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**AN EXPLORATORY STUDY OF LEARNER USE OF A
COMPUTERIZED ACCOUNTING TUTORIAL**

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Department of Administration, Leadership and Technology**

**Submitted in partial fulfillment
of the requirements for the degree of
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Shirley A. Herby
10/11/02

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DEDICATION

This dissertation is dedicated to the memory of my late father, Eugene J. Coates, who love for knowledge and belief in the importance of education was instilled in me as a young child.

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CHAPTER I
INTRODUCTION AND STATEMENT OF THE PROBLEM

Historically, the lecture has been the predominant teaching method in accounting as well as in many other disciplines. Representatives of the accounting profession as well as educators have indicated, however, that this method might not be the best way to prepare students for entry-level positions (AAA, 1986, Arthur Andersen & Co., et. al., 1989). The consensus is that “...the lecture-only, lecture mostly classroom doesn’t teach students enough of what they need to know. It encourages passivity and denies discovery and clearly doesn’t teach collaboration, problem solving or creativity” (Boehm, 1992, p. 38).

In an effort to voice their concerns about accounting education, representatives of the eight largest accounting firms published a position paper, *Perspectives on Education: Capabilities for Success in the Accounting Profession* (Arthur Andersen & Co., et. al., 1989). In this paper, the authors stated that the current educational environment was not responding to an increasingly complex and expanding profession and declining enrollments in college accounting programs. In an attempt to address the challenges facing the accounting profession, the authors outlined three sets of skills that an individual should possess in order to practice public accounting successfully: intellectual skills, communication skills, and interpersonal skills.

In response to this paper, a survey was conducted to ascertain the importance of various skills as perceived by accounting practitioners and educators (Ulrich, et al., 2000). Survey respondents indicated that communication skills, intellectual skills, and interpersonal skills were more important than technical skills, thus confirming the opinion of the large accounting firms that students need to obtain a well-rounded education in order to succeed in the profession. The representatives of the accounting profession also suggested that the current textbook-based, rule-intensive, lecture/problem-solving style of teaching should not survive as the primary means of knowledge presentation. They recommended that alternative teaching methods such as simulations, expanded written assignments, case analyses, and creative use of information technology (IT) should be used.

Methods of providing students greater exposure to IT could include teaching with electronic presentation or spreadsheet programs, and using software outside of the classroom. Computer-assisted instruction (CAI) can be used to provide students with more exposure to technology, while also affording them with a new way to learn accounting concepts and applications. CAI is defined as using a computer to make learning “easier and more likely to occur (facilitation), as well as using the computer to create a record proving that learning has occurred (certification)” (Burke, 1992, p.16). A newer aspect of CAI known as interactive multimedia (IMM) can provide significant increases in student learning (Bagui, 1998). IMM combines text, graphics, animation, and

sound to present information to learners. IMM has contributed to increases in learning as it allows interactivity with the computer, it is flexible and has a rich content, it is motivational, and it allows better structure in instruction (Bagui, 1998). Interactive multimedia instruction can be very engaging, thus adding to the motivational aspect of its use.

When evaluating these innovative methods of presenting accounting concepts, however, accounting educators should consider instructional methods' impact on students' learning, as well as students' perception of their learning. Consideration of the diverse learning styles of students might enable educators to make better decisions regarding the introduction of different teaching methods. Learning styles are unique ways whereby an individual gathers and processes information and are the ways by which an individual prefers to learn. Knowledge of students' learning styles might provide information about how learners best acquire knowledge (Davidson & Savenye, 1992). Since students with different learning styles exhibit different strengths, certain learning styles might be better suited to learning via an interactive multimedia method than others.

In addition to individual differences in learning styles, educators could consider students' attitudes toward the use of computers. For example, computer anxiety may cause learners to be resistant to learning by computer (Gardner, Descenza, & Dukes, 1993). Therefore, educators may need to be

sensitive to students who are uncomfortable using computers in the learning process.

A third factor that could be considered is comfort with learning in a solitary environment. Students have traditionally learned accounting through a lecture – with a live instructor and any number of classmates. This learning method exhibits a high degree of social presence, a concept that has been defined as the ability of a communications medium to approximate face-to-face communication (Short, et. al., 1976). It is conceivable that a feeling of isolation might cause discomfort with the computer-assisted learning method, which might in turn, cause the overall learning experience to be negative.

Statement of the Problem

In the past, accounting education research has quantitatively compared the achievement and satisfaction level of students learning accounting via traditional lectures with that of students engaged in a computer-assisted method. These studies found either no difference or a very small difference in student achievement as measured by exam grades (Friedlan, 1995; Labonty, 1989). In one study, students in the experimental group who were given computer-assisted homework assignments indicated a more positive attitude about the accounting profession than those who were asked to complete traditional homework assignments (Friedlan). In another study, statistically significant differences existed in student satisfaction scores, as indicated by responses to researcher-

administered surveys (Labonty). Labonty noted that students in the CAI group exhibited a more positive attitude about course value and the amount learned than students in the control group. In both studies, the surveys, which measured satisfaction on a numbered scale, were distributed at the end of the semester.

What is needed at this time is research that can help accounting educators measure the value of CAI. One factor that could be considered is that students' learning styles or attitudes toward computers might impact their comfort with different learning methods (Banerjee, 1999). Another may be that certain students, accustomed to learning in a group, such as via the traditional lecture, might feel isolated by a solitary learning method. Any perception of a lack of social presence of CAI could have a negative effect on some students' learning experiences. If students are in any way uncomfortable with mediated instruction, their experience with that learning method might not be successful.

Another factor to consider may be that use of a survey might not be the best way to measure student attitudes toward various learning methods. Surveys are often administered after the learning exercise and, by their nature, limit student input due to their fixed choice format. At the Consortium of Liberal Arts Colleges 1998 annual meeting, campus directors of information technology discussed the need for anecdotal evidence and "stories" regarding the success of information technology use (Jensen, 1998). The consensus among the participants was that most surveys and measures of performance were untrustworthy because it is extremely difficult to perform a "clean experiment"

in which students can be randomly placed in control and experimental groups (Jensen, 1998).

It is suggested that employing a qualitative data collection method that examines student perceptions regarding the computerized learning method on a more continuous basis could provide a deeper understanding of those perceptions. Collecting think-aloud protocols, the recording of students' verbalizations while they are engaged in the learning experience, has been effective in measuring user satisfaction with various computer programs (Mack, Lewis, & Carroll, 1987). Collecting and analyzing learner verbal protocols allowed me to study the experience with and reaction to the CAI through a moving picture rather than a snapshot. In addition, observing the learning process and interviewing the students after they completed the CAI allowed me to collect a rich set of data about these experiences. Therefore, I collected verbal protocols, observed students at the computer, and conducted interviews with four male and four female learners in order to examine their experiences using CAI to learn accounting concepts. I was especially interested to determine if the learners perceived that the tutorial contained the social presence characteristics of interactivity – information transmission, problem solving, and feedback.

Definitions

Computer- Assisted Instruction (CAI) - Direct use of the computer for facilitation and certification of learning (Burke, 1992, p. 16). In this study, a computerized interactive multimedia tutorial was the method of computer-assisted instruction employed.

Learning Style - unique ways in which an individual gathers and processes information, and are the ways by which an individual prefers to learn (Davidson, et. al., 1992, p. 348). Learning style in this study was measured using Kolb's Learning Style Inventory (1985).

Social Presence --The ability of a communication medium to approximate face-to-face communication (Short, et. al., 1976). As used in this study, a perception of the computerized tutorial. This included such characteristics of the tutorial as maintaining a level of student interest, interactivity (in the form of problem-solving and feedback), allowing students to learn and apply the concepts, and providing a logical presentation of the information.

Research Questions

By conducting this research, I attempted to answer the following questions:

- (1) How do students engaged in CAI react to its challenges and opportunities?

(2) How does the experience of these students compare to the major explanations offered in the literature for student reaction to CAI (including learning styles, attitude toward computers, and social presence)?

Significance of the Study

This study documents the value of CAI as an instructional medium in accounting education. Past research has documented CAI's value with regard to achievement. This study examined students' thinking and learning processes as they learned two chapters of financial accounting via CAI.

Accounting educators will be interested in the results that indicate that CAI is an effective supplemental learning method that might allow them to use class time for learning activities such as group work, case studies, or other technology-based instruction. CAI developers can learn what aspects of the CAI the students found to be useful and what aspects they thought were less effective.

CHAPTER II

REVIEW OF RELATED LITERATURE

Following is a discussion of relevant research on learning styles, attitude toward computers, computer-assisted instruction, and social presence. An individual's learning style, attitude toward computers, and perception of social presence may all affect his or her experience while learning using CAI.

Learning Styles

Learning style is defined as the ways individual learners react to the learning environment (James & Blank, 1993). Learning style can be measured by one of several available instruments. These can be divided into three dimensions of learning: information processing, affective, and physiological. Information processing or cognitive styles represent the learner's typical mode of perceiving, thinking, problem solving, and remembering. Affective styles are related to personality and are associated with attention, emotion, and valuing. Physiological styles are related to the physical environment, gender, and other personal characteristics (Keefe, 1987).

Of the many learning style instruments available, a few are more commonly used than others. These include those developed by Canfield (1988), Gregeorc (1982), Honey and Mumford (1989), and Kolb (1976, 1985).

The learning style instrument developed by David Kolb originated from his experiential learning model (ELM) (Kolb, 1984). This model is based on the works of John Dewey (1938), who focused on the role of experience in the learning process; Kurt Lewin (1951), who stressed active learning; and Jean Piaget (1970), who felt that intelligence was caused by the interaction between the learner and his or her environment.

According to Kolb (1984), learning styles are a combination of four abilities that an individual needs in order to be an effective learner. These abilities or learning modes form the basis for Kolb's Learning Style Inventory. Kolb defined the four basic learning modes as follows:

Concrete experience (CE) focuses on being involved in experiences and dealing with immediate human situations in a personal way. It emphasizes feeling as opposed to thinking. *Reflective observation* (RO) focuses on understanding the meaning of ideas and situations by carefully observing and impartially describing them. It emphasizes understanding as opposed to practical application. *Abstract conceptualization* (AC) focuses on using logic, ideas, and concepts. It emphasizes thinking as opposed to feeling. *Active experimentation* (AE) focuses on actively influencing people and changing situations. It emphasizes practical applications as opposed to reflective understanding. (p. 68-69)

Figure 1 contains a diagram of the four learning modes and the corresponding learning styles that have been proposed by Kolb (1984):

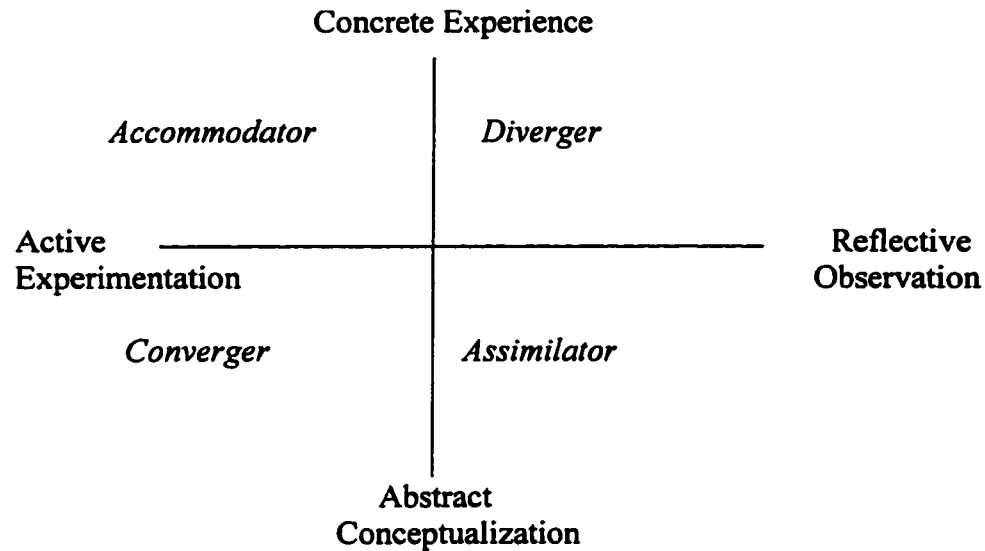


Figure 1

These four modes of learning, which are reflected as two bipolar dimensions -- abstract conceptualization (thinking) versus concrete experience (feeling) and reflective observation (watching) versus active experimentation (doing) -- were combined to produce the four basic learning styles: converger, diverger, accommodator, and assimilator (Kolb, 1984). The convergent learning style (converger) contains the dominant learning abilities of abstract conceptualization and active experimentation. Individuals who possess this learning style are able to solve problems, make decisions, and apply ideas. The divergent learning style (diverger) emphasizes concrete experience and reflective observation. Divergers perform well in situations that call for the generation of ideas, such as brainstorming sessions.

In the assimilation style (assimilator), the dominant learning abilities are abstract conceptualization and reflective observation. The strengths of individuals in this group are inductive reasoning and the ability to create theoretical models. Assimilators are less focused on people and more on abstract concepts. The accommodative learning style (accommodator) emphasizes concrete experience and active experimentation. The greatest strength of this orientation lies in carrying out tasks and getting involved in new experiences. Accommodators employ trial-and-error to solving problems and rely on others for information (Kolb, 1984).

Consideration of individual learning styles and the different ways individuals prefer to learn may enhance students' learning (Brock & Cameron, 1999). By incorporating teaching techniques that allow a student to use his or her preferred learning mode, instructors can help students excel and retain interest in what they are learning. Techniques that provide students with concrete experience include in-class demonstrations, simulations, and discussions of newspaper articles. Journal assignments, brainstorming sessions, and assignment of questions relating to course readings might provide reflective observation. Abstract conceptualization can be fostered through model-building activities and analysis of reading assignments. Finally, active experimentation can be achieved through labs, case studies, and other hands-on activities. Use of these various activities might cause students to become more engaged in the

learning process, and also help to reduce declining enrollments in courses that students find difficult or boring (Brock & Cameron, 1999).

Learning style may be correlated with gender and/or grade point average (Philbin, et. al., 1995; Wynd & Bozman, 1996). In the Philbin study, students were questioned as to how well their learning style “fit” with their educational experience. More women than men indicated that their educational experience did not fit with their learning style. The majority of men were assimilators, while women tended to be convergers and divergers. A possible cause might be that the assimilator learning style, emphasizing abstract and reflective learning, most closely reflects traditional education.

Convergers and assimilators among undergraduate business students earned higher GPA's than accommodators and divergers. Therefore, knowledge of learning style variations may allow educators to offer more diverse programs that will provide an effective learning environment for a greater number of students (Wynd & Bozman, 1996).

Learning style has influenced the performance of accounting students engaged in non-traditional methods of instruction (Grant, 1995, Jensen, 1995). In the Jensen study, students in an experimental group learned accounting concepts via teaching techniques that corresponded to the four learning modes proposed by Kolb, such as role-play, case study, and small group discussion in addition to lecture and problem-solving sessions. These students exhibited significantly better performance than the control group, who were instructed

using only traditional methods. Additionally, the differences in learning became greater on successive exams, indicating continued learning by the experimental group. As to individual learning style differences, experimental group accommodators and assimilators scored significantly higher than their control group counterparts. Experimental group converger test scores were higher than those attained by students of the other learning styles, but not significantly (Jensen).

In the Grant (1995) study, students were assigned to use either hypermedia software or a general ledger system to record accounting transactions. Although there were no significant differences in achievement between the two groups, divergers and accommodators that used the hypermedia software scored significantly higher than those using the general ledger system. While not related to achievement, it was discovered that accommodators relied on others for information, while convergers remained focused until the task was completed.

Learning styles have also influenced performance in multimedia or CAI environments (Bostrom, Olfman, & Sein, 1990; Frank, 1999; McDonald, 1996; Rasmussen & Davidson-Shivers, 1998; Sein & Robey, 1991). Abstract learners performed better than concrete learners when involved in learning to use a spreadsheet program. This result might have occurred because abstract learners are more comfortable in a new learning environment, whereas concrete learners rely on prior experience to learn (Bostrom, Olfman, & Sein). In the Sein and

Robley study of novice computer users, convergers exhibited the highest overall performance in a training session on the use of electronic mail systems.

Findings suggested that tailoring the instructional method to specific learners enhanced the overall learning of individuals in each learning style.

In the Rasmussen and Davison-Shivers study, immediate and delayed posttest performance was evaluated in three different hypermedia-learning environments. The three environments contained three different levels of learner control (ability to move freely through the lesson). Active learners performed best with the least amount of learner control, while reflective learners performed best in a treatment that exhibited a moderate amount of learner control.

In an attempt to determine the impact of multimedia instruction on student achievement and attitudes, and the relationship between these outcomes and Kolb's learning styles, McDonald (1996) administered the LSI and an attitude toward multimedia instruction survey to 298 undergraduate students. Of those surveyed, 73% felt that the use of multimedia instruction inspired interest in the course "Healthy Lifestyles 101." The researcher discovered that assimilators had a much more positive attitude toward multimedia instruction than convergers. In the Frank (1999) study, attitudes, participation, and learning style were examined to assess the interaction between college students and a multimedia instructional program in business. Qualitative data in the form of observation notes, open-ended interviews, and written answers to supplemental

questions were collected to understand the experience of 22 predominantly novice computer users who were exposed to CAI. Concrete experience and active experimentation learners (corresponding to the accommodator learning style) were most likely to initiate the sessions and engage the other group members in the learning activity. This was consistent with Kolb's description of accommodators, who he noted were likely to try new experiences (Frank, 1999).

Finally, learning style has been linked with computer anxiety (Ayersman & Reed, 1995-96; Grasha & Yangarber-Hicks, 2000). The effect of learning styles, programming instruction, and gender on computer anxiety was assessed in computer students (Ayersman & Reed). No significant difference in the level of computer anxiety of participants was noted prior to instruction. After the students received eight hours of instruction, assimilators exhibited a significant decrease in computer anxiety. Accommodators and divergers had a non-significant decrease, while convergers' computer anxiety scores increased. This result was possibly due to their small number and the fact that each participated in a more intensive instruction session, which reduced anxiety less than in the distributed format among all participants

In the Grasha & Yangarber-Hicks study, faculty users of information technology completed a questionnaire evaluating courses taught using technology as well as in a more traditional manner. Respondents also completed a teaching styles and learning styles questionnaire. The learning styles questionnaire was completed for each class that related to each type of teaching.

Although Kolb's LSI (1985) was not used, the instrument measured an abstract learning style. The authors found that abstract learners (corresponding to Kolb's assimilator and converger learning styles) performed well in technology-based courses.

These studies indicate that learning style may be an important variable to consider when using CAI or multimedia-based instruction. Different learning styles appear to cause varying amounts of success with this type of computer-assisted learning. Therefore, providing different methods of instruction (computerized or lecture based) to different learners may enhance the learning of a greater number of students.

Attitude Toward Computers

Attitude has been proven to be a strong predictor of behavior in individuals (Ajzen & Fishbein, 1980). Therefore, it is important for students to have a positive attitude about a learning method if that method is to be successful. Attitudes of computer users have been influenced by specific uses of computers, amount of computer use, and degree of workplace computerization (Brock & Sulsky, 1994; Durler, 1997; Mitra, 1998; Walters & Necessary, 1996). In the Mitra study, using computers solely for tasks such as word processing tended to lead to a more negative attitude toward computers, as did low computer use. Use of computers on a more voluntary basis, such as for Internet searching, contributed toward a more positive attitude.

Greater computerization of an accounting information system led to more positive attitudes toward computers (Brock & Sulsky). Among university business instructors in Taiwan, computer ownership and familiarity, as well as length of time of computer use contributed to positive attitudes about computers. Gender, age, academic background, and length of computer use were among the characteristics of users that affected feelings of intimidation about computers, as well as the perceived usefulness of computers (Durler, 1997; Nickell & Pinto, 1986; Rosen & Maguire, 1990).

In a study of the computer attitudes of business students at a large mid-western university, Walters & Necessary (1996) discovered that better attitudes toward computers were related to ownership of a personal computer, overall computer knowledge, and years of computer experience. However, gender did not have a significant effect on computer attitudes

Over the past several years, questionnaires have been developed that measure computer attitudes of various populations (Dambrot, et. al., 1985; Lloyd & Gressard, 1984; Nickell & Pinto, 1986). The Computer Attitude Scale (CAS) developed by Nickell and Pinto measures general positive and negative attitudes toward computers. The authors felt that there was a need to develop a general scale, because instruments that existed at the time were designed for specific populations. Their belief was that, if instructors and trainers were aware of negative attitudes toward the use of computers, they could modify their instruction and possibly improve user attitudes.

In a review of 15 computer attitude measures, LaLomia & Sidowski (1991) found that CAS scores indicating positive computer attitudes correlated with high computer science grades among college students and high job performance ratings among employees. The CAS has been used to effectively measure computer attitudes of a variety of populations, such as college students, programmers, and small business owners.

Individual differences such as gender and learning style have been studied to determine their effect on computer attitudes. The effect of gender is not apparent. While some studies indicate that males exhibit more positive attitudes (Nickell & Pinto, 1986; Rosen & Maguire, 1990; Whitley, 1997; Young, 2000), others have suggested that there is no gender difference (Ayersman, 1996; Lloyd & Gressard, 1984; Orr, et. al., 2001).

Learning style appears to have a more noticeable impact on computer attitudes. When learning style was compared with scores on a computer anxiety instrument, convergers reported lower computer anxiety scores than divergers. The author posited that individuals whose learning styles incorporate active experimentation (convergers and accommodators) should be “expected to develop fewer negative feelings toward using computer based technology” (Bozionelos, 1997, p. 754).

Social Presence

Social presence has been defined as the ability of a communications medium, such as a telephone or computer-mediated communication, to approximate face-to-face communication (Short, Williams, & Christie, 1976). This definition follows the concept of immediacy, a measure of the psychological distance between the communicator and the object(s) of the communication (Wiener & Mehrabian, 1968). Characteristics of immediacy include eye contact, smiling, and vocal expressiveness (Gorham, 1988). “People are drawn toward persons and things that they like, evaluate highly, and prefer; and they avoid or move away from things they dislike, evaluate negatively, or do not prefer” (Mehrabian, 1971, p. 1). This statement may be an important consideration when measuring a reaction to any learning method.

Media with a high degree of social presence are said to be warm, personal, sensitive, and sociable (Short, Williams, & Christie, 1976). These four characteristics make a perception of social presence somewhat subjective. An easier way to measure social presence might be to determine if a medium is perceived by the user to be interactive. If the user exhibits or indicates that perception, the medium has social presence (Gunawardena, 1995).

In fact, interactivity has been suggested as a cause of presence, defined as a mediated experience that is not perceived to be mediated (Lombard & Ditton, 1997). Although the authors did not specifically mention the term social presence, interactivity has been noted as an attribute of social presence

(Gunawardena). Characteristics of interactivity include user inputs accepted by and responded to by the medium and the speed with which the medium responds to the user inputs. Another is the number of situations or experiences that can be modified by the user, such as the placement of objects within the exercise. Finally, the ability of the user to change items is considered to be an example of interactivity. Examples of this characteristic include controlling one's own pace and the ability to move the program in more than one direction, as well as the ability to move objects (Lombard & Ditton).

Researchers have found that media with a high degree of social presence (closer proximity to face-to-face communication) have a positive influence on user satisfaction (Boverie et. al., 1997; Gunawardena & Zittle, 1997; Hackman & Walker, 1990). Attributes of a medium that would indicate a high degree of social presence include feedback, information transmission, and problem solving (Short et al., 1976). Each of these attributes should exist in order for CAI to effectively transmit knowledge or information. Measuring social presence would consist of evaluating the perception that the particular medium is appropriate for these activities (Rice, 1993).

The lecture, a teaching method with a high degree of social presence due to its face-to-face nature and immediacy, has traditionally been the method of instruction employed in higher education. The interaction inherent in this teaching method is an attribute with which students are most familiar and, likely, most comfortable. Researchers have found that a substantial relationship exists

between immediacy and learning (Gorham, 1988; Hackman & Walker, 1990; Kearney. et. al., 1985). Gorham's survey of 387 undergraduate students on their opinions on verbal and nonverbal teacher immediacy behaviors indicated that a high correlation existed between positive teacher immediacy behaviors and perceived learning.

In another study, researchers investigated the impact of teacher immediacy on affective learning in a people-oriented (communications) course and a task-oriented (accounting) course. The researchers discovered that a positive relationship existed between teacher immediacy and affective learning in both classes, because students were likely to engage in practices suggested in the course and enroll in related courses (Kearney, et. al., 1985).

Teacher immediacy behaviors were also positively correlated with perceived learning and satisfaction in a televised classroom. Positive behaviors noted by students included use of personal experiences, addressing students by name, and providing feedback (Hackman & Walker, 1990). Therefore, when strategies that enhanced social presence were employed, students indicated a positive experience with the learning method. It would appear that, in order for CAI to be considered a successful learning method, students must perceive that it exhibits some degree of social presence.

Social presence is also defined as the extent to which a medium is perceived to convey the actual presence of another communicator (Short, et. al., 1976). In later research, this definition has been used most often in the study of

computer-mediated communication and distance learning environments (Burke, 2000; Gunawardena & Zittle 1997; Hertenstein, 1999; Joe, 1996; Kim, 1994; Leh, 2001). Student perception of social presence has had a positive impact on satisfaction in a computer-mediated conferencing medium. In the Gunawardena & Zittle study, graduate students who participated in an inter-university virtual conference completed questionnaires on such variables as social presence, active participation in the conference, and overall satisfaction with the conference. The social presence scale, which followed the concept of immediacy, was found to be a strong predictor of satisfaction in this text-based computer conference. Results of the Joe study indicated that the perceived level of social presence in a CMC environment had a positive effect on subjects' self-disclosure in that context.

In an analysis of a distance-learning course in labor economics, participants' reactions to the course content and course structure were compared to the degree of social presence in the medium (face-to-face versus virtual classroom). Neither the course structure nor the course content related positively with the medium (Hertenstein, 1999). However, in a more recent study of the relationship between level of participation in a collaborative task in a face-to-face or distance Group Support Systems (GSS) environment, participation was significantly higher in the face-to-face environment. Subjects who perceived that the environment had a high degree of social presence

participated significantly more than did those who perceived social presence to be low (Burke, 2000).

Undergraduate students in a fifth-semester Spanish class (Leh, 2001) were given an assignment to communicate in Spanish with students from a Mexican university. Although the computer-mediated communication aspect of this course did not relate to instruction, the level of intimacy in the messages between students indicated a high level of social presence in the medium.

Research has also indicated that the need for social presence to exist in the medium is dependent upon the task that requires the use of the medium. For example, tasks that are primarily cognitive in nature, such as information exchange or problem solving, are not sensitive to the medium. Task-focused communication is sufficient for assigning work without any discussion of the requirements of the assignment (Hertenstein, 1999). Conversely, tasks that require interpersonal communication are more sensitive to the medium and require a greater approximation to face-to-face communication. Perhaps this concept may be extended to CAI. If students perceive that a particular section of a tutorial suggests the presence of an instructor (such as one that asks questions and then explains incorrect answers), then the social presence might be somewhat higher than that with a section that simply presents information and is less interactive. This need for the perception of the presence of another individual might be dependent upon the difficulty of the task. Sections of the CAI that relate to accounting concepts that are easier to understand, such as

accounting for equity, may require less social presence than those that present more difficult accounting theory and/or concepts, such as accounting for inventoriable costs.

Finally, media richness may be considered when examining social presence. The richness is determined by four factors: the amount of personal information the medium carries, feedback immediacy, cue transmission theory, and use of natural language (Hertenstein, 1999). Although these characteristics were used to evaluate a CMC medium, presentation of information, feedback immediacy, and use of natural language could be used to measure the degree of social presence inherent in CAI.

Computer-Assisted Instruction (CAI)

Computer-assisted instruction can be used as a method of learning either as a supplement to the traditional lecture or as a stand-alone method. The general process of CAI involves presentation of information to the learner, a request to the learner to respond to a question or problem about that information, evaluation of the learner's response, and a determination of the next step based on the evaluation of the response (Merrill, 1996). Recently, instructional software has been developed using interactive multimedia (IMM) capabilities. The availability of text, graphics, and animation has allowed authors to create instructional software that is more engaging and better able to contribute to students' understanding of topics (Crosby & Stelovsky, 1995).

Most CAI models are based on Thorndike's *law of effect*, the basis of behavioral psychology. The law of effect states:

Of several responses made to the same situation, those which are accompanied or closely followed by satisfaction to the animal will, other things being equal, be more firmly connected to the situation, so that, when it recurs, they will be more likely to recur; those which are accompanied or closely followed by discomfort to the animal will, other things being equal, have their connections with the situation weakened, so that, when it recurs, they will be less likely to recur. The greater the satisfaction or discomfort, the greater the strengthening or weakening of the bond. (Thorndike, 1911, p. 244)

Although this law was written in 1911, its connection with CAI exists, because research findings have shown that students had a more positive response to learning when the computer aided that learning (Friedlan, 1995; Kachelmeier, et. al., 1992; Labonty, 1989; Shute & Gawleck-Grendell, 1994).

CAI can be used an instructional method to promote active learning (having students involved in the material presented). Proponents of active learning believe that students not only retain more information but also exhibit a greater understanding of the material when they are actively processing information by reconstructing that information in personally meaningful ways (King, 1992). Students can combine the new information with prior knowledge and experience, thus making what is learned more meaningful. When students take a more active role in their learning, they feel more in control and their learning is improved (King).

In addition to contributing to an active learning environment, CAI has had a positive effect on cognitive performance, defined as "those skills used in

cognition to solve problems (e.g., planning skills, reasoning skills, logical-thinking skills, critical thinking skills, skills for transferring concepts, and problem-solving skills” (Liao, 1992, p. 369). Since both the AECC and the members of the accounting profession have stated the importance of these skills, it appears that CAI could have a positive influence on accounting education.

An early meta-analysis of 101 studies on CAI provided some interesting information on its benefits in higher education (Kulik & Kulik, 1986). In this comprehensive analysis of CAI, the authors evaluated studies that met the following requirements: research involving a college classroom, quantitative results comparing equal control and experimental groups, and results that were retrievable from college libraries or the Educational Resources Information Center (ERIC). The analysis included computing information on the effect size of the results, defined as the difference between the mean scores of the two groups divided by the standard deviation of the control group (Kulik & Kulik, p. 85). The authors found that most studies (77 out of 99) reported a positive increase in learning. In 22 studies, that increase was statistically significant. Although fewer studies measured differences in attitudes, the students using the computerized learning methods indicated more favorable attitudes. What is most interesting is that over two-thirds of the studies indicated that students using the computerized method needed less time to complete the learning task.

The evaluation of CAI has not been as extensive in accounting as it has been in other disciplines. Out of the 101 studies presented in the Kulik and

Kulik meta-analysis, only two were performed within accounting courses. Additionally, few accounting studies have been published since that date. This lack of data indicates that a need exists for more research into this aspect of accounting education.

Further emphasizing the need for research into more innovative learning methods in accounting, the American Institute of Certified Public Accountants and the American Accounting Association have stated that college accounting curricula should place more emphasis on higher-order learning (Arthur Andersen, et al., 1989; Rowley, et. al., 1990). This sentiment echoes that of the AECC and the accounting profession. Using computers to facilitate learning would allow instructors to spend less time teaching mechanics and more time helping students analyze results and evaluate alternatives. Teachers who increased the use of CAI as the result of exposure to individualized instructional materials found that they were able to engage students in more inquiry, problem solving, and simulation (Welty & Wei Kun, 1995). Since the AECC has recommended that students be exposed to these types of higher-level activities, using the computer to learn basic concepts may better prepare students to engage in more critical thinking and problem-solving activities.

Research has also addressed the importance of introductory accounting courses in shaping students' perceptions about further study in accounting, as well as perceptions about the accounting profession. The use of computers, either as problem-solving aids or as tutorials, has positively influenced students'

perceptions about accounting (Labonty, 1989). Findings from studies of the effects of CAI in introductory accounting courses indicated that there were no statistical differences in test scores between control (pencil and paper homework assignments or lecture) and experimental (computer homework assignments or tutorial) groups. However, the experimental groups spent less time on a topic, and the attitude toward learning was much more positive (Dickens & Harper, 1986; Labonty, 1989; Rowley, 1990). Although these studies did not show that the use of CAI significantly affected achievement, students who used a computer-intensive learning aid to learn a complicated accounting calculation experienced a significant increase in achievement (exam scores) over those who performed the calculation manually (Kachelmeier et. al., 1992).

In a higher-level accounting course, students were assigned computer-assisted homework problems in earnings per share and inter-period income tax allocation, two very complex financial statement related topics (Dickens & Harper). Although there was no significant difference in achievement between students using the microcomputer to solve the problems and those who solved the problems manually, survey results indicated that students were very interested in using the computer in this manner, despite the fact that it was not often used in accounting courses.

The studies discussed in this section represent findings from research measuring the success of CAI in accounting. They indicate that students are receptive to using computers in their courses. Since attitude may have a positive

effect on learning, perhaps an increase in computer use in accounting courses will lead to better attitudes and then greater learning. However, it is apparent that more studies should be conducted and that more in-depth data than that provided by posttest results and surveys would provide better information to analyze the effects of this learning method on learning and attitudes.

The introduction of interactive multimedia into education has had a very positive effect on student learning, especially on student attitude toward learning (Bagui, 1998; Crosby & Stelovsky, 1995; Kritch & Bostrow, 1998; Luyben, 1998; Stoney & Oliver, 1998). The ability of this type of program to present material in an engaging fashion through the use of graphics and animation has generated an increase in its use in many areas of higher education. Students who were taught basic computer science algorithms using multimedia courseware exhibited much higher gain scores (pre-test to posttest) than students taught using a blackboard. Additionally, class attendance was significantly higher among those students using the multimedia learning method (Crosby & Stelovsky).

In the Luyben study (1998), students who were provided with multimedia software programs to study the basic facts and concepts in an introductory psychology course were better prepared for class discussions, performed better on bi-weekly quizzes, and appeared to enjoy the class more than students who did not use the software. In the Stoney and Oliver (1998) study involving an introductory financial investments course, share valuation

and investments in stock were taught using a self-paced multimedia-learning environment. Students were introduced to a “microworld” (a simulation of a small part of a real environment) that allowed them to read information about the companies and the economy, make buy and sell decisions based on the information learned, and evaluate the effects of their decisions on their investment “portfolios.” Students stated during post session interviews that they had a very positive learning experience. The students also stated that they could control their learning, were sufficiently challenged, and believed that they learned the material presented.

In the Kritch & Bostrow (1998). study, the relationship between the number of responses required by a computerized tutorial and subsequent performance in a related task revealed that a greater number of responses contributed to better posttest performance. Subjects who were required to give a greater number of responses also exhibited better performance in a skill applying the tutorial concepts and indicated a more positive attitude toward the exercise than students who were required to provide fewer responses to the tutorial.

Results of the studies discussed in the last section indicate that learner attitude is an important component of learning. Providing students with learning methods that are engaging and different from those traditionally employed in education can positively impact learning. Therefore, using learning methods

that engage students and allow them to take a more active role in their learning can provide very positive results.

Chapter Summary

This review of related literature was divided into four sections to overview what is currently known about learning styles, attitude toward computers, social presence, and the use of CAI.

Learning styles are descriptors of the way individual learners react to their environment. I began with an overview of the Kolb Learning Style Inventory, which measures learning style and categorizes learners in one of four styles: accommodator, diverger, converger, or assimilator. Some researchers found that women more often than men reported that their preferred learning styles did not match their educational experiences. Moreover, in experimental studies where efforts were made to match learning styles with teaching strategies, learners whose styles matched the instruction offered outperformed those whose styles did not match the teaching strategies. Therefore, I was very interested to see how individuals representing each of Kolb's learning styles would experience the CAI-based tutorial.

The second area of literature reviewed was related to attitude toward computers. Because attitude is a predictor of behavior, it follows that those individuals who have a positive attitude toward computers in general could find the CAI experience to be a positive one. The review of literature did result in a

compilation of studies where positive computer attitude resulted in positive computer use. Moreover, an instrument that measures computer attitudes, the Computer Attitude Scale, was reviewed here as an effective tool to measure this construct. In this study, I used the CAS as a means of ensuring that each participant had an overall positive attitude about computers before choosing him or her to participate in the study.

A third area of the literature reviewed here was social presence. Social presence, the ability of a communications medium to approximate face-to-face communication, was an important variable in my study. Whether or not someone perceives a medium to have high social presence can account for user satisfaction. One of the major questions I had going into this study was whether or not CAI, as an instructional medium, could exhibit social presence.

I concluded the related literature section by presenting overviews of studies that have investigated CAI as either a method of learning or a supplement to the traditional lecture. Most studies reviewed were quantitative and showed a positive increase in learning, and showed that those using CAI needed less time to complete the learning task. The potential value of CAI was thus established and gave me a strong basis on which to pose this qualitative study that attempted to describe how learners use CAI in the learning process rather than be limited to measuring user satisfaction strictly as a measure of learning outcomes.

CHAPTER III

METHOD

In this qualitative case study, I examined the experiences of eight students using a CAI-based tutorial that substituted for traditional instruction in an introductory financial accounting class. By conducting this research, I attempted to answer the following questions:

- (1) How do students engaged in CAI react to its challenges and opportunities?
- (2) How does the experience of these students compare to the major explanations offered in the literature for student reaction to CAI (including learning styles, attitude toward computers, and social presence)?

Justification of the Method

This qualitative case study was exploratory in nature. My goal was to understand the lived experiences of these students as they learned concepts and solved problems using a sophisticated CAI-based tutorial that substituted for face-to-face instruction. I deemed the qualitative case study approach as the best way to collect data that would describe the feelings and reactions of each of these students as he or she navigated learning one-on-one with the tutorial rather

than many-on-one with a live instructor. Miles and Huberman describe a case as “a phenomenon of some sort occurring in a bounded context” (1994, p. 25).

Creswell suggested that the qualitative case study is the best approach when one is studying “a bounded system over time through detailed, in-depth data collection involving multiple sources of information rich in context” (Creswell, 1997, p.61). The bounded system was the experience of learning two units of material via the CAI, and qualitative data were provided by the learner him/herself via think-aloud protocols and individual interviews. Because I was present during these learning events, I observed the learner, taking copious notes and writing extensive analytic memos following each session. This method and resultant data allowed me to respond to the research questions posed. Combined with the qualitative data collected, I possessed descriptive information on each of the eight participants acquired through the instruments that were administered at the beginning of the study. They were The LSI (Kolb, 1985), CAS (Nickell & Pinto, 1986), and the self-developed demographic questionnaire. The descriptive data were not only employed in the selection process, but also provided me with common characteristics of the individual learning styles that I could look for in each participant when I was later analyzing the data.

Using both the qualitative and descriptive data, I told the story of each student’s learning experience in his or her own voice. The think-aloud protocols provided me with much of the information that makes up each student’s

experience. Combined with my observation notes, I used the data derived from the protocols (namely, student transcripts) to speak in the voice of each student, as if he or she were actually describing the experience. Information conveyed from individual interviews allowed me to interject students' opinions about the experience into the narratives. By employing multiple sources of data, I was able to present a complete narrative of each experience in the voice of each student.

Research Design

This section presents the procedures that I followed in the conduct of my study. I include a discussion of how I selected the participants and how I collected and analyzed the data. I then discuss how I present the data in Chapters IV and V.

Selection of Participants

Location

I conducted this study at a small, private, liberal arts college located in Pennsylvania. Lafayette College is dedicated to nurturing “the inquiring mind and to integrate intellectual, social, and personal growth” (Lafayette College Catalog, 2001). The college offers undergraduate programs in approximately 30 major fields. The primary programs of study include engineering, physical, natural and social sciences, and economics and business.

The total enrollment at the college is approximately 2,000, with over 90% of the student body residing on or very near to the campus. Students generally come from higher than average socioeconomic backgrounds and are considered to be of better than average intelligence, based on College Entrance Examination scores and high school grade-point averages. Limited racial or ethnic diversity exists at the college because approximately 92% of the student population is Caucasian. A majority of the students' homes are in New York, New Jersey, and Pennsylvania.

This location was chosen, because I was provided with entree due to my status as a member of the faculty (Ely, 1996). The course was offered in my department, but taught by another instructor. Access to potential participants was convenient. Because I was not their instructor, I could not influence their grades for the course.

Selection Criteria

To purposefully select eight participants for this study (one male and one female from each of Kolb's four learning styles), I administered three classification instruments to 24 students enrolled in a financial accounting course at Lafayette College: one to measure learning style, one to measure attitude toward computers, and a self-designed demographics questionnaire. After evaluating the literature on the available learning style and computer attitude measures, I chose Kolb's Learning Style Inventory (1985) and the

Computer Attitude Scale (Nickell & Pinto, 1986), because both instruments were appropriate for the group that I studied and both had been tested for validity and reliability.

The LSI

Kolb's *Learning Style Inventory* (LSI-1985) has often been used in higher education settings, and studies have indicated that it exhibits reliability (James & Blank, 1993). Individuals are classified based on their responses to the 12-item LSI. The students responded to sentences such as "When I learn: " or "I learn best when:" by ranking four sentence endings that best described how they learn. These endings correspond to Kolb's four learning modes (concrete experience, reflective observation, abstract conceptualization, and active experimentation). A score of "4" was given to the phrase that described how the student best preferred to learn, and a score of "1" described how the student least preferred to learn. The other two phrases were ranked "2" or "3" accordingly. The totals for each learning mode were computed, and the learning style was determined mathematically as the relationship of the scores for those learning modes. Each student was then classified according to his or her learning style (converger, diverger, accommodator, or assimilator). A detailed discussion of Kolb's learning styles was provided in Chapter II as part of the review of related literature.

Instruments that classify individuals as to a preferred learning style should exhibit reliability, consistency of results over time, validity,

appropriateness, meaningfulness, and usefulness of inferences made from test scores (James & Blank, 1993). In a review of learning style instruments suitable for administration to adults, James and Blank reported moderate reliability and strong overall usability of the LSI. Through administration of the 1985 version of the LSI to 187 Australian university students, Willcoxon and Prosser (1996) reported coefficient alpha reliabilities ranging from .81 to .87.

In another study, the construct validity of the LSI was investigated in Israel through an administration to 739 undergraduate students. The responses were analyzed using factor analysis and Guttman's Smallest Space Analysis. The finding of the smallest space analysis indicated that the words comprising the four scales of the inventory fit Kolb's model almost perfectly. In addition, the factor structure also provided support for the construct validity of the instrument and verified the Hebrew version of the LSI (Katz, 1986).

In a study of the use of Kolb's learning styles in the formulation of techniques that field supervisors could use to match their supervisory styles with the learning styles of their students, Raschick, Maypole, and Day (1998) reported Cronbach's alphas ranging from .73 to .88 on the four learning style dimensions and continuum scores (AC - CE and AE - RO), thus supporting the internal validity of the LSI.

The CAS

Next, to determine their attitude toward computers, I asked the students to complete the Computer Attitude Scale (Nickell & Pinto, 1986). This general measure of computer attitude (Appendix E) is a 20-item, self-reporting instrument that is easy to complete and has a reported coefficient alpha of .81 (Zakrajsek, et. al., 1990). The authors began development of the scale by collecting positive and negative statements about attitudes toward computers from 27 undergraduate psychology students. Then, 36 of those statements were given to students from introductory psychology classes to indicate their level of agreement or disagreement using a 5-point Likert scale with responses ranging from 1 “strongly agree” to 5 “strongly disagree.” Items chosen for the final version of the scale best discriminated between the 25 percent of the subjects with the highest and lowest total scores and demonstrated the highest item-total correlations (Nickell & Pinto). To score the CAS, you must first reverse the responses for items 2, 3, 5, 8, 9, 12,13, 15, 18, and 20. Then, the responses to the 20 items are summed to arrive at a total score. Individuals who score 20 on the instrument are classified as having an extremely negative attitude toward computers, while those who score 100 are classified as having an extremely positive attitude toward computers. A score of 60 is considered to be neutral. When I was choosing the students to participate in this study, I wanted only to include those whose score fell in the favorable range. The scores of my participants ranged from 67 to 92, which indicated that each student had a score

in the favorable range. For purposes of classification, I assigned the following descriptions to the ranges of CAS scores: less than 70 = less than favorable; 70 to 85 = favorable; greater than 85 = highly favorable.

