate technology can benefit students and educators alike" (p. 63). 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' experience, attitudes, and motivations as well as its possible value as an alternative to traditional teaching methods. Generally, findings have concluded that supplementing 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 "positive perceptions of one's technological ability is essential to the successful expectations" (as cited in Bhattacharjee & Shaw, 2001, p. 86-87). 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. They 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):

- 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);

- Lack of learning of underlying principles and concepts (Togo & McNamme, 1997); and

- Technically insufficient software (McCourt Larres & Radclifee, 2000).

Interestingly, even with these concerns, 74 percent of McCourt Laress 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

are not specifically related to these technologies, the literature will not be reviewed at this time.

Purpose and Method

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. The purpose of this study is to report research that addresses this concern.

Hence, this research asks the question, "What are the student perceptions of satisfaction and

effectiveness before and after completing an undergraduate paperless financial accounting

course?" This report focuses on student responses specifically related to the following: 1) initial

perceptions and expectations; and 2) semester-end attitudes, satisfaction, and perceived learning

from three technologies (i.e., CPS system, PC Tablet, and WebCT).

A paperless accounting course (Financial, Managerial, Cost Accounting) was designed

and offered to business students at an undergraduate 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, WebCT, student clicker system, Tablet PC, electronic slides, and a

computer testing device (examinations) (see Table 2 for descriptions). This paper focuses on the

CPS system, the PC tablet, and WebCT. Because there is no available literature on student perceptions regarding a paperless accounting class, a qualitative study was designed to explore the feelings and perceptions of participating students. 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.

[Insert Table 2 about here]

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. The professor designed the course and reflection assignments, and then worked closely with the adjunct 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 WebCT 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. 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.

<div align="center">Findings and Discussion</div>

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 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 the 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.

[Insert Table 3 about here]

The thrust of this study and analysis is very timely. There is agreement among accounting

educators that the need for research into the integration of technology and education is now more

pressing than ever before. And, this approach to the classroom experience is consistent with the

theoretical foundation of cognitive learning theory that allows and encourages active mental

exploration of complex environments. Furthermore, inasmuch as students are increasingly using

cutting-edge technology, it is important to ascertain their satisfaction with and attitudes about the

paperless accounting classroom. 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 PC Tablet by one of the instructors, and WebCT.

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 "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.

PC Tablet. There were three questions asked about the PC Tablet: 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 PC Tablet 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 lectures charts,
>
> graphs, and other important information to the lecture. 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.

Students found that that the PC Tablet saved class time (50 percent) 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.

There was a strong positive reaction to use of the PC Tablet. 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.

WebCT. Three questions were asked regarding the student's perceptions, satisfaction, and challenges related to WebCT: 1) What is your reaction to WebCT 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 WebCT 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 instructor (12 percent), organizational benefits (10 percent), and convenience. Most students did not sound overly excited about the technology (compared to responses about the PC Tablet) but found WebCT at least somewhat useful.

Most of the students had suggestions for the improvement of WebCT. First, many students felt that the effectiveness of the technology resides in the consistency of its use. They didn't feel WebCT 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 WebCT often and sometimes found they had missed assignments.

Third, the majority of the students felt that WebCT 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 WebCT it would be easier and more consistent. Many students said that this was their only

class that utilized WebCT, 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 WebCT. They insisted

that most instructors who use technology assume that their students already know how to use it.

Only a few students suggested that WebCT was easy to navigate in when first accessing and

using it. Many said that once they were comfortable with WebCT 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. Finally, 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.

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 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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Table 1

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".

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

Table 2

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

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