In an examination of the construct validity and correlation with computer use of five attitude toward computer (ATC) scales, Brock and Sulsky (1994) found that the CAS, as well as other scales, contained two attitudinal dimensions proposed by Lee (1970). The first dimension was a belief that computers are beneficial tools, and the second was a belief that computers are autonomous entities capable of supplanting individuals (Brock & Sulsky, p. 18). Reliability of the CAS evidenced by a Cronbach's alpha score of .81 and test-retest reliability after two weeks of .86 was reported. Reliability and validity were also found by LaLomia and Sidowski (1991), who reported an alpha of .81 and short-term test-retest reliability of .86.

Further evidence of the reliability of the CAS was found when it was administered to 107 MBA students on two separate occasions, one month apart, to measure test-retest reliability (Rainer & Miller, 1996). There were no significant differences in the mean score between the two administrations, thus indicating the reliability of the instrument. The researchers also measured the internal consistency of the instrument using the coefficient alpha. The alpha was .76 for the first administration of the instrument and .78 for the second administration. Finally, a multiple regression was performed to determine if attitude toward computers might predict computer usage. The CAS was a

significant predictor of computer usage, thus confirming the validity of the instrument.

Demographic Questionnaire

I concluded the information session by distributing a researcher-developed demographic questionnaire (See Appendix F). The data requested included gender, grade point average (GPA), and contact information (campus phone number and e-mail address). These data provided me with additional information that I used in the selection process.

Participant Selection Process

Eight volunteer students from one section of an Economics and Business course entitled Financial Accounting were the subjects of this study. Financial accounting is an introductory course that covers such topics as recording business transactions, preparation and analysis of financial statements, and accounting for assets, liabilities, and equity. The objective of this course is to provide students with the ability to interpret and analyze financial statements and use the information to make effective business decisions. Financial Accounting is a required course for all economics and business majors and is a prerequisite for all other accounting and finance courses. Students normally enroll in this course in their sophomore or junior year and have little or no accounting knowledge.

I began the selection process in the Spring, 2000 semester. I distributed a Letter of Interest to invite members of the financial accounting class to participate in the study Appendix B). Included in this letter were questions relating to prior work experience or education in accounting. I asked these questions because I wanted participants to have the same level of accounting knowledge. The letter also indicated that participation would include spending approximately one and one half hours on two different occasions learning two chapters in the course using a CAI tutorial. I explained that the first hour of each session would incorporate the CAI exercise, where they would learn the specified course content through the CAI by reading textual material, answering questions, and recording practice transactions. I also explained that, while they were doing this, they would be asked to verbalize everything that they were thinking. The second half hour would be a post-session interview, when I would make sure that I understood the individual student's verbalizations and invite him or her to comment on the overall experience. I also explained that the sessions would be video- and audio-taped and indicated that those who were chosen to participate would be asked to complete and sign a consent form (Appendix C). After I reviewed the letters of interest, I contacted 14 students by e-mail and asked them to attend an information session at which I described the project in more detail. At that session, I further explained how they would be expected to participate by demonstrating myself how they would be verbalizing their thoughts while they were engaged in the CAI. I displayed a screen of the

tutorial and verbalized what I was thinking, such as explaining how I answered the questions. They then completed the LSI, the CAS, and the demographic questionnaire.

Using these data, I chose a purposeful sample of eight volunteers. I had decided to choose eight students to include one male and one female representing each of Kolb's four learning styles. I also wanted to include students who had similar GPAs and who scored at least 60 on the CAS. There was only one student who was classified as an assimilator. Since that student was female, the fourth male participant chosen was a converger. I did not choose him based on his learning style, but because he was an international student, and I thought that he would be an interesting participant. A table containing the students' demographic information is presented in Chapter IV.

I contacted each of the eight students to inform them that they were chosen for the study. I met with each student to have him or her sign the consent form and schedule the CAI sessions for the first chapter.

Data Collection Procedures

The Financial Accounting class met two mornings per week, from 8:00 a.m. to 9:15 a.m., for a 14-week semester. The instructor had taught Financial Accounting for over 20 years and often teaches at two or three colleges in any one semester. Most of the course was taught by the traditional lecture method. The eight students studied two units, one on the stockholders' equity section of

the balance sheet and one on accounting for inventorable costs via CAI, and did not attend lectures for these two units. These two topics were chosen for the study because stockholders' equity is considered to be a somewhat easy topic to grasp, while accounting for inventorable costs is thought to be much more difficult. Both an easy task and a difficult task were chosen because the nature of the task can affect the need for social presence (Short et al., 1976).

The specific CAI package used in this study was *Financial Accounting Tutor Version 2* (1999) developed by Gode and Gode and published by John Wiley and Sons (see Appendices G and H for sample tutorial screens and detailed descriptions of the tutorial chapters). Since students purchased this tutorial along with their textbook, permission from the publisher was not necessary. The principal author of the tutorial is an assistant professor of accounting at New York University and was very supportive of this study.

Each chapter in the CAI (organized like a textbook) incorporated both accounting concepts and transactions. The beginning of each chapter outlined the topics that were to be covered. At various points throughout the chapter, the student was able to determine how much of the chapter had been completed, because a check mark appeared next to each completed section. Questions (true-false, multiple choice, and matching) were asked both before and after the accounting concepts were presented. If a question was answered incorrectly, the student was immediately prompted to think about the answer again. The CAI accomplished this task by utilizing a dialog box that stated, "try again" or

“really, what about...” The CAI allowed the student to answer the question again (as many times as he or she chose). If the student was unable to answer the question, he or she was able to obtain the correct answer by pressing both the control and question mark keys.

Then, each section illustrated actual business transactions. The student reviewed those transactions and then completed additional transactions to ensure that the material was understood. The student completed these exercises by dragging and dropping items on the screen into a box that replicated an actual accounting journal. Therefore, the CAI presented and illustrated the application of concepts (information presentation), provided students with an opportunity to measure their understanding of the material presented (problem solving), and indicated accuracy in responses (feedback).

Sources of Data

My goal was to fully understand the experience of the participants. Therefore, I accumulated data via three sources: use of the think-aloud method, collecting participant’s verbal protocols using a micro-cassette recorder; by direct observation of each participant and writing my observations; and finally, by post-tutorial session interviews with each participant. The combination of these data sources allowed me document each participant’s experience with the CAI.

The tutorial for each chapter took students about 60 minutes to complete. I video-taped and audio-taped the students in two separate sessions and took notes regarding their non-verbal behavior. Video-taping allowed me not only to record each subject's verbalizations, but also to determine which sections of the tutorial elicited a response (either verbal or non-verbal) from the subject. Immediately after completion of the task, I interviewed each student and asked him or her to describe his or her experiences. The verbalizations as well as the interview data were transcribed for coding and analysis. Audio-taping each session facilitated this process. However, the video-tapes proved to be invaluable in "filling in the gaps" when the audio-tapes were difficult to understand. They also allowed me to verify the accuracy of the transcripts. In addition, during the data analysis phase, I viewed the video-tapes several times and was able to observe non-verbal behavior, which was later coded and used to develop themes. The video-tapes were most helpful to me in developing the theme "we were engaged in the learning process." For example, Allen's hand gestures illustrating the re-issuance of stock at an appreciated price, Steve's waving his hands at the computer when he was frustrated at not being able to solve a problem, and John's tilting his head to the left and right when he repeated the words "debit" and "credit" were examples of their engagement with the CAI. I did not notice this non-verbal behavior during my observations of the actual sessions. Later viewing of the video-tapes provided me with these data that I had previously missed.

Since each session was both audio- and video-taped, proper placement of recording equipment was essential to my collecting understandable data. I placed a micro cassette recorder on top of the computer processor, which was close to face level of each participant. The video camera was situated on a desk to the right of the student, near his or her shoulder. This positioning allowed the camera to tape the computer screen as well as the student's face. However, upon viewing of the tapes, I discovered that the screens were somewhat blurred. I was able to determine which screen the student was completing by comparing a printed copy of each screen with that on the videotape. I found this to be an effective method of collecting verbal as well as non-verbal data, and it also allowed me to validate my observation notes when I later viewed the tapes.

Students' Think-Aloud Protocols

The verbal protocols that were used for analysis in this phase of the study were collected via the think-aloud method. The think-aloud method involves obtaining information about the knowledge and methods of human problem solving (Phelps, 1989; van Someren, 1984). In basic terms, the subject verbalizes his or her thoughts while in the process of solving a problem. Ideally, the subject will continue to talk during the entire time that the task is performed, with few or no prompts or suggestions from the researcher. Keeping researcher communication to a minimum allows the subject to concentrate on the task and avoid interpretation of his or her thoughts. Therefore, in an attempt to ensure

that the student devoted his or her full concentration to the tutorial, I did not engage in conversation with the student except to encourage him or her to “keep talking” (Mack, Lewis, & Carroll, 1987). Talking out loud does not interfere with task performance (Ericsson & Simon, 1993).

The think-aloud method was developed from the introspection method, stemming from psychological research. “Introspection is based on the idea that one can observe events that take place in consciousness, more or less as one can observe events in the outside world” (van Someren, p. 29). Using the think-aloud method requires recording verbalizations. Additionally, the think-aloud method treats the verbal protocols (the verbalized thought processes of the subjects) as data.

Prior research involving the think-aloud method was directed toward problem-solving capabilities of the subjects under study. One study used elementary school children as think-aloud models (Rikard & Langely, 1995). Using the think-aloud method, data were collected about students’ problem-solving strategies during physical education classes. It was discovered that using this method gave instructors greater ability to understand the students’ perception of the instruction, as well as their experiences with the task being performed. The researchers believed that the experience was valuable, as the teaching process could be enhanced when there was a greater understanding of the learning process. In another inquiry, the problem-solving processes of undergraduate students were studied using the think-aloud method. Although

the study focused on problem solving, the method enabled the authors to determine that successful problem solvers were better able to notice the relationships that existed among the problems to be solved and, therefore, were more efficient in arriving at solutions than the unsuccessful problem solvers (Wedman, et al., 1996).

In research involving adult subjects, three studies analyzed verbal protocols of accountants involved in analytical procedures commonly used during an audit (Bedard & Biggs, 1991; Biggs, Mock, & Watkins, 1988; Biggs, Rosman, & Sergenian, 1993). The reasoning processes of auditors were studied to determine how pattern recognition and hypothesis generation affect performance (Bedard & Biggs). The subjects were provided with fictional budgeted and actual financial data and were asked to hypothesize as to the cause of the differences. Evaluation of the verbal protocols of the subjects allowed the researchers to determine which reasoning processes resulted in correct or incorrect hypotheses as to the cause of the errors in the accounting data. A comprehensive case was administered to four auditors who performed analytical review procedures (comparisons of similar data among years as a method of detecting errors in the accounting records) during the process of audit program development. Analytical review procedures consist of calculating percentage differences in accounts balances, such as inventory or advertising expense, and calculating key financial ratios in an attempt to determine unusual items or amounts in a company's financial statements. These procedures were performed

while the subjects were thinking aloud. The resulting protocols allowed the researchers to ascertain the differences in the approach to the task by subjects who were considered to be experts and those who were considered to be novices. In particular, the protocols indicated that the more complete memory structures of the experts allowed them to make more efficient decisions than the novices (Biggs, Mock, & Watkins, 1988).

In a later study, researchers collected verbal protocols of financial analysts who evaluated financial, non-financial, and related industry data about a company in order to rate its strength. The data were presented in one condition on paper and in the second condition via computer software. The purpose of this exercise was to determine the effect of verbalizations on task performance (computer search time). Verbalization increased computer search time, thereby slowing down information acquisition, but did not change the amount of information acquired, the acquisition pattern, or the accuracy of decisions (Biggs, Rosman, & Sergenian, 1993).

Although its use is not widespread, researchers have discovered that the think-aloud method can be an effective way to assess individuals' problem-solving processes and monitor difficulties that subjects might have while using new software (Kay, 1995; Mack, Lewis, & Carroll, 1987). Verbalizations of adult volunteers learning a spreadsheet package (Lotus 1-2-3) were collected and evaluated. From this evaluation, it was discovered that certain knowledge-building activities, such as directed search, trial and error, and careful

observation, had a positive impact on learning. One researcher suggested that a deliberate trial and error strategy, observation and searching techniques, would be an excellent approach to learning new software (Kay, 1995). An earlier study explored the learning processes of office temporaries learning to use text-processing equipment. The analysis of the protocols allowed the researchers to evaluate the problems that the subjects encountered while learning the new skill, which provided them with valuable insights into the design of computer software and training materials (Mack, Lewis, & Carroll, 1987).

The think-aloud method has also been used to study interactions with multimedia (CD-ROM) instructional programs (Young, 1996). Six female AmeriCorps members, working in dyads, interacted with a program that taught interactive writing. The data collected enabled the researcher to determine the factors that accounted for the variations in interaction among the teams. Team members who demonstrated a more active personality and who preferred working individually immediately became more involved in the program by taking control of the computer mouse (and therefore the program). The more introverted member of each dyad tended to sit in a position where she could not control the mouse. Overall, the participants in the study felt that the program was well suited to their learning the topic.

The studies mentioned in this section all discussed the use of verbal protocols whether in problem solving or in learning new software. My study

analyzed the same type of data (verbal protocols) in an attempt to gain understanding of participants' experiences using CAI.

Researcher Observations

Observation allows a researcher to obtain a firsthand record of the phenomenon under study, as well as an opportunity to record behavior as it occurs (Merriam, 1998). While each participant was engaged in the tutorial, I took very detailed notes about his or her non-verbal behavior and noted any sections of the tutorial that might have caused an unusual reaction, such as the student indicating that something was very difficult to understand, or presented poorly. These notes included a pseudonym for the participant and the title of the tutorial chapter that was studied. Each observation was coded and analyzed with the transcribed protocols and interview transcripts.

Since each session was video-taped, later viewing of these tapes allowed me to observe behavior that I may have missed during the actual session. Since I was taking notes, certain behaviors, such as pointing to the screen, looking up at the ceiling while performing calculations, or sitting closer to the screen were not obvious to me. In addition, since the video camera was placed in a spot that was closer to the participant than I was, the video-tapes revealed facial expressions that I did not notice. Therefore, in addition to providing missed verbalizations, subsequent viewing of these video-tapes afforded me the opportunity to make a more thorough observation of each session.

Individual Interviews

Immediately after the tutorial session, I met with each participant to view portions of the video-tape of the session. I chose to conduct the interviews at this time to ensure that each participant would be able to discuss the experience while it was still fresh. The purpose of this exercise was to clarify any misunderstandings of particular verbalizations and to ascertain the individual student's thoughts about the experience. For example, if a student exhibited any unusual body language, such as looking away from the screen often, I took that opportunity to ask the student to explain why. If there was nothing unusual observed during the session, I asked the student questions, such as "Which sections of the tutorial did you find most helpful?" If the student provided a one-word answer, I then asked a probing question, such as "What do you remember most clearly?" I was careful not to ask two questions with one, and avoided questions that might be answered by simply stating, "yes" or "no." A transcript of an interview is included in Appendix J.

I transcribed the interview tapes and added those notes to the transcriptions of the verbalizations and the observation notes taken during the actual sessions. The transcripts of early interviews conducted after the first CAI session were studied carefully to enable me to form better questions for later interviews, conducted both after the first sessions with other students, and after the second CAI sessions.

The transcribed protocols of the tutorial sessions (two per participant), as well as my observation and interview notes, were coded and analyzed using the coding scheme shown in Appendix I. Coding refers to the process of assigning labels to information compiled during a study. Codes can be descriptive, interpretive, or pattern (Miles & Huberman, 1994). An early set of codes should follow the conceptual framework and research questions that drive the study (van Someren, 1994). The initial codes used in this study included descriptions of each participant, such as gender, GPA, learning style, and attitude toward computer scale score. These codes are known as base data. Codes describing how each participant performed the task, such as by reading material, summarizing concepts, calculating answers were added, as well as descriptions of non-verbal behavior. Later, codes relating to participants' perceptions of the experience, such as "the tutorial holds interest and provides real-world examples" were added as a result of comments made by the students during the interviews. Finally, codes describing the emergent themes, such as "we were engaged in the learning process" and "the tutorial exhibits social presence" were added during the analysis phase of my study. (See Appendix I for coding scheme). As I expected, the coding scheme expanded and became more complex as I performed observations and coded data. This process of coding and analysis of the transcriptions began soon after each session. According to Miles and Huberman (1994), early analysis allows the researcher

to not only think about the existing data, but also to consider ways to collect better data in future sessions.

Data Analysis

Data analysis is the process of making sense of the data (Merriam, 1998). The purpose of data analysis is to allow the researcher to present the data as descriptions and themes. To aid in this process, I employed the program QSR NUD*IST 4 (N4). This program is designed to assist qualitative researchers in analyzing unstructured data, by supporting processes of coding data in an index system. It allows a researcher to search for patterns in the textual data, construct and test theories, and generate reports about the data (QSR, 1997). N4 presents a hierarchy of nodes (a coding scheme) that I created that allowed me to retrieve all data relating to a particular topic, create new nodes during data analysis, and prepare memos and annotations that could also be coded for analysis. I entered the transcribed sources of data, also known as field notes (verbal protocols, researcher observations, logs, and interview notes) into N4 by student pseudonym and data source. This process provided me with printed reports of each participant's experiences and allowed me to compare them to each other and the results reported by other researchers by studying such characteristics as learning style. Once the data were coded for the attributes described above, I used the text search function of N4 to find text that contained nodes or characters specified by the coding scheme. Reports were then created that

displayed the text units (such as a line or a paragraph) that contained the item searched (such as a node or specific word). From these reports, I developed concepts and identified themes present in the data. These themes will be presented in Chapter V.

Presentation of Findings

I present the report of my research in Chapter IV and address the first research question: How do students engaged in CAI react to its challenges and opportunities? Although the chapter is quite lengthy, the volume is necessary to present a more complete picture of this project. According to Lofland (1974), 60% to 70% of a qualitative research report is events, anecdotes, and episodes. The eight profiles presented are the events and anecdotes that characterize those tutorial sessions. Using the multiple sources of data that I collected, I reported on the experiences of the students, providing thick descriptions of each tutorial session in the form of vignettes. Erickson (1986) describes a vignette as a particular description in which “the sights and sounds of what is being said and done are described in the natural sequence of their occurrence in real time” (p. 150-151). I believed that the best way to present these cases to the reader was to do so in the voices of the participants. Wolcott (2001) suggests that descriptive accounts of qualitative research be written in that voice. He notes that there is a preference for having the subjects render the narrative account in their own words. I accomplished this by using an emphasis in writing known as “emic,”

defined as “the local language, concepts, or ways of expression used by members in a particular group or setting to name their experience” (Schwandt, 1997).

The vignettes that are presented in Chapter IV are a combination of the think-aloud protocols and observation notes collected during the sessions, and the interview notes collected immediately after each tutorial session. The transcripts of the protocols provided the greatest amount of data represented in the vignettes. Using the exact words of the students’ protocol transcripts, I wrote the first version of each story. I then added non-verbal communication such as gestures, posture, and facial expressions, taken from my observation notes and continued viewing of the video-tapes where appropriate. Finally, answers to interview questions specifically related to particular times during the session or tutorial screens were added to complete the picture. The recursive nature of preparing the vignettes allowed me to “smooth out” the language provided by the protocols. What is important about presenting the data through the voice of the students is that I focused on exactly what was happening, which prevented me from interjecting any interpretation or opinion as to the behavior and reactions of the participants.

I continue the presentation of the data in Chapter V where I discuss the themes that emerged from my data analysis. The same data sources that were employed to develop the vignettes were further studied both before and after coding. It was during these exercises and also during the actual writing of the

vignettes that I developed the themes of: “Our primary learning styles fit our learning experience,” “We were engaged in the learning process,” “We could control our learning,” “We found the CAI to exhibit social presence,” “This is a good *supplemental* learning method,” “We became frustrated at times.” and “We had a positive learning experience.” Many quotes that were present in the interview transcripts provided the students’ viewpoints about these themes and are contained within the discussion of the themes.

Researcher Stance

I embarked on this research project with extensive experience in teaching financial accounting. I have taught this course for 17 years, both at the institution where the research was conducted and also at a large university in another state. Therefore, I am well versed in expectations from such a course, and have strong opinions as to how it can be taught effectively. I believe that undergraduate students should receive the best possible instruction, using as many different learning methods as possible. I have been very fortunate in my academic career to be able to integrate computers into many elements of my teaching. I teach accounting and corporate finance concepts almost exclusively using a combination of Microsoft PowerPoint© and Excel©. Outlines of my lecture notes are prepared using PowerPoint© and examples of accounting transactions and financial statements are presented using Excel©. Computers and projectors in the classrooms allow me to display this information to the

students. Additionally, for the past three years, I have taught all of the sections of a computer lab that accompanies the financial accounting course. In this lab, I teach the students to use Microsoft Excel© as a way to reinforce the concepts that are taught in class and also to provide them with a skill that is necessary for success in the workplace. Although I believe that this exposure is an essential element of any undergraduate curriculum, I was fully aware that I could not allow this belief to be transmitted to the participants at any time during the project.

I was very familiar with the CAI software used in this research project. I studied it carefully in preparation for this project and conversed with the author on several occasions. I chose this particular tutorial after evaluating several other packages and, therefore, was confident that it was well suited to the research project.

To prepare for this project, I completed the two classification instruments that I administered to the participants. My learning style is converger, the learning styles that emphasizes abstract conceptualization and active experimentation. As noted in the profiles, convergers prefer to deal with technical tasks and problems rather than interpersonal issues. Being an introvert and having an affinity to technical issues, I believe that this is a fair representation of me. My score on the CAS was 92. Since a 100 is the highest score that one can obtain on this instrument, 92 is indicative of a very positive attitude toward computers.

I was aware that in my role as researcher I had to refrain from conducting any conversation with the student engaged in the tutorial, other than to encourage verbalization. This was especially difficult when I noticed that the student was struggling with a journal entry (the method of recording an accounting transaction) or a concept because he or she did not remember the basic accounting rules learned at the beginning of the course. To prevent myself from interfering, I became more focused on the observation notes that I was taking, and this helped keep me quiet. While taking those notes, I was very careful to record only my observations during these sessions and not to interject my opinion of why the student might have reacted in a certain way. During the after-task interviews, I simply asked the student why he or she reacted at that particular time to avoid adding my interpretation of his or her reaction.

When coding and analyzing the data, I was open to adding new codes that might have emerged and eliminating codes that did not appear to apply. For example, I was able to delete the codes related to off-task behavior, as the students did not engage in such behavior. Finally, I attempted to report as accurately as possible the true experience of each student. It is my hope that each participant found this to be a valuable experience, not only from the point of view of learning accounting, but also in learning more about himself or herself as a student, and that this knowledge will enrich his or her remaining undergraduate education.

Trustworthiness

Trustworthiness is a system that a qualitative researcher employs to assure that the data presented reflect as closely as possible the experiences of the participants by preventing the biases of the researcher from entering into the study. Several activities can be used to attain this characteristic of a qualitative study. These include persistent observation, peer debriefing, unique case analysis, and member checking.

Persistent observation involves watching and recording the situation and reporting on issues on which the researcher becomes aware. I spent two 60-minute sessions with each student, recording as much of what I observed as possible, and viewed portions of the video-tapes of each session in interviews with the participants. These activities and the actual transcription of the notes provided me with a prolonged relationship with the data. During these sessions, I noted that student engagement with the tutorial, approval of the feedback provided by the tutorial and overall satisfaction with the learning method were themes that emerged.

Peer debriefing allows one to maintain credibility by sharing not only ideas, but also actual research results with others (Ely, 1996). I was a member of a support group of four doctoral students who were conducting qualitative research studies. We read each member's field logs and drafts of dissertation chapters and provided honest feedback about assumptions made and results reported. During the 1998-1999 and 1999-2000 academic years, I was also a

member of a NUD*IST software support group. A professor with extensive knowledge of this qualitative analysis software led this group. We discussed functional aspects of the program and assisted each other with coding schemes, discussion of method, and the best use of the program for each individual's research goals.

Unique case analysis is a process whereby qualitative researchers can test the validity of the themes that appeared to emerge during the data analysis phase. I reviewed my data to try to find instances where one individual's feeling about the tutorial process differed from those expressed by the rest of the participant group. For example, while most of the students felt that the feedback provided by the tutorial was extremely helpful because it encouraged them to reconsider incorrect answers, one participant felt that it was sarcastic and almost telling her that she was stupid. Another common reaction to the tutorial was for participants to simply glance at any information or data provided that related to actual corporations. However, one participant studied these data very carefully and indicated his interest in these companies.

Member checks allow a researcher to be confident that the presentation of the data accurately reflects the actual experience of the participants. I asked three participants to read the vignettes that described their experiences. Their comments assured me that the profiles that I had developed were a true portrayal of their experiences.

Human Subjects Considerations

Research studies that involve human subjects must be reviewed and approved by an institutional review board. This review is conducted to assure that no harm comes to the participants. The approval process begins with submission of an application that describes the research activity, subject selection and recruitment procedures, and measures to ensure confidentiality. In addition, the applicant submits copies of recruitment information, consent forms, and copies of any data collection instruments (in this case, the LSI, the CAS, and the demographic questionnaire) that would be distributed to participants. Once the Committee on Activities Involving Human Subjects reviews all of the submitted material, the members grant approval, or request that the candidate provide more information. Any research activity that involves the use of human subjects may not commence until final approval is granted.

Certain research activities conducted in educational settings may be exempt from full committee review. These activities include research conducted within normal educational practices in a common educational setting, such as a classroom, and research involving the use of educational tests and surveys where the researcher does not record identifying information. Since this research project involved collecting verbal data from students outside a normal classroom setting, I was ineligible to apply for an exemption from full committee review. I received approval from both Lafayette College and New York University.

The anonymity of the participants, a factor that is essential to the cooperation of the subjects, has been guaranteed by the following procedures:

- 1. Pseudonyms were used when referring to individual participants.**
- 2. The researcher will retain all instruments, transcripts, and tapes.**
- 3. All documents and other data will be kept for three years and then destroyed. (Rikard & Langley, 1995)**

CHAPTER IV

DATA PRESENTATION AND ANALYSIS: . PARTICIPANT PROFILES AND REACTIONS TO THE CD-ROM TUTORIAL AND COMPARISON OF EXPERIENCES TO THOSE REPORTED IN PRIOR STUDIES

Introduction

The first section of this chapter will provide an introduction to each of the eight participants in the study and a description of his or her experience with the tutorial as a learning method. The descriptions of the experiences will take the form of first-person vignettes, in which the experience is described in the voice of the student. The qualitative data presented in this section address the first research question: How do students engaged in a computerized accounting tutorial react to its challenges and opportunities? I attempted to answer this question by developing first-person vignettes, where I told the story of each student and his or her experience. Using the first person perspective, I was able to present the stories in the voices of the students. I employed a concept known as emic, as I felt that it was important for the students to tell their own stories.

Before writing these stories, I collected an extensive amount of data, including transcripts of the students' verbal protocols, observation notes, and interview transcripts. Once these data were imported into N4, reports were generated by participant, and according to the coding scheme. Intensive and recursive analysis of these reports enabled me to develop the individual profiles.

This analysis began by my transcribing the verbal protocols (approximately 16 hours), interview transcripts, and written observation notes. I then viewed the videotapes to ensure that the transcriptions were accurate. Once I had completed this process, I entered the documents into N4 and printed each document in that format –that is – with each line numbered. I read each document many times during the coding process. After the coding was completed, I studied the N4 output by code. Documents related to the individual students provided the raw data used in the vignettes.

In the second section of this chapter, I will compare the experiences of the eight students with those in the existing literature. I will attempt to answer the second research question: How does the experience of these students compare to the major explanations offered in the literature for student reaction to CAI (including learning styles, attitude toward computers, and social presence)? I attempted to answer this question by reporting on comparisons between the experiences of these students and those discussed in earlier studies. In addition to the data used to complete the first section of the chapter, I also studied the N4 output by code, following the coding scheme presented in Appendix I.

The tutorial sessions were conducted in an adjunct faculty office in the Center for Economics and Business at the college. The original structure was built in 1865 and housed the Biology department. In the early 1980s, an alumnus donated a very large sum of money to the college with the stipulation that a building devoted to the study of economics and business be constructed.

In 1986, the construction was completed and the building was renamed for the benefactor. The building consists of four traditional classrooms, one “smart” classroom (equipped for multimedia presentation of course material with a computer, document camera and a projection system), two seminar rooms, and one large lecture hall (also a “smart” classroom). During the summer after this study was conducted, the adjunct faculty office and an adjacent storage room were incorporated into a computer classroom/lab. Currently, classes in spreadsheet applications in accounting, as well as corporate finance and econometrics (use of regression analysis in economics) are taught in this room.

The office that was used for data collection for this study was approximately 15 feet square. I chose this location because I felt that it would afford the most privacy. It was located on a floor that housed only one classroom that was used much less frequently than the others in the building. Also, since the college has tried to limit the number of courses taught by adjunct faculty over the last two years, this office was often empty. It housed two desks, three bookshelves, and had become a depository for old computer equipment. There were two windows that faced west, and a blackboard on the southern wall. The Financial Accounting Tutorial 99© software was installed on to a Gateway 2000 computer equipped with a Gateway monitor and Hewlett Packard printer. During the second tutorial session, the participants were given a pencil and paper to perform the large number of mathematical calculations required by that chapter. This followed the nature of the subject matter presented by the two

chapters. Since the first chapter presented information on financing a corporation with equity (stock), it inherently was more informational. The second chapter that I chose introduced inventoriable costs (inclusion of asset depreciation in the cost of a manufactured item) and, therefore, required students to perform more calculations.

To observe and record each student's non-verbal behavior without being a distraction, I sat at the edge of the desk that housed the video camera. I was in back of the student (not directly), but close enough to answer questions (although I only answered questions that were necessary to allow for completion of the task). This location enabled me to observe facial expressions and other non-verbal behavior, as well as see the screen that the participant was currently viewing.

Participant Profiles

Demographic data, with descriptive information about each participant (identified by a pseudonym), appear below in Table 1:

Table 1
Demographic Data

| Name | GPA | Learning Style | CAS Score | Major | Age | Class |
|-------------|------------|-----------------------|------------------|--------------|------------|--------------|
| Allen | 3.08 | Diverger | 76 | Econ/Bus | 20 | Sophomore |
| John | 2.99 | Converger | 80 | AB Engg. | 21 | Junior |
| George | 2.68 | Accommodator | 75 | Econ/Bus | 19 | Sophomore |
| Steve | 3.90 | Converger | 83 | Econ/Bus-CS | 18 | Sophomore |
| Karen | 3.10 | Converger | 83 | Econ/Bus | 19 | Sophomore |
| Linda | 2.65 | Diverger | 67 | Econ/Bus | 20 | Sophomore |
| Kathy | 2.50 | Accommodator | 74 | Econ/Bus | 19 | Sophomore |
| Sharon | 3.11 | Assimilator | 92 | Math/Econ | 19 | Sophomore |

The participant group consisted of four males and four females enrolled in an introductory financial accounting class in the Spring, 2000 semester. Tutorial sessions were scheduled around participants' class and extra-curricular activity schedules. The participants were extremely cooperative during each phase of the study. They were all anxious to help me complete this project, even though they were not receiving extra credit for their time spent. Only one student forgot to attend a tutorial session, but this was rescheduled, and no time was lost.

Data for the demographic data table and profiles were obtained from the LSI, the CAS, a demographic questionnaire, as well as my field logs, which contained transcripts of their verbal protocols, notes taken during my observations of each session, and transcripts of post-session interviews with

each participant. I have included a description of each tutorial screen in Appendix H to aid the readers' understanding of what each student was learning.

Allen

Introduction

Allen was a 20-year-old sophomore Economics and Business major, the oldest of four sons and a member of the basketball team. Since he transferred from a college in New England at the beginning of the academic year, he was "red-shirted" or ineligible to play during the season. However, he practiced with the team every afternoon. Allen was eager to learn accounting through the tutorial and become part of the study. His learning style was that of a diverger, which means that his strengths lie with concrete experience and reflective observation. Allen's athletic interest is congruent with the interests of divergers (LSI scoring handbook). The semester after I collected the data for this study, Allen adopted a second major in English, due to his interest in writing.

Allen scored a 75 on the Computer Attitude Scale, which indicates a favorable attitude toward computers. However, since a score of 60 indicates a neutral attitude, his score should not be considered to be highly favorable. His grade point average was 3.08, which corresponds to an overall B average.

The Experience

Like anything, if you haven't worked on this stuff, the first time you work on it it's going to be challenging. You're going to have to go back and read a number of times. There's going to be a handful of problems that are going to throw you for a loop. Took me months to get my lay up down in basketball, so it's just new.
(OC – grinned broadly) (Allen first interview, 32-38)

Session one - So here I am ready to begin this study with Professor Handy. It's 9:00 am, and I'm glad that I had breakfast. As we walk down to the office we are talking about the basketball team, which is having an extraordinarily good year. I think that our team might actually make it to the NCAA tournament. So now I am sitting in front of the computer screen and as the program begins Professor Handy is telling me that I should say everything that comes into my mind. I begin by reading a screen that requires that I match items even before any material is presented. I can pretty much answer the questions out loud but I'm not really sure if retained earnings should be part of liabilities or owners' equity. My hunch is that owners' equity is the correct answer. It is. Good start. Now I am reading text about the formation of a corporation. The screen says that corporate laws differ across the states in the U.S. As I read this slide, I wonder how closely related the corporate laws are from one state to another. Obviously if it's much easier to start a firm in one state than another you'd probably find that most firms' charters would migrate or come from the state that had easier laws.

I read that Delaware is the favorite state for a firm to incorporate (screen #7) and house its headquarters. I am glad to see this information, and I'm thinking back to the earlier screen and comment that it's interesting. A couple of pages back I said that companies, corporations, or firms, whatever, might be attracted to one state or another based on the outlines of the charter, the laws, the restrictions or the different options. It says here that most US corporations start out in Delaware, ok; Delaware laws make it difficult to be taken over. That's really interesting!

I feel confident as I am answering the true-false questions on authorized and outstanding stock (screen #8). However, this third question is kind of confusing. Oh, this question goes against what I just said about shareholder rights. I think that I had better go back and read more carefully. I am just trying to get this in my head. I really like the screen with the diagram illustrating how stock is issued to the general public. The different colored arrows make the process very distinct and easy to understand. Whoa, this next screen (#12) contains a lot of technical information. The concept of no par stock is really throwing me for a loop. But as I read on a little more, it makes sense to me that just because a share of stock does not have an assigned par value, it still has to have a market value, because this is what trading is based on.

Now I have to prepare journal entries to record stock issuance transactions. This material must be very important, because this is a different kind of activity than what I've done up until now. I'm doing this very slowly

because I want to get all of the information into my head. The feedback is very helpful. I really like the box that pops up and says, “correct” or “try again.” I also like that this journal entry screen has a balancing feature (columns that increase in size as the proper accounts and amounts are placed into the entry). I learned at the very beginning of the semester that debits and credits have to equal, so this is very helpful. Now that the entry is complete, these columns are equal in size, and since they are presented in different colors, are easy to view.

I really like this process of learning using the tutorial. I have a slight background in stock, and I would have interpreted the term preferred stock to refer to preference as to voting rights (which it does not). The tutorial cleared that up for me. I also feel that the concept of different classes of stock is very interesting. I am reading through the material rather slowly, and I feel bad that I’m such a slow reader. I’m just trying to sort out the structure here. I often have to go back and read things more than once. But since I am reading this material carefully, these questions (screen #18) are easy and I can answer them quickly. The tutorial is asking whether every stockholder has to attend the annual stockholders’ meeting in order to vote. I am going to say false because it doesn’t make sense to me to make everyone travel, so other arrangements for voting must be necessary. As much as I like learning this way, I don’t think that this would work alone. What would be ideal is to have a lecture to go along with what is on the screen. That would be an ideal combination!

I also feel that it is very important to take this tutorial seriously. I do not like to answer questions incorrectly. However, I'm having trouble calculating the percentage of stock an individual would possess if he owned two shares of stock out of ten outstanding shares (screen #21). My gut reaction is 20% and the tutorial is telling me to "try again." I'm getting a little frustrated because I think this has to be the right answer. But, maybe I am doing something wrong and making an easy question difficult. I am going to ask for the correct answer. As I press the control and question mark keys, the tutorial displays the answer as "point two." It used a different expression for the same number than I did, so it was just a misunderstanding. I'm the type of person who wants to learn to the best of my ability, so I want to get it correct. There isn't anything wrong with how that was presented, that's just my personality.

This is interesting here - it says - you have the case of a company that takes a piece of a public corporation and makes it private and protects itself from the concept of proxy wars. And I'm just wondering if proxy wars are the same as hostile takeovers. And then again this goes back to state that states such as Delaware make it more difficult for firms incorporated there to be taken over by others. Therefore, eat whole idea of setting up your charter in a certain state clearly benefits all aspects of forming the company.

Now I have to answer a series of true-false questions about the payment of dividends (screen #24). I am trying to explain the logic that I am using to answer them. One of the questions asks whether or not dividends are an

expense. I know that they are a liability, and I think that an expense is a liability, because it has to be paid. However, according to the tutorial, dividends are not an expense. I'm not sure why. A lot of times the tutorial asks the questions before the material is discussed. As I read the next screen (#27), which illustrates the relationship between expenses and cash flows, I am getting a better handle on this. It explains how firms have to pay interest expense, but not dividends. This is a very colorful screen. I also really like the use of color. When I see something highlighted in color, I know it must be important.

I also like when the tutorial discusses actual corporations. I have read the certificate of incorporation of Kellogg's, a proxy statement from Ford, and an annual report talking about treasury stock for General Electric Corporation. I am spending spend a great deal of time on of these screens, because I like to know what is happening in the business world. Now I am studying a table (screen #28) that states that Microsoft Corporation had never paid dividends to its shareholders. This information really surprises me. It's interesting that shareholders are not promised dividends. I kind of knew that but I didn't realize that Microsoft, which is huge, has never paid dividends. I can see what they're saying if a company takes what it would pay out in dividends and reinvests it in other areas it would boost the stock price. So, in the end, if someone who invested in Microsoft was smart enough to realize that you would actually get more when you sell it, you can live without the dividends.

Here, I'm trying to match terms about dividends (slide #30.) This screen tells me who gets the dividend when the stock is sold after dividends are declared. It introduces two new terms, cum-dividend and ex-dividend. (OC – he sat back in the chair as he said that “ex-dividend” was a new term. Then he immediately sat forward in the chair, placed his head really close to the monitor, and searched the screen for the definition.) Oh, here are more journal entries (screen #31.) I don't have to fill these out myself, so I'm just reading them. These entries really explain how a dividend becomes a liability.

Wow, this is really helpful. This screen (#32) says, “Dividends are a transfer; they are not an expense.” It is another multi-colored diagram, and it shows how dividends are simply distributions of profits, not expenses. This really explains what I was confused about before. Ok, here is some more information (screen #33) that compares debt and equity as ways for a firm to raise funds. It gives the good and bad points of using debt. Now I also know the definition of “capital structure,” a term I've heard before, but I never knew its meaning.

Here is a new kind of problem to solve. This screen (#35) has a table that I have to complete. There are seven problems to solve. A firm has \$100 cash, no liabilities, and 10 shares of stock. It pays dividends of \$1 per share. So the price per share before the dividend should be \$100 divided by 10 shares or \$10. Good, that's right. What is the market value of the firm's equity before the dividend payment? Wow, I'm not sure. The correct answer is \$100. How do

they get that? There is \$100 cash, that I know, and no liabilities, that was given, too. Oh, use the accounting equation - assets minus liabilities equals equity. I'm making this more difficult than it is. (OC – he repeatedly pointed from the screen to his head and back to the screen while he was stating the concepts and calculating the answers.) This is great, they show the answers to the table in the form of a diagram. They have boxes for the firm's assets and equity before and after the dividend payment. There are also two boxes that show the shareholder's investment before and after the dividend. Once again, the use of color is excellent.

Now this is really interesting. This slide (#37) says that dividends provide a signal to the market. If the market interprets the dividend as a sign of the firm's confidence in its future, the stock price can go up. I think this is fascinating!

Now it looks like I have to switch gears. I am now reading about stock repurchases, known as treasury stock. It gives five reasons why a firm might buy back its stock, such as for executive bonuses and takeover prevention. This General Electric annual report is interesting. It shows how much treasury stock GE bought and sold from 1996 to 1998. I really like these real-world examples. This next slide (#42) says that firms can buy back shares of stock instead of paying dividends. I'm answering a few questions about cash paid to shareholders as dividends or from a stock repurchase. Those are pretty straightforward. Ok, another journal entry. This really helps me understand the

material. A firm buys back 10 shares at \$4 each. Again I just drag the account names and dollar amounts into the box. If I'm right, everything sticks where I put it. I like to know right away if I'm getting this straight.

Ok, so here are some questions about re-selling the treasury stock, one situation at a higher price and one at a lower one. So the first question asks if the company would include contributions by owners and distributions to owners in its income. Dividends never show up on the income statement so I would say no. Correct. Would accountants book a profit if the shares are sold at a higher price? I'm going to say no again because when they buy the stock it doesn't affect income, so I'd guess that the resale doesn't either. Also correct. I'm thinking the same for the third question, about booking a loss on the resale, and that's right too. I like how these questions go together because they really follow the sequence of the reading. The good organization and progression of these questions makes them like stepping stones, following the organization of the material. I think it makes the material easier to learn when the questions are organized this way. So, when they are showing the journal entries on the next two screens (#48 & 49) they continue with that sequence of reissue price less than repurchase price and then reissue price greater than repurchase price. I also like how the text emphasizes how retained earnings is not affected by these transactions. (OC – As he was going through the treasury stock section, Allen answered the questions out loud by pointing to the individual question, and, to illustrate the repurchase of the stock, gestured by placing his hands together near

the screen and then moving them close to his body. When he explained how the price per share increased, he placed his hands together in front of his face as he said that the share price was \$9, and then began moving his left hand up higher as he said that the price had risen to \$10 per share. As he answered a question related to the resale of treasury shares, he was describing his thought process by moving his hands together, almost in a jumping motion, and then rolling them together, as a basketball referee would do to signal “traveling.”)

Since I was told to skip the screens relating to treasury stock retirement, I’m now at the section on stock dividends and splits. So they are saying here if the stock splits you might think that you are getting more. What is really the case is that your value is going to stay the same because when it splits, the number of shares increases, but your price per share decreases by the same amount, so you’re going to be in the same boat as before.

So now I have to work on another table (screen #57). I guessed I must have gotten quiet, because Professor Handy is saying “talk!” I’m just trying to do the math for this, if I have \$120 in cash, and 100 shares, how much is each share worth? I’m not sure, I’ll say \$10. No, it says “try again.” The correct answer is \$12. I should have gone with my gut instinct. What about this one? $20\% \times 2$ - wow, I’m not sure - I’m probably making this harder than it is. Hmm, I’m just going to fill in what I can first. The firm gives a 20% stock dividend, so for every 10 shares it gives 10 additional shares. NO, this is throwing me off, this math is getting me messed up. I’m not sure, maybe I’m reading into this too

much. The firm gives 2 shares, oh for every 10 shares. I was thinking that each of those 10 shares you get 2 additional ones - so like for the first one you'd get 2 see what I mean? So 10 and 2 would be 20. There's only 10 shares and the price was 12, ok so it's opposite, you have to keep the value the same. That was much easier than I made it out to be.

Oops, here is a 2 for 1 stock split, not another stock dividend, so in exchange it gives 20 since you had 10 shares. Ok, it was just exactly what it said, 10 shares for 20. It still has to come out, the whole ball of wax still has to come out to the same value. I looked at that 12 and said ok, for every 10 shares you get two additional shares. So I looked at that 12 and said, well you know that you have 10 shares within that 12 so you're at 12 now plus you have that 2 - 10 + 2 you have the two that you didn't do anything with so I thought 14 and I got it wrong.

This table comparing stock dividends and splits (screen #63) is good. It seems to give every possibility and explains the effect on par value, retained earnings and total owners' equity. This is very informative.

Ok, here is another new section called understanding retained earnings. Some of this stuff I remember from a few pages back. You know, I really like when you get a question wrong that the explanation pops up and it said "really, what about stock dividends?" It makes you think about your wrong answers.

Wow, it looks like I'm done. That was a lot of good information. I can even use it outside of accounting class, I'll bet. I'm really glad that I did this, as

I think this is a very interesting way to learn material. You know, being an economics and business major, when you look at business in general you are talking about dividends, stocks, bonds, and all the thing that go with them. This is stuff I'll be applying to my everyday world pretty soon.

I think it was definitely presented well. This is new to all of us. I guess I'm not looking for the easy way out because this is challenging information and you can get frustrated. I had an idea of the numbers to use but I wasn't sure how to formulate them (OC - points to the screen). Take this, divide by this. It's just good that you click on the arrow and it did show you how they did it. If they just left it as here are the answers - some books do that like they'll just leave you the answers to the problems. It's just that I'm sure you've come across books and it gave you the answer and that's it. The bottom line is that I like that. They let you take a stab at the information you know is challenging and in the end they lay it out for you. (Allen first interview, 6-20)

I also think that the tutorial did a great job of presenting the information:

I would say that the order would be rated at an eight and one half to nine. I can remember there was one screen in which it had the questions match the information. What I liked was it had the questions and they were like stepping stones to the information, they correlated very well. Like the first question wasn't for the last part of information that was presented. It went in a stepping stone which let you kind of picture the screens in your mind and place the information in the questions. So you were able to say, OK, the first part of the information will kind of go with this part of the question. It helped you recall the right information" (Allen first interview, 28-42).

Even though I did have some difficulty at time when I had to solve the problems, that didn't have anything to do with how the material was presented.

Well, obviously for me, I've always been the type of person, I have to go back and look at things and that's why I did like the pace because you could go back. I would say, I mean some of the questions I found challenging, some of the other questions, some of the true and false that I knew right away. Again, because the information was clearly stated in relation to the question, but I did find some of the answers definitely challenging where I'd have to go back numerous times and even with that because it's new information, new material I still had some incorrect answers. So definitely it was challenging. (Allen first interview, 50-63).

Session two - So now I'm back at the computer. It's Wednesday afternoon, and it is really nice out. As soon as I'm done here, I have to run to practice. I hope I get time to eat lunch first. I begin by reading about a business named FotoShop. The owner invests \$220, and uses the cash to buy 100 rolls of film for \$200, and a machine to process the film for \$20. The machine can only process 100 rolls of film. I guess that's why it only cost \$20! Then on the next screen (#2), I'm looking at a series of questions relating to the costs that should be considered when processing a roll of film (illustrating the compilation of costs in the manufacturing process). Some of the answers were provided on the first screen, and I guess the others I'll have to figure out on my own. It's very natural just to click back and forth between these two screens. I also really like the fact that everything is at eye level and is very accessible. I can just go back and get the information I need to answer the questions on screen #2. (OC – always checked for the data, rather than relying on his memory.) The first asks

the cost of the machine, which is \$20. The second one asks how many rolls the machine can process. That's easy, the last screen said 100. Now, what is the cost of processing a roll of film? Do I have to do a mathematical calculation or something? I look to Professor Handy, but she isn't answering my question. If the machine to process the film cost \$20, and it can only process 100 rolls of film, then it must cost 20 over 100 or point two to process each roll. I'm correct? Wow!

Oh boy, I'm having a difficult time with this next question. The tutorial wants me to calculate the final cost of a processed roll of film. I have put in three answers already, and they are all wrong. I just don't know what they are looking for! I'm trying to do this math. It's not complicated math, but I just don't know where these numbers are coming from. I am getting really concerned about all of these wrong answers. I am going to ask for the answer. Two point two. I'm not sure where that came from at all.

Now the next question asked for the total cost of processing 40 rolls. I'm not sure how to even begin to figure this out. This is not good! I know that it has to be easy math, but I don't know which numbers to use. I feel like I'm throwing myself into a spiral. I wonder if there is somewhere that I can look at the mathematical equations. Sometimes the answers were on the next screen in the last tutorial chapter. I think that I am going to click forward to the next screen. Surprisingly, equations are provided for each question. I didn't know that these answers were available, but I felt as if I had to search them out. Now

that I have reviewed these equations, I think that I am more confident and can answer the questions. I have some paper to do the math. I am really glad that I found those equations, because I just didn't realize that I needed to include the actual cost of buying the film, as well as the processing cost. If I don't get this concept down, I probably won't be able to answer a lot of the questions in this section. Total cost of rolls processed on day one. That's not too bad, now that I know the cost of one processed roll. It would be 40 rolls times \$2.20 or \$88. Correct, good.

Oh, boy, I'm still having some trouble with these problems. I'm going to ask the tutorial to give me some of the answers. I really don't like to do this, because I think that I should be able to get these answers on my own. Now that I see the correct answer, I can talk about it. I think I now understand the process that I should have taken to arrive at those answers.

Now I'm just reading through each one to try to implant in my head the process of figuring out these numbers. So 60 rolls processed on the second day times point two gives you 12, the cost of processing the rolls on the second day. And then the total cost of processed rolls is 60 times two point two, which we get because we add the machine cost. All right, I think this is helping me to understand the concepts a little better.

I'm finally finished with those questions! I know that the math wasn't incredible equations, but just because it was new I didn't know what to multiply or divide, and that was frustrating.

Now I am reading about treating depreciation as an inventorial cost (screen #5). I wasn't sure what that meant before, but this is beginning to make sense to me now. Firms do this in order to make their expenses match better with what is actually sold. Screen #6 has a great diagram that shows how the different kinds of inventory are related. It highlights the three inventories and has arrows drawn to let you follow the progression of the system.

Good, I like journal entries (screens #7 & 8). These I don't have to do myself, but I can study them. These two screens give all of the journal entries that would occur when the firm buys the machine and the film, and then places the film through the production process. Oh, now I have to do an entry on my own (screen #9). This one asks what should be recorded when the firm processes 40 rolls of film, and therefore depreciates part of the cost of the machine. I learned that you always debit depreciation expense and credit accumulated depreciation. But, depreciation expense won't stick, which means that it's not right. Work in process fits, but that doesn't make sense to me. I'm going back and read again. Oh, yeah, this is treating the depreciation as part of the cost of processing the film. I can't believe I forgot that already. The next few screens have more entries for me to complete. I'm getting them right, so I must be starting to understand this stuff now.

Another good thing about this tutorial is that you don't have to do everything in order. I'm trying to fill-in a table (screen #13) using all of the inventory numbers that I calculated before. I think that it's good that I can skip

over questions that I can't answer, and then use the answers from the other questions to find the missing ones. Ok - it is right here I'm answering it. Work in process, it said back a few screens \$200 plus something. It is different because we have the input due to depreciation being treated as an inventoriable cost. I'm just trying to do the math and back this up with intuition. I guess what they're saying here is that you're going to get materials and work with them, and they you are going to get an output. I'm just thinking of what I read and trying to make sense of this. So \$200 of input plus \$8 for the input due to depreciation being treated as an inventoriable cost. That works, so now I have to get the ending balance. I know this is 120. Oops I tried to put the number in the finished goods box. The program said, "try again!" I put it in the proper box, and now I can go on to finished goods. We had no goods at the beginning which it states there, now we had 88 as your inputs with this work in process equation here, outflows were 55, that's the cost of the 25 processed rolls that were sold.

The posting entry screen (#14) seems to be pretty straightforward. It just takes the various entries and puts them into the proper accounts. This unadjusted trial balance on the next screen shouldn't be a problem for me to do either. I'll just refer back to the balances on the last screen and drag the amounts into the box as if I were doing the journal entries.

Screen #18 shows the financial statements at the end of day 1. This is easy, also, as they sold 25 rolls of film and didn't have any expenses other than cost of goods sold. Wow, review of machine's use. It looks like the same

questions all over again. I can see what they are trying to do here, they are putting it all together. I can flip back and forth if I need to, it's really easy with the arrows and the mouse. Number of rolls sold on day 1, I think it was 40. Nope, try again. (OC – sits back in chair when he gets answers wrong.) Let's go back and look. Oh, they SOLD 25 rolls, but 40 was how many they processed. (OC – points to screen often.) Depreciation expense on day 1. I seem to remember that it was \$8. Nope, wrong again. It says the answer is \$5. Where did that come from? It works out to be the 25 rolls sold times point two depreciation per roll. I'm still not sure why it's that. To be very honest with you, I just don't have a very good hold on this material right now. I think the depreciation is throwing me off more than anything. It's simple math, but when I'm trying to connect it to the intuition, I get messed up. (OC – his eyes were very close to screen at this point).

All right. Screen #22 wants me to do a journal entry for when the 60 rolls are processed on day two. I'm going to go back and look at the same entry for day one. Ok, debit work-in-process for 60 times point two or 12, and credit accumulated depreciation for the same amount. Good, I got something right! Now I have to do the entry to transfer those 60 rolls to finished goods. Finished goods is an asset, and work in process is an asset, so I'll just increase one asset and decrease another. Right again, I'm on a roll! 75 rolls are sold on day two. Lets get rid of the inventory, and increase cost of goods sold. Good. Screen #25

has the answers to the entries. But since my answers stuck, I know they are correct.

Here is the unadjusted trial balance at the end of day two. Since I did the same thing for day one, I guess I just have to review this one. Finally, closing entries and financial statements. They are also done for me, but I'm just going to go through them. I like the color differences; again I know when I've come to important material. That's it? Wow, that went fast.

Overall, I believe that this was a very positive learning experience. I really felt like I was communicating with the computer as I was going along:

I think this is good also because you're on your own but you have the computer helping you with the feedback (OC – points to the computer) when it gives you the answers, it doesn't leave you. It's not like homework where you go home, read the chapter on your own and do the problems and then you're kind of stuck. It's almost like the computer is acting like the professor in a way. (Allen second interview, lines 103-110)

The feedback was very helpful, as I knew immediately if I had the right answer; and if I was stuck, I could get a hint on how to keep going:

That goes back to how it was presented. I think that would go hand in hand. It was presented well and the feedback being it shows you. I really like when it says 'try again.' You can check you know when I got stuck sitting here without any outlet and try to work through it especially with the information being new. I know students try to work through it. You have to have some kind of outlet and the feedback being that you can go and click the arrow and it will lay out the equation for you and it will give you the answer and it will explain the answer. A lot of times with these screens where you have the question and it had the answer right at the bottom and even though it

would be easy to look at the answer I think that's your preference. You know some people I actually believe when information is new sometimes it's all right to look at the answers, look at the questions at the same time because you have two different angles. You have the questions and the answers and you can really try to look at it and try to really get it in your head, you know what I mean instead of completely not knowing any clue about the answers (Allen second interview, 42-63).

George

Introduction

George was a 19 year old Economics and Business major. His learning style was accommodator, which combines concrete experience and active experimentation. His score on the CAS was 75, which indicates an overall favorable attitude toward computers, but closer to neutral (score of 60) than most favorable (score of 100). His grade point average was 2.68.

The Experience

I feel that this was definitely a meaningful learning experience. This was a different way than I've ever learned before. And I wouldn't mind doing it again. I thought it was interesting and new, and made me want to stick to it and see what came next, especially when I was solving all the different examples and questions and the different ways to answer the questions. I wanted to go ahead and find something new and look for more stuff. (George first interview, 51-60)

Session one - So, since I'm beginning this session right after another student, everything is ready to go. The tutorial is already loaded onto the computer. Professor Handy reminded me of what I'm supposed to do. That is, say out loud any and all thoughts that come into my mind as I am doing these tutorial screens. I don't have much to say about this right off the bat, I feel that is very one-to-one, it is very personal. I can't discuss this, it could be negative. I'm not a reading person, I'm a talking type.

However, I like the feedback that the tutorial gives me. When I answer a true-false question or a multiple choice question incorrectly, a small box appears on the screen and says, "try again," or "really, what about..." If my answer is right, it says, "correct." This is much better than reading a textbook, because the textbook doesn't help me out like this. It is also very helpful that the matching columns and the journal entries can't be completed if I'm wrong. I have to keep trying to get the right answers. Therefore, I know immediately if I have to re-think my answer. If I were preparing the same type of entry on paper, I wouldn't know if it is correct or not until the next class. I think this is a great feature of the tutorial!

Another thing that I like is the fact that you can control your speed and the direction. I like to be able to go back to things:

You didn't have to follow any speed, you could slow down.
I actually read a few things more than once. I didn't feel pressure to finish. I wanted to read it and make sure I understood it first.
(George first interview, 33-36)

Now I am looking at a diagram describing an IPO (screen #18). It is very colorful and easier to follow than my textbook. It gets to the point and doesn't overwhelm me with a lot of useless information. The illustration of the process of issuing shares is really good, too. I like the fact that it's like a map that leads me through this process with arrows going from the firm issuing shares to the investment banks to the investing public.

I think that the pictures, especially the cartoons, will help me remember important points. For example, the cartoon of the two guys engaged in battle will help me remember the concept of proxy wars, an attempt to gain control of a corporation by soliciting a sufficient number of stockholder votes to replace existing management (screen #20). Also, I'll never forget the difference between preferred and common stock since it was compared to the House of Lords and the House of Commons, using an image of the British Parliament building. These pictures also give me a break from reading and answering questions. I'm glad that the program provides a few questions between text passages, it breaks up the monotony of reading.

Hmm. On this screen (#21) I'm having trouble answering some of these questions about the right of existing stockholders to purchase additional shares of stock. I'm really glad that this tutorial gives me the answers if I get stuck. All I have to do is press the control and question mark keys, and help appears! This way I don't have to spin wheels in my head trying to come up with the answer. You know, even though I'm having some trouble with the questions, I

think I am really learning a lot from this tutorial. Material that seems important is shown in bold type or in different colors. I look at that more carefully than some of the other text and I think I will remember that information.

On slide #24 I am looking at questions that compare interest and dividend payments. They are easy questions for me to answer. I like the title: "Guess the answers." I suppose the authors have a sense of humor. What's really funny is that only after I answered the questions did I see the answers on the bottom of the screen. See, I didn't even cheat. I didn't see them down there!

Oh, this next screen has ten more questions that I have to guess on. Now that I know the answers are at the bottom, it is kind of annoying. It's too easy for me to look down and not think about the answer.

Wow, this next screen is confusing (screen #26). The tutorial says that it is going to explain three things, but then there are only two pictures. I'm not going to pay that much attention to this. I'm also not sure that this graph about Microsoft's policy of not paying dividends (screen #28) is really necessary, although it does show how the stock price has risen from near zero to about \$140 in fifteen years.

I'm now looking at slide #31. I like how they mix up the reading with other things, like these journal entries. This makes me want to keep going, to find out what's next. I'm also going to remember what is in these journal entries, because dragging down the account names and dollar amounts is like taking notes in class. I think that these examples will help me remember these

facts more than by simply reading the information. Oh, no, I can't get this part of the journal entry. I'm trying to make additional paid-in capital go into the liabilities section, and it just refuses. Why isn't this going anywhere?

This next diagram on dividends (screen #32) is not so easy to follow. I'm not even sure whether I should go from left to right or from top to bottom. Anyway, the screen colors kind of jumped out at me, so I'll concentrate on that highlighted information. It describes that dividends are not an expense to a corporation, as is interest, which figures into profit before taxes. At this point, however, I'm not really sure what the involvement of the taxing authorities is.

I have now moved to slide #35. Here I have to answer some more questions in a table about dividends, and their effect on the investor. The price per share before the dividend payment is \$10 and the total firm market value before the dividend payment is \$100. These are easy answers to get, because they're given. Calculating the shareholder's wealth before the dividend payment is not so easy. I'm glad that I can ask for the answer if I need it, because I really have no idea how to calculate this. The price per share after the dividend payment must be \$9, although just because I'm right doesn't mean that I understand it. I think that when I go to the next page it will answer my questions. This last question is confusing, too. I understand that the investor's equity is supposed to be equal before and after the dividend payment, I really wasn't looking at it that way. I know that when I'm reading this that it's not all sinking in right now. I would definitely have to go through this two times,

especially the reading part. It takes me a while to learn that way. Either that or I would have to discuss it with somebody to make it easier to understand.

Slide #36 presents another diagram about dividends. Once again the bold gets my attention. Anything to bring me down. I would definitely read it more carefully. This next section of text is really long (slide #37 and #38). I begin to lose interest after a little while; it's getting very similar to the other stuff. I might not want to read it, I actually find myself just skimming more now, and then I have to go back to read. I tend to do that a lot though, when it gets repetitive or long-winded. This isn't long-winded, but when things get long I just try to move ahead, using the mouse to keep me focused at one point instead of just skimming.

Now the tutorial is talking about corporations buying back their stock. It is called treasury stock. The first table (screen #41) is a listing of General Electric's treasury stock. I'm not too interested in that, so I'm moving on. The text is pretty easy to read. Now I have to answer some questions about stock repurchases. The firm has \$100 cash, and 10 shares held by just one shareholder. The firm pays dividends per share of \$1. So, the shareholder will get \$10 cash as dividends. If the firm repurchases one share instead of paying dividends, the shareholder will still get \$10. That makes sense. What is the number of outstanding shares after the firm pays a cash dividend and after the firm repurchases one share? Wow, I just guessed at that. I don't know how

I got that one right. I think I like to put numbers in a table more than matching and multiple choice. The answer's not just right there. You actually have to think about it. It takes a while to guess if you don't know

This next page talks about taxes and says that it can be skipped without any loss of continuity. I don't notice anything big about this. Things that are optional don't happen for me, it's real easy that way. So, I'll just go on to the slide (#44) on accounting for treasury stock. I can answer these questions; they are pretty easy. Treasury stock is subtracted from total equity; therefore it is called a "contra-equity" account. I never heard of that. Here is another journal entry (slide #45) that I have to do. I like this form where you do the debit and credit, plus you actually move it, which hopefully I can do. If you put it in the wrong spot it doesn't actually work. I also like this because it is just like writing notes down.

These next entries are already done for you (slides #48-49). They talk about when the firm sells the treasury stock again. The difference between the cash received and the cost of the stock is paid-in capital. It took me until the bottom part of the screen where there's actual numbers and things to understand this concept rather than it reading it in simple words. It's just a different way that I learn.

I am pretty comfortable with the information on treasury stock. The next section is on stock dividends and stock splits. Screen #55 has a picture of someone cutting up a watermelon into several pieces. It illustrates splitting the

stock. I don't really see anything interesting about McDonald's stock splits (screen #56), and it doesn't really explain anything. Ok, another table (slide #57). A firm has \$120 in cash, and 10 shares of stock. What is the market value of the shares, the number of shares, and the price per share originally, after a 20% stock dividend, and after a 2 for 1 stock split? This isn't too bad. After a 20% dividend, the number of shares and the market value of the shares has to change. I can get into this and figure it out. This is helpful. If I get the answer wrong, it lets me know right away. That is good for me.

The last section is on retained earnings. This equation on screen #65 is good, beginning retained earnings plus net income minus dividends equals ending retained earnings. I can remember this. I also like how the next slide numbered the items that can change retained earnings. It is set up well, and it doesn't jump around. Now there are questions to answer again, this time about distributions to shareholders (screen #67). This is good, because questions help me put some of this information into long-term memory. Wow, I'm finished. I think that I really learned a lot from this. I really had to pay attention if I was going to get the problems right:

They weren't very easy but they took a little thinking. In the very beginning when the problems came up I got more wrong but I think I wasn't paying attention to them as much, but by the end of the lesson, I understood that this was part of the lesson, and I started to focus on them more. Then I started to get more right. (George first interview, 38-46).

Session two - I hope this chapter is as good as the first one was. In fact, I even went to see Professor Handy and tell her how much that last chapter helped me on the exam. I know that I improved my semester grade after doing that last tutorial. The only problem that I see with doing this today is that the weather is excellent outside, and I really don't feel like being in this basement this afternoon.

So, I start by reading a screen that gives a lot of information about some business named FotoShop. As I look at the next screen (#2), I see that I have to answer a lot of questions. I'm kind of confused with this first one. I don't know whether it's the same page. Already I'm getting a little annoyed. It's a bit strange not having the information right there, and having to move back and forth to find the information and then answer the question.

The cost of the machine was listed on the last screen, and it was \$20. Cost of processing a roll. How am I supposed to figure that one out? Going back and forth is a lot tougher, in fact it's really annoying. I'm getting kind of frustrated now. I don't really want to have to keep flipping between these screens. I have no clue what the cost of processing a roll is. I'm just going to ask for the answer. Point two, how did they get that?

I just want to pass this by, it's not that interesting and I don't want to keep going back and forth, because it's not really helping me out right now (OC – appears to be just pushing keys on the computer). All right, total cost of a processed roll of film. What's the answer? \$2.20? I don't like how it starts at

the top of the screen, every time you have to flip back and forth. The price of rolls processed is, the same as the other one, nope, two. I'm not really a fan of this section right now, I'd rather try to figure it out. If I was doing this I wouldn't even bother. Oh, on the next page, good thing, they show you the equations, that makes it easier to understand. Now I can look at everything and try to figure out how it goes.

Let's get back to some actual reading. The machine's depreciation is being treated as a period cost. This is going to be easier to do. Acquisition cost is \$20, and since 40% is used up on day one, depreciation for day one is \$8. but they only sold 25 rolls on day one when they processed 40. So they are saying that the owner shouldn't bear the cost of all of the processed rolls when only some of them are sold. That's why treating depreciation as a period cost understates the inventory and the income. Depreciation of manufacturing assets is treated as an inventoriable cost? I'm not sure why it is saying that. I usually would just skim over this stuff at the top and note the bolder blue stuff since that probably is the main point. I hope it is so I don't have to read as much (OC – laughed).

Oh, good, a diagram. I liked these in the first chapter. This one talks about how costs go through the manufacturing process. I like this chart. It has a good flow to it. I like being able to use a mouse to underline when I read to make sure I'm catching every word.

Here are some journal entries that show the difference between accounting for depreciation as a period or a product cost. In one case depreciation goes into inventory, and in the other depreciation goes right in to expense. Now I see it. The next journal entries don't seem to want me to do anything. I'm looking for something to answer, but I guess not. Ok, now I can do this entry. I remember these from the last chapter, also. I have to drag the titles and the dollar amounts with the mouse. Ok, I'm just trying to figure out where everything goes here. Hmm, depreciation expense is what. Accumulated depreciation is a credit, debit - ok - depreciation expense is not going in - work in process is an asset and that stays, so I guess it is right. Put the eight down, and debit and credit are equal.

When the debits and credits equal, there are two bars on the right of the screen that become the same height. It makes it easy to see that you finished the entry. For the next entry I have to know what the total cost of 40 processed rolls is. Total cost of 40 processed rolls, um, 40 rolls of film. I have no clue. I just don't remember. I still have questions so far from that other stuff. It's kind of a pain. I'm not even going to guess. I wonder if there's a way to, is there an answer? Oh, that's right, because I had no idea how to do that. Right now, I'm trying to think to myself how to get total cost but I can't think of the numbers or anything, so let's see, finished goods go in assets as debits, and work in process is credited, YES! These other things I don't think do anything.

Now I have to do the journal entry to record the sale of 25 rolls of film. I'm still not looking back, so I don't know the cost of the film sold. I see \$55 at the bottom, so I'll guess that. I'm right. So for the entry, finished goods is an asset, and cost of goods sold is an expense. Which one do I debit and which do I credit? Now I remember. Credit assets to make them smaller.

Another table to do. I guess I'm up for it. Inventory balances at the end of day one (screen #13). This should be ok. I have to figure out the beginning balances, inputs/outputs, and ending balances for raw materials, work in process, and finished goods. The beginning balance of raw material is, ok, we are just looking right now below the table, and putting in the answers. I guess the answers are right below. I'm trying to understand why but I'm not really, unless it said something I missed but I don't think it did. Ending balance is zero. \$200 input plus the input for depreciation, so 208? Ok, I actually like this on the bottom here, it gives you the numbers and you can keep adding and keep looking at it. Ending balance is zero again, inputs are 88 minus cost of processed rolls.

The next screen (#14) shows how the journal entries were posted. This format is not very easy to follow. You see, I don't like when information is not grouped together. I think the t-accounts should be shown right next to the entries. Actually I don't know if you can actually do that but other than just having them on separate screens and keep flipping back to understand. If you are real lazy like myself you just look over and say ok, it's fine.

Now I have to take those numbers from the t-accounts and prepare a trial balance. It's much better to have to complete the charts yourself than just review what the screens give you. I have to flip back here, but it's only one page, so that's not so bad. If I put in all the account names first that should be easier. I should know where they belong, we did this in the first week of the semester. Now I'll just look back and get the amounts. I think I might understand this now. I was really having trouble in the beginning. Now there are more t-accounts, and they have the dollar amounts in the opposite places. This is very confusing. What is this income summary? I don't know what that is! It looks like income and expenses go to this income summary, and then that goes to cost of goods sold. Ok, that makes sense now.

Now I'm up to the trial balance after closing (screen #18). This shows the income statement, which is revenue less expenses. That's the same number that went into income summary and retained earnings. Now it is really falling into place.

Oh no, another table like the one in the beginning. I can't believe I have to answer these same questions again! Cost of the machine, I think it was \$20. Correct, good. Number of rolls that the machine can process. I have no clue (OC – asked for answer). 100 rolls, I forgot. Cost of processing rolls is \$5. It's down the bottom. I'm not really doing this stuff in my head, I'm just looking on the bottom now, I guess I'm cheating. Number of rolls processed on day two, 18? No, number of rolls sold was 75. I have no idea. (OC – asked for answer). It

says that the answer is 60, I don't know where these numbers came from, I guess way back. Depreciation on day two is 12. Number of rolls sold is 75. Cost of processing rolls is 15, ok. I guess the first two first were giving information and the rest you have to figure out by yourself.

Now I have to do some more journal entries. I really like to do them. It helps me to remember this stuff better. This one isn't so easy, though. I'm just trying to get something down on the screen without having any idea where it really belongs. I can't cheat, because they don't show the answers for this. Prepare the entry when rolls are transferred to finished goods. I can follow this one much easier. Debit finished goods, and credit work in process. Now for the amount. I think that 10 is too small. What about 150? No, it won't stick. Which one will? Oh, it must be 132. It is the only one left! When 75 rolls are sold on day two, debit cost of goods sold and credit finished goods. I'm not having any luck. My head's fried! Now they are showing the answers to journal entries (screen #25). I should have gone back to the beginning to get these numbers. It seems like a very different chapter. It's strange how it was set up. It didn't really make it part of your head - it didn't seem like it taught you. It's all examples - it's all like doing your own work. The other chapter told you exactly what to do, because the questions were intermingled. This one was really confusing! I think that's why I'm having so much trouble. I'm just giving up after a while. I'm glad that this one is over, I don't think I could do anymore.

Overall, I still liked learning this way, even though this chapter caused me some problems and frustration:

Not a lot of information was given until the end. This was more problem based. It was not as good as the stock chapter. That taught the problems.” “There was less reading, but it was less informative. Different types of problems are better.” (George second interview, 4-6, 33-34)

Steve

Introduction

Steve was the youngest of the eight participants, having just turned 18, and is an international student. He is an extremely polite individual. In fact, he begins most sentences with “Sir” or “Ma’am” when he is speaking to a member of the faculty. When he enrolled at the college, he had already completed enough advanced placement credits in high school to be granted sophomore status. He graduated from a five-year high school program in three and one half years. Steve was working on a double major in Computer Science and Economics and Business, and earned a 3.9 grade point average, the highest in the participant group. He scored an 83 on the CAS, the second highest score of the group (tied with another student).

Although I did not know at the time that I chose the group, his computer background was very different from that of the other participants. During the second interview, I asked him if he had anything to point out about himself. His

response surprised me in light of the fact that he was extremely adept at the computer:

Well, when I was living at home before coming here to college, I hardly ever used computers. Use of computers at home was just not much. I couldn't even e-mail colleges. My friend would set up the e-mail, I would type the message, and he would send it for me. Now I can write a program in Java. This is after one computer science course. I think the general atmosphere about using computers here is what got me going. I also work at SOS, the computer help desk, so I learned a lot there. (Steve first interview 136-145)

His responses to the LSI classify him as a converger. The strengths of this learning style include problem solving, deductive reasoning, and task accomplishment.

The Experience

Session one - I just finished a 75-minute class that began at 8:00AM. I know that I shouldn't be yawning so much, but I just can't help it and I keep apologizing. I have a bottle of water, and I'm ready to begin. Professor Handy just reminded me that I should say everything that I think of and told me that if I became too quiet, she would prompt me to talk. I say, "that's fine Ma'am." I begin by reading the text on the computer. The very beginning of this tutorial wants me to answer questions! Shouldn't it tell me something first? I am mumbling, so Professor Handy reminds me to speak louder. This IBM balance sheet looks very complicated. There are lots of numbers on it, and it is very long. The next page or two of text describes different kinds of stock. One

question asks about the differences between treasury stock and treasury bonds. When I read this, I say that I have no idea what a treasury bond is, but a bond has to be payable, and has to have interest, and treasury stock does not, so that's false. Even though this is a new concept, I'm thinking about something that we learned in an earlier chapter. Oh, good, I got the answer right. I really didn't think that treasury bonds and treasury stock could be the same. This next screen (#9) is blue and shows a prospectus, which is what a corporation presents to potential investors before a public offering. Now I know what that is.

I like the screens like this that have pictures and diagrams. Here is a screen (#10) that has a diagram illustrating primary and secondary security markets. It shows trademarks from companies such as Merrill Lynch, J.P. Morgan, and Goldman Sachs. I smile as I say I can see my future right there!

Right now, I am reading about the differences between primary and secondary markets for corporate stock (screen #11). This screen has a very confusing term. Seasoned public offering. What kind of a thing is this? Some of these other concepts are puzzling. How would shareholders not have to pay the entire price to purchase stock, but have to contribute any unpaid portions if the corporation deemed necessary. How does that work?

Here I have to do some real accounting. The tutorial is asking me to record the sale of stock by a corporation in the corporation's journal. I see immediately that I have to drag the accounts into the journal box. I'm doing this very slowly so I get it right. Cash is an asset so I'll debit cash for 10 shares

times \$5 or \$50. Common stock is equity. Additional paid in capital I'm not sure about, but it can't be a liability, so it also must go into equity. I finished this pretty fast. Debits equal credits, good job.

Now that I have finished reading some text about the rights of stockholders (screen #17), I'm at a screen that wants me to answer eight true-false questions. Sometimes I forget to read the questions out loud, but I can usually remember to answer them out loud. (OC -I heard "true, false, true, true, false, true, false, false." He nodded his head when he said "true", and shook his head when he said "false.") I like to sit back a little when I read, but I want to be close to the screen when I have to answer questions. Maybe it's because I wear glasses.

Now the tutorial is explaining the concept of dividends (screen #22), which are distributions to a company's shareholders. It says that when a person buys a house and rents it for a year before selling, he or she has two types of income: rental income and profit from the sale. I say to the tutorial, you should have said profit *or loss* from the sale!

Here is another good diagram (screen #23). These blue boxes describe how payments are made to bondholders and stockholders. There are arrows drawn from the firm to the bondholders to show interest payments and to the stockholders to show dividend payments. This is very helpful.

Now this tutorial is asking me a lot of true-false questions. These two screens (# 24 & 25) have 17 questions! I guess some of them are supposed to be

tricky, such as, “Shareholders get cash when firms declare dividends.” I know this is wrong, as cash is received when firms *pay* dividends, not declare them. I wasn’t tricked! I say, what a silly question is that! But why isn’t there another question that asks whether or not dividends are a liability when declared? Can a firm’s dividend announcement change the stock market’s expectations of the firm’s future performance? Yes, of course it can.

Screen #26 is talking about the differences between financing a corporation with debt or equity. It talks about interest and dividend payments, and how they affect a firm’s income. It keeps talking about saving taxes when paying interest. What does this mean? I just don’t understand this thing with taxes and interest!

Oh, here is another new section; it is called treasury stock (screen #40). I am looking at a section of the annual report of General Electric. It has more terms that I don’t know. For example, I keep reading a word “dispositions” that I don’t understand. The balance sheet for GE, dispositions, what’s dispositions, I have no idea what dispositions is. Also, where does the concept of “free cash flow” come from? This should be explained better. Maybe I should skip this section, as I think it is going to confuse me. Oh, I’d better not! I don’t want to skip over anything that is important. I might need the information later.

Screen #42 states that cash dividends reduce the stock price, but not the number of outstanding shares. Stock repurchases have the opposite effect. They reduce the number of outstanding shares, and that should cause the stock price to

increase. If you decrease supply and keep demand constant, the price will go up. I remember that concept from principles of economics.

The next few screens discuss that fact that firms could repurchase their shares of stock, known as treasury stock, rather than pay dividends, and therefore provide shareholders with more flexibility as to when to pay taxes. I don't like the idea of paying taxes. In fact I say to the computer, "Taxes stuff I don't like."

More true-false questions. This tutorial has a lot of them! These are about treasury stock (screen #47). The first question about what to put into the company's income is impossible! I wish that the tutorial could give a little more information here. This question is about contributions by and distributions to shareholders. Oh no, my answer is incorrect. The screen just says to "try again." Try again, how? I want to know why my answer is wrong! Since English is not my first language, I sometimes need more definitions. I also don't like to get answers wrong.

I want more information here on this next question too, because it asks, "If accountants booked a profit or loss on the re-issuance of shares, would it allow them to manipulate the firm's total income by the issuance of stock?" YES? We do not have a reason for this. Reason, reason, reason!

Now I have to do some more journal entries, this time for treasury stock. First, I have to record the repurchase by the company They only give you two accounts to choose from, and since every journal entry has to have at least

two accounts, I should be able to figure this out! If the firm buys back ten shares of stock and pays \$4 for each, then they pay out \$40 in cash. So, I have to credit cash, because that's what you do when the firm pays out cash. Then I'll just debit treasury stock for the other \$40. That works!

These entries for the reissuance of treasury stock (screen #48 and #49) are ok. I don't have to do them myself, but I am looking at them carefully. I'm allowed to skip this stuff about retirement of treasury stock. That's fine, I'm ready to read about something else.

Here's a new screen (#55) that discusses stock dividends and splits and other items that affect the retained earnings of a corporation. It says that shareholders get proportionately more shares for each share held in the case of a stock dividend. A stock split occurs when the firm increases the number of shares, and decreases the par value. This table that shows stock splits (screen #56) is really something! I can't believe what it says about McDonalds. WHOA, they've had 11 stock splits and only one stock dividend! (OC – sat up in the chair).

Ok, this screen (#57) has a table where I have to calculate what happens to stock after stock dividends and splits. The firm gives a 20% stock dividend, so for every ten shares owned it gives two more shares. If the total market value of the shares is \$120 before the dividend, it has to be the same after the dividend. So, if there are 10 shares outstanding before the stock dividend, there must be twelve shares after. The price per share was \$12 before, so it must be

\$10 after. Now, instead of the stock dividend, the firm does a 2-for-1 stock split. The market value of the shares stays the same again, so the number of shares goes from 10 to 20, and the price per share goes from \$12 to \$6. This is pretty easy. (OC – sat back in chair).

I'm now looking at a table (screen #60) that has information on stock splits distributed by Microsoft Corporation. This reminds me of something that I read before, and I say ok, now, what were the two effects of stock splits and dividends? Oh, yeah, information effect and transfer effect. (OC – looks at ceiling as he is recalling the information).

Oh, I really like *this* table on accounting for stock splits and dividends (screen #63). It is very colorful (blue, green and white) and tells you what happens to shares outstanding, par value per share, and total equity when the firm has a stock dividend or a stock split. You don't have to fill-in anything, but it has good information. I'm going to print this table when I'm finished!

“Where are we now” indicates that I'm about to start the last section. This screen (#65) gives a good explanation of items that affect retained earnings. It starts out by saying that retained earnings are not a bundle of cash, they are not even an asset. Retained earnings are affected by the income statement, profit and loss, cash and scrip dividends. What is a scrip dividend? Oh, it is a non-cash or property dividend. That sounds fine. Quasi-reorganization. WHOA, sounds like a religious group!

Wow, that was the last screen! I can't believe that I'm finished already, and I really think that I learned a lot here. I don't even think that I yawned too much! There are a lot of good things about this way to learn. I think one of the most important is that I could go as fast or as slow as I needed:

Of course I could control the pace, of course it was just a mouse click. I could control both the speed and the whole program. The forward and back buttons were a big help when I couldn't solve a question. I could go back and look and then explain it to myself. The best part is that there is this X button at the upper right corner which I knew was always there and I could click anytime (Steve first interview 15-20, 40-42, 61-67).

Session two – As I walk into the room to begin this session I say to Professor Handy “I'm not tired today, Ma'am.” I just ate lunch, and the weather outside is *really* nice! It's good that this room has small windows, so I don't know what is going on outside the building! While the tutorial is loading onto the computer, I am telling her that I am going to spend six weeks at an internship in my home country at Chase bank. I am very excited about the opportunity to work at an American bank back home.

I hope that this chapter is as interesting as the first, so I'll sit right down and read the first screen of the chapter on inventoriable costs. The title of this screen (#1) is “FotoShop again: a machine to process film before sale.” FotoShop again? I don't remember FotoShop. I don't think that we talked about FotoShop before. Inventoriable costs, I wonder what that means. Already there are terms I don't understand! I hope they will be explained soon. Screen #1 is giving me information that I need to answer questions on the next screen,

some of which can be answered directly; others require computations using the data. I think that it will take a long time to answer these questions. I am trying to remember to verbalize each of my answers or calculations. Rather than relying on my memory, I think I should refer back to the information screen before answering or calculating. However, it isn't easy to go back and forth to get the information and then answer the questions. This is causing me some difficulty. I have to remember to talk about this during the interview after this session is over.

When the answers were given, that feedback was good and quite explanatory, but the thing was that you had to keep going back to this one example where the information was on this one page, but the questions spread over 5 or 10 pages.

When I saw the last 2 pages on that, I kind of knew that ok, on the first day we sold 25, and the second day we sold 75, and the first day manufactured was 40, and the second day was 60, so I had kind of learned that. But before that I had to go back and look at everything, which, you lost track of your thought processes. (Steve second interview 45-49, 53-59)

I'll just have to take this slow and go through each question. Number of rolls processed on one day. 40, ok. Cost of processing rolls on day one. 100 rolls on day one, oh shoot. There were 100 rolls of film on day one. Ann pays \$20 cash to buy a machine to process the film. Cost of processing the rolls on day one. It processed 40 rolls of film on day one and the cost of each roll was \$2.00. 40 rolls of film, cost of each roll was \$2, and the machine gets depreciated. So, point two into 40 would be eight plus eight, 88, I think. No, just eight. *Doesn't seem good, doesn't seem good.* Total cost of rolls processed

on day one. Cost of processing, total cost of rolls processed on day one. *Come on*, this has to be 88, *come on*. YES!

I don't like to get answers wrong, so I am getting frustrated with this exercise. I feel like I don't know what I'm doing here, and that is a very uncomfortable feeling for me.

If I had spent a lot of time and gotten them right, I would say that the problem was easy, but the mere thing that I wasn't getting them right, the time factor wasn't really a concern for me. Tells me I have to start reading accounts again. (Steve, second interview 36-41)

This question is asking the cost of processed rolls on the second day. Cost of processing rolls on day two. The number of rolls processed is 60 times the cost of processing which would be 60 into 2,400, 12 (OC – he performed some complicated calculations to get easy answers). This screen has so many calculations! I was given a pencil and paper, but I am using the calculator in the computer. I'm only using it for the hard calculations.

I am so glad that I finished answering those questions! The fact that I can find out right away if I am right or wrong is very helpful. This way I can keep trying until I get the right answer.

This next screen (#4) presents information describing the differences between product costs, which are added to inventory, and period costs, which are expenses. I have to concentrate more now than I did during the last chapter. It helps me to point my finger as I read. (OC – his finger pointing was synchronized with the reading. He broke the sentence into phrases with the

action of pointing his finger). If the depreciation (point) of the machine (point) is treated as a period cost (point) will FotoShop's inventory (point) reflect the fact that processing (point) had added value to the film (point)? If the depreciation of the machine is treated as a period cost, I think, that means that at the end of the annual period or whatever period that is, will there be an entry showing the fact that the processing added value to the film?

This makes sense to me now. Sometimes reading things slowly helps me to understand them better. Now I am looking at a diagram (screen #6) that illustrates the flow of costs through the production process. The three kinds of inventory are shown in blue boxes that highlight them and separate them from the rest of the accounts. It has arrows going from one kind of inventory to the next, and shows the costs going in at each stage. This is a little easier to understand than the other material. Screens #7 and #8 give some of the journal entries that the corporation would record during the production process. I'd rather have to prepare them than just read them. Oh, good, on this screen (#9), I have to prepare the journal entries to record the flow of costs myself. I remember that I have to drag the accounts and the dollar amounts with the mouse. This is easy. I like to be able to do different activities. However, on this last entry, something is wrong. What is the cost of 40 rolls of film? Did I miss something here? Where did this 40 rolls of film come from?

Oh, now I get it, I forgot that 40 rolls was part of the original information that was given on the first screen of the chapter. I shouldn't forget such things!

Ok, what is the cost of processing 40 rolls of film? 40 rolls of film, the cost of processing one is what? How about I just add the cash and see what happens. \$220, let's see. So three guesses have gone wrong. Eight? Where did that eight come from? You have eight here somehow. The depreciation of the machine on day one is treated as a period cost and what are they asking here? What is the cost of processing? 20 cents times 40 rolls on day one equals eight. That's fine.

Screen #10 says that the journal entry for recording revenue is straightforward and presented on the following slide. I say (OC – very loudly), **STRAIGHTFORWARD?** I've gotten everything wrong up to now. But, I'll just look at that entry on the next screen. The answers make these entries look very easy. They really aren't that bad.

Now I have to put more numbers in a table (screen #13). Raw materials, beginning, fill in the following, beginning balance, zero, that's fine. Inflow was 200, outflow, finished goods 55, so let's see. NO. So outflows are 200. Ending balance is zero, that's fine. Work in process beginning balance is zero, inflow, outflow, so ending balance is also zero. Work in progress, 220, work in process, 88. Is it 88? Beginning balance is zero, how on earth do we get that? 208? Oh, eight plus 200. Outflows has to be the number of goods, that is 55, and ending balance would be the subtraction. Finished goods, originally there were no finished goods, inflows, 88, cogs is 55, so outflow finished goods 55, and ending balance is 55 from 88, 33? Good job!

Screen #14 shows how they post the journal entries into the ledger, that's easy. Now I have to prepare a trial balance. I haven't done that on a computer before, but it can't be that hard. Ok, cash is an asset, so it goes on the asset side. Finished goods is an asset, too. Wow, I'm not sure about the difference between OE permanent and OE temporary. I remember from the last time that OE stands for owners' equity, but what's this permanent and temporary stuff? There's no place for revenues and expenses, so I'm going to see if they belong in temporary. YES! That's where they belong. I'm right! The rest of this is easy.

Here is a screen that summarizes the closing entries at the end of the first day of processing the film (#17). Aren't closing entries supposed to generate zero balances in revenue and expense accounts at the end of an accounting period? I think that's what I remember. I do not exactly like closing entries so much, but OK. These makes pretty much sense to me, so they can't be so bad.

It looks as if I have almost finished off day one. The balance sheet and the trial balance after closing. The income statement is a listing of entries in the income summary account with the proper titles. Income statement is a listing of entries, ok, of income summary accounts with proper titles. That sounds fine enough.

Oh, no, another one of those tables! This one (screen #19) says review of machine's use. I hope I can remember this stuff. Here we go again, cost of machinery. It was 20, wasn't it? Yes. Number of rolls the machine can process is, how many rolls can the machine process? Was it 40 or was it 100? Yes, 100.

Number of rolls processed on day one was 40, depreciation on day one was, number of rolls sold into the cost of machinery used in selling. That has to be 25 into 20, this should be five. Depreciation, was \$5, was it not? Yes. I guess I'm not doing so badly after all. Number of rolls sold on day one was 25, cost of processing the rolls sold on day one was, number of rolls the machine could process is 100. 20 divided by 100 into 25 is equal to five. Number of rolls processed on day two, 75, which were sold, divided into 20 and then divided by 100, I think. Shoot. Depreciation on day two, 60 divided by 100 into two, I think this is it, yeah, 12 should be it.

Now we go on to day two. Sounds good. I begin by looking at three journal entries (screens #22-24). Let's try the expense entry for the sale of the rolls. So, cost of goods sold goes up, what's with the cost of goods sold? It goes up, doesn't it? It's 165. So why isn't it sticking on the screen like it is supposed to? Maybe it is because cost of goods sold is a debit and not a credit like I've been trying to do? Not good, Steve. Debit cost of goods sold. And finished goods of course is credited, that's fine.

Day two is going much faster than day one. Already I have to prepare the unadjusted trial balance and closing entries, but that's fine. And now, screen #28 says to make financial statements: The balance sheet is the trial balance after closing. And the income statement is the entries into income summary with the proper account titles. We've done this before, haven't we?

Now I'm finished. That was a lot of work! It's a good thing that I didn't begin this session tired like last time. I think that this is a very good learning method, although I would not recommend that it be the *only* method. One of the aspects that I liked the best was the interactivity that I felt the computer was providing:

First of all and most important is the immediate feedback. It is like going to the person who wrote the book and say if you multiplied 25 by 2 you will get this and how the answer is that. It's like having a conversation with the tutorial. (Steve second interview 126-130)

Even though I found this to be very helpful, I don't think that this would work on its own. We still have to use the textbook and go to class. That has to remain as the primary source. If I read the textbook, then I should come here to answer questions, because I can get the answers right away.

John

Introduction

John was a 21 year-old junior AB Engineering major. This degree combines technical courses with a broad liberal arts curriculum. In addition to science and engineering courses, students take economics and other humanities and social science courses. These students generally do not become design engineers after graduation, but enter fields such as construction management,

patent law, and systems consulting that allow them to use the unique combination of skills that they acquired from this major.

John scored an 80 on the CAS, which was the median score of the group, and the midpoint between a neutral score of 60 and the highest possible score of 100. This score indicated that he had a positive attitude about computers. He has earned a GPA of 2.99, and his learning style is converger. Individuals with this learning style have strengths in problem solving and deductive reasoning. Engineering is a major often pursued by convergers.

The Experience

I liked being able to go back to look at something again because I got to a question that I couldn't answer. I also liked being able to skip pages that seemed to be a repeat of what I was just asked to do, like the journal entries.

I liked that the tutorial not only told me that my answer was wrong, but gave a little hint sometimes about something else to consider, such as 'what about cash dividends?'
(John first interview, 67-73, 4-7)

Session one - Professor Handy told me that I am the first student to use the tutorial. I wonder if that is good or bad. It is a little awkward just standing here as the tutorial is loading. Professor Handy is fiddling with the video camera. She asked me to say out loud anything that I'm thinking. She put the micro-cassette recorder on the computer and told me that I can begin at any time. I am reading information out loud and answering questions. This is pretty

easy so far. It even tells me that my answers are right, that's really cool! If I get an answer wrong, it gives me hints, too.

Screen #3 is asking true-false and matching questions about sources of funds for a business. I find myself drumming my fingers on the desk as I am thinking, and singing "do de do de do" before I answer the questions. (OC - When he answered the questions correctly, he smiled and said, "I'm correct". When he answered incorrectly, he said "great job, John"). I'm not sure how to get to the next screen, so I turn to Professor Handy and she reminds me to click the right arrow. The screen says that shares are also called stock. I'm being told not to mumble. Screen #4 says that shares can be divided into two classes, preferred and common. (OC - he was swinging back and forth in the chair as he was reading the text). This tutorial will focus on common shares. That's fine to me. This next screen is funny. Its title is "A Corporation is Born." There is a picture of a chick hatching from an egg, and the text is about different kinds of stock: authorized, issued, and outstanding. (OC - points at each type of stock as he read). I thought stock was stock! There are also treasury shares, but they have nothing to do with the U.S. Treasury.

Kellogg's Certificate of Incorporation (screen #6). Is that what is on the front of a stock certificate? Or is this just a contract? It talks about the name of the company, where it is registered (usually in Delaware), the total shares of stock, and all that good stuff. I guessed that Delaware was the preferred state of incorporation, and it says that on the next screen. This is because the laws of

that state are geared toward dealing with corporations efficiently, and it is difficult to be taken over if your corporation is incorporated in Delaware.

Screen #8 has questions that I have to answer. Let's see, the number of issued shares can be greater than the number of authorized shares. That's false. The tutorial told me I'm correct. The number of treasury shares is greater than the number of issued shares. Hmm, I don't think so. Correct again. This next one's not so easy. The number of outstanding shares can be greater than the number of issued shares. Can I just click to go back and check? Professor Handy is not answering me. I guess I'll try it anyway. I can, and the screen says that the actual number of outstanding shares can't exceed the issued shares, so that's false. The tutorial agrees, so that's good.

The next screen talks about a prospectus, but there doesn't seem to be anything big here. Screen #10 shows how shares are issued. The issuer sells them to the underwriter, and then they go to John Q. Public. More true false questions already (screen #11)? Here we go. Do firms sell their shares directly to the public without the help of underwriters? *Noooooo*. Now there is a multiple choice question. Which of the following is true? Investors can only buy shares from the issuing firm. Investors can also buy shares from other investors who purchased the shares previously. (OC - closed his eyes tightly as he was thinking). I think it's number one. Nope, it's number two. Oh, well.

The rest of screen #11 states that firms initially use investment bankers to sell the shares, but investors can also trade shares among themselves in a

secondary market like the New York Stock Exchange. I think I should have known that. The next screen has a lot of text and is describing something known as par value. This is an arbitrary legal value assigned to the stock. I never liked arbitrary things! The amount by which the issue price exceeds par value is called additional paid-in capital. The sum of par value and additional paid-in capital is known as contributed capital. This is a little complicated. In fact, I find myself repeating what I just said to try to understand it all. Here is a question. Suppose a firm issues shares with no par value. Would the market price of these shares be zero? No, it can't be. There has to be some market price. Good, I'm correct about that.

Ok, screen #13 has a journal entry for me to do. If a firm issues 10 shares of stock with a par value of \$1 each, and they are issued at \$5 apiece, prepare the journal entry below. Firm issues 10 shares. What is OE permanent? Oh, of course, it is owners' equity. Our text calls it stockholders' equity. YIKES! The printer on the floor here just recycled, and I jumped about ten feet! Where was I? I just drag the account name, I think. Yeah, it moves! So I'll debit cash. Can I move these again, or they stuck there? Again, she doesn't answer me! But she did tell me to talk more. I'm just reading about additional paid-in capital again. I'm still a little hazy on that. The next screen shows the entry that would be made if the stock had no par value. It is pretty similar to the one that I just did, so that makes sense.

Where are we? This screen has a bunch of topics and check marks. Professor Handy said to skip this. Screen #16 has a lot of text on the rights of stockholders, and indicates that different classes of stock have different rights. Oh, look - more true-false questions. Common shareholders are the owners of the corporation. Common shareholders? Sure. That's right. Common shareholders manage the operations of the firm directly? Um, they have voting rights, I think. But I don't think they run the operations, so I'll say no. Oh good, another one right. Common shareholders elect the board of directors. YES. (OC - when he wasn't sure about an answer he would say 'sure', and when he was more confident he would say 'yes'). Shareholders must be physically present at the annual meeting to vote for the board of directors. Hmm, I would say yes. When it says 'really?', what does that mean? Does it mean I'm wrong? She shook her head yes. I didn't know that. (OC - laughs). Last question. The board of directors manages the firm. Sure. 'Try again.' All right, wrong again. (OC - laughs again). I guess I'm not too up on the board of directors.

Back to some more reading. Now it gives me all of the information that I needed to answer the questions on the last screen. Isn't that a little backward? But, that's what the engineering professors do. They make us do all the homework before the lecture. It makes the lecture easier to understand, but then they rip us apart on the homework!

Ford proxy statement. Do I have to read all of this? It tells how much the voting rights are for each class of common stock. I think I'll just skim it a

little. Next, proxy wars. This screen (#20) has a little cartoon of two guys fighting. It says that proxy wars are what happen when groups of stockholders try to persuade other stockholders to vote with them in order to control the firm. (OC - sits up and begins to read faster). This, of course, is difficult to do when the firm is incorporated in Delaware. Sounds like Delaware is the place to be!

Now I have to do some math (screen #21). I hope I can get this right. A firm has five shares outstanding. You own two shares. What percent of the vote do you control? Two over five, which is 40%. (OC - used the keypad, not the number keys on the top of the keyboard). If the firm sold five more shares exclusively to the other shareholders, what percentage of the vote would you then control? That would be 20%. Correct, and no calculator! Existing common shareholders have the right to buy any new shares issued to prevent this dilution of voting power. This is known as the preemptive right. I'd be glad about that if I were a shareholder. Does the preemptive right mean that the new shares are free? No, dumb question.

Ok, the right to share in profits and losses - dividends (screen #22). Match the following terms. Dividend payments are made to...shareholders. Interest payments are made to...creditors. I like that when you drag the arrows, they don't stick if you're wrong. Comparison of interest payments and dividends. Firms are required to make promised interest payments to their creditors. Hmm, required. Yes, true. That's right. Firms cannot pay dividends until they make their interest obligations. Sounds right, but I think it's false.

Nope, it's true. (OC - moving his head back and forth like a metronome as he answers the questions). Firms that are more profitable can pay higher dividends in the long run. Makes sense, true. Shareholders get cash when firms make profits. Sure, NO? Not a good guess. Shareholders pay cash when a firm incurs a loss. I think that's false. Good, it is. Firms are required to pay dividends at regular intervals, *nope*. Once a firm declares a dividend, it is required to pay it. That makes sense, so I'll say true. It is true.

Understanding the sequence of dividends (screen #29). This looks like something that would be in the newspaper when General Electric declares a dividend. It mentions the declaration date, the record date, and the payment date. If you buy the stock after the record date, you won't get the dividend. That stock is sold "ex-dividend." I never heard that term. Oh, the lights in here just went out! This is a strange room! Anyway, the tutorial also says that the stock price goes down after the record date. I guess that makes sense, since the stock should be worth less without the dividend.

Screen #35 tells about the transfer aspect of cash dividends. It looks like I have to do some computations. A firm has \$100 in cash, no liabilities, and 10 shares of stock outstanding, held by one shareholder. The firm pays dividends per share of \$1. Price per share before the dividend payment. That should be \$10. Market value of the firm before the dividend payment, \$100. Price per share after the dividend payment. It would still be \$10, wouldn't it? 'Try again', so I guess not. Why would it be different from before? I'd better go back and

read again. Price per share goes down by the amount of the dividend after the record date. So, I guess it must be \$9, not \$10. Yep, I forgot that pretty quickly!

Stock repurchases and treasury shares. U.S. corporations are allowed to repurchase their shares. Many countries don't allow this. The major reasons for stock repurchases are: an alternative to paying dividends to allow the shareholder to choose when to pay taxes, to distribute the repurchased shares to employees through stock option plans, and to keep the stock price in an acceptable range. Isn't that price manipulation? Now, suppose a firm has \$100 in cash, no liabilities, and 10 shares outstanding. This is starting to sound familiar. The firm pays dividends per share of \$1. How much will the shareholder get in dividends? 10 shares outstanding, \$1 per share, so \$10. Correct. If the firm did not declare cash dividends but repurchased one share, how much cash will the shareholder get? Well, one share, so \$10 again. Correct.

If a firm pays the cash dividend, the number of outstanding shares will be what? Won't it still be ten? Yeah. The price per share after the dividends have been paid? \$10 per share less \$1 dividend is \$9. If the firm repurchases one share, the number of outstanding shares? It would go down to nine, and the price per share after the repurchase would be \$10. I think I'm getting the hang of this.

Accounting for treasury stock. When a firm buys back stock its equity should increase or decrease. I'd say increase. Noooo, it doesn't. It says that

treasury shares are subtracted from owners' equity. Didn't I read that at the beginning? Screen #41 is an example of how a corporation reports treasury shares. General Electric annual report. Ok, in December 1996, the board of directors increased the authorization to repurchase company common stock to \$13 billion, and authorized to continue the program through 1998. (OC – again, he moved his head back and forth like a metronome when he read this and several other passages).

Journal entries for recording treasury stock. The purchase seems pretty straightforward. I just have to credit cash because they are paying it out, and then I guess I'll debit treasury stock to make it balance. If the reissue price is less than the repurchase price, debit cash and credit treasury stock, and debit paid-in capital from treasury stock for the balance. Let's see. The firm reissues eight shares for \$3, which were purchased at \$4 each. So it says that I should debit cash for eight times six which is twenty-four. NO, wait a minute. Eight times three is twenty-four. TYPO, now I don't feel so bad! This entry is fine, now that I got past that mistake. Treasury stock retirements. Professor Handy is telling me to skip this. So I skip over to stock dividends and stock splits (screen #55). The tutorial says that stock dividends and splits are common, but their accounting treatment is controversial and inconsistent. Accounting controversial? The term stock dividend is a misnomer, because shareholders don't actually get anything. Even though they receive additional shares, each of their shares is worth less, so the overall equity is the same. But, if the stock

price goes up, don't they have more shares to sell at the higher price? Anyway, screen #57 has a table where I have to calculate what happens to the market value of shares, the number of shares outstanding, and the price per share after both a 20% stock dividend, and a 2-for-1 stock split. If there are 10 shares, each selling for \$12, the total market value would be \$120. That doesn't change, so, I'll just put 120 in the market value box after the dividend and the split. Good, both correct. Now the number of shares outstanding after a 20% stock dividend. Let's see, 10 shares times 20% is two additional shares, so new shares outstanding is 12. Therefore, \$120 market value divided by 12 shares makes the price per share \$10. I'll do the same with the stock split. 2-for-1 split doubles the number of shares outstanding. So 10 shares becomes 20 shares. Then, the price per share is cut in half, so \$10 becomes \$5 per share after the split. That was a really good exercise!

Now I am looking at a screen (#59) that talks about the informational aspect of stock dividends and stock splits. A firm's current price is \$100 per share. It does a 2-for-1 stock split. The mechanical effect would be to lower the stock price to \$50 per share. Will the market bid the price above \$50 per share after the split? Yes, because of the good news that the firm probably announced after the split. Thus, the second effect of a stock dividend or split is the signaling effect. Dividends convey information about a firm's prospects, which may affect stock prices beyond the purely mechanical. I think I remember

reading that somewhere about a company splitting its stock and the price going way up again because the stock was more affordable.

Screen #60 shows stock splits that Microsoft Corporation has had since 1987. In 10 years, there had been six stock splits. Before the 1996 split, the stock was selling for \$152.875 per share. Out of my price range!

This table is very good (screen #63). It seems to describe anything on the balance sheet that changes after a stock dividend or split. Moving right along. Understanding retained earnings. Match the following items - profits, losses, cash inflows, cash outflows. Well, profits should increase retained earnings and increase cash flow. Retained earnings are equal to the cash retained in the business. No, can't be. Firms are required to pay dividends. No. I got that wrong before, so I won't forget it. Retained earnings is reduced when dividends are declared or paid. Paid. The arrow doesn't stick, so I guess not! It must be declared. The next screen says that retained earnings are not a bundle of cash or even an asset. Beginning retained earnings plus net income minus dividends declared equals ending retained earnings. I remember that from the first or second chapter. At least I remembered something! This last screen talks about items that affect retained earnings. I think that I've been through all of these already today. I guess I'm done. That was kind of fun, but I'm tired.

This was definitely a good learning experience. "I would like to look at this again, to get a more solid understanding of the material. Also, this would be a good preparation for class. I would think that the lecture would be more clear if I went through this first." (John first interview, 43-48). I liked being able to control my pace. "I didn't feel rushed at all.

And, if a piece of an annual report was presented, I felt as though I could just glance at it and go on. I liked being able to go back to look at something again if I got to a question that I couldn't answer. I also liked being able to skip pages that seemed like a repeat of what I was just asked to do, like the correct journal entries" (John first interview, 24-27; 67-73).

Session two - I'm back for the next session. Last time I was here in the afternoon, and today I am here at 9:00AM. I'm used to getting up early because engineering classes often begin at 8:00AM. At least I don't feel as awkward as I did last time. I am telling Professor Handy about my internship with a management consulting company this summer. I am going to be living with my dad for the summer, and that doesn't make my mother very happy!

FotoShop again. To start FotoShop, Ann provided \$220 in cash. Ann manages FotoShop on day one and buys 100 rolls of film at \$2 each on day one. Ann also pays \$20 to purchase a machine to process rolls of film before sale. The machine can process exactly 100 rolls of film. So, it processes 40 rolls on day one, and 25 of those are sold at \$3 each. At the end of day one, it is not known how many rolls will be sold on day two.

So as I flip to the next screen I see lots of questions that I have to answer. First question - what is the cost of the machine? Do, do, do, do, the cost is \$20. Correct, that's a good way to start. Number of rolls the machine can process, that's 100. The cost of processing a roll. She buys 100 rolls of film for \$2 each, that's 200 rolls of film, make that \$200 for film so the cost to process should be

\$5. Try again, I guess I'd better. Ann paid \$20 for the machine. What am I doing wrong here? Cost to process each roll. So it would be \$200. No, \$220, I'm just guessing. FotoShop needs a machine to process the film. Ann pays \$20 in cash to purchase it, so not just \$200; it must be \$220. No, it isn't. This is frustrating. The cost of the machine is \$20, the number of rolls is 100, and the cost of processing one roll, so, the cost of processing ONE roll has to be \$2, no, I guess not. I'm dumbfounded. Let's go back to the beginning and read again. FotoShop was started with \$220 in cash. Ann buys 100 rolls of film and the machine with the \$220. So at \$2 per roll, and she processed 40 rolls, maybe the answer is 80, nope, not that either. *What am I doing wrong?*

I have to ask for the answer. It is 20 cents per roll. 20 divided by 100? (OC laughs for a long time). \$20 cost of the machine over the number of rolls the machine can process makes sense. I'm an idiot! Total cost of a processed roll. Includes the cost of an unprocessed roll, so that would be \$2.20. That was much easier than the last one! Number of rolls processed on day one – 40. Total cost of processing rolls on day one would be 40 rolls times point two or eight. Three in a row!

Total cost of rolls processed on day one. That would be eight, too. No, it's the cost of processing the rolls, OH, plus how much they paid for the rolls, so it would be 88. That's right. Number of rolls sold on day one, 25. Cost of processing rolls sold on day one. My brain doesn't seem to want to do any multiplication. I'm going to make this easy on myself and use the calculator in

the computer. 25 times point two is five. Number of rolls processed on day two, 60, so the cost of processing would just be \$12. Cost of rolls processed on day two, is the \$120 that she paid for the film plus the \$12 for processing or \$132. Number of rolls sold on day two, 75. Cost of processing rolls sold on day two, 75 times point two plus the 150 or 165. That was the last question. Enough of that page!

Now, it says here that the machine's depreciation can be treated as a period cost. Since 40% of the acquisition cost is used up on day one to process the film, depreciation for that day is \$8. That's just 40% of \$20, so that makes sense. However, since 25 rolls were sold, if the entire depreciation on day one is expensed, will Ann bear the cost of processing all the rolls, even if they weren't sold? Yeah, I think she would. Treating depreciation as a period cost understates the value of the inventory and overstates expenses. Thus, depreciation should be treated as a production cost and therefore capitalized as part of the inventory. That makes sense.

The next screen (#5) says that depreciation of manufacturing assets is treated as an inventoriable cost, which means that only the depreciation associated with the products that were actually sold is expensed in that period. It also says that this is an often-misunderstood point. I can believe that! Here is a diagram (screen #6) that illustrates how the goods go into the various inventory accounts. Raw materials go in to work in process. The unprocessed

film is the raw materials. The processed film is work in process. That will eventually go into finished goods, which is the third inventory.

Here are some journal entries for me to look at. If the depreciation of the machine were treated as a period cost, accumulated depreciation is credited for \$8. It is a contra-asset. Depreciation expense must be the owners' equity temporary account that is debited. But, if we treated depreciation as an inventoriable cost, the inventory, which is work in process, is debited to the asset account, the contra-asset account is accumulated depreciation which is credited, and owners' equity has nothing to do with it. When 25 rolls are sold, the depreciation is effectively expensed because inventory, finished goods is credited, and owner's' equity, temporary, under COGS is debited. Ok, now screen #8 gives all of the journal entries for day one. When she invests the money, FotoShop debits cash and credits contributed capital. When FotoShop buys film, the raw materials account is debited and cash is credited, both for \$200. Same for the machine, except Machine is debited. Oh, the little tape recorder just clicked. I'd better not talk until she flips the tape. Finally, when the film is transferred into work in process, debit that and credit raw materials.

Now I have to record a journal entry for when the machine processed 40 rolls of film on day one (screen #9). I guess I just have to drag the accounts into the box like last time. Accumulated depreciation would be down here, in contra-assets, depreciation expense and work in process would be here. Deprecation expense would be over here, no, expense is a liability, no? It's not

letting me put it here. OK, work in process inventory, so the film is transferred there, and work in process, actually depreciation, so WIP is debited for \$8, and accumulated depreciation is \$5, no, wonderful, depreciation expense has to go somewhere. I think I'm getting a little frustrated. I don't understand why depreciation expense is not recorded. (OC - He sat back in his chair and clasped his hands behind his head). But since the entry is balanced, I guess that's about it. (OC - sat back up in the chair). Screens #10 and 11 have more journal entries to record transactions in the sequence. Processed film is transferred to finished goods. So I guess I debit finished goods and credit work in process. There are two numbers to choose from, \$8 or \$88. It must be \$88, as it asked for the "total" cost of 40 processed rolls. (OC - as John summarized the entries, he gestured with hand, and moved it to the left as he read the debit (left) side of the entry, and gestured to the right as he read the credit (right) side of the entry). The next entry is more of the same, and I'm getting this now.

Ok, now I have to calculate inventory balances (screen #13). (OC - as he attempted to remember the dollar amounts of the three inventories, he looked down at his fingers, and winced a few times). Do, do, do, inflows, \$200, which is the \$100, no 100 rolls of film times \$2, outflows is also \$200 because they sold that much. Ending balance is obviously zero. Work in process, zero to start, obviously, let's see, inflows, must have been \$200, no depreciation, so it's also \$208. (OC - John was very comfortable in his use of the keyboard. Instead of hunting for the number keys at the top, he used the keypad exclusively, and

rather than moving to each box in the table by clicking the mouse pointer, he used the tab key). So, now outflows, they processed 40 rolls of film times \$2, that's \$8 for depreciation, and 208 minus 88 is what, 120. Finished goods, obviously start at zero, inflows, let's see, must have been the outflows of work in process and that was \$55 and the stuff was sold, so 55 minus 33 or the difference.

Oh, here are the journal entries posted to the t-accounts. Now the owner can find out how much is actually in each account. Then, the next screen (#15) has the trial balance for me to complete. I just have to drag the account names down, and then copy the balances from the last screen. It equals out, so that is good.

The next screen (#17) just shows the closing entries. I remember those from the beginning of the semester. Screen #18 shows the financial statements at the end of day one. It says that the balance sheet is the trial balance after closing, which makes sense, because closing entries remove all of the income statement accounts. Review of machine's use (screen #19). I remember the cost of the machine, that's \$20. It could process, 100 rolls, and it processed 40 on day one. Now, the cost of processing rolls sold on day 1, 25 times point 2 is \$8. No, cost of processing rolls sold on day 1, 25 sold times point 2 is not 8, 25 times point 2 is 5. Whoa, John, good math skills!

Now I go on to day two. Record the journal entry when 60 rolls are processed on day two. I finally understand that I don't need to record

depreciation expense, because that goes into work in process. Then I just have to credit accumulated depreciation for \$12, which is the 60 rolls times point two. Next I have to record the transfer of inventory in to finished goods. (OC - he pushed his hand out to the right as he said, "they're gone now"). Debit finished goods and credit work in process because they're gone now. Next, 75 rolls are sold on day two. (OC - he tried to multiply 75 by 2.2 out loud. He didn't say his answer out loud, but winced when the box popped up and said "try again." He pointed at the screen and found the answer to the previous question). If 60 times two point two is 132, then I should use 75 times two point two. (OC - He used the computer calculator and found the correct answer). Here is a summary of all of the entries on day two (screen #68). (OC - he nodded his head to left when he said the word "debit", and to the right when he said "credit").

Prepare the unadjusted trial balance on day two. This is beginning to sound familiar! This time it is done for me, as are the closing entries on the next screen. Finally, make financial statements. Day two certainly took less time than day one! I'm glad I'm finished. This chapter was harder than the last one! But I know I learned a lot from this, both as far as the information that was given, and also how it was presented. "It's more trial and error, seeing the answer pop out like that is more than what you get in a lecture. You can learn from your mistakes" (John, second interview, 60-62).

Karen

Introduction

Karen was a 19-year old sophomore economics and business major. Like two other members of the participant group, her responses to the LSI classified her as a converger. Individuals who are classified as this learning style are adept at problem solving and technical tasks. Karen's score on the CAS was 83. She and one other student shared this second-highest score. Her GPA was 3.10.

The Experience

I thought it was better than the book because if asked you questions right after, or was it right before? Sometimes I was like, wait, I remember seeing that before.

I didn't mind doing it, like I wasn't going oh God, another hour? (OC - I told her that she didn't check her watch or look away from the screen). It didn't bother me to do it at all. I wasn't sure when I was done, but I didn't mind at all (OC -giggles) (Karen first interview, 5-6; 79-84).

Session one - I hope that I will be able to think of enough things to say. Professor Handy asked that I just speak whatever comes into my mind. I'm kind of a quiet person, so I hope that I do this right. I'm reading the first screen, and already, Professor Handy is telling me I have to talk. This screen is about sources of funds. It has a picture of a guy with a long beard panning for gold. It has a few questions that are pretty easy to answer. One wants me to match some

terms – shares, retained earnings, and debt to liabilities and owners' equity. You just have to drag the arrow from one to the other. The next screen (#4) says that stocks are an important source of funds. I'm just reading the information, but I don't have anything to say about it. The next few screens have a lot of reading about incorporating a firm. I'm reading it, but even though Professor Handy is telling me to talk, I can't think of too much to say. I didn't know that there were so many kinds of stock. It says that issued shares were bought by the people and weren't sold back to the corporation. Outstanding shares were bought by the people, but then the company bought them back.

Here are some true-false questions about what I just read. These are pretty easy, especially since I just read the information. Now I have to figure out an answer. Authorized shares are 100, issued shares are 75, and treasury shares are 20. How many shares are outstanding? 20% of 75 should be the outstanding shares.

This next screen (#9) talks about a prospectus. It is a document that informs potential investors about the firm's prospects. I am now looking at a diagram that illustrates how shares are issued. She is reminding me to talk, but I don't have anything to say right now. Journal entry for the issuance of common stock. A firm issues 10 shares, par value \$1, sold for \$5 each. So you're going to debit cash because the company is receiving cash of \$50, and then you would credit common stock and additional paid-in capital for \$10, all right, common stock is \$10. That's because common stock is \$1 and you'd credit that for the

10 shares. Credit additional paid-in capital for \$40, because it balances out assets and liabilities.

Here is a lot of text, and it is talking about the rights of common stockholders. I am just reading it out loud. Ok, here are some true-false questions (screen #17). Common shareholders are owners of the corporation. Do common shareholders manage the firm directly? I think that is true. It's false? Why is that? Common shareholders elect the board of directors. Does the board of directors manage operations of the corporation directly? The officers have overall responsibility for the financial statements, which are audited by outside auditors. (OC – although she read each question out loud, she answered most silently).

This is the Ford proxy statement for April 7, 1997. It begins by saying that the board of directors is soliciting proxies to be used at the 1997 annual meeting. The next paragraph states who can vote by proxy. It says that common shareholders and holders of class B stock can vote. What is class B stock? Is that preferred stock? Each stockholder has one vote for each share of stock. Holders of common stock have 60% of the voting power, and class B stock has the remaining 40% of the voting power.

The next screen is titled: "Takeovers and proxy wars: For your general information only." I like the cartoon at the bottom, it shows people in a gunfight. Here are some more questions. A firm has five shares outstanding, and you own two. What percent of votes do you own? Five shares and

outstanding is two, is that 40%? If the firm had a private issue and you still have two, I guess you would have 20%. (OC – made a face and then smiled when she was incorrect). The preemptive right, which allows current shareholders to purchase shares in a new issue, implies that dilution of voting power would be prevented.

Now the tutorial is talking about dividends. It says that it is easier to understand dividends if they are compared to interest payments. It asks who gets interest payments and who gets divided payments. These questions are pretty easy. This next screen (#23) has a diagram that shows the cash flows from the corporation to the creditors and the shareholders. I'm a little confused about the secondary market for bonds. I'm not sure whether it goes through creditors or shareholders in that secondary market. But one part of this is really helpful. It says that creditors get the principal and interest, and shareholders get equity and the capital.

Now I have to answer some more questions. This screen says, "guess the answers." Firms are required to pay dividends to their common shareholders. Firms are required to make interest payments to their creditors. Interest payments depend on the profitability of the firm. Firms that are more profitable can pay higher dividends in the long run? Wow, this next screen (#25) has 10 more! Shareholders pay cash when firms incur a loss. Shareholders get cash when firms have positive cash flow. Shareholders must pay their firm's creditors if it cannot do so. (OC – as before, she read the

questions out loud, but answered them silently. All of her answers were correct).

Clarification 1: Firms are required to repay debt and interest. This screen says that shareholders are not promised payments when they invest in a firm because they buy ownership in a firm. They are paid only if the firm chooses to pay dividends or if they can sell their shares in the secondary market. That's interesting, especially since the next screen says that Microsoft has never paid dividends. Since it reinvested its profits, the increases in stock price benefited the investors.

The difference between ex-dividend and cum-dividend prices. In which of the following cases is the buyer of the stock entitled to receive the dividends on the stock? I would think if he buys the shares before the ex-dividend date. That's right. In which case will you pay more for the stock? You'll pay more if the previous owner...(OC – laughed at her incorrect answer). Here are some journal entries for dividends. Ok, so when a firm declares a dividend it debits retained earnings and credits dividends payable, and when it pays the dividends, it debits dividends payable and credits cash.

Now I am reading about the advantages of debt. As long as the firm makes the promised payments to its creditors, it doesn't share control; but by issuing stock, it shares control. As long as the firm makes the promised payments to the creditors, it does not share profits with its creditors, issuing shares implies sharing profits. And, interest payments are tax deductible, but

dividends are not. Which investment would result in higher returns for the investor when the issuing firm does well? Which investment would likely be more risky? Will investors buy the more risky investment for the expectation of higher returns? (OC – once again, she answered each silently).

Now I am looking at a screen (#35) has a table with a bunch of questions on the transfer effect of cash dividends. The price per share before the dividend payment... Market value of the firm's equity before the dividend payment... Price per share after the dividend payment, known as the ex-dividend price. I think its \$11. The cash the shareholder has after the dividend payment is 100 minus 90. The shareholder's balance after the dividend payment. That really wasn't too difficult to do. These questions are explained on the next screen, which is a diagram of the transfer of cash from the firm to the shareholder. It is pink, green, and purple, and explains things well. Now, can the firm's dividend announcement change the stock market's expectations of the firm's future performance? True. The stock market can raise, no, dividend policy can raise the stock price if the market views the dividends as the firm's confidence in its future. That's really interesting. That is another effect of cash dividends. (OC – yawned).

Now I am moving to a new topic, called treasury stock. That is stock that the shareholders owned, but the firm repurchased. There is a lot of reading on screen #40, so I don't have much to say here. The next screen shows something from GE. Ok, here are some more questions. Dividends are not

declared, but the firm uses the cash to repurchase one share. How much cash would the shareholder get? If the firm pays a cash dividend, the number of outstanding shares would be..., and the price per share after the dividend would be? Price per share after the dividend would be \$9. When a firm buys back its shares, the owners' equity...decreases. That's right. The amount shown as treasury stock, I'm not sure, is added, no, subtracted from owners' equity. Oh, then it must be a contra-stockholders' equity account. Ok, now I have to fill-in a journal entry here. The firm buys back 10 shares at \$4 each. I'd say that cash is going to be credited and treasury stock is going to be debited. That's good.

Reissuance of treasury shares. Are contributions to owners and distributions to owners included in the owners' income? True, no false. Would accountants book a loss if the resale price of treasury stock is lower than the repurchase price? I think it's no. Would accountants' recording a profit or loss on the reissuance of shares allow a firm to manipulate its earnings by timing the reissuance? True, yeah.

Now I have to skip this next section on retirement of treasury stock. So I am now reading about stock dividends and stock splits. A 10% stock dividend is given by a firm to a shareholder that has 10 shares, so the firm gives one share. A 2-for-1 stock split means that the firm gives two shares in exchange for every one held. This means that shareholders get more in a 2-for-1 stock split than in a 10% stock dividend. A firm has \$120 in cash, and 10 shares outstanding and it gives a 20% stock dividend, where every 10 shares gets two

additional shares (screen #57). The shareholder will have 10 shares. Now, instead of a stock dividend, the firm gives a 2-for-1 stock split. So 2-for-1 split means that for every 10 shares, the firm gives 20 shares.

Now I am reading about the informational aspect of stock dividends and splits (screen #59). If a firm's current stock price is \$100 per share, and there is a 2-for-1 stock split it is going to lower the price to \$50 per share after the split. That makes sense. Here is a really good table (screen #63) that is an overall comparison of stock dividends and stock splits. The number of shares outstanding increases for small stock dividends, large stock dividends, and stock splits. Par value per share has no change for small or large stock dividends, but decreases for stock splits. Additional paid in capital increases for small stock dividends, but has no change for large stock dividends or stock splits. Retained earnings decreases by market value for small stock dividends, decreases by par value for large stock dividends, and does not change for stock splits. Total owners' equity is unchanged for all. I learned a lot from that!

Back to some questions on retained earnings. The retained earnings are equal to the cash retained in the business. False. Firms are required to pay dividends. True, no. Firms are required to pay dividends that are declared, true. Retained earnings are reduced when dividends are paid, no. There can be direct changes to retained earnings – profits and losses are not the only causes of changes in retained earnings, that's false. It's not?

Items that affect retained earnings (screen #66). Ok, so retained earnings are affected by profit and loss, dividends, treasury stock, some stock retirements, prior period adjustments, and quasi-reorganizations. I never heard of some of those. Oh, that was the last screen already. I think that went really fast!

Session two – Here I am, again. It is *pouring* out today, so I don't really mind coming back to do this again. George said that it was so nice yesterday that he had a lot of trouble concentrating. Since the tutorial is already on the screen, I guess I'm ready to go. FotoShop – Ann bought 100 rolls of film at \$2, processed 40, and sold 25 at \$3 each. Bob produced 60 rolls and sold the remainder at \$3 each on the second day. Wow, screen #2 has a lot of questions! All right, number of rolls machine can process, 25. No? Oh, that was the number sold. Cost of processing a roll, um, \$2? No, \$3, no. Cost of processing a roll. Oh, \$1 (OC – laughs), they sold it for \$3. 'Try again', I don't know, I'm going to ask for the answer. I thought it was \$1, it says point two. Total cost of a processed roll of film. This includes the cost of the unprocessed roll. It's 20 cents for one roll, and then including the processing, it cost \$3, no, they sold it for \$3. Ann buys 100 rolls of film at \$2 each. They sold for \$3. The total cost – I should be able to do this (OC – laughs). \$100, no 100 rolls for \$2.

So on day one she sells, she processes 40 rolls, which are 20 cents apiece. That's 80 cents, and the unprocessed rolls, which is 60. That would be \$8, \$20, no? Oh, boy. She processed 40 rolls at 20 cents each, that's \$8, then

unprocessed, there's 60 unprocessed rolls, which – how much do they cost? (OC – the tutorial never asked about unprocessed rolls). 40 times point two is eight and the unprocessed – wait, total cost of a processed roll is \$3. What am I doing? I took the \$2 and added 20 cents to get \$2.20. That should have been easy enough. Number of rolls processed on day one was 40, now I'm on the wrong box. (OC – laughs). Cost of processing rolls on day one was \$8? Total cost of rolls processed on day one. She processed 40 times \$2.20, which is \$88. At least I could get that one!

Number of rolls sold on day one was 25. Total cost of processing rolls sold on day one. Well, she sold 25 and each one cost \$2.20. That would be 25 times \$2.20. (OC – silence). That would be 50. No? Oh, I made a math error, even with the pencil and paper! (OC – laughs). Five times two is ten, two times two is four and one is five, and then five times two is ten. That should be \$55. It's still wrong, I don't get it! I'm going to give up. (OC – asked for the answer.) Oh, I get it, \$5, it just asked the cost of processing! I'd better read these questions more carefully! So, the *total* cost of rolls sold on day one would be the \$55.

Ok, moving on to the next question. The number of rolls processed on day two. That would be 60? Yes. The cost of processing rolls. She processes 60 rolls out of the hundred, so then the cost would be...she processed 60 rolls of film. She bought 100 rolls of film and processed 60. She processed 40 out of 100. I'm trying to figure out how they got the cost of processing one roll. I'm

taking 40 over x equals 20 cents. So that would be \$400 so that makes more sense.

I don't know how they are getting \$12. So they processed 60 rolls out of 100. I have no idea. So total cost of rolls processed on day two. It would be \$2, and then \$15? No. Total cost. OH, I GOT IT! So this was the cost of processing rolls sold on day two. So cost of processing is \$12 for all those rolls. Then total cost of processed rolls is 60 times \$2, which is 120, so the answer is \$132. That makes more sense.

Number of rolls sold on day two is 75. Cost of processing these rolls. So they processed 60 divided by 12 is \$5 because 60 was the number of rolls processed, and the cost was \$12. No. All right, so they sold 75 between the two days. They processed and sold 60, so that means that they sold 15 from day one. So the cost of processing the rolls should be \$5 for day two, but for day one it should be two something. I don't know, 15? I don't know how they got that. I have no idea what they did. They had 15 rolls divided by what? They divided by five, I guess.

Last question, finally. Total cost of rolls sold on day two. So they sold 75 rolls of film so that will be 75 times two which is 150, then add 15 so 165. Good, that's right. That was a rough page!

Now onto a new screen (#4). Treating the depreciation as a period cost. This will understate the inventory because the depreciation is being expensed. Will Ann bear the cost of processing 40 rolls even if she only sells 25? I think

that's true. Ok, it is. Will she follow a production plan that requires processing in advance? So, this way she won't bear the cost of processing 40 rolls when she sells 25. If the depreciation of the machine is treated as a production cost, it will be capitalized into inventory.

This next screen is titled "Production costs are inventoriable costs. This says that the cost of processing 40 rolls of film on day one is \$8, and the cost associated with processing the five rolls that were sold was 25 times point two or \$5. What do we do with the remaining \$3? Got me! It says that it will go into inventory and be expensed when those 15 rolls are sold on day two. That makes sense.

Here is a diagram that shows how the costs go through the inventory accounts. The direct cost was just buying the film for \$200. The work-in-process inventory includes that film and the \$8 of depreciation. Ok, now there are some journal entries for me to look at. When you treat depreciation as a product cost, inventory is going to be debited for \$8 because you made it. Then you just credit accumulated depreciation for the same amount. When the 25 rolls are sold on day one, finished goods inventory is credited for \$5, and cost of goods sold is debited for \$5. This next screen (#8) just has some more journal entries to look at. FotoShop gets \$220 in cash and then credits contributed capital. When they buy the film they debit raw materials and credit cash for \$200.

Now I have to do a journal entry. The machine processed 40 rolls of film. What is the cost of processing 40 rolls of film? It would be \$8, ok. I multiplied the cost of 20 cents by the 40 rolls. Is the machine depreciated when it is used to process the rolls? I would say yes. Correct, good. Now on to the entry. First I am going to credit the contra-asset accumulated depreciation. Then work in process is debited for \$8, because that is the cost of processing. But I can't get depreciation expense to stick. It doesn't want to go anywhere. I don't know about this depreciation expense. Maybe that's it? It does balance. I'm looking over at Professor Handy and she is just smiling at me. I'm just going to go on to the next entry (screen #10). What is the total cost of 40 processed rolls? I seriously don't remember. \$88? Ok. So finished goods must be debited for \$88, and work-in-process credited because that's the finished product. Now, what journal entry will FotoShop make to record the cost of goods sold? Finished goods will be, is it debited for \$88? It's not sticking. Oh, no, that must be a credit, because it is going down. So cost of goods sold has to be debited to make it balance.

Here is a table that I have to do. So beginning balance of work-in-process is zero. Inflows would be the cost of the film and the depreciation, so that would make 208. Then I subtract 88 which is the cost of 40 rolls and that would equal 120. For raw materials, beginning balance is zero, inflows and outflows are both 200, because they bought the film and then put it into work-in-process, so the ending balance is zero, too. That was pretty easy.

Screen #14 says post journal entries. These are the entries that I looked at before. Cash increased by 220, and contributed capital was credited for 220. Then raw materials were debited for 200 and cash credited when they bought the film. They also bought the machine and debited machine and credited cash for \$20. Work-in-process was debited for 200 and raw materials credited when they processed the film. Raw materials has a zero balance. Work-in-process was also debited for \$8 for the depreciation on the machine, and then it was credited for 88. That was transferred into finished goods. They transferred 55 out of finished goods into cost of goods sold, and the ending balance in finished goods is \$33.

Question: an adjusted trial balance. Do I have to do this? She is not even looking at me right now, so I guess I'll try it. So it is going to be cash debited for 220, no, that doesn't stick. Oh, contributed capital is credited for 220, cash had no balance left. They spent all of that money. (OC – laughed).

Overall I really liked the approach that this took, combining reading and questions in small pieces. "It's more interesting than the book because the book is so boring at times, I'm just like 'OH, MAN'" (Karen, first interview, 23-25).

Linda

Introduction

Linda was a 19 year-old sophomore economics and business major. Her learning style is diverger, which combines the learning modes of concrete

experience and reflective observation. Divergers perform well in situations where they are able to generate ideas. They are interested in people and are imaginative (Kolb, 1985). Linda's score on the CAS was 67, which was the lowest of the group.

The Experience

You don't get the exact feedback you necessarily want. In the classroom, the feedback is directly related to what you are asking. I like the classroom much better than this. (Linda second interview 122-125)

Session one – I hope this isn't going to be a nightmare. I was very interested in participating in this project, but now that I'm here, I'm not so sure. In fact, I am telling Professor Handy that I'm definitely going to get frustrated. I always get frustrated with computers. She turns on both the video camera and the little recorder and tells me to begin. Already I have to answer some questions before it even tells me anything! The first one asks which are sources of funds for a firm: owners, internally generated profits, debt, or all of the above. It must be all of them. That's right. Now, match the following: shares and retained earnings go with owners' equity, and debt goes with liabilities. I don't know what do at the bottom of this screen. It says that corporations raise money by selling shares to the public and through internally generated profits. I guess I just have to read it. The next screen (#4) says that

shares are an important source of funds, and it shows the IBM annual report for 1996. I don't know what to do with this either, so I guess I'll just look at the numbers. Professor Handy is telling me to say what I am thinking. I'm just reading right now. A corporation is born. This screen shows a little chick in an egg and describes the different kinds of shares that a corporation can have. Kellogg's certificate of incorporation. Do I have to read *all* of this? She shook her head no, that's good. Here are a bunch of true-false questions. The number of issued shares can be greater than the number of authorized shares. That's false. The number of outstanding shares can be less than the number of issued shares. True. All right now. Authorized shares are 100, issued shares are 75 and treasury shares are 20. You should add them together to get outstanding shares, so that should be 195. Try again. I have no clue, what's the answer? 55. I don't get it.

I'm reading about a prospectus, and she is telling me to talk. A prospectus is something that a firm gives to potential investors before it issues stock. The next screen (#10) describes how shares are issued. It shows the firm, a few investment banks, and then the investors. The pictures of the investors are funny. They look kind of old fashioned. Primary and secondary markets. Here are some questions that seem to relate back to that diagram. Do firms sell their shares directly to the public without the help of their underwriters? I would guess not, since the underwriters were on the diagram. I'm right. Now there is some text that discusses initial and seasoned public offerings. I think that IPO

stands for initial public offering, but I never heard of a seasoned one. It says that's how existing firms issue more shares to finance expansion. Investors can also trade shares among themselves. That I knew.

Screen #13 says, 'Q: journal entry for the issuance of common stock', but there is nothing in the journal. I'm going to skip over it. Nope, she is telling me to go back. A firm issues 10 shares. The par value per share is \$1 and the shares are issued at \$5 each. Build the journal below. I don't know what to do. Professor Handy says to drag the names that are highlighted in yellow into the journal. Why won't this work? I can't get the numbers to stay. What is OE permanent? Is it the same as stockholders' equity? I don't think that this is working right, because the numbers aren't sticking. I can't even ask for the answer here. I'm going on. The next screen has the answer. I guess I was trying to put the numbers in the wrong places, so that's why they weren't sticking. I hadn't even considered the fact that my answers weren't sticking because they were wrong. Here is more stuff to read (screen #16). I just like to read silently. Now I have to answer some more questions about what I just read. I don't mind doing this, but I don't like that you have to click on the next box every time you answer a question. It makes me feel like I'm not getting the right answer because nothing comes up. That's because it won't let you click on the answer until you get in that box.

The right to vote. This just says that common shareholders elect the board of directors, which appoints managers to run the firm. Firms must send

proxy statements to allow stockholders to vote if they can't get to the annual meeting. The next screen (#19) shows a Ford proxy statement. It is really long, so I'm just going to go to the next screen. This one talks about proxy wars. There is a picture of two guys shooting at each other. There is a lot to read here. Professor Handy is telling me to talk, but I'm just reading. More questions. A firm has five shares outstanding. You own two shares. What percent of the vote do you own? That should be 40%. If the firm sold five shares exclusively to the other shareholders, what percent would you then control? Now it would be 20%. These questions are kind of easy.

Here are some more questions. These are about dividends. Did it talk about them already? Match the following items: dividends are paid to..., interest is paid to... Is the difference between a shareholder and bondholder that one holds shares and the other holds bonds? I'm not getting an answer. Oh well, I'll try this. Dividends go to shareholders, and interest goes to creditors. That is right. What does shareholders' income consist of? Dividends or gains and losses from the sale of shares. I think it's both. It is. Bondholders' income consists of interest paid by the firm or gains from sales of bonds. That must be both, also.

Another diagram (screen #23). This doesn't look too interesting, so I'm going to move to the next screen. More questions. The top of the screen (#24) says guess the answers. Firms are required to pay dividends to their common shareholders periodically, they can't choose when to pay them. Yes. 'Try

again'? I thought firms always had to pay dividends. Firms cannot pay dividends unless they have met their interest obligations. Yes. It says 'Really'? Why is that wrong? Is this true in all cases that firms can't pay dividends unless they pay the interest first? I thought they always had to pay the dividends. The next page is just more questions. These are pretty easy, but I keep forgetting to talk. Here is a diagram with pictures of a factory and people on it. I doesn't seem to say too much. Clarification one – firms are required to repay debt and interest. That makes sense. Clarification two – (screen # 27) firms are NOT required to pay dividends. I wish I knew that before. This chart says that Microsoft has never paid dividends. I never knew that. Understanding the sequence of dividend payments. This screen (#29) shows how General Electric announced it was going to pay a dividend. Declaration date, record date, payment date, and ex-dividend date. She is telling me to talk again. It's hard to talk when you are reading. Now I have to answer some questions about the difference between "ex-dividend" and "cum-dividend." In which of the cases is the buyer of the stock entitled to receive the dividend on the stock – he buys shares before or after the ex-dividend date? Before. In which case will you pay more for a stock? When it is cum-dividend, not ex-dividend. Got all those right, they were easy. This says that ignoring the time value of money, the ex-dividend price equals the cum-dividend price less the dividend. Clarification three – dividends are payable only after they are declared (screen #31). This has some journal entries, but I don't have to do anything with them. Clarification

four – dividends are a transfer, they are not an expense. It's just another diagram. I don't find these very helpful. Comparison of debt and equity as sources of funds. I'm just reading this here. It lists the advantages and disadvantages of debt.

Oh, now I have to fill numbers in a table (screen #35). Suppose a firm has \$100 in cash, and 10 shares outstanding, which are held by just one shareholder. The firm pays dividends per share of \$1. What is the price per share before the dividend payment? Price per share - \$1 per share times 10 shares equals \$10. (OC – correct answer, incorrect logic). Market value of the firm's equity before the dividend payment is \$100. Market value of the firm's equity after dividend payment, \$90, I believe. Good, all of those are right so far. Cash the shareholder has after the dividend payment. Must be \$110. 'Try again.' What is the answer? It says \$10. I don't understand why when the shareholder gets the dividend payment he only gets \$10, the dividends per share were \$1 and he only gets \$10, what about the \$100? I don't get that at all.

Now it looks as if I am on a new topic – treasury shares (screen #40). This seems backward that they talked about treasury shares at the beginning when they had a couple of questions, and they are going over it now. This says that firms sometimes buy back their stock. Then they are not outstanding shares, and therefore, can't vote. Suppose a firm has \$100 in cash, no liabilities, and 10 shares outstanding (screen #42). The firm pays dividends of \$1 per share. How much cash would be shareholder get as a dividend. \$1. No, why

not? Oh, it is \$10 because there are 10 shares outstanding. If the firm pays a cash dividend, the price per share after the dividends will be paid is still \$10.

No. What is the answer? It is \$9. I don't understand why the price went down after the dividend was paid!

Stock repurchases allow shareholders to choose when to pay taxes (screen #43). It says that I can skip this page without any loss of continuity. I think I will then. Accounting for treasury stock, questions. When a firm buys back its shares, its owners' equity increases, decreases, or stays the same. I think it increases. 'Try again.' Oh, no, I just read that it decreases (OC – smiles). Treasury stock is added to or subtracted from owners' equity. Has to be subtracted from. Right. Therefore, treasury stock is an owners' equity account or a contra-owners' equity account. It has to be a contra account. Right again. Here is another journal entry that I have to do, this time for the repurchase of stock by the firm. A firm purchases 10 shares of stock at a price of \$4 each. I just have to drag these accounts into the journal. I know that I have to credit cash for \$40, so I must have to debit treasury stock for the \$40. That makes sense since it said before that treasury stock decreases equity. More questions. Reissuance of treasury shares: does it affect income? These four questions are pretty easy. Professor Handy is telling me to talk. I keep forgetting.

Now the tutorial is talking about reissuing the treasury stock. Why would they buy back their stock and just reissue it again? If the reissue price is

greater than the repurchase price, then just debit cash, credit treasury stock and credit additional paid-in capital. That's straightforward enough. Reissue price less than repurchase price (screen #49). Cash proceeds from the issue = $8 \times 6 = 24$. DID YOU SEE THAT TYPO? Anyway, debit cash, credit treasury stock, and debit additional paid-in capital. It is just the opposite of the last entry. I wish I had to do these entries rather than just read them. Retirement of treasury stock. This section she said to skip.

So, now I'm reading about stock dividends and stock splits (screen #55). This screen just has a lot to read on it, so I don't have much to say right now. It has a cute picture of a French maid cutting up a watermelon. The next screen lists the stock splits by McDonalds. They sure had a lot of them! Here is another table for me to do. A firm has 10 shares outstanding at a price of \$12 per share. What is the total market value of the shares? I guess it is 10 times 12 equals \$120. What is total market value after a 20% stock dividend? It should still be \$120. Good, that's right. But now, how many shares are outstanding? They had 10 shares and gave 20% more, so there should be 12 shares now. And, what is the price per share? \$120 divided by 12 shares is \$10 each. OK. What happens after a two-for-one stock split? Market value has to be the same, good, it is. Number of outstanding shares has to double, so it must be 20. Price per share has to be cut in half (like that watermelon), so that is \$6. Wow, no mistakes!

The next few screens have some journal entries that show how to record stock dividends. Again, they are already done, so I'm not paying too much attention to them. This screen (#63) has a big table that talks about dividends and splits. It is pretty good. I'm reading it, and she is telling me to talk, again. Understanding retained earnings. This looks like a new topic. Match the following items. Profits...increase retained earnings. Cash inflows...have no direct effect on retained earnings. Easy. The last few screens are just more reading about retained earnings. Nothing comes to mind as I read them.

That was the last screen. It really wasn't as bad as I thought it would be.

I got frustrated sometimes. I'm not sure that I liked the way it was organized, like when they ask you questions, and then explain the material. I actually would like to do this again. This wasn't like the book where you just sit and read it and you can fall asleep. It was also good that I could go back over things I didn't understand. If I didn't want to read something, I could just skip it. But if I went too fast, I could look at it again. (Linda, first interview, 59-62).

Session two – So now I'm back, I'm not nearly as nervous as I was last time. The only problem I have today is that I have an interview tomorrow with Lipton Tea Company, and I really have to get back to my room and prepare for it. I hope this one doesn't take too long.

This screen says "FotoShop, again." It talks about someone named Anne who began a business with \$220. She took the money and bought 100 rolls of film for \$100 and a machine to process the film for \$20. This next screen has

questions already! I can't believe how many there are. I don't know how I am supposed to answer these. Am I just supposed to punch in the numbers? I guess she isn't going to answer any questions this time, either. I have to figure out the cost of processing a roll. There are 100 rolls of film. How much would it cost to process one of those rolls? Ann buys 100 rolls at \$2 each. It's \$200 for the film, um, try again (OC – sighs loudly). Is the total cost of a processed roll just a single one? Wait, all right, so the cost of each roll is \$2. Do you have to click on every single one of these? It said, “try again.” (OC - when she answered questions that required a numerical response, she pounded the keyboard. At this point, the keyboard slipped off the desk and onto her lap. She laughed, but made no comment).

The number of rolls processed on day one is 40, and the total cost of rolls processed might be \$88. It is. All right, I didn't think it was all that clear. So on the second day she processed 60 rolls of film. Therefore, the cost of processing those 60 rolls must be 60 times .2 or \$12. So, 120 plus 12 is 132, the total cost of rolls processed on day two. So this last questions must be 75 rolls times two which is 150 so it would be 145. “Try again.” I have no clue, so I'm going to see the answer. Oh, yeah, 155 does make more sense. This screen was frustrating!

Now I'm reading text about how companies treat depreciation. If it is treated as a period cost, it just gets recorded into depreciation expense. This is odd. It says that if the depreciation of the machine is treated as a period cost,

would the inventory reflect the fact that processing had added value to the film, and I said yes. It gave me that “really” thing. Sometimes the feedback is helpful, but not when it says “really?” I don’t like that at all.

Now there is a lot of reading about treating depreciation as a product cost (screen #5), and thereby increasing the value of the inventory. I guess that’s why I got that last question wrong. Professor Handy is telling me that I should talk, but I’m just trying to soak this all up. Here are some journal entries to look at (screen #8). They seem pretty straightforward, so I’m just going to move along. It figures, now I have to do the entries. I’ll have to do the drag down thing again. Accumulated depreciation is credited so you have to debit an OE temporary. That won’t go anywhere, I’m not sure what I’m supposed to do. Accumulated depreciation does not belong in liabilities. I don’t understand why I can’t do anything. Am I doing this wrong, because depreciation expense won’t stick anywhere? I don’t have any questions either. What do I have to do to make it work? I’m really frustrated right now. I don’t know what to do, because accumulated depreciation, I credited it, and the \$8 has to go into a debit somewhere. I would think it would. I don’t know, none of these things are sticking. Should I move on, or just finish it? Now it balances, but I’m not sure why. I think that I should have looked at the other screen a little more carefully, because all I did here was guess. (OC – she tried to use all of the accounts, even though the entry was already complete).

Processed film is sold from the finished goods inventory. This is just finished goods, what happened to work in process? (OC – sighs heavily). I can't figure this out, what is the total cost of film sold, now do they mean wrapping? (OC – this was never mentioned). I'm not too sure. I have to ask for the answer. How do they get 55? Is this a totally different problem? I am so lost right now! I'm going to move on. Here is a table. The screen (#13) says "Inventory balances at the end of day one." Work in process, that would be zero. That's \$200 into raw materials. Work in process is, I'm not sure. (OC – she was really banging on the keys). Inflows, \$88 into finished goods. Transfer out of finished goods, 55, ending balance would be zero. Ending balance in work in process is 120. No, ending balance in finished goods is \$33, not zero.

Post journal entries (screen #14). I don't have to do anything here. Unadjusted trial balance. Accumulated depreciation is a contra-asset, and the work in process should be a temporary liability, no it is still an asset. Finished goods would not be a liability, not an expense, so it must be an asset. Finished goods, asset, cash asset. (OC – tried each account until one stuck). I don't know what contributed capital is. Now for the dollar amounts. Cost of goods sold would be 220. Cash, work in process is 120, and it is debited, and finished goods, 33. Machine is 20. Contributed capital I'll say is 55. No, it's not. I'll ask for the answer. It says that it is \$220. I'm just trying to see what they were doing here with the revenue. It is just going to the credits. Just balancing it out. Closing entries (screen #17). This doesn't seem like much (OC – checked her

watch). Review of machine's use (screen #19). Number of rolls the machine can process is 100, and then the number of rolls processed on day one is 40. Depreciation on day one is \$8. Number of rolls sold on day one is 25. Cost of processing rolls sold on day one is \$5. Depreciation on day two is \$12, that is the 20 minus eight. Number of rolls sold on day two is 75. Cost of processing rolls sold on day two is 15. Wow, I got all those right!

Here is a journal entry for day two. What do I do when 60 rolls are processed on day two? Work in process should be an asset. It sticks there. Depreciation is... I don't understand. It's not letting me put I the 165, would that not be accumulated depreciation? I'm getting frustrated with these. I don't know, maybe I went through it too fast. Now the rolls are transferred into finished goods. Isn't there anything but these, like some examples? I can't figure out how to get the finished goods. I know it's a debit, and there's 75, so 75 times two is 150, but 150 won't stick anywhere. I have to get through this. Summary of journal entries on day 2 (screen #25). I needed these before! Closing entries again, I can just glance at these. Same with the financial statements. This last screen is just charts and graphs. It looks like I'm done. I didn't like this chapter as much. It really didn't teach me like the other one did. I really got annoyed by the feedback this time.

I liked the times when it said "are you sure?", 'what about this?', or 'would this work instead of what you just picked?' I didn't like the one that just said *really* (OC – emphasized the word really). It made me feel stupid. It was almost a little bit sarcastic.

The sarcastic remarks, like 'really.' When I didn't understand something, I'd have to punch in a whole bunch of numbers and none of them would come out and there was no way to get extra help, like I didn't think it would show you step by step how to do it, and sometimes that's what I need, and I didn't understand how they got that number. Like when I did find out the answer, it took a couple of minutes to get things in my head, like, OK, this is what's going on and this how to do it (Linda second interview, 48-53; 72-81).

Sharon

Introduction

Sharon was 19 years old, and a Math/Economics major. This curriculum allows students to analyze mathematical models through such courses as operations research and statistics. Students who pursue this major often begin careers in the insurance industry as actuarial specialists. Sharon's LSI classification was assimilator. Individuals with this learning style are often involved in the basic sciences and mathematics. They are more interested in abstract concepts than interacting with people (Kolb, 1976). Sharon earned a GPA of 3.11, and scored a 92 on the CAS, which was not only the highest in the group, but also close to the highest attainable score on the instrument.

The Experience

This could have tested my knowledge more if I allowed it to. If this was my only source of having the information instead of class, I would definitely have a hard time (Sharon second interview, 14-17).

Session one - So Professor Handy said that I can begin whenever I am ready. I have to go through this tutorial and say out loud anything that I am thinking as I do it. The very first screen says "Owners' Equity - Residual Claims." There is a picture of a baseball catcher and nothing else on the screen. The bottom says 1 of 89. I guess this is going to take a long while!

The next screen says, "What's ahead" and has a list of what must be the topics to be covered. So I'm on screen #3, and already I have to answer questions! Shouldn't I have read something first? A corporation is born. I'm reading about the various kinds of shares of stock: authorized, issued, treasury, and outstanding. Kellogg's Certificate of incorporation. Wow, they have 500 million issued shares. That's a lot! (OC - asked to talk louder). Sorry. I'm not reading *every* word, but I'm looking at most of it, In fact, some of the things I'm reading again. Delaware is the favorite state of incorporation for many firms (screen #7). It says that the state's corporate laws are well established and are friendly to corporations. Delaware also has a court system dedicated to help corporations. Judges are appointed for their expertise.

Here are some questions on the next screen. The number of outstanding shares can be greater than issued shares. Authorized shares are 100, issued shares, 75, treasury shares are 20. Outstanding shares equals... Treasury shares are similar to Treasury bonds. (OC - answered all questions correctly and silently). What is a Prospectus? I am reading most of this screen silently.

When firms issue shares they are required to inform potential investors and the SEC. Not too much there. Screen # 10 is a diagram showing how shares are issued. I'll just look at this very quickly, and then go on.

More questions already. Have I read anything since the last questions? These questions are on primary and secondary markets. There are only three, and they are pretty easy. (OC - she answered all of them silently). Professor Handy is telling me that I should talk while I am doing this.

Here is some text to read (screen # 12). It is talking about par value and additional paid-in capital. The next screen is a journal entry. A firm issues 10 shares. The par value is \$1 and they are issued for \$5 each. Build the journal entry below. How am I supposed to do that? Do these things move? OH, I can drag the account names down into the entry. There should have been some directions so I didn't have to guess what to do. The entry is balanced, so it must be right. Here is the answer (screen #14). I did get it right, so I can just look at this quickly.

Rights of common – classes of stock. There isn't much here. I'm going to go on. There are more questions on the next screen. Professor Handy is telling me to talk. I'm not thinking of anything, I'm just reading the questions. (OC - answered all correctly, but silently). Right to vote. This screen has a picture of a ballot box. I'm just reading this silently. There is a multiple-choice question in the middle of the screen. Choose the right answer. Each shareholder has only one vote, or the number of votes is proportional to the number of shares

held. The answer is not in any of the previous sections, not that I noticed. I got it right anyway. The second answer was the correct one.

Ford proxy statement. This is really long. I'm just going to skim this information. Proxy wars. I'm reading this silently, and I don't really have much to say about it. Questions on the right to participate in new issues of stock. A firm has five shares outstanding. You own two shares. What percent of the votes do you own? I guess that whatever, two shares out of five outstanding. Try again. Doesn't it say you own two of the five? I don't know, I'm just guessing at the answer. (OC - answered the second question the same way). Oh, it asked for percentages, I was giving fractions. Unless specifically mentioned, existing shareholders have the right to buy any major new shares to prevent the involuntary dilution of their voting power.

The preemptive right implies that the new shares are free to the existing shareholders. False. The preemptive right does not imply that new shares are free; it means that they have the right to buy the new shares.

This is a new topic. Dividends - the right to share in profits and losses. Match the following items. Dividends are paid to...shareholders. Interest is paid to...creditors. Those were *very* easy. More questions at the bottom. Shareholders' income consists of dividends paid by the firm, gains or losses from the sale of shares in the secondary market, or both. It's both. Debt holders' income consists of both.

Interest and dividends, guess the answers. Question eight is not very clear. I was just thinking if the firm declares dividends and they don't specifically state that it's not going to be cash, do I have to assume that it is going to be cash and not stock? That's the same thing with question nine. They should have been more specific.

Clarification 1 – firms are required to pay debt and interest (screen #27). This is more reading. I don't know what to say when I'm reading these screens. Clarification 2- firms are NOT required to pay dividends. Wow, I never realized that Microsoft hasn't ever paid dividends! The graph shows that the stock price has really increased over the years.

The difference between ex-dividend and cum-dividend. "Cum-dividend" means with a dividend and "ex-dividend" means without a dividend. In which of the following cases is the buyer of the stock entitled to receive the dividends declared on the stock? He buys the shares before the ex-dividend date, or he buys the shares after the ex-dividend date. I guess if he buys the shares after the ex-dividend date. In which case will you pay more for the stock? 1. When you are entitled to get the dividend declared on the stock. 2. When the previous owner is entitled to get the dividend declared on the stock. I guess it is #2. The answer is funny. I guess because I was wrong, it said, "Really, I'd liked to trade stocks with you!" The bottom of the screen says the ex-dividend price equals the cum-dividend price less the dividends declared.

Here are two journal entries that would be recorded when dividends are declared and then paid. They are already finished, so I am just reviewing them. Clarification 4 –dividends are a transfer, not an expense. This is a diagram that shows how profits are first used to pay interest, then taxes, then dividends last. I'm not really looking at these diagrams too closely.

Screen # 33 compares debt and equity as sources of funds. It explains the advantages and disadvantages of debt. The only disadvantage is that even when the firm is doing poorly, it still has to pay its creditors, or it can be sued. Here are some questions on the comparison of debt and equity. Which investment is likely to have higher returns for the investor when the issuing firm does well, stocks or bonds? Stocks. Which investment is likely to have lower returns for the investor when the issuing firm does poorly? Stocks. Which investment is likely to be more risky? Stocks. I think these questions need to be more challenging.

Suppose a firm has \$100 in cash, no liabilities, and 10 shares outstanding, owned by one person. The firm pays dividends of \$1 per share. Price per share before the dividend payment. \$10. Market value of the firm's equity before the dividend payment. \$100. Shareholder's wealth before the dividend payment. \$100. Price per share after the dividend payment. \$9. Market value of the firm's equity after the dividend payment. \$100 still. Try again. What is the answer? 90. I don't know where the \$90 came from. The next screen (#36) has a diagram that explains the answers. I understand the

previous questions a lot more after reading this chart. The tape recorder stopped, and Professor Handy is up flipping the tape in the little machine. The informational aspect of cash dividends. Do stock prices reflect expectations of future earnings? Yes. Can a firm's dividend announcement change the stock market's expectation of a firm's future performance? Yes. Both right.

This is a new topic. Treasury stock exists when firms buy back their stock. There is a lot of information on screen #40. I'm reading through it very quickly. GE had a lot of treasury stock in 1996. This table shows about \$11 billion. Here are some questions on treasury stock. Firm has \$100 cash, 10 shares, and pays \$1 dividend per share. I answered the first one correctly. However, I'm having some trouble with the second question. It asked how much cash the shareholder would get if the firm repurchased one share instead of paid dividends. I put in the wrong answer. How did I calculate that? I don't know how I got that answer. I guess I thought the book value was \$1, but it is \$10. The shareholder would get \$10 if the firm repurchased one share.

I answered third question correctly. Oh, but I got the fourth one wrong. I'm thinking to myself about the answers. I'm just not used to doing this, so I forget to say it out loud, I'm sorry. Let's try this fourth question again. If the firm repurchases one share, the number of outstanding shares will be, it will go down by one, so it has to be nine. And, the price per share after the repurchase will be? I don't think that should change, so I'm going to say \$10. That's correct.

Here are three more questions about accounting for treasury stock.

These are easy and I am answering all three questions correctly. Screen #45 has a journal entry at the time of repurchase of stock into the treasury. A firm purchases 10 shares at \$4 each. Cash is debited, that's wrong. This is being done by the firm, so credit cash? Firm buys back 10 shares at \$4 each. Oh so, cash is credited and treasury stock is debited for \$40 each. That makes sense.

Reissuance of treasury shares. There is no text, but I have to answer three questions. Are contributions by owners and distributions to owners included in an entity's income? No. Correct. Would accountants book a profit if the firm resells the shares at a price higher than the repurchase price? No. Would accountants book a loss if the firm resells the shares at a price lower than the repurchase price? I guess not. If accountants booked a profit or loss on the reissuance of shares, would it allow a firm to manipulate its reported income by timing the reissuance of its stock? I don't understand that question. I'm going to guess no. That's correct.

Here is a journal entry for the reissuance of treasury stock. I don't have to do anything, but review it. The next screen (#49) has another entry. I am just looking at it quickly. Retirement of treasury stock. Professor Handy said to skip the next five screens. So now I am reading about stock dividends and splits. The first screen just has a lot of information. Here is a table that I have to fill-in. Professor Handy is reminding me to talk out loud as I answer the questions. I'll try. A firm has 10 shares outstanding with a market value of \$12

each. What will be the total market value, price per share, and number of shares outstanding after a 20% stock dividend and a 2-for-1 stock split? (OC - she is flexing her fingers as she reads the questions). 20% dividend, I'm sorry, I forgot to talk. Number of shares outstanding – 10 shares and gave 2 additional. I guess that's 12. That's right. Price per share stays the same. Wrong. Why is that? I'm going to ask for the answer. It says \$10. Oh, shares increase, so price goes down. Stock split. Can I look back for help? Total market value should still be 120. Oh no, I knocked the micro cassette off the desk and I jumped! It must be 30 shares, since there are 10 outstanding and they give 20 for 10, add them and get 30. No. Ok, I understand what I did wrong. I knocked it off again. Can I move this thing? Price per share was \$12, so it must be \$6 now.

The informational aspect of dividends and splits. There are two effects. One is the divisions of shares effect. This lowers the stock price per share. The other is the information or signaling effect. Stock dividends and stock splits by themselves do not increase shareholders' wealth. If stock dividends and splits convey information about a firm's prospects, however, then they can affect stock prices beyond the purely mechanical effect. (OC - read this passage *very* quickly).

Accounting for small dividends. A firm has 100 shares outstanding with a price per share of \$5 and a par value of \$1. It declares a 20% stock dividend and issues 200 additional shares. If the questionable assumption above is correct, then the following entry will be made. Ok, so they debit retained

earnings for \$1,000. That is 200 shares times \$5. Then they credit common stock - par value for \$200. That would be the same 200 shares times \$1 par. The rest goes into additional paid-in capital. The next journal entry is for large stock dividends. It looks the same as the last one, and the lights just went out. The next screen (#63) has a table comparing stock splits and small and large dividends. It doesn't look like much, so I am skipping it. (OC - only student that didn't study or express a desire to print that table).

Another new topic - understanding retained earnings. This screen just has a bunch of questions. Match the following items. Profits, losses, cash inflows and outflows on one side, and increase, decrease, or have no effect on retained earnings on the other. These are easy, and I am getting all of them right. Now there are some true-false questions. Retained earnings are equal to the cash retained in the business. False. Firms are required to pay dividends. They went over that before. False. Firms are required to pay dividends that they have declared. That's true. Understanding retained earnings (screen #65). Now they give the information that answers the questions on the last screen. Now, here is a list of the items that affect retained earnings. I am reading this silently. A few of these I knew from earlier chapters, but a lot of them are new. Wow! Already? Professor Handy said that I'm done.

This reminds me of the disk that came with the textbook. I used it at the beginning of the semester to do problems, but it wasn't as challenging as the book. I learned much more from the textbook.

Session two - So here I am back at the computer. Professor Handy said that this chapter is shorter, and reminded me to say everything that comes to mind. I laughed at that and said that I'll try. The set-up is the same, the little tape recorder, and the video camera. She put the small tape recorder where I can't knock it down! On the first screen it says that Ann manages FotoShop on day one. She has \$220 in cash and spends \$20 in cash for the machine to process the rolls before sale. (OC - writing this information on paper). She sold 25 rolls on day one for \$3 each. So she makes \$75. The machine processes 60 rolls of film on day two and Bob sells 75 rolls at \$3 each, so that's \$225.

The next screen has a lot of questions. The machine cost \$20 and the machine can process 100 rolls. I remembered those two from the first screen. Cost of processing each roll I don't remember. (OC - looks back to screen #1). I'm reading to see how much it costs for each roll, if they mentioned it, to process the film. I have no idea how to do this. (OC - swinging back and forth in her chair). I'm looking back at the first screen. It says here that she bought 100 rolls of film at \$2 each and that she paid \$20 for the machine to process the rolls before sale. The machine can process 100 rolls of film. I guess she has 100 rolls and each roll is \$5 to process? No, I'm going to try \$2. No, I have no idea how to do this. So I'm going to press the question mark. The correct answer is point two. So the next answer is that the total cost of processing the film, which is supposed to be 100 rolls, I guess, so that is \$20? No. *Ooh!*

Includes cost of processed rolls. Oh, this is for day 1. She only processed 40 rolls. So I'll try 40 times point two, which is \$8. Hmm, I guess not. (Flipping back to first screen). The machine processes 40 rolls of film on day 1, of which 25 were sold at \$3 each. So she bought 100 rolls of film. I guess that's why they don't process some of these; yeah, that's it. I'm going to look for the answer. Didn't I put in 20%? Is there a way to see how they got the answer? (OC - I told her to go to the next screen).

Cost of the machine is \$20. Number of rolls the machine processes, that was given. Cost of processing one roll, that was 20 over 100, 20 being the cost of the machine over the number of rolls that it can process, which are 100. The total cost of processing a roll of film is two plus point two which, OH I get it now because she paid \$2 for each roll of film and that is included in the cost. (OC - flips back to first screen).

Number of rolls processed on day one was 40, that was given. Cost of processing rolls on day one, 40 times point two, I think that's \$8. Total cost of film processed on day one that's two point two times 40 (OC - I reminded her that a pencil and paper were on the desk). 40 times point two is eight, carry the zero, \$16, no, that's wrong though. Wait! I made a mistake with my math, a calculation mistake. It's supposed to be \$88. Good. Rolls sold on day one, 25, that was given. Total cost of rolls sold on day one so that's 25 times two point two. I think that's 50, five, four plus one is five, so \$55. Five times two is 10. I guess I have to incorporate the cost at which she sold it, I'm not sure, so I'm

looking at the answer to see. It's \$5, which is 25 times point two, which I guess is the cost of processing 25 rolls at point two. So I guess the answer was supposed to be \$5.

Number of rolls processed on day two is 60, that is given. Cost of processing rolls on day two, so 60 times point two, two times zero is zero, \$12. Total cost of rolls processed on day two, 60 times two point two, which is \$132, and number of rolls sold on day two is 75, that was given. Cost of processing rolls sold on day two is 75 times point two is \$15. And total cost of rolls sold on day two is 75 times two point two which is \$165. And that's correct, obviously, because they told me! (OC - laughed).

On screen #4, I'm reading about treating depreciation as a period cost. If I'm reading in my mind should I do it out loud? (OC - I told her that if it makes her think of something, then say that). I'm trying to think if this anything to do with, it said when depreciation is treated as a period cost, I'm trying to think if it has anything to do with the differences between perpetual and periodic inventory systems and I'm going to say no. Treating depreciation as a period cost does not provide appropriate incentives to Ann. Thus depreciation of the machine is treated as a production cost and capitalized into inventory.

Now this screen (#5) explains how production costs are inventoriable costs. Professor Handy is reminding me to talk out loud, but I'm just reading. Screen #6 has a diagram showing how costs flow through the production process. (OC - yawned while reading this screen). Screens #7 and #8 give

journal entries for recording depreciation as a period or a product cost, and all of the transactions for day one. I am just reviewing these, I really don't have much to say right now. Screen #9 wants me to complete a journal entry for when the machine processes 40 rolls of film; but first, there are two questions at the top. Cost of processing 40 rolls. I got the answer right there by using the calculations that I remembered. The information on the second page had nothing to do with what they just told me. I didn't get it from there. If that's what that page was supposed to do. I guess they want me to put it where the entry is supposed to go. (OC - she was holding a pen for the calculations, but she just put it down). Accumulated depreciation is an asset and depreciation expense should go there. It's not an asset. I thought that was, oh that's a contra asset, is it? No. I thought it would go there. I guess I'll have to just do the numerical values. It's supposed to be \$8. (OC - flipped back to journal entry screens). Because they processed 40 rolls and that's \$8. Depreciation expense still won't go. (OC - because it doesn't belong). Work in process is \$8 because it's 40 rolls, it's not working. (OC - was becoming frustrated). I'm going to get the answer. Oh, no, this kind of problem doesn't give the answer. This is not going anywhere. I guess I would go on. What is the total cost of 40 processed rolls? 40 times two point two is \$88, so work in process, no, finished goods is \$88. Work in process is \$88. Let us examine the journal entry for cost of goods sold. Ok, they only sold 25 and 25 times two point two that's 55. The cost of goods sold, ok, finished goods is \$88, but I don't know why that 88 isn't going

anywhere. I guess it's 55. Well I know that finished goods is \$88, oh, no it's not. Ok, it's a credit of \$55. Cost of goods sold is debited \$55. Here are the answers for the journal entries that I just did (screen #55). Machine processed 40 rolls, that's \$88, transferred to finished goods inventory the finished goods is \$88, OK.

Now I have to complete a table about the three inventory balances. Professor Handy is saying talk again. I'm just getting the answers from the explanations they're giving down here. Outflows, 200. Beginning balance is zero. Work in process inventory beginning balance is zero, inflows, is 208, outflows is 88, and ending balance is 120. Finished goods beginning balance is zero, inflows are 88, outflows are 55, ending balance is 33. (OC - wasn't calculating answers, just copying them from the bottom of the screen).

This next screen says, "post journal entries." It has a bunch of t-accounts for each of the transactions. Inflows during the period, work in process, contributed capital. So that's 220, and sales revenue is 75. Now I have to prepare the trial balance. Accumulated depreciation is a contra asset. I don't know what the point of this would be, you just have plug numbers and not know why, exactly. Because it's not connected to the problems. Like you could just go back to the page and see what the answers are. But I'm going to see where everything goes. Using the mouse, I am dragging the numbers at the top of the screen into the trial balance. \$20 for the machine, and I got \$220 for contributed capital. I know the work in process. I know they had \$75 in revenue, and my

finished goods is 55, no. They're not giving me anything to work with. (OC - all answers were on the prior screen). I'm just going from my memory to see why they assigned certain values from the balance sheet. Accumulated depreciation is \$8, and 75 in cash, isn't that what I got for revenue? Oh, I forgot. Now I'm confused. I guess the balance is \$33. Finished goods, work in process, the balance is 120. I know that the balance is \$75 there, but it wouldn't take it before. Cost of goods sold is \$55. Oh, the tape stopped, do you want to flip it? Professor Handy put a new tape in.

Close the temporary accounts (screen #60). I'm just looking at the lines that they put in the box. Revenues go to income summary, cost of goods sold goes to income summary as a debit and the balance of the income summary goes into retained earnings. The income statement is a listing of the income summary accounts with revenues of \$75, COGS of \$55, cost of goods sold \$55, net income \$20. Net income is revenues minus COGS.

Review of machine's use. This looks like the same questions that I had to answer before. Ok, cost of goods sold is \$20. Number of rolls that the machine can process is 100. Number of rolls processed on day one is 40, depreciation on day one is eight, number of rolls sold on day one is 25, cost of processing rolls sold on day one is 55, that's wrong. 25 rolls, oh, it's 25 rolls times point two which is, I don't have a calculator. Eight, no, \$5. Yeah, that's 25 times point two. Number of rolls processed on day two, 60. (OC - rubbing her chin while she is thinking). Depreciation on day two is ... Number of rolls

sold on day two is 75, so the expense on day two is \$15, oh, the depreciation is \$12. The \$3 is the cost of processing the 15 rolls that were processed on day one that were not sold until day two. Sales on day two were 75. Cost of processing is \$15, well the 60 rolls that were in WIP, what is WIP? (OC - I told her it was work in process). Accumulated depreciation is \$12.

Now I have to prepare a journal entry for processing rolls on day two. Raw materials, depreciation expense, I don't know what, I'm just going to try to see what works. Work in process, processed 60 rolls, but I sold 75, it might be 150. It cost me point two cents to make one roll, so to process 60 rolls it should be \$12. (OC - she was trying to drag every available account into the entry, even though only two fit).

Screen #23 has another journal entry, this time for transferring 60 rolls to finished goods. Professor Handy is saying, "talk!" I'm just seeing what is here because I remember from before that some of the things weren't even going in. 60 processed rolls are transferred to finished goods. I get it now. I see what they're doing. So there's finished goods at 60 rolls that cost me two point two cents. *Wait*, hold on! I have to sit up here. So that's 150, actually that's 132. I'm really not thinking, well I am thinking, but I'm not used to doing it out loud. I'm trying. (OC - laughed a little). I guess I don't know if that's true, but if the rolls were transferred to finished goods, so I would assume that it would be 60 times two point two which is 132 but I guess not. I'm going to take a look at the answer. They don't give it. That *is* the answer, I don't know why it didn't come

up before, that's kind of *weird*. This is frustrating. Work in process 132 as well. I'm going to go forward.

Journal entry for the sale of 75 rolls on day two. 75 rolls were sold on that day so we have cost of goods sold which was 75 times two point two which is 165, we have finished goods which is 75, I believe it's 75. I have, oh wait, before I had the finished goods was 132. Depreciation expense and accumulated depreciation, it goes here. Cash 225 because they sold 75 rolls, but it's just not taking my answer there. Now it does. I guess when they received the cash they didn't think that was important, but they wanted me to see it.

The trial balance is already done, but I did that on day one. Close temporary accounts at the end of the day (screen #27). Revenues, income summary, COGS, income summary, and income summary into retained earnings is \$60. Opening balance is \$20. Speak louder? Sorry. The last screen is part of a balance sheet for Proctor and Gamble. It just shows buildings and equipment, and accumulated depreciation. Not much there. Now I'm finished. I don't think this was a very good chapter. Like the first chapter, the information was ok, I liked being able to move around the screens easily. It was a matter if I didn't remember something or understand something, I could just go back, or if I wanted to, get the answers. But I really didn't like the problems at all.

I didn't think they were challenging enough, even though I didn't get them right. If they were, I would have read it more thoroughly (Sharon first interview, 33-35).

They were awful because they weren't testing your knowledge, they were just testing your memory. It could have tested my knowledge more if I allowed it to (Sharon second interview, 10-15).

Kathy

Introduction

Kathy was a 20 year-old sophomore economics and business major. Her learning style was accommodator. According to Kolb's profile of an accommodator, Kathy would be expected to excel at involving herself in new experiences, while using trial and error to solve problems. Accommodators often rely on others for information rather than their own analytic ability. Kathy scored a 74 on the CAS, and had a 2.65 GPA, which was the lowest in the group.

The Experience

I like how it asks questions after you learn something, it was right there. I like how it lets you know the answers. A lot of times teachers ask questions or give you old tests, but you don't get the answers, so you don't know if you're right. I also like how after the answers there is explanations, so if you don't know how they got that answer you could go back and look. I thought it was well organized. If I were in my room, I might have done this slower. I should have gone back and read some things more than I did (Kathy second interview, 6-14).

Session one - Well here I am ready to begin. Professor Handy is telling me to just say everything that I am thinking of while I am doing this tutorial. That shouldn't be too hard to do. She placed a video camera on my right and a small cassette recorder on top of the computer.

I'm beginning this tutorial by reading the first screen. It is beginning with a question. Which of the following are sources of funds for a firm? Stock sold to investors, profits, or money borrowed from banks? I think it's four, all of the above. OH, it said I'm correct! That's funny. Now, match the following items: shares, retained earnings, debt, and liabilities and owners' equity. Shares and retained earnings go with equity, and debt with liabilities. The bottom of the screen says that firms have three sources of funds. Selling shares to the public, generated profits, and borrowing from banks. Screen #4 has a big balance sheet for IBM. Do I have to read all of this? Professor Handy is not saying anything. She didn't say yes, so I'm going to go on. Here is a new screen that says "Kellogg's Certificate of Incorporation." This is a really long, too. I'm just reading through it. It talks about the purpose of the corporation, which is to engage in any lawful act or activity. I'm not sure if I'm suppose to read this whole thing. I am looking at Professor Handy, and she is writing something on paper. Kellogg's has 500 million shares of common stock authorized. I don't know if I should ask her if I should keep reading. She said that she wouldn't talk to me at all except to tell me to "keep talking." The par value of the stock is \$.25 per share. This thing is *really* long, but I'm just going to keep reading. The

screen says that Kellogg's is registered in Delaware. I'm still reading. It says that the corporation may pay dividends if the board of directors declares them and there is cash to pay them. I can't believe how *long* this is! Now I am beginning to skim, because I don't know if I'm supposed to take more than the hour she said I will probably be here. She isn't telling me to move on, so I'll just keep doing this.

Now I'm finally finished! That took me *forever* to read! (OC - Kathy was the only participant who read past the second or third paragraph. She laughed about that during the interview). This next screen (#8) tells about Delaware being the favorite state of incorporation for firms. I'm just reading this to myself, just like I did the Kellogg's thing. Am I even doing this right? Professor Handy said that I should say whatever comes into my mind.

Here are some true-false questions that I have to answer. The number of issued shares can be greater than the number of authorized shares. That's false. The number of treasury shares can be greater than the number of issued shares. I think it's true, no, it's false. I thought it was true but you can't buy back more than you issued. The number of shares, the number of *outstanding* shares can be greater than the number of issued shares. True? No. I thought it might be true because it's not that you buy back so many shares you should buy back a greater number than you have there but I guess they're talking about the whole number of issued shares. The outstanding shares can be less than the issued shares. Um, authorized shares and issued shares are the same if there is no treasury shares.

Ok, if 100 shares are authorized, 75 shares are issued, and treasury shares are 20, how many shares are outstanding. I thought treasury shares were outstanding shares. I don't know, five. No, 50? Should I just skip it? Professor Handy reminded me that I can ask for the answer. It is 55. All right, that makes sense. Treasury shares are shares that are purchased by the U.S. Government. False. Treasury shares are similar to Treasury Bonds. Um, false. Done.

What is a prospectus? That's what screen #9 asks. It just tells that firms are required to inform potential investors about the firm's prospects through the prospectus. The screen has symbol of the SEC on it. The next screen shows pictures of how shares are issued. There are arrows drawn from the issuing firm to the investment bankers or underwriters and then to the investors who are called the primary market. There are also arrows drawn between two cartoon characters, which represents the secondary market, which is where investors sell shares among themselves. In the cartoons, the men look like they are counting piles of money. They were funny! A few more questions. Do firms sell their shares directly to the public without the help of investment bankers? No, not according to that picture on the last screen. Which of the following is true: investors can only buy shares from the issuing firm, or shares can be purchased from other shareholders. I think it's the second one. That's right.

On this next screen (#12), I am reading about something called par value and additional paid-in capital. It is hard to talk out loud when I am just reading. Suppose a firm issues shares with no par value. Will the market price of these

shares be zero? No, correct. Now I have to prepare a journal entry. A firm sells 10 shares with a par value of \$1 for \$4. Build the journal entry below. What do I do? Ok, move the names and the numbers down. Cash is debited for 10 shares times \$4 each or \$40. Ooh, the lights went off. (OC - she giggled). Oh, what happened? Common stock is not going anywhere. I don't understand why! Oh, it belongs in owners' equity, not assets. Common stock is credited for \$10. I don't know why it didn't do that before. (OC - it was wrong). This next screen says, "Where are we"? It has a bunch of check marks at the end of phrases. What do I do with this? Oh, that's right, this just tells me what I've completed up to this point, and I'm supposed to skip it. I forgot. The rights of common stockholders. Do I have to read this whole thing? It says that each share of stock has a right to vote for the management of the firm, to share in new stock issues, to the profits and losses of the firm, and the firm's net assets if it is liquidated. Common shareholders are owners of the corporation. False. Common stockholders manage the operations of the firm directly. False. Shareholders must be physically present at the annual meeting to vote for the board of directors. True. Oops, I guess not. (OC - laughs). The board of directors manages the firm's operations directly. False. The board of directors appoints the firm's officers. True. The officers are the managers and have overall responsibility for the firm. True? Officers are responsible for preparing the financial statements that are then audited by the firm's auditors. Terms of

ownership: each shareholder has one vote, or the number of votes is proportional to ownership. I think it's proportional. Right.

Ford proxy statement. Here is another long one. I think I'd better not read the whole thing this time, because I've been here for a while already, and I'm only on screen #19. It just talks about who can vote and when the vote will take place at the annual meeting. Here are some more questions. A firm has five shares outstanding and you own two of those shares. What percentage of the vote do you control? Two over five. Try again? Isn't that right? I'll ask for the answer. 40? *Isn't that what two over five is?* The firm sells five additional shares exclusively to the other shareholders. Your voting percentage would now be? If the firm sold five additional exclusively, wouldn't it be two out of 10 or 20? NO? Oh, I forgot the percentage sign. Is the voting power diluted by the new shares? Yes. The preemptive right implies that the new shares are free to the existing shareholders. That can't be. False. Ok.

The right to share in profits and losses: dividends. Match the following terms - dividends are paid to...shareholders, and interest is paid to...creditors. They were easy. You buy a house for \$100 and rent it for \$10 per year. At the end of two years you sell it for \$150. You have two types of income from the house: rental income and profit from the sale. What types of income do shareholders and bondholders get? Where do I answer that question. (OC - It wasn't a question, it was just paving the way for questions in the box). Shareholders income consists of dividends paid by the firm, gains and losses

from the sale of shares in the secondary market. I'd say both 1 and 2. Debt holders' or bondholders' income consists of interest paid by the firm, gains and losses from the sale of bonds in the secondary market. Both 1 and 2 again. Good, all of those were right.

Here is another diagram. This one shows how the assets of the firm are distributed to the creditors and the shareholders. Comparison of interest payments and dividends: guess the answers. Isn't that kind of silly, guess the answers? Firms are required to pay dividends to their common shareholders periodically - they cannot choose when to pay dividends. True. False? Ok. Firms are required to make promised interest payments to the bondholders - true. Firms can not pay dividends unless they have met their interest obligations - true. Interest payments depend on the profitability of the firm assuming they have enough cash to pay interest - um I think they have to pay the interest anyway. Firms that are more profitable can pay more dividends in the long run - um - sure. Dividends are an expense - false. Shareholders get cash when dividends are declared - true - nope? Shareholders get cash when firms have positive cash flow. Shareholders pay cash when firms have negative cash flow - false. Shareholders must pay a firm's creditors when it is unable to do so - false. Firms are required to pay dividends at regular intervals - true - oops. I guess not. When a firm declares a dividend it is required to pay it. Shareholders get cash when firms declare dividends - shareholders get cash when firms declare dividends - false. Shareholders get cash when firms pay dividends - true.

Dividends are expenses from the firm's perspective - false. Oops, the tape stopped. Professor Handy is flipping the tape in the little recorder. Back to work. Next is a lot of text (screen #27) that explains that firms are required to pay interest. They don't have to pay dividends to the shareholders. I am now looking at a graph that shows how Microsoft's stock price has risen over the years. The screen says that Microsoft has never paid dividends to its shareholders.

Here is more information about dividends. I am reading about the dates for dividends. There is a declaration date, record date, and payment date. It also mentioned something called the ex-dividend date. This is when the right to receive the dividend goes from the seller to the buyer of the stock. If I buy the stock before the ex-dividend date, I will get the dividend. If it buy it after that date, the seller gets the dividend. The price of shares before the ex-dividend date are called cum-dividend, and the price of shares after the ex-dividend date are called ex dividend. Now there is a question. In which case would you pay more for the stock - when you are entitled to the dividend declared on the stock, or when the previous owner is entitled to collect the dividend declared on the stock? It must be the first one. Ok, it is. Ignoring the time value of money, the ex-dividend price equals the cum-dividend price less the dividends declared. I wonder what the time value of money is? (OC - took a drink of Gatorade).

Here are two journal entries that would be prepared when dividends are declared and paid. This next screen (#32) had a diagram that explains that

dividends are after-tax payments, and not expenses. I'm just looking these two things quickly. Now I am reading about the advantages of debt from the firm's perspective. This section is just reading. What do you mean? (OC - reminded to say what she was thinking). Oh, ok.

Which investment would most likely have higher returns for the investor when the issuing firm does well? Stock or bonds? It has to be stock. Correct. Which investment is likely to have lower returns for the investor when the issuing firm does poorly? Also stock. Which investment is likely to be more risky? Stock again. I like how this answers questions after you learn something, and I like how it lets you know your answers are right.

So, more questions. Will investors buy a riskier investment unless it provides higher returns? Riskier? No. A firm has \$100 in cash, no liabilities, and 10 shares outstanding, which are held by one shareholder. The firm pays dividends of per share of \$1. The market value of the equity is equal to its book value - price per share before dividend - \$1? Try again. Oh, no, \$10. The market value of the firm's equity before the dividend payment. 100? The shareholder's wealth before dividend payment. Zero. No? 100. Price per share after the dividend payment. 10, try again. 11? 9? (OC - guessing). Market value of the firm's equity after the dividend payment. 100 less 10 dividend is 90.

Cash that the shareholder has after the dividend payment. 10. The shareholder's wealth after the dividend payment. 10? No, 100? Why can't I get it to give the answer? (OC - reminder her of shift question mark). 90. I thought

it was 100. The market value of the firm's equity before dividends. The market value of the equity - 100? The shareholders' wealth before dividend payment - um zero? Shareholders' wealth before dividend payment - 10? Price per share after dividend payment - 10. Price per share after dividend payment - 9? Market value of the firm's equity after dividend payment - um 90. Cash that the shareholder has after dividend payment - shareholder has after dividend payment - Shareholder's wealth - shareholder's wealth after dividend payment - 9? Oops! Oh, 10. Shareholder's wealth after dividend payment. Shareholder's wealth before dividend payment - no, after the dividend payment - how come it's not giving the answer? (OC - I told her to press the shift key) OH, (OC - laughs). I keep forgetting about the shift key.

The informational aspect of cash dividends (screen #37). This is explaining that the cash transfer from dividends causes the stock price to decline. This screen also says that the market often sees dividends as a good sign. Do stock prices reflect expectations of future performance? I would think so, yeah. Does a firm's dividend announcement change the stock market's expectations of future performance? True. A firm's dividend policy: a corporate finance issue. It says I can skip this one, should I? Professor Handy is shaking her head no. So do I have to read it? She said yes. All of the issues on this page are discussed in corporate finance courses.

Here is a new topic, stock repurchases, or treasury stock. There is a lot of reading on this first screen (#40). The next one shows a part of an annual

report of GE. It tells how much treasury stock the company had in 1994, 1995, and 1996. OK, here are some questions. Suppose a firm had \$100 in cash, no liabilities, and 10 shares outstanding, which are held by one shareholder. The firm pays dividends of \$1 per share. Is this the same problem? I thought I just did this. How much cash will the shareholder get as a dividend? \$10. If the firm uses cash dividends to repurchase a share, how much cash will each shareholder get? The firm does not declare dividends but repurchases shares. Assume the firm does not declare cash dividends but repurchases one share - um a dollar? There are some differences between cash dividends and stock purchases. If the firm pays a cash dividend the number of outstanding shares remains the same - pays a cash dividend. And the price per share after the dividend paid will be - 9. I typed in the same answer and it said I was wrong.

If the firm repurchases a share, outstanding shares will be...and the price per share after the repurchase will be...(OC- sits up very close to the computer screen as she is answering these questions.). When the firm buys back its shares its owners' equity - increases, nope, decreases. The amount shown as treasury stock is added to the owners' equity is added or subtracted - if the firm buys back the shares, owners' equity decreases so the amount shown as treasury stock is subtracted. Therefore treasury stock is a contra-owners' equity account.

Here is a journal entry for treasury stock. A firm buys back 10 shares paying cash. Cash \$40 credited. So treasury stock must be debited for 40.

That's easy enough. A firm has repurchased 10 shares at \$4 each. Consider two

cases: the firm reissues eight shares for \$6 per share, and the firm reissues eight shares at \$3 per share. So the firm has repurchased \$10, no 10 shares. Are contributed, contributions by owners and distributions to owners included in an entity's income? No. Do accountants book a profit on repurchased shares? No. Will accountants book a loss if the firm resells shares at a price lower than the repurchase price? No. If accountants booked a profit or a loss would it allow a firm to manipulate its reported income by timing the reissuance of its stock? I have no idea. It must be yes. Ok, it is. Here are some journal entries for when the firm sells back the shares. One is when it reissues the shares at a higher price, and the other when it reissues the shares at a lower price. These make sense. Retirement of treasury shares. This section I can skip. So now I am on stock dividends and stock splits. This screen (#55) has an explanation of what happens when a firm gives a stock dividend or stock split. You get more shares with a stock split than a stock dividend. A firm has 10 shares outstanding with a market price of \$12 each. What is the total market value of the shares, the number of shares outstanding, and the price per share after both a 20% stock dividend and a 2-for-1 stock split? If a firm gives 20% stock dividend - for every 10 share it gives an additional 2 shares. Total market value of the stock before. 12. Oops! Total market value of ALL the shares. 120. Good. Ok, so the number of shares outstanding - 10 before and 12 after. So now there is a 2 for one stock split. 10 shares before and 20 after. The price per share was 12, and now 6.

Information aspect of stock dividends and splits (screen #59). Current price is \$100 per share. It does a 2 for 1 stock split. The mechanical effect is to lower the price to \$50 per share. Will this cause the stock market to bid the price above \$50? I don't think so. It will? There are two effects of stock dividends and stock splits: the division of shares effect and the signaling effect. This might convey information about the firm's prospects, which might affect stock price. It says I can skip the next three pages of information without any loss in continuity.

Understanding Retained Earnings. Match the following items. Profits, losses, cash inflows and outflows. Increase, decrease or have no direct relation to retained earnings. So profits increase RE, and losses decrease it. I don't know about cash inflows and outflows. That's good, they have no effect. Retained earnings are equal to the cash retained in the business. Um, yeah. No? Firms are required to pay dividends. No.

Firms are required to pay dividends if they have been declared. Yes. Retained earnings are reduced when dividends are declared or paid. Probably declared. Right. There can be direct changes to retained earnings - i.e. profits and losses are not the only causes of changes in retained earnings. I think that's true. It is. I'm finished. I'm really glad, because I was starting to worry that I was taking too much time doing this! I liked doing this even though it took me so long and some parts were hard:

Some were difficult. The journal entries were easy because there were only two choices. Some of the true-false were tricky. If I got them wrong, I re-read them. The multiple-choice were also pretty easy. I had a lot of trouble with the ones where I had to fill-in the numbers. I guessed at the fill-ins at the beginning, and then when I began to think about the calculations involved, I got more right. I always feel like accounting is adding, and not subtracting, so that messed me up (Kathy first interview, 21-33).

Session two - This is the second tutorial chapter. It is almost the end of the semester. We have two weeks left, and I can't wait for summer break. Professor Handy said that this chapter is shorter, but has a lot more calculations. She also said that she is going to remind me to talk constantly if I get too quiet.

All of the equipment is ready and I can begin. I'm reading about something called FotoShop that processes film before it is sold. This screen gives a lot of information, like how Ann bought a machine and 100 rolls of film. It also says that Bob manages FotoShop on the second day. So on screen two there are a lot of questions! The first one asks the cost of the machine. I forgot already! I can go back if I need to? Cost of the machine is \$20. Number of rolls the machine can process is 100. Cost of processing is, I'm not sure how to get it. Let's think. Cost of processing rolls, I think it's \$3, no. I'm not sure. (OC – asks for answer). Oh, point two. (OC – looks very confused). Total cost of processed rolls, includes the cost of unprocessed rolls. I think it's three point two. Three? Four? Oops. No. Two point two? I'm not really sure. No, two

point two, I don't know how they got that. Oh, number of rolls processed is 40. (OC – asks for answer). Cost of processing rolls, eight. Total cost of processing rolls on day one, I'm not sure. Total number of rolls processed is 40, cost of rolls processed, oh, eight, no. 88? Oh.

Number or rolls sold on day one, she sold 75 on the second day, so it's 25. (OC – went back to screen #1 to find the answer). Correct. Cost of processing rolls sold on day one. Cost of processing rolls, 40? Um, eight times two is sixteen. Five? No. Total cost of rolls sold on day one. Three times 25 is 75. (OC – shaking her head). No. 55? Number of rolls processed on day two, 60. Cost of processing rolls sold on day two, I'm not sure how they got that. 12? Total cost of rolls processed on day two. I don't understand the difference between cost of processing rolls and the total cost of rolls processed. Number of rolls sold on day two is 75. Cost of processing rolls sold on day two. \$15. Total cost of rolls sold on day two. (OC – asked for many answers on this screen without trying to calculate them on her own).

Oh look, here are the formulas for those questions. Cost of processing rolls, two divided by 100. I guess that makes sense. Screen #4 has a lot of reading. I haven't had to read much yet. Machine's acquisition cost is \$20. Would Ann have any incentive to follow a long-term production plan if she bears the cost of processing 40 rolls when she is likely to sell only 25 rolls? No. If the depreciation of the machine is treated as a period cost, will FotoShop's inventory reflect the fact that processing has added value to the film? No. This

next screen (#5) talks about adding the depreciation of the machine to the cost of the inventory.

Here is a diagram with arrows going from top to bottom. It shows how the film goes from being a raw material to a finished good by adding other costs, like depreciation. The next two screens just show journal entries for depreciation and moving the film through production. It didn't talk much about this before, so I am just glancing at them. Now I have to do a journal entry (screen #9). Cost of processing rolls. Contra asset accumulated depreciation. (OC – looks back at first screen). Ann has \$220 in cash. She buys film for \$200 and buys a machine for \$20. What is the cost of processing 40 rolls of film? Five? No. it must be eight, that's the other choice. It is. Would the machine's depreciation be included in the cost of processing the rolls? No. Oh, Yes? I'm trying to drag the accounts down into the entry. Accumulated depreciation, I don't know why it wouldn't go in there. (OC – if the account doesn't belong, it won't stick). But, the screen shows that the entry is balanced, so I must be done. Onto the next one. Processed film is transferred to finished goods. Depreciation expense, finished goods, work in process. I still don't understand why it isn't going in there. (OC – trying to drag all of the numbers into the entry).

Here on screen #12 it says that the processed film is sold from the finished goods inventory. The journal entry for the revenue is straightforward and is shown on the next page. Let us examine the journal entry to record cost

of goods sold. What is the total cost of film sold? \$55. Finished goods, I don't know why it doesn't stay. (OC – had difficulty with debit/credit rules).

Now, here is a table that is called "Inventory balances on day one." Raw materials beginning balance is zero, work in process, zero, finished goods beginning balance is zero. 55, oh no. Inflows 220, outflows are 200, oh, 208. Finished goods inflows 88, outflows 88, and ending balance is 55. Finished goods beginning balance is 33. (OC – copied numbers from the bottom of the screen instead of trying to calculate them). Post journal entries (screen #14). Here are t-accounts that show the entries and the balances in each account. Unadjusted trial balance, cash, cost of goods sold, oh, the machine is 20, accumulated depreciation is 8. Contributed capital is 220. Work in process is 88. It's not staying again. Cost of goods sold is 75, sales revenue is 75, oops, I don't know why it's not staying. Cash debit 75, oh, now it works. Review of machine's use (screen #19). (OC – skipped three screens). Cost of the machine. Am I supposed to remember this? Can I go back? Cost of the machine is \$20. Number of rolls the machine can process, 100. Number of rolls processed on day one is 40. Depreciation on day 1, eight. Number of rolls sold on day one, 25. Cost of processing rolls sold on day one. 25 times I don't know. (OC – asked for answer). Number of rolls processed on day two is 75. No? Oh, 60. Depreciation on day two, 75. (OC – asked for answer). Number of rolls sold on day two, cost of processing rolls sold on day two. (OC – asked

for answer). Screen #20 has the answers. Screen #21 just tells me how much I've finished. All that is left is bookkeeping for day two.

Machine: When 60 rolls are processed on day two. Work in process and accumulated depreciation. I'm not really sure how this goes. OH, is this a journal entry? I think that accumulated depreciation should be credited but it won't let me do it. Oh, there, now it will. I don't understand why.

Now the entry for when 60 processed rolls are transferred to finished goods. Cost of goods manufactured. No? That won't stick. It must be finished goods and work in process. The revenue entry for 75 rolls is straightforward and is shown on the next page. Let us try the expense entry for the sale of the rolls. Finished goods, it's not going in (OC – didn't get it.) There are a lot of numbers here. I don't know which one to use. Cost of goods sold is (OC - guessing). Ok, it balances. That's good. Here are the answers to these entries. I can skip this. Unadjusted trial balance (screen #26). This one is already done for me. Close temporary accounts on day two. This is the same thing that they did for day one. Make financial statements. This is done, also. Oh, I guess I'm done. I think I went through that really fast!

I like how this was always there with you. "After you did a problem, it showed you that you got it right, and every one had a reason why the answer was correct. It was easy to see how they got the answers. I liked having it right in front of me, it made it easier to understand.

When you get a question wrong it tells you, by saying try this or try that, but if you are right, it tells you that too (Kathy first interview, 26-32; 67-69).

Summary of Profiles

The eight participants' verbalizations were somewhat different from each other. I found that the male students were likely to be very verbal during the sessions, even if only to read long passages of the text. John was the participant that was most likely to verbalize most of what he was reading on the tutorial screens. George tended to voice his opinion about certain aspects of the tutorial, such as the color of the screens, or the type of question posed by the tutorial. Allen and Steve described their thought processes while answering questions and compared information contained in the tutorial with prior knowledge. Of the female participants, I had to prompt Karen to talk most often, although I did have to remind each of them several times during their sessions. Karen would read questions out loud and answer them silently. She rarely spoke, unless to address questions. Sharon performed most of the calculations out loud, but did not say much else. She did, however, apologize several times for forgetting to talk out loud. Linda and Kathy were also both quiet, but tended to verbalize their confusion with the problems that they were asked to solve, and Linda verbalized her frustrations.

Comparison of Experiences With Those Reported in Prior Studies

In this section of the chapter, I will address the second research question: How does the experience of these students compare to the major explanations offered in the literature for student reaction to CAI (including learning styles, attitude toward computers, and social presence)?

Learning Styles

Before collecting the qualitative data, I studied the characteristics of the four learning styles developed by Kolb that were delineated in the LSI handbook (1985) as well as those reported by other researchers. The characteristics that were cited for each of the learning styles were the characteristics that I looked for in the eight students. Therefore, I adopted an a priori design and sought to learn how the eight students were similar to others who possessed the same learning style. Some of my findings regarding learning styles were similar to those reported in earlier studies. In one study, it was reported that convergers and assimilators earned higher grade point averages than divergers and accommodators (Wynd & Bozman, 1996). In most cases, this held true in the current study. One diverger (Allen) had a higher GPA than one converger (John), but this might be because John was an engineering major, considered to be more difficult than economics and business.

Several of the studies evaluated the connection between learning style and success with software or computer-assisted instruction. In an analysis of

four studies that measured the influence of learning style on learning new software, Bostrom, Olfman, and Sein (1990) noted that abstract learners (assimilators and convergers) performed better than concrete learners (divergers and accommodators). My study did not measure performance. However, the convergers, John, Steve, and Karen, had little or no trouble completing the task requirements, such as solving problems. Sharon, an assimilator, completed the CAI with little difficulty, even though she did not like the learning method. Convergers were also reported to exhibit the highest overall performance in a training session of the use of electronic mail (Sein & Robey, 1991). Again, although my study did not seek to measure performance, I observed that the three convergers were very successful in their completion of the CAI. They had less difficulty than the others in completing the tasks required by the software.

In a study that measured the impact of multimedia instruction on student achievement and attitudes, McDonald (1996) discovered that assimilators had a much more positive attitude toward multimedia instruction than convergers. This was not the case in my study. Although only one member of the participant group was an assimilator, she did not have a positive attitude about the CAI, but she completed the task successfully. She thought it should have been more challenging, and that a textbook provided more information. A study that measured an abstract learning style, though not through the use of the LSI noted that abstract learners (assimilators and convergers) performed well in technology-based courses (Grasha & Yarbanger-Hicks, 2000).

In another study involving hypermedia, divergers and accommodators who used hypermedia software to solve accounting problems exhibited significantly higher achievement scores than individuals of the same learning styles who solved the problems in a more conventional manner (Grant, 1995). More specific learning style characteristics observed by Grant, such as the tendency of convergers to remain on task until completion or accommodators to rely on others for questions, were also evident in my study.

In the other study that used learning style as a way to explain differences of accounting students learning with less traditional techniques, Jensen (1995) discovered that accommodator and assimilator members of the experimental group experienced significantly greater achievement than control group members of the same learning styles. The achievement of convergers was greater in the experimental group, but not significantly. Since convergers tend to be successful in traditional educational settings, such as lecture and problem solving, the small difference in achievement should not be surprising. The three convergers in my study were good students who adapted well to the CAI, but might have been just as successful if exposed to other modes of learning.

I also noted other similarities existed between the results discovered in my study and those reported by other researchers. Studies have indicated that convergers adapt well to new experiences and can successfully learn using technology. Active learners (accommodators and convergers) tend to be more comfortable in new environments than reflective learners (divergers and

assimilators). Of the three reflective learners - Allen, Linda, and Sharon - Allen had a much more positive experience. The others stated that they preferred learning by lecture and/or textbook, more reflective ways to learn.

As part of the process of comparing the experiences of the eight students in my study with those discussed in the literature, I focused on Steve's characteristics and experience and attempted to match them with Kolb's description of a converger, as well as characteristics discussed in other studies.

The converger learning style comprises the learning modes of abstract conceptualization, which focuses on using logic, ideas, and concepts, and active experimentation, which emphasizes practical applications as opposed to reflective understanding (Kolb, 1984, p. 68-69). According to the LSI scoring handbook (1985), strengths of the converger include problem solving, decision-making, deductive reasoning, and defining problems. I found several instances in the data describing Steve's experience that illustrated his similarity to other convergers. For example, his ability to solve problems easily was evident at many times during his sessions. The first time I noticed the ease with which he solved problems was when he had to complete a journal entry to record a transaction. Although he was not given instructions by the tutorial to drag the account names and dollar amounts into the box, he simply figured it out on his own (Steve observation one, 42-43). When he was confronted with the table that required him to calculate changes in stock as the result of stock dividends and stock splits, again, he logically performed the calculations and used the

information from the first calculations to complete the later ones (Steve observation one, 124-129).

Deductive reasoning is another strength of convergers. When Steve had to answer a question as to whether treasury stock, a concept with which he was not familiar, was like a treasury bond, he stated that he never heard of treasury stock, but bonds must have interest, so the answer had to be false (Steve session one protocols, 31-33). Later in that session, when he had to solve problems about purchases and reissuances of treasury stock (stock purchased by a corporation from its shareholders), he was again able to apply prior knowledge to the new concepts (Steve session one protocols, 395-402).

One of the other characteristics listed in the LSI handbook (1985) related to the fact that convergers engage in too little hasty decision-making. This is especially true of Steve's approach to completing the tutorial problems. He very methodically went step-by-step through every one and thus was able to solve them very easily.

Grant (1985) reported that the convergers in her study remained focused on a task until completion. While some of my participants gave up on the difficult problem at the beginning of session two, Steve answered every question without asking for the tutorial to provide any answers (Steve observation two, 8-11). Sein and Robey (1991) discovered that among novice computer users, convergers exhibited the highest overall performance in a training session on the use of electronic mail. Steve was the most inexperienced of all of the students

as to computer use, as there was very little availability of computers in his home country. However, his converger learning style appears to have contributed to his overall success in completing the tutorial chapters.

Convergers have also exhibited a tendency toward academic success. In one study, convergers and assimilators earned higher grade point averages than their undergraduate business major counterparts (Wynd & Bozman, 1996). Steve had the highest GPA in the group of eight, a 3.9 out of a 4.0 scale. Another interesting trait noted by Kolb is that both economics and computer science were majors pursued by convergers. Those two courses of study comprised Steve's double major; therefore, he fit the converger model well.

Attitude Toward Computers

The other selection instrument used in this study was the Computer Attitude scale (Nickell & Pinto, 1986). The scores of the participants ranged from 67 to 92 (higher scores represent more positive attitudes). Prior studies found that CAS scores indicating positive computer attitudes correlated with high computer science grades among college students (LaLomia & Sidowski, 1991). Although Steve was the only member of the group to study computer science along with economics and business, his 3.9 GPA indicates high grades in all of his courses. One study of computer anxiety (presumably a negative computer attitude) among Kolb's learning styles reported that convergers reported lower computer anxiety than divergers. The three convergers in my

study had CAS scores of 80 or above, while the two divergers had CAS scores of 67 (Linda) and 72 (Allen). The author posited that active learners (convergers and accommodators) should have fewer negative feelings toward computer technology (Bozionelos, 1997).

Studies that measured the effect of gender on computer attitude have reported mixed results. Although several studies have indicated that males have better attitudes toward computers than females (Greber, 1990; Nickell & Pinto, 1986), studies had reported no effect (Walters & Necessary, 1996), and more positive attitudes experienced by females (Ray, et. al., 1999). Due to the size of the participant group in the current study, an analysis between gender and attitude toward computers could not be made.

Other factors that relate to positive computer attitudes include amount and type of computer use as well as length of time of computer use (Durler, 1997; Mitra, 1998). One would have expected Steve to have had a very high CAS score, given his high grades in computer science, his learning style, and the ease with which he completed the CAI exercise. His score of 83, while not low, was lower than I expected. A possible reason for this was his lack of experience with computers (due to the lack of availability in his home country) before starting college about seven months before the onset of this study. Perhaps the short amount of time that he was exposed to computers accounted for his score.

Social Presence

Social presence has been studied in relation to computer-mediated communication and distance learning environments, where the perception of the presence of another individual was an important characteristic of the medium (Boverie, et. al., 1997; Hackman & Walker, 1990). A characteristic of social presence that should be inherent in these media is immediacy, a measure of the psychological distance between those communicating (Wiener & Mehrabian, 1968). Some of the students stated that they actually felt as though they were communicating directly with the computer during the exercise. Allen stated that being involved with the CAI was like having a conversation with the computer. John said that the immediate feedback was more than a student would get in a lecture. Steve compared the process with talking to the author and discussing how to solve the problems. In an early distance learning investigation, a positive relationship existed between teacher immediacy and affective learning (Kearney, et. al., 1985).

Another attribute of teacher immediacy is his or her use of personal experiences. Some of the sections of the CAI introduced accounting concepts with either cartoons, such as the concept of proxy wars, or comparisons to familiar concepts, as in the discussion of preferred and common stock using the example of the House of Lords and the House of Commons. The students often mentioned those examples, which resemble the use of personal examples by an instructor.

The second concept that has been linked to social presence is interactivity: the perception that a mediated experience is not actually mediated (Lombard & Ditton, 1997). Information transmission, problem solving, and feedback are characteristics of a medium that indicate interactivity, and therefore, social presence. Although social presence has not previously been studied in connection with CAI, the reactions of the eight students that participated in the current study suggested that the CAI did possess those characteristics.

As expected, the students stated that the CAI software was interactive. Researchers have measured the existence of interactivity in a medium by observing several characteristics. One characteristic is the availability of user inputs that are accepted by and responded to by the medium, corresponding to the questions and problems that the user completes. Another is the speed with which the medium responds to the inputs, which was immediate; and the third is the number of situations that can be modified by the user -- such as dragging account names and dollar amounts into a journal or financial statement (Lombard & Ditton, 1997). The CAI possessed all of these characteristics that indicate interactivity and, therefore, social presence.

One other concept that could be considered in a discussion of social presence is media richness. Two of the factors that indicate media richness, feedback immediacy and use of natural language (Hertenstein, 1999), existed in the CAI software. These elements allow still another way to consider the

existence of social presence in the medium.

The definition of social presence has evolved since its introduction. The initial characteristics of warm, personal, sensitive, and social (Short, et. al., 1976) were expanded to include immediacy, interactivity and media richness (Gunawardena, 1995). Using this definition, social presence did, in fact, exist in CAI.

Chapter Summary

In this chapter, I introduced the eight participants and reported on their experiences through the presentation of first person vignettes. These vignettes allowed me to describe the experiences as if the students were telling their own stories. These vignettes were developed from the three sources of qualitative data collected during the tutorial sessions. Repeated reading and analysis of these data enabled me to develop and revise the vignettes into their final form.

The second section of the chapter contains the comparison of my findings to those reported in earlier studies. In many cases, I noted similarities between the experiences of the eight students in my study and those reported by other researchers.

CHAPTER V
DISCUSSION OF THEMES,
SUMMARY, AND RECOMMENDATIONS
FOR FUTURE RESEARCH

In this final chapter, I will discuss the major themes that emerged, summarize the study, and suggest recommendations for future studies.

Themes

The purpose of this study was to understand the experience of students learning accounting via a multimedia tutorial in lieu of a traditional lecture. Following is a discussion of the themes that emerged from my examination of the data. These data include the transcripts of the protocols of the participants collected during the tutorial sessions, my observation notes, and transcripts of the interviews conducted after each session.

Our Primary Learning Styles “Fit” our Learning Experiences

The participant group in this study contained representatives from each of the four learning styles outlined by David Kolb (1985): converger, diverger, assimilator, and accommodator. Descriptions of the learning styles are provided in Chapter II. There were three convergers (two males and one female), two divergers (one male and one female), one assimilator (female), and two accommodators (one male and one female) in the group. Although students may

have exhibited characteristics of other learning styles, they were classified by their primary learning style. In analyzing the data, I discovered that not only did the students demonstrate characteristics of their individual learning styles, but their experiences were similar to those reported by other researchers.

Allen and Linda were classified as divergers, the learning style that emphasizes concrete experience and reflective observation. According to the profiles provided by Kolb's LSI, divergers would rather observe than participate, and feel than think. Divergers are able to view concrete situations from many perspectives (Kolb, 1984).

Allen was able to view concrete situations from various perspectives. He took the information presented by the tutorial and related it to real-world situations. For example, one screen displayed a diagram that explained the ways by which individual investors could acquire stock. It listed investment banks as the primary market and individuals as the secondary market. Allen was able to take that information and connect it to the concepts of initial public offerings and seasoned public offerings. He also compared the concept of proxy wars discussed in the tutorial with that of hostile takeovers.

Allen also exhibited some other characteristics of divergers as outlined in the LSI scoring handbook (1985). For example, journalism is a career that is a choice of divergers. Allen in fact adopted a second major in English after this study was completed. His intention is to be able to write for a financial publication. Additionally, athlete is an occupation pursued by divergers.

Although Allen does not intend to pursue professional sports, he did play basketball on an NCAA Division I team.

Linda definitely fit into the learning mode of reflective observation. She stated at the end of the second interview that she much preferred listening to a lecture than learning using CAI. Therefore, her preference for learning was much more reflective than active. Linda also possessed certain diverger characteristics discussed in the LSI scoring handbook. However, these were not in evidence at the time the study was conducted. When she was a participant in the study, she was an economics and business major. She has since changed her major course of study to psychology and women's studies, and will enroll in a two-year program to study to be a midwife after graduation. Psychology and nursing are two fields that are pursued by divergers (Kolb, 1985). Therefore, it appears as though her ultimate career choice is consistent with her learning style.

The converger learning style emphasizes the learning abilities of abstract conceptualization and active experimentation. John, Steve, and Karen were classified as convergers. All three exhibited the converger characteristic skill in problem solving. Overall, they had less difficulty completing the questions and problems posed by the CAI than the other participants. Except for Steve's yelling at the computer at one point during session two, all three were relatively unemotional, another of Kolb's characteristics of convergers.

Steve's approach to the tutorial was perhaps most indicative of the learning style. Two strengths of the abstract conceptualization mode are the ability to follow a scientific approach to problem solving, and excel at quantitative analysis. Steve's ability to solve problems and use his quantitative skills was evident during both sessions, but especially when he was solving the problems at the beginning of session two. For example, his approach to solving the problems involved studying the information presented, and using whatever data he needed to answer questions. Since he evaluated the data provided by the tutorial, he had less difficulty in completing the screen that asked for several cost calculations that other participants found to be a struggle. His ability to determine the equations needed to answer the questions is indicative of his strength at quantitative analysis.

Active experimenters are good at getting things accomplished. Steve would not leave a screen until he completed the entire task. He easily solved the problems (even though he perceived that he was having great difficulty in doing so), and he had little trouble grasping the concepts that the tutorial was presenting. He also solved the problems in a very logical manner.

John also had less trouble than most of the participants in solving the problems asked by the CAI. His answers were always very precise and he also used a very logical sequence to find those answers. He rarely guessed at the math, he simply used the computer's calculator to perform the arithmetic operations. John and Steve were the only two participants who used that

function of the computer. When he had some difficulty in answering one question at the beginning of session two, he admitted that he was just guessing, and when he saw the answer, he laughed and called himself an idiot. He was then able to answer the rest of the questions on that screen with ease. Incorrect answers were *always* his fault. John, however, rarely answered any of the objective questions incorrectly. Since he read most of the text on every slide out loud, I wondered if the concept of “Students retain 10 percent of what they read, 26 percent of what they hear, 30 percent of what they see, 50 percent of what they see and hear, 70 percent of what they say, and 90 percent of what they say when they do something” (Stice, 1987) applied to him.

It is interesting to note that three of the careers selected by convergers are engineering, economics and computer science. John was an engineering major, Karen was an economics and business major, and Steve held a double major in economics and business and computer science. Karen’s possession of converger characteristics was less evident than Steve’s and John’s, but she too was a very logical thinker. Her overall extremely quiet personality both during the sessions and the interviews made it more difficult to assess her attitude about the learning style. However, according to Kolb (1984), convergers would rather deal with technical tasks and problems rather than social and interpersonal issues. That description fit Karen quite well.

The assimilator learning style emphasizes reflective observation and abstract conceptualization. Sharon’s quiet nature was indicative of this learning style. A

strength of these individuals is their ability to take information and put it into concise logical form (Kolb, 1984). Sharon's verbalizations often consisted of her summarizing the concepts presented on the screens. Additionally, although she had some trouble with the quantitative problems at the beginning of session two, once she was able to see the first equation, she could take that information and come up with the other equations that she needed to solve the rest of the problems. Assimilators seem to have aptitude for Mathematics. Since Sharon is a Math/Economics major, her learning style apparently fits her chosen field.

The accommodator learning style emphasizes the learning modes of active experimentation and concrete experience. George and Kathy were accommodators. Accommodators are generally strong at adapting to new experiences, although they may sometimes be regarded as being impatient (Kolb, 1984). George readily admitted that he was not a patient individual. This was evident at several times during his sessions. He often became anxious when he couldn't answer a question immediately. In these cases, if he did not get the correct answer on the first attempt, he would ask the CAI to provide the answer, without giving the question much more consideration. This fact was especially evident during session two. He had a lot of difficulty answering the questions that were presented at the beginning. Even though the answers could be found on the prior screen, or calculated from information on that screen, he was not able to determine the answers. He did not like that he had to go back and forth between the screens, he even said that he found it annoying. When he answered

the first question correctly, he said, "YES!" However, since he did not want to keep changing screens, he missed some of the information that he needed to answer the other questions. As a result, he would guess at the answers once or twice, and then just ask for the answer. Therefore, he had difficulty answering most of the questions in the chapter that related to that information screen. He gave up on that screen very quickly, and said that it was not interesting, and he didn't want to go back and forth between screens. He guessed at a few more questions, and tried to find a few of the answers on the prior screen, but indicated that he wasn't pleased with the set-up of that screen.

Once George discovered the equations on the next slide, he barely glanced at them, despite the fact that he stated that he could "figure out" the answers. He went right to slide #4, and read the text that explained the process of including depreciation in the cost of manufactured goods. He read the text silently, and stated the answers to the true-false questions out loud. When he read, his whole head moved from left to right, rather than just his eyes. As he continued to read the text that presented additional concepts related to the inclusion of depreciation in manufacturing cost, he admitted that he was looking for highlights on the screens, and only reading that material. This tendency to give up very easily is another characteristic of an accommodator. One of the weaknesses listed by Kolb in the LSI scoring handbook was the lack of direction to goals. Often during session two, it appeared as if he was just trying to complete the exercise without learning the material. Therefore, although George

indicated that he liked learning accounting using CAI, this did not appear to be an appropriate learning method for him.

Kathy's approach to the CAI was quite similar to that of George. She, too, seemed at times just to skim that material and then, when she couldn't answer a question on the first try, just press the shift and question mark keys and get the answer. Because she spent too little time reading the material also, she was unsuccessful at answering many of the questions.

Although neither George nor Kathy were certain as to their career plans at that time, both structured their courses of study to take more business than economics courses. Accommodators tend to pursue careers in management, retailing, and banking, logical ones for students who study business. Most of the members of the participant group graduated in May of 2002 (John graduated in 2001). Steve has been offered a job at an investment banking firm, and as previously mentioned, Linda will continue her studies and train to become a midwife. The other students are still looking for jobs. Although the results of this study are not generalizable due to its qualitative nature, it appears as though the learning styles of the eight students fit their college major or their intended career plans.

During my observations of the tutorial sessions, I discovered another way that Kolb's theories helped me to understand students' experiences. This tutorial demonstrated the four learning modes developed by David Kolb. Concrete experience was employed by allowing students to focus on a familiar

concept. During the introduction of the characteristics of preferred and common stock, methods of investment in a corporation, the tutorial described the difference between the two classes by comparing them to the House of Lords and the House of Commons in the British Parliament. Another example of the existence of this learning mode occurred when proxy wars were introduced as part of the stock ownership section. A small cartoon of two figures engaged in battle was included at the bottom of that screen. Reflective observation was employed when the characteristics of preferred stock were discussed through textual materials, thus enabling the user to reflect on the concepts presented, in a way similar to a lecture. The textual material was presented very thoroughly, with key terms presented in bold text or in a bright color. Abstract conceptualization, which emphasizes thinking, was evident when users were asked to complete true false, multiple-choice, and matching questions. These activities allowed the students to test the knowledge they had just gained through the reflective observation stage. Finally, active experimentation was in evidence when the tutorial required the user to record various accounting transactions relating to preferred stock. The students dragged account names and dollar amounts from an information section to an area that resembled a company's accounting records. The activity offered the students a more active way to assess their knowledge than simply answering true false and multiple-choice questions. This learning mode emphasizes practical applications, which were available in the problems users were required to solve.

We Were Engaged in the Learning Process

The participants were unquestionably engaged in the process of learning accounting concepts using this method. The level of concentration that I saw during the sessions was exceptionally high. Their eyes rarely strayed from the computer screen, except for a few cases in which they were performing mathematical calculations and were either looking up or had their eyes closed to enhance their concentration. Some of the tutorial screens had small cartoons to illustrate the concept that was being introduced. For example, in the screen that described the process by which stock is sold by a corporation through underwriters to the general public, pictures of two men in large hats counting coins illustrated the general investing public. The students indicated that they were drawn to these cartoons and found them amusing. They often mentioned them in the interviews, stating that they would remember those concepts because of the cartoons. A few mentioned that they would never forget the differences between preferred and common stock due to their comparison to the House of Lords and the House of Commons.

The participants' verbalizations also provided indications of their level of engagement with the tutorial. At one point when I had reminded Linda to continue talking out loud, she indicated that she was reading the material and "trying to soak it all up" (Linda session two protocols, #63). During the

interview after the first session, Linda indicated that she thought it was a good learning experience, and she believed that she was motivated to learn using this method. She stated that she did not fall asleep the way she would when reading a textbook. She held this opinion despite the fact that she knew she was going to be frustrated. This was the first thing that she said when she walked into the first session. She said that computers always frustrated her.

Allen said several times that he was "trying to get it in my head," and often pointed to his head as he was saying this (Allen session one protocols, 77-78), or "trying to sort out the whole structure of this, the whole format" (session two protocols, 154-156). He also commented on many occasions that a particular section of the tutorial was interesting. For example, he was very interested in the concept of proxy wars and associated them with hostile takeovers:

This is interesting here - it says - you have the case of a company that takes a piece of a public corporation and makes it private and protects itself from the concept of proxy wars. And I'm just wondering if proxy wars are the same as hostile takeovers. And then again this goes back to state that states such as Delaware make it more difficult for firms incorporated there to be taken over by others that whole idea of setting up your charter in a state that clearly benefits all aspects of forming the company (Allen session one protocols, 184-195).

Allen also often mentioned aspects of the tutorial that he found to be exceptionally helpful, such as diagrams, which described a process (such as the issuance of stock) with arrows and colors. He indicated that those types of screens made the information very distinct and easy to understand.

Steve's engagement was evident, as he often spoke to the computer, and at one time actually shouted at the computer. The tutorial screen indicated that a journal entry to record a particular transaction would not be presented because it was straightforward. His response was "STRAIGHTFORWARD? I'VE GOTTEN EVERYTHING WRONG UP TO NOW!" (Steve session two protocols, 252-253). This was not actually the case. Steve did not answer very many questions incorrectly. In addition, he would tell the computer if the question were especially good or silly. "What a silly question is that! Can a firm's dividend announcement change the stock market's expectation of the firm's future performance. *Yes, of course it can.*" (Steve session one protocols, 77-79). On other occasions, Steve's conversation with the computer was again apparent. For example, when answering a true-false question, he indicated that he wanted more information. "...they include them as income. False. Contributions by owners and distributions to owners included. The answer is no. I want to know why!" (Steve session one protocols, 367-370). Near the end of that same session, he commented on the textual information. "Retained earnings are not a bundle of cash, they are not even an asset, that's right. But that's a good equation!" (Steve session one protocols, 408-410).

George also indicated that the tutorial held his interest. One insight that I found to be very interesting was when he compared dragging accounts on the screen (to prepare journal entries) to taking notes in class. He indicated that since he was more involved with the tutorial at that time, he felt that he would

better retain that information. During the interview after the first session (the stock chapter), he indicated that this was definitely a meaningful learning experience.

Anytime you can reinforce something, it's meaningful. This was a different way than I've ever learned before. And I wouldn't mind doing it again. I thought it was interesting and new and made me want to stick to it and see what came next, especially when I was solving all the different examples and questions and different ways to answer questions, I wanted to go ahead and find something new and look for more stuff (George first interview, 49-60).

Although these students did not attend the lecture for this chapter, they took the same exam as those students who did. After taking that exam, George came to my office to thank me for choosing him, because he believed that using the tutorial really prepared him for the exam. During the first tutorial session, he commented a few times about his involvement with the tutorial. "I like the note here, the humor lightens up the reading and helps you remember things." (George session one protocols, 154-156). A few screens later, he mentioned again that his interest was held by the tutorial. "I like how this kind of keeps you guessing about what would happen next, and how the examples are going to come up. It makes you want to keep going" (George session one protocols, 172-175).

John also had positive comments to make about the experience. When I asked him during the first interview if he felt as if it were a good experience he

replied, “Yes, I would like to look at this again, to get a more solid understanding of the material. Also, this would be a good preparation for class. I would think that the lecture would be more clear if I went through this first.” (John first interview, 43-48).

The participants’ referral of accounting concepts that they were learning from the CAI to prior concepts was another indication that they were actively engaged in the tutorial, rather than just reading the information on the screens. While studying the section on treasury stock (stock repurchased by the issuing corporation), Karen answered a question incorrectly, but then used accounting knowledge acquired in an earlier chapter in the semester, and was able to understand the correct answer. “The amount known as treasury stock is added or subtracted from stockholders’ equity. I think it’s added, no, that’s wrong. OH (OC – stated very loudly), treasury stock must be a contra-stockholders’ equity account, so that’s why it would be subtracted!” (Karen session one protocols, 186-189). Sharon would restate the questions that the tutorial asked as she was attempting to answer them. She would also indicate that she better understood questions that were asked before the text was presented once she read that text.

Another indication of the level of concentration and therefore engagement exhibited by the students was the variation in their distance from the monitor. In almost every case, when solving a problem or answering questions, the participants would sit very close to the monitor. When they were

reading text, they were more likely to sit back in the chair. However, this never seemed to last for very long. Since questions and problems were interspersed with text on almost every screen, the students were constantly sitting up forward. (Allen first observation, 134-136, second observation, 64-65; Linda first observation, 91-92).

When I first developed my coding scheme, I had included several codes for off-task behavior, as I thought the participants might become bored, or say things that were completely unrelated to the tutorial. I found that I did not have data that corresponded to these codes; therefore they did not apply to this study. I did ask each participant if he or she were thinking of anything else while studying the tutorial material. Only Kathy indicated that she was hungry during one of the sessions. Every one of the other participants stated that he or she was thinking about what the tutorial was presenting at the time.

We Could Control our Learning

This tutorial was developed to allow users not only to complete the chapters at their own pace, but to also control the direction. Arrow keys enabled the participants to go back and review concepts that were unclear, and find answers to questions. Additionally, the forward arrow keys permitted the user to skip over slides that he or she considered to be unnecessary, such as solutions to problems that were answered correctly.

The participants liked the fact that they were not only able to control the pace at which they completed the tutorial chapters, but they especially appreciated that they were able to change directions when needed. For example, when the participants were confronted with a question, they were able to go back and review earlier screens to find the answer. Every participant indicated that this was a very attractive feature of the program. Karen indicated that she was glad that once she saw the answers to the journal entries, she was able to go back and look at the original question, so she could better understand what she had just done. Allen stated during both interviews that the arrow keys were extremely useful, because he liked being able to go back and forth between questions and text. Sharon felt that she could move around the tutorial as she wanted. "...it was a matter of if I didn't remember something or understand something, I could just go back, or if I wanted to, get the answers." (Sharon second interview, 32-34).

Kathy mentioned during the first interview that she, too, liked being able to go back and look at prior screens and read the information as fast or as slowly as she wanted. "If I were in my room, I might have done this slower. I should have gone back and read some things more than I did" (Kathy first interview, 16-17).

George felt that this feature of control aided in his learning of the material. "I could definitely control the pace. You could slow down. I actually read a few things more than once. I didn't feel pressure to finish. I wanted to

read it and make sure I understood it first” (George first interview, 31-36).

Later in that first interview, George mentioned that fact again. “I didn’t feel pushed. I didn’t feel out of control, I could go at my own pace” (George first interview, 87-88). Linda’s comments about controlling the program echoed those of George. “Yeah, it was just fine. I went at my own pace. I could go back over things I didn’t understand. If I didn’t want to read something, I could just skip it” (Linda first interview, 19-20; 59-60).

John felt that having control over the program allowed him to concentrate on confusing aspects, and spend less time on items that he understood.

I didn’t feel rushed at all. And, if a piece of an annual report was presented, I felt as though I could just glance at it and go on. I liked being able to go back to look at something again if I got to a question that I couldn’t answer. I also liked being able to skip pages that seemed like a repeat of what I was just asked to do, like the correct journal entries (John first interview, 24-27; 67-73).

Finally, Steve indicated many of the same sentiments about controlling his learning as the other participants.

Of course I could control the pace, especially being able to go back and look at the previous page, of course it was just a mouse click. I could control both the speed and the whole program. The forward and back buttons were a big help when I couldn’t solve a question. I could go back and look, and then come back and explain it to myself” (Steve, first interview, 15-20; 61-67).

However, I believe that a comment that he made later in that interview was an excellent indication of his feelings about the control aspect of the

program. He said, “Ma’am, there is this X button at the upper right corner which I knew was always there and I could click at anytime!” (Steve first interview, 40-42).

We Found the CAI to Exhibit Social Presence

I was interested to learn if the participants believed that the learning method was interactive, because media that are perceived to be interactive have social presence (Gunawardena, 1995). Since social presence was an element of the theoretical framework of this study, I was especially interested to determine if the participants perceived its existence. Following a description provided by Short, Williams, and Christie (1976), the characteristics of interactivity that I looked for were information transmission, problem solving, and availability of feedback. I will discuss each these characteristics and the students’ perceptions of them.

Information Transmission

Most of the participants felt that the CAI presented the information in an organized and understandable manner. They all indicated that learning method did provide them with useful information. However, they commented that the order of presentation was, in fact, unusual at times. For example, in the chapter on stockholders’ equity, the tutorial often asked questions before the information was presented. Kathy’s reaction to the presentation was typical of the group.

When asked to discuss her feelings about the presentation of information, she stated,

I liked it. It made it fit and built it up. Everything seemed to go together on top of each other. Sometimes they asked questions first. I felt like I was guessing and that defeated the purpose. If I got it wrong, it bothered me, but if I got it right, it was like, 'Oh, I know something!' I think that it didn't make sense. Was it trying to find out what I know?
(Kathy first interview, 5-12).

By asking questions before the text was presented, the author of the tutorial was trying to set the tone for the information that was to follow. Additionally, the students had to concentrate and think about the answers to those questions, as they didn't have the text on prior screens. This factor contributed to their level of engagement, because they were unable to simply look back at other screens and find the answers. They had to think about what the answers might be.

Linda felt that the questions should have been presented after the textual information. She indicated that she was beginning to think that she was missing information when she was reading, and became frustrated when she answered questions incorrectly because she had not yet learned the material. However, her overall impression of the information presented in the first chapter was positive. "I liked the setup where you were reading; you could just pick out information. If you wanted to, you could go back and look at the information, like if you went too fast, you could look at it again" (Linda first interview, 59-62).

Although John also mentioned the unusual order of presentation, he was less surprised about it, because he was used to the requirement of many engineering professors that homework be completed before the lecture. He indicated that it was easier to understand the lecture when you had already looked at the material on your own. George also felt that the order of presentation was good. In fact, he stated that: "...it made sense, it didn't jump around" (George first interview, 28-29). As he was studying the diagram on the issuance of stock by a corporation, George indicated that the diagrams were like maps that made the concepts easier to follow (George first observation, 28-29). Allen did not seem to mind that aspect of the first chapter, either. His comments on the presentation were very positive:

I would say that the order would be rated at an eight and one half to nine. I can remember there was one screen in which it had the questions match the information. What I liked was it had the questions and they were like stepping stones to the information, they correlated very well. Like the first question wasn't for the last part of information that was presented. It went in a stepping stone which let you kind of picture the screens in your mind and place the information in the questions. So you were able to say, OK, the first part of the information will kind of go with this part of the question. It helped you recall the right information" (Allen first interview, 28-42).

Kathy also had positive comments about the presentation of the second tutorial chapter. When asked the same question about information presentation, she stated:

I like how it asks questions after you learn something. I also like how it lets you know the answers. A lot of times teachers ask you questions or give you old tests, but you don't get the answers, so you don't know if you're right. I also like how after the answers

there is explanations, so if you don't know how they got that answer, you could go back and look. I thought it was well organized. (Kathy second interview, 6-14).

Steve affirmed that "...everything was in place" in the first tutorial chapter (Steve first interview, 12). However, although he thought that the presentation of the second chapter was also good, he indicated that he sometimes had to go back several pages to find the information needed to answer questions, and that was distracting. He didn't blame the tutorial. "This tells me that I have to start reading on accounts again" (Steve second interview, 40-41). Karen had similar comments about the second chapter. "It was kind of confusing with day one and day two. The last chapter was kind of just reading, but with this one, there was a lot to keep straight, and the stock chapter had true-false and multiple choice. These questions were harder" (Karen second interview, 55-56). Several of the comments about the second chapter (inventoriable costs) referred to the fact that the chapter provided less information and required that more problems be solved. That was consistent with the topics presented by each chapter. In fact, I have always found that students in a course such as financial accounting are more interested in stock and information related to investing in corporations than they are in accounting for inventory.

Problem Solving

For the most part, the students were able to solve the problems provided by the tutorial. However, at the beginning of the second chapter, a series of sixteen questions related to the costs associated with processing a roll of film to get it ready for sale was presented following some data on the first screen. The students had a great deal of difficulty understanding just what the problems were asking, and consequently, how to answer them. For example, three of the items of information given on the first slide were the cost of a machine that would process the film, the number of rolls that it could process, and the cost to purchase 100 rolls of film. Two questions asked for the cost to process a roll of film, and the total cost of a processed roll of film. Not one of the eight participants in this study was able to answer those questions correctly on the first try. The cost to process a roll of film was calculated as the cost of the machine divided by the number of rolls of film that the machine could process. The total cost of a processed roll of film was the cost to purchase one roll plus the cost to process one roll of film. I shared copies of those first two screens with members of my support group, who in fact did not possess a background in accounting. They, too, found those questions, as well as several others, difficult, if not, impossible to answer. Since this could have been a characteristic of the way the problem was presented in this particular tutorial, it might not be a general concern for this type of learning method. The participants certainly had less difficulty completing the problems in the stock chapter, as well as later

problems in the inventory-costing chapter, so their overall attitude about the problems that they were required to solve was positive. Additionally, none of the participants found the questions to be unreasonable after they saw the equations that could be used to answer the questions. In fact, several laughed and said that they were making the process more difficult than they should have.

George indicated while he was answering questions that he preferred multiple choice questions to matching, as he would simply guess at the matching questions, knowing that incorrect answers didn't stick. He stated during the first interview that he realized that he had to be focused if he was going to be able to answer the problems correctly:

They weren't very easy but they took a little thinking. In the very beginning when the problems came up I got more wrong but I think I wasn't paying attention to them as much, but by the end of the lesson, I understood that this was part of the lesson, and I started to focus on them more. Then I started to get more right. (George first interview, 38-46).

Although he had a very difficult time with several of the problems in the second chapter, and he indicated that he would have much preferred to be outside at the time, George's opinion of the problems was not as negative as I would have expected. He indicated that he would have been much better off if he had written down the information from the first screen, so he wouldn't have been as distracted switching screens so often. He also indicated that he learned better with smaller pieces of information, and that that particular problem was exceptionally long.

John felt that the way the journal entries were constructed in that incorrect account names or amounts didn't stick was very helpful. He said that it made him think more about which accounts he should have been using. He indicated that he had a difficult time with the first set of questions in the second chapter, but he blamed his own confusion, not the tutorial. He said that he should have been able to do simple arithmetic.

Kathy also some trouble solving the problems in both chapters, but indicated an overall positive reaction to them:

Some were difficult. The journal entries were easy because there were only two choices. Some of the true-false were tricky. If I got them wrong, I re-read them. The multiple-choice were also pretty easy. I had a lot of trouble with the ones where I had to fill-in the numbers. I guessed at the fill-ins at the beginning, and then when I began to think about the calculations involved, I got more right. I always feel like accounting is adding, and not subtracting, so that messed me up (Kathy first interview 21-33).

Allen felt that the problems were challenging, but thought it might have been because he had never been exposed to this type of learning method and this material before. Again, his reaction to the problems, like the rest of the tutorial, was very positive:

Well, obviously for me, I've always been the type of person, I have to go back and look at things and that's why I did like the pace because you could go back. I would say, I mean some of the questions I found challenging, some of the other questions, some of the true and false that I knew right away. Again, because the information was clearly stated in relation to the question, but I did find some of the

answers definitely challenging where I'd have to go back numerous times and even with that because it's new information, new material I still had some incorrect answers. So definitely it was challenging. (Allen first interview, 50-63).

One participant had a completely different reaction to the problems.

Sharon presented a unique case as she exhibited a very negative attitude to the problems in both chapters. When I asked her about the problems contained in each chapter during both interviews, her answers were very different from those given by the other members of the participant group:

I didn't think they were challenging enough, even though I didn't get them right. If they were, I would have read it more thoroughly (Sharon first interview, 33-35).

They were awful because they weren't testing your knowledge, they were just testing your memory. It could have tested my knowledge more if I allowed it to (Sharon second interview, 10-15).

The other participants did not share this reaction. They all admitted that they found the problems difficult at times, but they did not indicate that to be a negative aspect of the tutorial or the overall method of learning.

Availability of Feedback

The participants liked the fact that the tutorial gave them an immediate response to each of the questions they answered, or the problems that they solved. At the very beginning of session one, a few seem surprised at the fact that they were told right away if they were right or wrong. (Kathy first

observation, 4-5; John first observation, 2-3). John was very impressed after he answered his first question when he saw the word “correct” appear in a box on the screen. “It told me I’m right, that’s really cool!” (John session one protocols, 5-6). During the post-session interviews, the participants had many positive comments about the feedback. John indicated that he liked the fact that he was able to get explanations to his incorrect answers. “I liked that it not only told me that my answer was wrong, but gave a little hint sometimes about something else to consider, such as ‘what about cash?’” (John first interview, 4-7). Kathy also had several positive comments about the feedback during her first interview. In fact, many of her answers to other questions related back to the feedback characteristic of the tutorial. When I asked her to comment on the tutorial’s presentation of information, she stated:

I like how it asks questions after you learn something, it was right there. I like how it lets you know the answers. A lot of times teachers ask questions or give you old tests, but you don’t get the answers or you don’t know if you are right. I like also like how after the answers there are explanations, so if you don’t know how they got that answer you could go back and look (Kathy second interview, 6-14).

She also had very positive comments during the first interview when I asked her about the feedback.

After you did a problem, it showed you that you got it right, and every one had the reason why the answer was correct. It was easy to see how they got the answers. I liked to have it right in front of me, it made it easier to understand” (Kathy first interview, 26-32).

She also indicated that she appreciated the fact that the feedback was positive as well as negative. “When you get a question wrong it tells you, by saying try this or try that, but if you are right, it tells you that too” (Kathy first interview, 67-69).

George commented on this characteristic of the tutorial as he was solving problems in the first session. “I like how you can get the answer if you need it, especially if you have no idea like I just did” (George session one protocols, 193-194). During his second post-session interview, he mentioned the usefulness of the feedback feature again. “You do the problems, and can be told if you are right or wrong” (George second interview, 43-44).

When asked to comment about the feedback, Steve compared the tutorial to a textbook and said,

The main difference between this and the book that I can see first of all it has the questions and the answers are right there, and that is good.” He actually compared the feedback provided by the tutorial to having a conversation with it. “First and most important is the immediate feedback. it is like going to the person who wrote the book and say if you multiplied 25 by 2, you will get this and the answer is that. It’s like having a conversation with the tutorial” (Steve second interview, 126-130).

Although it seemed that Allen had only positive comments to make about every aspect of the experience, his comment about the feedback was very informative. During the first interview, he said, “I said that when I was actually going through that process that I liked how the box popped up. There were some answers that were false and right away you started to think about some

other part or the activity or some other information it gave you. It told you the right answer and it told you the right direction to go with the whole thing, so I actually liked that a lot” (Allen first interview, 18-24). The feelings that he expressed during the second interview were just as positive, if not more so.

That goes back to how it was presented. I think that would go hand in hand. It was presented well and the feedback being it shows you. I really like when it says 'try again.' You can check you know when I got stuck sitting here without any outlet and try to work through it especially with the information being new. I know students try to work through it. You have to have some kind of outlet and the feedback being that you can go and click the arrow and it will lay out the equation for you and it will give you the answer and it will explain the answer. A lot of times with these screens where you have the question and it had the answer right at the bottom and even though it would be easy to look at the answer I think that's your preference. You know some people I actually believe when information is new sometimes it's all right to look at the answers, look at the questions at the same time because you have two different angles. You have the questions and the answers and you can really try to look at it and try to really get it in your head, you know what I mean instead of completely not knowing any clue about the answers (Allen second interview, 42-63).

Karen indicated that she thought that the feedback was helpful. She preferred to figure out the answers herself, so she was content with seeing “try again” when she answered a question or problem incorrectly. In the cases when the tutorial asked her to consider something else, she said that it gave her some direction, but it didn't bother her at all. Sharon, on the other hand, felt that the feedback should have been more informative. She felt that all of the problems

that required calculations should have had detailed feedback on how to answer each question. Although the feedback didn't always provide the student with the answers or the equations, that information was always near the problem that was to be answered.

Another unique case occurred with regard to the feedback aspect of the tutorial. Even though the majority of the participants found it to be extremely helpful, Linda's reaction was completely different. While most of the participants found the phrase "Really, what about...?" to be quite helpful, she saw it as sarcastic. In fact, during the second interview, she stated that she didn't like when it asked "*really?*" She stated that she felt that the tutorial was telling her that she was stupid. During session two, she answered a question incorrectly and commented, "That's odd. It says that if the depreciation of the machine is treated as a period cost, would the inventory reflect the fact that processing had added value to the film, and I said yes, and it gave me that '*really*' thing" (Linda session two protocols, 57-61), and sighed very heavily. Although her reaction was not as strong during the first interview, she also mentioned then that "really" wasn't a good choice of words to indicate that the user answered a question incorrectly. She indicated that "try again" was not bad, but each question should have given some indication of the correct answer. "What about..." would have been a much more appropriate response in her opinion.

This is a Good Supplemental Learning Method

Most of the participants gave some indication that they felt that this learning method would be a valuable way to supplement what is learned in class. Kathy specifically stated that using a tutorial would be a good reinforcement of what is learned in class. When I asked her in the second interview whether she would prefer this type of learning to lectures and textbooks, she stated, “Maybe once in a while, or after the lecture to explain it another way. But it shouldn’t replace the lecture because you can’t ask questions” (Kathy second interview, 71-76). George’s sentiments were very similar to Kathy’s. He also called the process a good reinforcement of what is learned in class. He compared it to having good notes or a good discussion in that he was able to understand the material more easily.

John spoke of the value of this method of learning by stating it was a good way to prepare for the lecture. During the first interview, I asked him if he felt that the experience was worthwhile. “Yes, I would like to look at this again, to get a more solid understanding of the material. Also, this would be a good preparation for class. I would think that the lecture would be more clear if I went through this first” (John first interview, 41-49).

Although Allen had many very positive comments to make about the experience, his feelings about this learning method being adopted as a stand-alone method echoed those of the other participants.

Let me say this. I don't think that this alone is the way to go, but with a teacher, but like the previous comment, having a teacher walk you through this, that would be sufficient. Just sitting in front of a screen, that's not enough. I mean it would be ideal I think if you had the lecture go along with the screen work, if you could say, if you need to go back. I think as a whole combination this would be ideal (Allen first interview, 142-145; 131-135).

I think Steve's comment regarding this aspect of the tutorial was the most insightful. When I asked if he would like to see this learning method more he responded,

Yes, but in no way am I saying that we should use the textbook lesser. That is the primary source. If I read the textbook once, then I should come here to answer questions. If I answer questions in the book, I have to go to the professor to check the answers, but here I get the answers right away" (Steve second interview, 115-122).

We Became Frustrated at Times

Most of the participants definitely showed signs of frustration during their sessions, albeit for different reasons. However, neither Sharon nor Karen appeared to be frustrated at any time during either session. Sharon indicated that she was frustrated only once when the tutorial was explaining a concept using percentages. She said that she always has to write numbers down herself. Since she could not understand the concept just by reading it on the screen, she became frustrated. Karen stated that she did not find anything about the experience frustrating.

Allen stated that his personality caused his frustration.

I'm a type of person who wants to learn to the best of my ability, so I want to get it correct, so yes, the ones that I had wrong, I think that's just my personality. It wasn't the format or the way it was being taught, it was just because of my personal traits (Allen first interview, 79-84).

He felt that his lack of knowledge on the subject caused him to have a difficult time answering questions, and that, too, led to frustration.

Just that I know the math wasn't incredible equations but just because it was new I didn't know what to take, I didn't know what to divide, what to multiply, that got frustrating. I've taken math courses, I've taken calculus courses which have huge equations to work through but this because the information was new even the simple equations threw me for a loop at times" (Allen second interview, 87-94).

Sometimes, the frustration was apparent during the sessions. For example, as previously mentioned, the tutorial prevented the user from entering incorrect account names into journal entries. The students saw their inability to make the items "stick" as a problem with the tutorial, rather than their own mistake. George could not make the account Additional Paid-in Capital, a stockholders' equity item stay in the liabilities section. "*Why isn't this going anywhere*" (George session one protocols, 48-49)? Kathy also indicated frustration when she couldn't get her incorrect answers to stay. Although I said very little to the participants, I did tell them that their answers weren't sticking because they were wrong. This allowed them to try a different approach. However, some said that they hadn't considered that their answers were wrong.

When Steve could not arrive at an answer at the beginning of session two, he began waving his hands and stated:

Number of rolls processed on day one. 40, ok. Cost of processing rolls on day one. 100 rolls day one, *oh shoot*. 100 rolls of film on day one. Ann pays \$20 cash to buy a machine. Cost of processing the rolls on day one. It processed 40 rolls on film on day one and the cost of each roll was \$2.20. 40 rolls of film, cost of each roll was \$2.20, and the machine gets depreciated. So, point two into 40 would be eight plus eight, 88, I think. Just eight. *Doesn't seem good, doesn't seem good*. Total cost of rolls processed on one day. Cost of processing, total cost of rolls processed on one day. Come on, this has to be 88, *come on*. **YES** (Steve session two protocols, 19-42).

Linda was very vocal in the second interview about her frustration. She mentioned the first problem and her difficulties with that, but much of her frustration resulted from the feedback, and her reaction to it:

The sarcastic remarks like 'really'. When I didn't understand something, I'd have to punch in a whole bunch of numbers and none of them would come out and there was no way to get extra help, like I didn't think it would show you step by step how to do it, and sometimes that's what I need, and I didn't understand how they got that number. Like when I did find out the answer, it took a couple of minutes to get things through my head, like ok, this is what's going on, this is how to do it.

I think if there was a help button that gave you a step by step process or something. Like multiply this variable by this variable. Just not, 'no, that's not the right answer', or 'try again.' **I JUST SAT THERE TRYING TO MULTIPLY NUMBERS BY NUMBERS UNTIL I GOT IT RIGHT** (Linda second interview, 72-81; 85-90)!

A few of the participants mentioned that they became frustrated when they could not complete a table or answer questions. John indicated that he was frustrated at his own stupidity in not being able to figure out what the questions were asking. The greatest amount of frustration occurred at the beginning of session two when they were required to answer the questions about costs to include in a processed roll of film, and therefore in inventory. What is most interesting is that once they saw the equations needed to solve those problems, they all indicated that it was much easier than they originally thought.

We Had a Positive Learning Experience

One of the questions that I asked the participants during the interviews was “Do you feel that this was a meaningful learning experience? Define ‘meaningful’ any way you like.” Linda almost seemed surprised at her own answer to this question. “I would actually like to do this again. I think it was kind of motivating” (Linda first interview, 33-34). Since she had expected to be very frustrated during the session, she was surprised. Steve’s response was, “Of course, this is much needed, especially before an exam (Steve first interview, 29-30).

Allen also stated that he believed this was a meaningful learning experience, although he based his opinion on the content of the first chapter, not the method of instruction:

Meaningful, I guess being an economics and business major, this information, I mean when you look at just

business in general you are talking about dividends, stocks, bonds, all the in between things that go along with that, just like all the information and ex-dividends, the cum-dividends, it was definitely meaningful. This is stuff I'll be applying to my everyday world pretty soon (Allen first interview, 68-75).

Kathy felt that the chapters were well organized, and she indicated that she liked being able to answer questions and know immediately that she was right or wrong. She noted that this feature would be a time saver, as students could go back right away and review sections that they did not master, and spend less time on those that they understood.

George stated that the tutorial presented material in a more interesting way than a textbook. John indicated that the active nature of this method was very positive. "It's more trial and error, seeing the answer pop out like that is more than what you get in a lecture. You can learn from your mistakes" (John second interview, 60-62). He stated at the end of the second interview that more students should be exposed to this type of learning. He also suggested that students who had difficulty grasping the material from a lecture might benefit from this method of presentation.

Karen appreciated that the tutorial combined the information and the questions and problems. She thought it was much more informative to learn in smaller pieces and then be able to see what she learned in each section. She said the textbook was boring because all you did was read a 40-page chapter and then have to complete the questions. She much preferred going back and forth between information and questions. "It's more interesting than the book because

the book is so boring at times, I'm just like 'OH, MAN'" (Karen first interview, 23-25). She laughed very loudly after her last comment!

Sharon's overall impression of the learning method was not as positive as those expressed by the rest of the participant group. Although she did say that the information was helpful, she felt that it should have been more challenging. When I ended the first interview by asking her if she was glad she did it, she stated, "Yeah, we have this disk that came with the book. I used it at the beginning and it was helpful, with extra problems, but certainly not as challenging as the book" (Sharon first interview, 60-63). The disk that she referred to was the very same CD-Rom that was used during the tutorial sessions. Apparently, she didn't remember it.

Summary of Themes

The seven themes just discussed emerged from my examination and analysis of the three data sources collected during the tutorial sessions: transcripts of verbal protocols, observation notes, and transcripts of post-session interviews. By continuously reading the data and viewing the video-tapes of the sessions, I discovered ideas that led to the codes relating to the participants' perceptions of the experience (Coding scheme can be found in Appendix I). These codes allowed me to sort the data using N4 and review together all sections of the data that contained those codes. Some of those codes, such as "the tutorial holds interest" and "The tutorial provides feedback" led to the

themes “We were engaged in the learning process” and “the tutorial exhibits social presence.” A sentiment of several of the participants that was discussed during the interviews provided me with the data to create the code “This is a good *supplemental* learning method.”

Overall, the students felt that they had a good learning experience and were glad that they participated. Although they indicated that learning using CAI was not sufficient on its own, they saw its value as a review and reinforcement tool. From many of their comments, I was able to determine that they felt that the learning method exhibited social presence, a conceptual framework that I followed in this study.

Summary of the Study

This qualitative case study sought to gain insight into the experience of students learning two chapters of financial accounting via CAI as an alternative to the traditional lecture. By conducting this study, I was able to report on how students reacted to the challenges and opportunities inherent in this learning technique by providing first-person accounts of their experiences. These stories allowed the reader to read about the student experiences. This qualitative reporting emphasis, known as emic, uses the expressions of the members of the participant group to describe the experience (Schwandt, 1997). I then compared their experiences with those described in previous studies, especially in the areas of learning style, attitude toward computers, and social presence.

Use of mediated methods to learn the subject of accounting have been studied to a small extent using quantitative methods, such as measurement of achievement and attitudes. Qualitative data collection and analysis have not been employed in the study of these learning methods. My study reported on the experiences of the eight students on a continuous basis in real-time, rather than after the fact.

Prior research has shown that certain learner or medium characteristics, such as learning style, attitude toward computers, or a perception of the existence of social presence can influence an individual's experience with a learning method.

A positive impact on learning can occur if the learning method is matched with the learner's learning style. For example, when students are provided with learning methods such as case study and group discussion in addition to the traditional lecture, more learning modes are employed, and performance in the course is enhanced (Jensen, 1995).

In addition to learning style, a person's attitude toward computers may influence a positive or negative experience using a computer mediated learning method. Characteristics that may lead to a more positive attitude toward computers include amount and type of computer use and level of workplace computerization (Brock & Sulsky, 1994; Mitra, 1998). As would be expected, greater computer use or computerization leads to higher computer attitude scores.

Finally, although not studied within the concept of CAI, the perception of social presence might have an impact on learning with a mediated method. Media that provide feelings of immediacy, close proximity between the communicator and listeners contribute toward a perception of increased learning (Gorham, 1988; Hackman & Walker, 1990). Interactivity has also been mentioned as a characteristic of social presence. A medium is interactive if the user can modify objects within the medium, user's inputs can be responded to by the medium, and the user can control his or her own pace (Lombard & Ditton, 1997). Since these characteristics may be present in computer software, the definition of social presence, which has been researched in the area of computer-mediated communication, can be extended to CAI.

An introductory financial accounting class at Lafayette College was the site of this study. Lafayette is a private liberal arts college located in Pennsylvania. Approximately 30 majors are offered, including natural and social sciences, engineering, and economics and business. There are approximately 2,000 members of the student body, most of whom are Caucasian, are considered to be upper-middle class, and live in New York, New Jersey, and Pennsylvania. This site was selected for the ease of entree due to my status on the faculty. Out of a class of 24, a purposeful sample of eight students was chosen based on their responses to Kolb's Learning Style Inventory (1985), the Computer Attitude Scale (Nickell and Pinto, 1986), and a self-developed student demographic questionnaire. The LSI and the CAS were chosen because

they had shown reliability in prior studies. Both instruments have been successfully administered to similar populations.

I attempted to include male and female representatives of each of Kolb's four learning styles in the participant group. However, since only one interested student in the class was an assimilator, a third converger was chosen. Also, I only chose students who scored at least 60 on the CAS in order to have participants who had an overall favorable attitude about computers. Each student spent approximately one hour on two different occasions learning the material, and then about 30 minutes after each session in an interview. During the sessions, I taped their verbalizations, employing the think-aloud method. Observation notes taken during the sessions, as well as tapes of the interviews that were transcribed along with the verbalizations provided the data that were analyzed and became each student's story, told in his or her own words. Once I reported each experience from the stories or profiles, I developed and reported on the themes that I discovered during the data analysis. These themes represent the feelings of the eight students about the experience.

Most felt that this was a positive learning experience, as the material presented was very relevant to them, they were able to learn the material in a different way, and could control the pace of the material and therefore the pace of their learning. Some of the students indicated that they thought that the instructional method provided them with motivation to learn the concepts presented by the CAI. Perhaps it was the newness of learning with a different

method, or the fact that the material presented is often of great interest to Economics and Business majors might have been reasons for them to feel that they were motivated to learn.

The students also indicated that they liked the way the information was presented, as well as the feedback that they were given when they answered questions. They really liked the fact that they would know immediately whether or not they answered questions correctly, and therefore, if they should look back at the material again, or could go on to the next section. Alternating information and questions decreased the monotony that the students associated with the textbook. Although all but one of the students was pleased with the learning experience, the consensus of the students was that CAI was useful as a supplemental learning method, but should never completely replace lectures. Their reason for this sentiment was the inability to have their own questions answered. They believed that they could reinforce what they learned in class, but this should not replace the professor and a textbook.

Finally, the CAI appeared to exhibit social presence. In this study, the characteristics of social presence were applied to a different medium than in prior studies. However, certain aspects of interactivity reported by Lombard and Ditton (1997) that are characteristics of social presence, appeared in the CAI. Users inputs accepted by and responded to by the medium indicate interactivity. The CAI provided many opportunities for the students to input information in the form of answering true-false and multiple choice questions, and dragging the

mouse pointer from one column to another to complete matching questions. The students stated that these exercises not only enabled them to measure their understanding of the material, but also kept them engaged in the activity.

Another aspect of interactivity is the availability of situations that can be modified by the user, such as the placement of objects within the exercise. The CAI provided many instances where students were asked to drag account names into journal entries (method used to record accounting transactions) and financial statements. George found this to be an especially useful feature. In fact, he compared completing those tasks to taking notes in class. Although some of the students skimmed reading material or simply asked for answers to computational questions, all eight students completed all of these active exercises.

The third example of interactivity was the ability of the student to control the pace and to move the program in more than one direction. This ability was available throughout the CAI. The students commented so much on this aspect that it became one of the themes that emerged from this study.

Media richness has been mentioned in the literature as a characteristic that can be considered when evaluating social presence in a medium (Hertenstein, 1999). The CAI contained two of the four factors of media richness: feedback immediacy and use of natural language. The feedback aspect of the CAI and the students' perception of its usefulness and helpfulness has been discussed. The use of natural language was another positive aspect of the

CAI. The author often used real-world examples to explain the accounting concepts. The students stated that these examples were extremely helpful in their understanding and remembering the material.

The need for social presence is dependent upon the task that is completed through the medium (Hertenstein, 1999). Information transmission and problem solving are not sensitive to the medium and therefore, do not require social presence. Social presence is more important when interpersonal communication is required. Even though there was less need for social presence to exist in the CAI, feedback from the students indicated that it actually did.

In addition to the definition of social presence as approximating face-to-face communication, Short, Williams and Christie (1976) stated that it is also the extent to which a medium is perceived to convey the actual presence of another communicator. Although this definition has principally been linked with computer-mediated communication, such as e-mail and electronic chat rooms (Gunawardena & Zittle, 1997; Joe, 1996; Kim, 1994), this characteristic was present in the CAI. Two of the students, Allen and Steve, compared learning with the computer to receiving information from an individual. During the second interview, Allen stated that the computer was almost acting like a professor in that he didn't feel like he was on his own. He expressed this sentiment when I asked him to comment about the feedback. Steve also felt that the feedback was very helpful. He described it as having a conversation with the CAI about how to go about solving a particular problem. Although the other

students did not mention this aspect of the CAI as directly as Allen and Steve, their positive comments to the three characteristics of social presence and interactivity, namely, information transmission, problem solving and availability of feedback, allowed me to conclude that the CAI did, in fact exhibit social presence.

Recommendations for Future Research

I reported of the experiences of the students who learned two chapters of financial accounting through CAI instead of a traditional lecture. Further research using the think-aloud method might seek to determine the experience of students engaged in other methods of learning, such as a distance-learning environment, computer-based assignments, or perhaps solving accounting problems either alone or in a small group. The think-aloud method can provide valuable insights into learning as it is taking place. A newer medium that the think-aloud method might be used to evaluate is course design and delivery using BlackBoard or WebCT. These web-based methods of course organization and administration employ many useful techniques, such as on-line quizzes and real time chat rooms. Measuring students' perceptions of these course attributes could provide valuable insight for instructors.

In addition to the narrative stories reporting on the students' experiences with the learning method, the qualitative research method employed in this study resulted in the themes "our learning style fit" and "we had a positive learning

experience." Perhaps a quantitative measurement of these themes, such as measurement of achievement by learning style, or a scale to measure attitudes about the experience might be employed in a future study.

Students in this study exhibited characteristics of their individual learning styles. While Kolb's LSI was useful here, perhaps other explanations for differences exist, such as "thinking styles" (Sternberg, 1988). Other personality measures, such as the Meyers, Briggs Type Indicator (1985) might be used to measure differences among learners.

Research studies have also indicated that attributes such as learning style, gender, and computer use may affect computer attitudes. Both the LSI and the CAS might be given to a larger population in an attempt to determine if a connection exists between learning style and attitude toward computers. Since data are mixed concerning connections between gender and computer attitude, administering the CAS to a larger population may provide more insight. Additionally, instead of measuring computer attitudes in a time when it is expected that most individuals in this type of population should have at least favorable attitudes toward computers, measuring users' self efficacy in their confidence in their computer skills and comparing those results to learning style could yield interesting data.

This study reviewed the concept of social presence in CAI, a medium that had not been studied in this context before. Social presence was evaluated qualitatively, through examination of the think-aloud protocols, and the

interview transcripts. While CAI as used in this study exhibited social presence in some instances, it wasn't always evident. Social presence could be measured quantitatively via the social presence scale (Short, et. al., 1976). This scale asks the evaluator to rate the medium as sociable-unsociable, sensitive-insensitive, warm-cold, and personal-impersonal. Users of CAI could complete this scale and the results statistically measured to test the effect of social presence on the achievement and satisfaction of the users of the CAI.

Finally, with the expanded use of computers, learning via computer-assisted instruction is expected to increase dramatically. Not only tutorial CAI, but interactive exercises available either on the Internet or on CD-Rom that could reinforce text and lecture material would be useful to students as supplemental learning materials. Evaluation of the effects on achievement when these additional types of work are assigned could give accounting educators alternatives to produce graduates that possess technical competence as well as greater technological skills. Currently, the accounting profession is in a state of turmoil. The complexity of transactions is increasing geometrically. Additionally, accounting irregularities and oversights by auditors have created the need for earnings restatements and in some cases lead to bankruptcies. As a result, competent accounting professionals may be in greater demand than any other time in history.

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APPENDIX A

INSTITUTIONAL REVIEW BOARD APPROVAL

**Action Report
Institutional Review Board for Research Involving Human Subjects
Lafayette College**

Principal Investigator: Sheila A. Handy (Department of Economics and Business)

Title of Research: A Study of the Effects of Learning Style and the Perception of Social Presence on Student Satisfaction with a Computerized Tutorial

Period of Research: 6/11/99 – 6/11/00

Research Type: Faculty Research

Review Requested: Expedited

IRB Action: Approval (6/10/99)

In accordance with procedures approved by the Lafayette faculty on 5/14/95, the Institutional Review Board has reviewed your proposal for research involving human subjects. Pursuant to your request for expedited review, the proposal was evaluated by two board members. Both evaluators judged the proposal as being acceptable for expedited review (as described in Section IV-D of the Lafayette IRB Guidelines) and recommended that the proposal be approved. This letter documents my decision as IRB chair to approve the proposal in accordance with these recommendations for the period beginning June 11, 1999 and ending June 11, 2000.

Sincerely,

Matthew McGlone/IRB Chair

APPENDIX B

LETTER OF INTEREST

Professor Sheila Handy is conducting a research study on student satisfaction with different learning methods as part of the requirements to complete a doctorate in Business Education at New York University. She needs to study the reactions of eight students while they are studying accounting through a computerized tutorial.

Please complete the following information and return this form to the Economics Department office by 5pm tomorrow. If you have any questions, please feel free to contact Professor Handy at handys@lafayette.edu, or extension 5311. You may also drop by her office at 107 Simon Center.

Name _____

Campus phone _____

E-mail _____

Have you ever taken an accounting course before? _____
Yes No

Do you have any work experience in accounting? _____
Yes No

Would you be willing to participate in a study measuring student satisfaction with a computerized tutorial? _____
Yes No

APPENDIX C

CONSENT FORM

Economics and Business 218

Tutorial Research Project

You have been invited to take part in a study to learn more about student experiences with computerized tutorials within the financial accounting course. This study will be conducted by Sheila Handy, Business Education Program, New York University. This study is part of Ms. Handy's doctoral dissertation. Her faculty sponsor is Bridget N. O'Connor, Ph.D., who can be reached at the School of Education at NYU – 212-998-5488 or bridget.oconnor@nyu.edu.

If you agree to be in the study, you will first be asked to complete Kolb's Learning Style Inventory, the Computer Attitude Scale, and a brief demographic questionnaire. From this information, I will choose eight participants. Please note that not all volunteers will be chosen to participate, as participants are chosen based upon such factors as learning style and Computer Attitude Scale score.

If you are chosen, you will be asked to study two chapters (one on financial statement preparation and analysis and the other on accounting for bonds) in the course via a computerized tutorial in lieu of attending the lecture. You will be asked to verbalize your thoughts while you are engaged in the tutorial. At the same time, I will observe the session and take notes. This tutorial session will be both audiotaped and videotaped. Audiotaping will facilitate transcription of the verbalizations. At the end of the session, we will watch the videotape of the tutorial session, and we will discuss your experience. The interview will be audiotaped. You may review these tapes and request that all or any portion of the tapes be destroyed.

Participation in the study will involve about two hours of your time on two different occasions. One hour will be the actual tutorial session, and the second hour will be the interview. If you are chosen to participate, you will not have to attend class for those two chapters.

Although you will receive no direct benefits, this research may help us to determine how students experience learning accounting through computerized tutorials.

The researcher has explained this study to you and answered your questions. If you have any additional questions or wish to report a research-related problem, you may contact Prof. Handy (Room 107 Simon Center) at extension 5311 or at handvs@lafayette.edu.

For questions about your rights as a research participant, you may contact the University Committee on Activities involving human Subjects, Office of Sponsored Programs, New York University, 212-998-2121.

Participating in this study is voluntary. You may refuse to participate or withdraw at any time without penalty. Nonparticipation or withdrawal will not affect your grades or academic standing.

Confidentiality of your research records will be maintained by the researcher. All tapes and transcripts will be kept at the home of the researcher for three years and then destroyed.

You have received a copy of this consent document to keep.

Agreement to Participate

I affirm that I am over 18 years of age.

Subject's signature

Date

APPENDIX D

PERMISSION FROM AUTHOR OF CAS

Date: Mon, 07 Feb 2000 08:43:10 -0600
From: Gary Nickell <nickellg@mhd1.moorhead.msus.edu>
Subject: CAS
To: handys@mail.lafayette.edu
Organization: Moorhead State university
X-Mailer: Mozilla 4.7 [en] (Win95; U)
X-Accept-Language: en
Original-recipient: rfc822;handys@lafayette.edu

This email grants you permission to use the "Computer Attitude Scale" published in *Computers in Human Behavior*, 1986, in your research. A copy of the scale including scoring information can be found on my web site (<http://www.moorhead.msus.edu/nickell/research.htm>). I would appreciate if you would send me a copy of any published or presented research that includes the CAS. Good luck with your project.

--

Gary Nickell, Ph.D., Chair
Psychology Department
Moorhead State University
Moorhead, MN 56563
(218) 236-4080
email: nickellg@mnstate.edu
homepage: <http://www.mnstate.edu/nickell>

APPENDIX E

COMPUTER ATTITUDE SCALE

Name _____

INSTRUCTIONS: This instrument is designed to measure attitudes towards the use of computers in our society. It is not a test, so there are no right or wrong answers. Using the scale below, indicate your level of agreement or disagreement in the space which is next to each statement.

| | | | | |
|----------------------|----------|-----------|-------|-------------------|
| 1 | 2 | 3 | 4 | 5 |
| Strongly Disagree | Disagree | Undecided | Agree | Strongly Agree |

- ___ 1. Computers will never replace human life.
- ___ 2. Computers make me uncomfortable because I don't understand them.
- ___ 3. People are becoming slaves to computers.
- ___ 4. Computers are responsible for many of the good things we enjoy.
- ___ 5. Soon our lives will be controlled by computers.
- ___ 6. I feel intimidated by computers.
- ___ 7. There are unlimited possibilities of computer applications that haven't even been thought of yet.
- ___ 8. The overuse of computers may be harmful and damaging to humans.
- ___ 9. Computers are dehumanizing to society.
- ___ 10. Computers can eliminate a lot of tedious work for people.
- ___ 11. The use of computers is enhancing our standard of living.
- ___ 12. Computers turn people into just another number.
- ___ 13. Computers are lessening the importance of too many jobs now done by humans.
- ___ 14. Computers are a fast and efficient means of gaining information.
- ___ 15. Computers intimidate me because they seem so complex.
- ___ 16. Computers will replace the need for working human beings.
- ___ 17. Computers are bringing us into a bright new era.
- ___ 18. Soon our world will be completely run by computers.
- ___ 19. Life will be easier and faster with computers.
- ___ 20. Computers are difficult to understand and frustrating to work with.

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APPENDIX F
DEMOGRAPHIC DATA

Name _____

Gender _____

Campus phone _____

E-mail address _____

Grade-point average _____

APPENDIX G
SAMPLE TUTORIAL SCREENS

25. Owners' Equity Page: 48

Reissue price > repurchase price

The firm reissues 8 shares for \$6 per share. These shares had been repurchased for \$4 per share.

A new account called "Paid-in capital from treasury stock" is created. It is set to the difference between the cost of the treasury stock and the proceeds from its reissue. Note that the retained earnings account is not increased.

Cash proceeds from the reissue = $8 \times 6 = 48$
 Cost of the treasury stock reissued = $8 \times 4 = 32$
 Difference = $48 - 32 = 16$

| A | +dr | -cr | L | -dr | +cr |
|------|-----|-----|-------------------------------------|-----|-----|
| Cash | 48 | | DE Permanent Treasury stock | | 32 |
| | | | Paid-in capital from treasury stock | | 16 |

| | | | | | |
|------|-------------------------------------|----|----|--|--|
| Cash | | dr | 48 | | |
| | Treasury stock | cr | 32 | | |
| | Paid-in capital from treasury stock | cr | 16 | | |

Primary and secondary markets

Q: Do firms sell their shares directly to the public without the help of their underwriters (investment banks)? Yes No

Q: Which of the following is true?

1. Investors can only buy shares from the issuing firm.
2. Investors can also buy shares from other investors who purchased the shares previously.

Q: Match the following

Investors buy from the issuing firm (or its underwriters)

Secondary market

Investors buy from each other

Primary market

Firms issue shares to the general public with the assistance of investment banks (which are called underwriters). A **syndicate** is a group of underwriters managing an issue. Shares are initially sold in the primary market. When a new firm issues shares for the first time, it is called an **initial public offering (IPO)**. When an existing firm issues shares to finance its expansion, it is called a **seasoned public offering**.

Investors can later trade these shares between each other in the secondary market at stock exchanges such as the New York Stock Exchange.

APPENDIX H

TUTORIAL DESCRIPTION

Following is a summary of the screens provided by each tutorial chapter:

Owners' equity

*3 – Sources of funds

The slide begins with true-false questions on the topic. Students answer by clicking on the box corresponding to the answer. Sources of owners' equity, such as investors, and earnings are described, as are sources of debt (creditors).

*4 – Shares (also called stocks) are an important source of funds

The slide provides a copy of a portion of the stockholders' equity section of the IBM balance sheet for the years ended 12/31/96 and 12/31/97. Included items were preferred and common stock, retained earnings and treasury stock. The IBL logo was presented at the bottom of the slide.

*5 – A corporation is born

A picture of a chicken hatching out of an egg was shown at the bottom. The process of incorporation was described, and definitions of authorized, issued, treasury, and outstanding shares were provided. The slide indicated that treasury shares are shown as negative stockholders' equity items.

*6 – Kellogg's Certificate of Incorporation

A portion of the articles of incorporation was included, which the reader could scroll down to view. The Kellogg's trademark was shown at the bottom of the slide.

*7 – Delaware, the favorite state of incorporation.

The Delaware state logo is shown in the bottom right-hand corner. It was noted that corporations can be incorporated in Delaware and have their headquarters in another state, as GM's main office is in Michigan. More than 50% of all large firms in the US are incorporated in Delaware. The reasons include the state's administrative system is geared toward dealing with corporations efficiently, the state's laws are very corporation friendly (e.g., it is very difficult for Delaware corporations to be taken-

over), and the state has a well developed, non-juried court system for handling corporate matters.

***8 – Understanding authorized, issued, treasury, and outstanding stock**

The frame contains six true false and one computational question on the various types of shares of stock. To answer the true-false questions, the student clicks on what he or she feels is the correct box, and is immediately told whether or not the answer is correct. For the computational question, an answer is typed into the box, and again, immediate feedback as to the answer is given. The answers are provided at the bottom of the slide.

***9 – What is a prospectus?**

The logo of the Securities Exchange Commission is placed at the bottom of the slide. The slide describes a prospectus as the document that informs potential investors of a stock issuance and refers the reader to the EDGAR database to find a copy of a prospectus.

***10 – How are shares issued?**

The slide provides a diagram of the sequence of issuing shares from the investing firm to the investment bankers (names Merrill Lynch, JP Morgan, and Goldman Sachs) to the public through the primary market, and then among investors through the secondary market. Logos of the applicable firms and cartoons representing the investing public are provided.

***11 – Primary and Secondary Markets**

The first half of the slide provides questions to measure understanding of the material discussed on the prior slide, and defines such terms as syndicate (a group of underwriters managing an issue), initial public offering, and seasoned public offering (offering by an existing firm.)

***12 – Par value and additional paid-in capital (APIC)**

The slide notes that not all share are assigned a par value (arbitrary legal value). The amount of the excess of the issue price over the par value is described as additional paid in capital. Stated value was mentioned as an alternative to par value, although conceptually, there is no difference. A true-false question regarding the market price of a share of stock with a zero par value was placed in the middle of the slide. The final paragraph stated the par value of a share of stock is normally set quite low, as it has no bearing on the value of the firm, as does market value.

***13 – Journal entry for issuance of common stock**

The reader was asked to drag and drop account names and amounts to complete a journal entry for the issuance of 10 shares of \$1 par common stock at \$5 per share. If either the account name or the amount that the reader tried to place in the entry was incorrect, it jumps back to the data field. If it is correct, it remains in the journal entry area. As the amounts are correctly placed in the entry, debit and credit columns at the bottom of the slide appear to illustrate the balancing effect of an entry.

***14 – Answer to journal entry for common stock**

Provides the correct answer for the entry that the reader was asked to complete in the prior screen. Boxes separate the debits and credits of the entry and the headings, such as account type (asset or stockholders' equity) and debit or credit are highlighted in blue type, and the entry is presented in regular type. The bottom of the screen explains the procedure for recording stock issued in exchange for non-cash assets.

***15 – Recap of work completed thus far**

Topics that have been completed are checked in blue (list of topics is shown in red type).

***16 – The rights of common stockholders: classes of shares**

Explains the various rights of common stockholders, such as the right to vote, the right to purchase additional shares in the case of a new issuance, the right to distributions of earnings in the form of dividends, and right to a return of investment in the case of corporate liquidation.

***17 – Shareholders, board of directors and officers**

Eight true-false questions relating to the information provided on the last screen. If the question is answered correctly, the word "correct" is shown on the screen. If not the phrase "try again" appears.

***18 – The right to vote**

Describes the process by which common stockholders can vote for the board of directors and other matters by the use of the proxy card. A two-answer multiple-choice question relating to the number of votes allocated to each shareholder (i.e., one per

person, or one per share owned). The answer that is selected (by point and click is highlighted in yellow, and “correct” or “try again” appears.

*19 – Ford Proxy Statement: April 7, 1997

The trademark of Ford Corporation is shown, and the top right corner, as is an icon to link the user to the Ford website. The actual proxy statement that is reproduced is approximately 60 lines long. An icon allowing the user to print the statement is available.

*20 – Takeovers and proxy wars: for your general knowledge only

The screen contains a clip-art cartoon of an individual engaged in a battle, and explains that control of a corporation means ownership of more than 50% of the voting stock. Therefore, proxy wars are campaigns by different groups to obtain proxy votes from stockholders. The concept of leveraged buyout was described, and the example of RJR Corporation was mentioned as the largest LBO in history.

*21 – The right to participate in any new issues of stock of the same class

Two questions requiring calculations by the user relating to stock ownership percentage before and after the issuance of new shares of stock. The user must calculate the answers and type them into the box at the end of the question. If the questions are answered incorrectly, the words “try again” appear and the user is informed that the question mark key on the keyboard to obtain the correct answer. The two true-false questions refer to the concept of preemptive right, the right to purchase new shares to prevent dilution of one’s ownership percentage.

*22 – The right to share in profits and losses: Dividends

The first question relates to the recipients of dividends and interest. The user is required to match the payment to the recipient by dragging a line from one column to the other. If the match is incorrect, the line disappears, so the user knows immediately if he or she is correct. The two (three answer) multiple choice questions on the same topic ask about the income derived from stocks or bonds. Choice A and B in each question are correct, and answer C allows the user to choose both. If only A or B are chosen, the tutorial asks the user to consider the other choice also.

*23 – Cash flows to debtors and shareholders

This screen provides a diagram of the cash paid by corporations to shareholders and creditors, and presents it in the form of the accounting equation (assets = liabilities + equity). The diagram uses arrows to show the cash payments of interest and dividends.

***24 – Comparison of interest payments and dividends: Guess the answers**

Seven true false questions are asked that relate to interest and dividend payments. The correct answers are provided at the bottom of the screen. Since these concepts were not yet covered using text materials, users were asked to guess at the answers,

***25 – Understanding dividends: Guess the answers**

Ten additional questions about the payment of dividends, with answers provided at the bottom of the screen.

***26 – Review: The accrual method and the entity concept**

Reminds the user that net income and cash flow are different, that firm and owner accounts are separate, and that shareholders have unlimited liability. A diagram showing the separation of shareholders (illustrated as a group of people) from the firm (illustrated as a building) is provided at the bottom of the screen.

***27 – Clarification 1: Firms are required to repay debt and interest (an expense)**

Explains that debt is a legal responsibility of the firm, and that interest is an expense deducted from revenue to compute taxable income. It further explains that debt holders expect to receive nothing beyond the interest payments and a return of their principal.

***28 – Clarification 2 – Firms are NOT required to pay dividends**

Indicates that dividends are not legal responsibilities of corporations, and illustrates that Microsoft Corporation has never paid dividends despite profits and positive cash flows. A graph of Microsoft's stock prices, showing large increases from 1985 to 1995 illustrates that reinvesting earnings has benefited the shareholders.

***29 – Understanding the sequence of dividend payments**

The slide begins with a reproduction of a General Electric dividend announcement from 1997. The GE trademark and a link to the GE web page are provided, and the important dates listed in the announcement, declaration, record and payment, are defined. The ex-dividend date is also described.

***30 – The difference between “ex-dividend” and “cum-dividend” prices**

Three questions testing the user’s knowledge of stock prices before and after the dividend record date. One question is matching, and the other two are multiple choice.

***31 – Clarification 3: Dividends are payable only after they are declared**

Provides the journal entries for the declaration and payment of dividends, and indicates that dividends are only a liability when they are declared. The accounts affected by the transaction are listed as assets, liability, or equity items.

***32 – Clarification 4: Dividends are a transfer; they are not an expense**

This slide provides a multi-colored diagram that indicates that dividends are distributions of after-tax profits.

***33 – Firm’s perspective: Comparison of debt and equity as sources of funds**

The screen lists the advantages of debt, including retention of after-tax profits and control by the firm, and tax deductibility of interest. The principal disadvantage of debt is the requirement to pay interest whether or not the firm has a positive cash flow.

***34 – Investors’ perspective: Comparison of debt and equity**

Four multiple-choice questions relating to investor returns when the firm is successful or unsuccessful were asked and a summary of the fact that bonds are a less risky investment than stock was provided.

***35 – The transfer aspect of cash dividends from investors’ perspective**

The slide provides data relating to a firm’s capital structure (\$100 cash, no debt, 10 shares outstanding, \$1 dividend per share). The user is asked to complete a table in which he or she is asked to compute stock prices and market values before and after the dividend payments. The bottom of the slide indicates that the answers are listed on the next slide. If the user answers a question incorrectly, he or she is prompted to “try again” and is told that the correct answer can be obtained by pressing the question mark key.

***36 – A: The transfer aspect of cash dividends from investors’ perspective**

This slide provides a diagram of the dollar amount in assets and equity before and after the dividend payment, as well as the shareholder investment before the dividend (\$100 stock value) and after the dividend (\$90 stock value and \$10 cash).

***37 – The informational aspect of cash dividends**

This slide provides text relating to the fact that the declaration of dividends can raise the price of the stock if the market views the dividend as a signal of confidence in the firm's future.

***38 – A firm's dividend policy: A corporate finance issue**

The user is that this slide can be skipped without any loss of continuity. Since it deals with corporate finance, they were permitted to skip it.

***39 – Where are we?**

Another recap of the information that has been completed.

***40 – Stock repurchases: Treasury shares**

This slide explains the concept of treasury stock, previously issued shares that have been repurchased by the firm. The major reasons for repurchase, such as maintenance of stock price, and prevention of a buy-out, are listed.

***41 – GE 1996 annual report: Treasury Shares**

This slide contains a portion of the treasury stock footnote in the GE 1996 annual report. It lists the changes from the beginning to the end of the year through purchases and dispositions, and explains the source of funds for the repurchases.

***42 – Stock repurchases: An alternative to paying cash dividends**

The slide poses a hypothetical situation where a firm has \$100 cash, no debt, and 10 shares of stock owned by one shareholder. The user is asked to compute the amount of cash dividends that the shareholder will receive; the cash proceeds from selling one share, the number of shares outstanding and the price after the dividend. Once the amounts are computed, the user must type in the answers and the tutorial indicates whether or not they are correct, and gives the option to obtain the answer using the questions mark key.

***43 – Stock repurchases allow shareholders to choose when to pay taxes**

This slide indicates that it can be skipped without loss of continuity.

***44 – Accounting for treasury stock**

The slide begins by asking three multiple-choice questions, where the user must click on the correct answer. The answers relate to the effects of treasury stock on owners' equity, and the location of treasury stock on the balance sheet. The procedure for recording treasury stock transactions is described in text form, and emphasis was placed on the fact that firms cannot report profits or losses on treasury stock transactions.

***45 – Q: Journal entry at the time of repurchase**

The user is provided with the contributed capital section of the balance sheet, and is asked to complete the journal entry to record the repurchase of shares as treasury stock. If the account names or amounts are placed incorrectly in to the entry, the amounts revert back to the information section.

***46 – A: journal entry at time of purchase**

The correct answer is provided, and the new contributed capital section of the balance sheet is illustrated.

***47 – Reissuance of treasury shares: Does it affect income?**

Two situations regarding the resale of treasury shares are presented, and the user is asked to answer four true-false questions about the effects on firm income.

***48 – Reissue price > repurchase price**

The procedure for recording a treasury stock reissuance at a price higher than the repurchase price is illustrated. The account known as "paid-in capital from treasury stock" is introduced and explained. Also, the journal entry is illustrated.

***49 – Reissue price < repurchase price**

The procedure is again explained, and the journal entry is again illustrated.

***50 – When shares are retired after repurchase**

This slide was skipped

***51 – IBM 1996 annual report: Stock repurchase and retirement**

This slide was skipped

***52 – Retirement price lower than original issue price**

This slide was skipped

***53 – Retirement price higher than original issue price**

This slide was skipped

***54 – Where are we?**

Recap of material covered

***55 – Stock dividends and stock splits**

This slide provides a conceptual explanation of the differences between stock dividends and stock splits, and contains a clip-art cartoon of an individual “splitting” a vegetable.

***56 – Examples of stock splits**

This slide provides a list of stock splits by McDonalds Corporation from 1966 to 1994, and a reproduction of an IBM stock split announcement. Trademarks and links to both companies web pages are provided.

***57 – Q: The division of shares aspect of stock splits and stock dividends**

The user is required to compute amounts and complete a table of market values, shares outstanding, and price per share both before and after a stock dividend and stock split.

***58 – A: The division of shares aspect of stock splits and stock dividends**

The completed table is shown, and conceptual explanations are provided. The difference in stock price before and after a stock split is illustrated with clip-art pictures of paper money and coins.

***59 – The informational aspect of stock dividends and stock splits**

Skipped

*60 – The two effects of stock splits on Microsoft’s stock price

Skipped

*61 – Accounting for small stock dividends (less than 20 – 25%)

Illustrated the journal entry and the accounts and amounts involved in a small stock dividend, and explained that this size dividend does not affect the price per share.

*62 – Accounting for large stock dividends (>25%)

Illustrates the journal entry and compares the dissimilar treatment from small stock dividends. The reason for this treatment, i.e., the effect on market price, is also discussed.

*63 – Accounting for stock splits and overall comparison

Describes the accounting treatment for a stock split (no journal entry, as no accounts are affected) and summarizes in table form the effects of small stock dividends, large stock dividends, and stock splits on outstanding shares, par value per share, APIC, retained earnings, and total stockholders’ equity.

*64 – Q: Understanding retained earnings

The user is asked to match accounting concepts of profit, loss, cash inflows, and cash outflows to their effect on retained earnings (increase, decrease, no effect), and to answer four questions about retained earnings.

*65 – A: Understanding retained earnings

Explains that retained earnings represent the owners’ residual claim against the accumulated earnings of the firm, and illustrates the calculation as beginning balance + net income – dividends = ending balance. The retained earnings section of the GE annual report is illustrated, and a link to the company’s web page is provided.

*66 – Items that affect retained earnings –

A conceptual discussion of those items that have an effect on retained earnings, such as profit or loss, cash dividends, and reissuance of treasury stock at a price lower than the repurchase price.

***67 - Q: Distributions to shareholders**

Five multiple-choice (two choices each) questions relating to items that reduce owners' equity.

***68 – Restrictions on distributions to shareholders**

Skipped

***69 – Where are we?**

Recap of material covered

***70 – Preferred shares**

The slide begins by asking why preferred shares are given that name. The concept is then explained, and the user is informed that preferred shareholders must receive dividends before common shareholders. The two classes of stock are compared to the House of Lords and the House of Commons in the UK. The House of Lords appears to be more powerful, but the House of Commons has the right to vote. A clip-art picture of a castle is provided.

***71 – Dividends on preferred shares**

A conceptual discussion of how dividends on preferred stock are stated, either as a fixed dollar amount, or as a percentage of the par value. Cumulative and participating characteristics of preferred shares are also defined and discussed.

***72 – Other types of preferred shares**

This slide defines callable, mandatory redemption, and convertible preferred shares. An excerpt from the Proctor and Gamble balance sheet from 1997, indicating the balances in preferred stock, as well as a link to the Proctor and Gamble web site, are also provided.

***73 – Are preferred shares debt or equity?**

The user is asked to match characteristics of stocks or bonds with the two types of capital. Then, a discussion of provisions of preferred stock that almost guarantee minimum payments to stockholders, such as mandatory call provisions.

*74 – Liquidation and seniority of claims: Who must be paid first?

A description of the order of claims in bankruptcy, including employees, secured creditors, unsecured creditors, preferred stockholders, and common stockholders. A double decker bus illustrates the superiority of the claims of the creditors over those of the stockholders.

Inventoriable costs (note: this session began in the middle of this chapter)

*44 - FotoShop again: A machine to process film before sale

The slide indicates that the concept of including depreciation in the cost of manufactured goods will be examined. There are pictures of a storefront, and a man and a woman, who are the owners of this business. All of the financial data relative to the business is provided. This includes the contribution to the business by the owner, the items that were purchased for the business which were film and a developing machine, and the number of rolls of film that were processed and sold on the two days that the business would be in operation.

*45 – Q: How the machine is used on day 1

This slide asks a series of 16 questions regarding the use of the machine to process film. Some of the questions could be answered using data from the prior screen, and the others were computational. All answers could be determined from the original information.

*46 – A: How the machine is used on day 1

This slide provided the answers to the questions posed on the prior slide. If a calculation was needed to answer a question, the equation was given.

*47 – If the machine's depreciation is treated as a period cost

Text on the effect on the company's inventory of expensing the depreciation as it was incurred. The slide also asked four questions about the effects on inventory of this decision.

*48 – The machine's depreciation: Production costs are inventoriable costs

This slide describes the purpose of including such costs as depreciation in the final cost of manufactured inventory. The concept was discussed in bold type to emphasize the importance of the rule.

***49 – The flow of costs through the production process on day 1**

A diagram that shows how the various components of inventory are factored into the final cost. It begins with raw materials, and through arrows, indicates how they are converted to work-in-process and finished goods through the process of adding additional costs, such as depreciation.

***50 – Preview of depreciation as a period cost versus inventoriable cost**

Provides journal entries illustrating the accounting for the cost of inventory when depreciation is treated as both a product and a period cost.

***51 - Journal entries for machine on day 1**

Illustrates the journal entries needed to record the contribution of cash to the business, the purchase of film, the purchase of the machine, and the transfer of film out of raw materials inventory into work-in-process inventory.

***52 – 5: The machine processes 40 rolls of film**

This slide asks two questions about the cost of processing the film, and whether or not the machine depreciates as the film is processed. Students are then required to complete a journal entry to record the depreciation. As in the first chapter, journal entries are completed by dragging the accounts and dollar amounts into the JE box. As the journal entry is completed, two columns appear, showing the balancing mechanism of entries.

***53 – 6: Processed film is transferred to the finished goods inventory**

This slide asks a question about the cost of the 40 processed rolls, and then requires that the student complete a journal entry transferring the completed rolls out of work-in-process into finished goods.

***54 – 7: Processed film is sold from the finished goods inventory.**

The student is asked to indicate the cost of the film sold, and then provide the journal entry to record the transfer out of finished goods inventory (an asset) into cost of goods sold (an expense).

***55 – Answers**

Provides answers to the four journal entries that the student was asked to complete on the last four slides.

***56 – Inventory balances at the end of day 1**

A blank table was provided that students had to complete by providing the beginning balances, inflows, outflows, and ending balances of raw materials, work-in-process, and finished goods inventories. The answers were provided right under the table.

***57 – Post journal entries**

This slide presented T-accounts, which illustrate a business's general ledger, for all of the transactions that occurred thus far.

***58 – Unadjusted trial balance**

Using the balances in the accounts provided on the prior slide, students were asked to complete a trial balance by dragging the account names and dollar amounts.

***59 - Unadjusted trial balance**

Provides the answer to the trial balance that was assigned on the last slide.

***60 – Machine on day 1: Close temporary accounts at the end of day 1**

This slide provided the entries required to close the revenue and expense accounts at the end of day 1. Closing entries are needed to match revenues and expenses to the proper time period.

***61 – Machine on day 1: Make financial statements**

A list of the accounts from the trial balance that would appear on the income statement, i.e. revenue and expense.

***62 – Review of the machine's use**

10 questions, similar to those asked on the second screen. This acted as a review of all of the activities that occurred on day 1.

***63 – Machine: Summary of days 1 and 2**

Answers to the questions that were asked on the prior screen. As before, equations were provided when needed.

***64 – Where are we?**

Recap of topics completed

***65 – Machine: When 60 rolls that were in WIP are processed on day 2**

Asked the student to prepare the journal entry to record the processing of the other 60 rolls.

***66- Machine: 60 processed rolls are transferred to finished goods**

Journal entry to record the transfer of the completed rolls.

***67 – Machine: 75 rolls are sold on day 2**

Journal entry to record the recognition of expense relating to the sale of the rolls of film.

***68 – Machine: Summary of journal entries on day 2**

Answers to the four journal entries the student was asked to complete.

***69 – Machine: prepare unadjusted trial balance at the end of day 2**

Illustration of the trial balance after day 2 transactions

***70 – Machine on day 2: Close temporary accounts at the end of day 2**

Illustration of closing entries at the end of the second day.

***71 – Machine on day 2: Make financial statements**

An illustration of the income statement reflecting on day 2.

***72 – Excerpts from P&G's balance sheet (June 30, 1997)**

***73 – Summary of topics covered so far**

Table illustrating income and cash flows for each day that the machine was used to process film.

APPENDIX I

CODING SCHEME

Q.S.R. NUD.IST Power version, revision 4.0.
Licensee: Sheila Handy.

PROJECT: dissertation, User Sheila Handy, 2:06 pm, Jan 11, 2001.

| | |
|---------|--|
| (1) | /Base Data |
| (1 1) | /Base Data/Gender |
| (1 1 1) | /Base Data/Gender/Male |
| (1 1 2) | /Base Data/Gender/Female |
| (1 2) | /Base Data/Grade point average |
| (1 2 1) | /Base Data/Grade point average/C- to C Range |
| (1 2 2) | /Base Data/Grade point average/C+ to B- Range |
| (1 2 3) | /Base Data/Grade point average/B to B+ Range |
| (1 2 4) | /Base Data/Grade point average/B+ to A Range |
| (1 3) | /Base Data/Learning style |
| (1 3 1) | /Base Data/Learning style/Accommodator |
| (1 3 2) | /Base Data/Learning style/Assimilator |
| (1 3 3) | /Base Data/Learning style/Converger |
| (1 3 4) | /Base Data/Learning style/Diverger |
| (1 4) | /Base Data/CAS result |
| (1 4 1) | /Base Data/CAS result/Less than favorable |
| (1 4 2) | /Base Data/CAS result/Favorable |
| (1 4 3) | /Base Data/CAS result/Highly favorable |
| (1 5) | /Base Data/Major |
| (1 5 1) | /Base Data/Major/Economics and Business |
| (1 5 2) | /Base Data/Major/AB Engineering |
| (1 5 3) | /Base Data/Major/Math-Econ |
| (1 5 4) | /Base Data/Major/Dual Econ-Bus and CS |
| (2) | /Data Source |
| (2 1) | /Data Source/Protocol Transcripts |
| (2 1 1) | /Data Source/Protocol Transcripts/The first |
| (2 1 2) | /Data Source/Protocol Transcripts/Session two |
| (2 2) | /Data Source/Observer Notes |
| (2 2 1) | /Data Source/Observer Notes/Observation 1 |
| (2 2 2) | /Data Source/Observer Notes/Observation 2 |
| (2 3) | /Data Source/Interview Transcript |
| (2 4) | /Data Source/Analytic Memos |
| (2 5) | /Data Source/Tutorial Screens-Owners' Equity |
| (2 5 1) | /Data Source/Tutorial Screens-Owners' Equity/Title Screen |
| (2 5 2) | /Data Source/Tutorial Screens-Owners' Equity/Table of Contents |
| (2 5 3) | /Data Source/Tutorial Screens-Owners' Equity/Sources of Funds |
| (2 5 4) | /Data Source/Tutorial Screens-Owners' Equity/Shares - important source of funds |
| (2 5 5) | /Data Source/Tutorial Screens-Owners' Equity/A corporation is born |
| (2 5 6) | /Data Source/Tutorial Screens-Owners' Equity/Kellogg's Certificate of Incorporation |
| (2 5 7) | /Data Source/Tutorial Screens-Owners' Equity/Delaware: Favorite State |
| (2 5 8) | /Data Source/Tutorial Screens-Owners' Equity/Understanding authorized, issued, |

- treasury, and outstanding
- (2 5 9) /Data Source/Tutorial Screens-Owners' Equity/What is a prospectus?
 - (2 5 10) /Data Source/Tutorial Screens-Owners' Equity/How are shares issued?
 - (2 5 11) /Data Source/Tutorial Screens-Owners' Equity/Primary and Secondary Markets
 - (2 5 12) /Data Source/Tutorial Screens-Owners' Equity/Par value and APIC
 - (2 5 13) /Data Source/Tutorial Screens-Owners' Equity/Journal entry - issuance
 - (2 5 14) /Data Source/Tutorial Screens-Owners' Equity/Journal entry answer
 - (2 5 15) /Data Source/Tutorial Screens-Owners' Equity/Where are we?
 - (2 5 16) /Data Source/Tutorial Screens-Owners' Equity/Rights of common stockholders
 - (2 5 17) /Data Source/Tutorial Screens-Owners' Equity/Shareholders, board of directors, officers
 - (2 5 18) /Data Source/Tutorial Screens-Owners' Equity/The right to vote
 - (2 5 19) /Data Source/Tutorial Screens-Owners' Equity/Ford proxy statement
 - (2 5 20) /Data Source/Tutorial Screens-Owners' Equity/Takeovers and proxy wars
 - (2 5 21) /Data Source/Tutorial Screens-Owners' Equity/The right to participate
 - (2 5 22) /Data Source/Tutorial Screens-Owners' Equity/The right to share in profits and losses
 - (2 5 23) /Data Source/Tutorial Screens-Owners' Equity/Cash flow to debtholders and shareholders
 - (2 5 24) /Data Source/Tutorial Screens-Owners' Equity/Comparison of interest and dividends
 - (2 5 25) /Data Source/Tutorial Screens-Owners' Equity/Understanding dividends
 - (2 5 26) /Data Source/Tutorial Screens-Owners' Equity/Accrual method and entity concept
 - (2 5 27) /Data Source/Tutorial Screens-Owners' Equity/Clarification 1
 - (2 5 28) /Data Source/Tutorial Screens-Owners' Equity/Clarification 2
 - (2 5 29) /Data Source/Tutorial Screens-Owners' Equity/Sequence of dividends
 - (2 5 30) /Data Source/Tutorial Screens-Owners' Equity/Ex-dividend and cum-dividend
 - (2 5 31) /Data Source/Tutorial Screens-Owners' Equity/Clarification 3
 - (2 5 32) /Data Source/Tutorial Screens-Owners' Equity/clarification 4
 - (2 5 33) /Data Source/Tutorial Screens-Owners' Equity/Firm's perspective - debt and equity
 - (2 5 34) /Data Source/Tutorial Screens-Owners' Equity/Investors' perspective - debt and equity
 - (2 5 35) /Data Source/Tutorial Screens-Owners' Equity/Transfer aspect of dividends
 - (2 5 36) /Data Source/Tutorial Screens-Owners' Equity/Transfer aspect - answer
 - (2 5 37) /Data Source/Tutorial Screens-Owners' Equity/Information aspect of cash dividends
 - (2 5 38) /Data Source/Tutorial Screens-Owners' Equity/Firm's dividend policy
 - (2 5 39) /Data Source/Tutorial Screens-Owners' Equity/Where are we 2?
 - (2 5 40) /Data Source/Tutorial Screens-Owners' Equity/Stock repurchases
 - (2 5 41) /Data Source/Tutorial Screens-Owners' Equity/GE 1996 annual report
 - (2 5 42) /Data Source/Tutorial Screens-Owners' Equity/Stock repurchases- alternative to dividends
 - (2 5 43) /Data Source/Tutorial Screens-Owners' Equity/Stock repurchases- time taxes
 - (2 5 44) /Data Source/Tutorial Screens-Owners' Equity/Accounting for treasury stock
 - (2 5 45) /Data Source/Tutorial Screens-Owners' Equity/Q - JE at repurchase
 - (2 5 46) /Data Source/Tutorial Screens-Owners' Equity/A: JE at repurchase
 - (2 5 47) /Data Source/Tutorial Screens-Owners' Equity/Reissuance of treasury shares
 - (2 5 48) /Data Source/Tutorial Screens-Owners' Equity/Reissue price < repurchase price
 - (2 5 49) /Data Source/Tutorial Screens-Owners' Equity/Reissue price > repurchase price
 - (2 5 50) /Data Source/Tutorial Screens-Owners' Equity/Shares are retired
 - (2 5 51) /Data Source/Tutorial Screens-Owners' Equity/IBM 1996 annual report

- (2 5 52) /Data Source/Tutorial Screens-Owners' Equity/Retirement price lower
- (2 5 53) /Data Source/Tutorial Screens-Owners' Equity/Retirement price higher
- (2 5 54) /Data Source/Tutorial Screens-Owners' Equity/Where are we 3?
- (2 5 55) /Data Source/Tutorial Screens-Owners' Equity/Stock dividends and stock splits
- (2 5 56) /Data Source/Tutorial Screens-Owners' Equity/Examples of stock splits
- (2 5 57) /Data Source/Tutorial Screens-Owners' Equity/Q: Division of shares aspect
- (2 5 58) /Data Source/Tutorial Screens-Owners' Equity/A: Division of shares aspect
- (2 5 59) /Data Source/Tutorial Screens-Owners' Equity/Informational aspect of dividends and splits
- (2 5 60) /Data Source/Tutorial Screens-Owners' Equity/Microsoft splits
- (2 5 61) /Data Source/Tutorial Screens-Owners' Equity/Small stock dividends
- (2 5 62) /Data Source/Tutorial Screens-Owners' Equity/Large stock dividends
- (2 5 63) /Data Source/Tutorial Screens-Owners' Equity/Stock splits
- (2 5 64) /Data Source/Tutorial Screens-Owners' Equity/Q: Understanding RE
- (2 5 65) /Data Source/Tutorial Screens-Owners' Equity/A: Understanding RE
- (2 5 66) /Data Source/Tutorial Screens-Owners' Equity/Items that affect retained earnings
- (2 5 67) /Data Source/Tutorial Screens-Owners' Equity/Distributions to shareholders
- (2 5 68) /Data Source/Tutorial Screens-Owners' Equity/Restrictions on distributions
- (2 5 69) /Data Source/Tutorial Screens-Owners' Equity/Where are we 4?
- (2 5 70) /Data Source/Tutorial Screens-Owners' Equity/Preferred shares
- (2 5 71) /Data Source/Tutorial Screens-Owners' Equity/Dividends on preferred shares
- (2 5 72) /Data Source/Tutorial Screens-Owners' Equity/Other types of preferred shares
- (2 5 73) /Data Source/Tutorial Screens-Owners' Equity/Are preferred shares debt or equity?
- (2 5 74) /Data Source/Tutorial Screens-Owners' Equity/Liquidation and seniority of claims?
- (2 6) /Data Source/Tutorial screens - Inventoriable costs
- (2 6 1) /Data Source/Tutorial screens - Inventoriable costs/Machine to process film
- (2 6 2) /Data Source/Tutorial screens - Inventoriable costs/How the machine is used on day 1
- (2 6 3) /Data Source/Tutorial screens - Inventoriable costs/A: how the machine is used on day 1
- (2 6 4) /Data Source/Tutorial screens - Inventoriable costs/Depreciation - period cost
- (2 6 5) /Data Source/Tutorial screens - Inventoriable costs/Production costs are inventoriable
- (2 6 6) /Data Source/Tutorial screens - Inventoriable costs/Flow of costs through production process - day 1
- (2 6 7) /Data Source/Tutorial screens - Inventoriable costs/Preview of depreciation
- (2 6 8) /Data Source/Tutorial screens - Inventoriable costs/Journal entries - day 1
- (2 6 9) /Data Source/Tutorial screens - Inventoriable costs/Machine processes 40 rolls
- (2 6 10) /Data Source/Tutorial screens - Inventoriable costs/film transferred to FG
- (2 6 11) /Data Source/Tutorial screens - Inventoriable costs/film sold from finished goods
- (2 6 12) /Data Source/Tutorial screens - Inventoriable costs/Answers
- (2 6 13) /Data Source/Tutorial screens - Inventoriable costs/Inventory balances - end of day 1
- (2 6 14) /Data Source/Tutorial screens - Inventoriable costs/Post journal entries
- (2 6 15) /Data Source/Tutorial screens - Inventoriable costs/Q: unadjusted TB
- (2 6 16) /Data Source/Tutorial screens - Inventoriable costs/A: unadjusted TB
- (2 6 17) /Data Source/Tutorial screens - Inventoriable costs/Closing entries - day 1
- (2 6 18) /Data Source/Tutorial screens - Inventoriable costs/Day 1 - financial statements
- (2 6 19) /Data Source/Tutorial screens - Inventoriable costs/Review - machine's use

(2 6 20) /Data Source/Tutorial screens - Inventoriable costs/Summary of days 1 & 2
 (2 6 21) /Data Source/Tutorial screens - Inventoriable costs/Where are we 1?
 (2 6 22) /Data Source/Tutorial screens - Inventoriable costs/60 rolls processed on day 2
 (2 6 23) /Data Source/Tutorial screens - Inventoriable costs/60 rolls transferred to finished goods
 (2 6 24) /Data Source/Tutorial screens - Inventoriable costs/75 rolls sold on day 2
 (2 6 25) /Data Source/Tutorial screens - Inventoriable costs/Summary - day 2 JE's
 (2 6 26) /Data Source/Tutorial screens - Inventoriable costs/Day 2 - unadjusted TB
 (2 6 27) /Data Source/Tutorial screens - Inventoriable costs/Day 2 - closing entries
 (2 6 28) /Data Source/Tutorial screens - Inventoriable costs/Day 2 - financial statements
 (3) /Participant behavior
 (3 1) /Participant behavior/On-task behavior
 (3 1 1) /Participant behavior/On-task behavior/Physical
 (3 1 1 1) /Participant behavior/On-task behavior/Physical/Staring at screen
 (3 1 1 2) /Participant behavior/On-task behavior/Physical/Looking away from screen
 (3 1 1 3) /Participant behavior/On-task behavior/Physical/Reading silently
 (3 1 1 4) /Participant behavior/On-task behavior/Physical/Performing pencil and paper calculations
 (3 1 2) /Participant behavior/On-task behavior/Verbal
 (3 1 2 1) /Participant behavior/On-task behavior/Verbal/Reading aloud
 (3 1 2 2) /Participant behavior/On-task behavior/Verbal/Repeating material
 (3 1 2 3) /Participant behavior/On-task behavior/Verbal/Answering questions
 (3 1 2 4) /Participant behavior/On-task behavior/Verbal/Solving problems
 (3 1 2 4 1) /Participant behavior/On-task behavior/Verbal/Solving problems/Calculating
 (3 1 2 4 2) /Participant behavior/On-task behavior/Verbal/Solving problems/Recording transactions
 (3 1 2 5) /Participant behavior/On-task behavior/Verbal/Indicates understanding
 (3 1 2 6) /Participant behavior/On-task behavior/Verbal/Indicates confusion
 (3 1 2 7) /Participant behavior/On-task behavior/Verbal/Indicates frustration
 (3 2) /Participant behavior/Off-task behavior
 (3 2 1) /Participant behavior/Off-task behavior/Physical
 (3 2 1 1) /Participant behavior/Off-task behavior/Physical/Eyes wandering
 (3 2 1 2) /Participant behavior/Off-task behavior/Physical/Moving chair
 (3 2 2) /Participant behavior/Off-task behavior/Verbal
 (4) /Cases
 (4 1) /Cases/Allen
 (4 2) /Cases/John
 (4 3) /Cases/George
 (4 4) /Cases/Steve
 (4 5) /Cases/Karen
 (4 6) /Cases/Linda
 (4 7) /Cases/Sharon
 (4 8) /Cases/Kathy
 (5) /Perceptions of experience
 (5 1) /Perceptions of experience/Tutorial holds interest
 (5 2) /Perceptions of experience/Tutorial provides feedback
 (5 3) /Perceptions of experience/Tutorial logically presents concepts
 (5 4) /Perceptions of experience/Tutorial provides examples
 (5 5) /Perceptions of experience/Tutorial provides problems to solve
 (D) //Document Annotations
 (F) //Free Nodes
 (T) //Text Searches

APPENDIX J
SAMPLE INTERVIEW

Q.S.R. NUD.IST Power version, revision 4.0.
Licensee: Sheila Handy.

PROJECT: dissertation, User Sheila Handy, 8:52 am, Mar 11, 2002.

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+++ ON-LINE DOCUMENT: adinterview1

+++ Document Header:

*Allen first interview

+++ Retrieval for this document: 165 units out of 165, = 100%

++ Text units 1-165:

1

2 *How do you think the information was provided?

3

4 I think it was definitely provided well, I mean this
5 is new to all of us, I said early on that I guess I'm
6 not looking for the easy way out but in a way because
7 it's challenging information you get frustrated and
8 you know, I had an idea of the numbers to use, but
9 not, I wasn't sure about how to formulate them like
10 you know I take this divided by this so it was just
11 good that you click on the arrow and it show you how
12 they did it, I mean if they would have just left it
13 as here are the answers, well some books do that -
14 they'll just leave you the answers

15

16 What did you think of the feedback?

17

18 I said that when I was actually going through that
19 process that I like how the box popped up there were
20 some answers that I had false and right away you
21 started to think about some other part of activity or
22 the other information it told you the right answer
23 and it told you the right direction to go with the
24 whole thing, so I actually liked that a lot.

25

26 *How was the order of presentation?

27

28 I would say on a scale of 1 to 10 I'd say about 8 and
29 one half, 9. I can remember there was one screen in

30 where it had the questions match. What I liked was
31 it had the questions were like stepping stones to the
32 information, they correlated very well. Like the
33 first question wasn't for the last part of the
34 information that was presented. It went in a
35 stepping stone which let you kind of picture the
36 screens in your mind and kind of place the
37 information in the questions. You kind of knew, I
38 mean, let's face it that was a learning process, you
39 are supposed to absorb and learn. So you were able
40 to say ok, the first part of the information will
41 kind of go with this part of the question. It helped
42 you to recall the right information. So I would
43 definitely say eight and a half to nine.

44

45 *Did you feel you could control the pace?

46

47 Oh, definitely, because of the back arrow and the
48 front arrow.

49

50 *How easy were the problems to solve?

51

52 Well, obviously for me, I've always been a big
53 person, I have to go back and look at things and
54 that's why I did like the pace because you could go
55 back. I would say, I mean some of the questions I
56 found challenging, some of the other questions, some
57 of the true and false that I knew right away. Again,
58 because the information was clearly stated in
59 relation to the question, but I did find some of the
60 answers definitely challenging where I'd have to go
61 back numerous times and even with that because it's
62 new information, new material I still had some
63 incorrect answers. So definitely it was challenging.

64

65 *Did you find this to be meaningful? Interpret

66 meaningful in whatever way you like.

67

68 Meaningful, I guess being an economics and business
69 major, this information, I mean when you look at just
70 business in general you are talking about dividends,
71 stocks, bonds, all the in between things that go
72 along with that =, just like all the information and
73 ex-dividends, the cum-dividends, it was definitely
74 meaningful. This is stuff I'll be applying to my
75 everyday world pretty soon.

76

77 *Did you become frustrated>

78

79 I'm a type of person who wants to learn to the best
80 of my ability, so I want to get it correct, so yes,
81 the one's that I had wrong, I think that's just my
82 personality. It wasn't the format of the way it was
83 being taught. it was just because of my personal
84 traits.
85

86 *Can you think of any particular part that made you

87 frustrated?

88

89 I guess more or less probably the part that I would
90 say was just I'm not a big guy on all black screens.
91 Some people can read things just one time, I wish I
92 had that ability. I love seeing graphs, I'm a very
93 visual learner and so obviously when you are
94 visualizing things to have them separated by color
95 and graphs so a few of the times when they were
96 getting in depth with the information and the
97 material and those all black screens would show up
98 and the combination of the challenging material and
99 the all black screens kind of got a little
100 frustrating. If it were broken up a little bit with
101 color and graphs that might help present it a little
102 easier.
103

104 *Did you have control over the whole program?

105

106 Definitely, I liked to be able to go back and forth.
107

108 *Are you glad you did it?

109

110 Yeah, I guess you would say this is the wave of the
111 future. I was reading an article the other day that
112 said there's a high school that's teaching every
113 desktop has a PC. In fact, I have a friend's mom
114 taking classes at Duquesne all on line. So having
115 things taught to you over a PC.
116

117 *How different was this from the textbook?

118

119 Obviously physically. well I guess, this is kind of

120 corny, but I'll say that with a book, you look down,
121 you turn the pages, with this it's very eye level, I
122 think that's a lot more efficient, because you have
123 that mouse, you're sitting with the mouse, and you
124 are looking at something eye level, and click, boom,
125 it's back. Instead of the whole process, you hear
126 people say, 'I gotta take a break' because their
127 neck, they are looking straight down at a book. I'm
128 not saying you don't get tired of looking at a
129 screen, but I'm saying I'm suggesting that the
130 efficiency is a little better. Also, with a lecture,
131 I'm a visual learner, with a lecture, I mean it would
132 be ideal I think if you had the lecture go along with
133 the screen work, if you could say, if you need to go
134 back. I think as a whole combination this would be
135 ideal. I think everything has its positives and
136 negatives.
137

138 *Do you see any negatives to this?*

139
140 That's tough. I said about the black, but books have
141 that also. I really don't, I thought it was pretty
142 good. Let me say this. I don't think that this alone
143 is the way to go, but with a teacher, but like the
144 previous comment, having a teacher walk you through
145 this, that would be sufficient. Just sitting in
146 front of a screen, that's not enough. I don't know
147 if this means much, but as a college student, I guess
148 we get lazy in a way, even the hardest workers get
149 lazy in a way of carrying the books and carrying. I
150 think why students procrastinate is like 'now I gotta
151 go through my papers and find all the examples of
152 IBM'. Now you are talking cyber work where it's on a
153 disk, and ok, Professor Handy gave me this disk and I
154 can work and go to the library and pop it in and boom
155 I'm clicking through. Like I said, efficiency is the
156 key. I think efficiency in anything, the business
157 world, the classroom, that really fuels people to
158 learn in a way, to learn to push themselves. When
159 people know the process is going to be inefficient,
160 they kind of say human nature. But if they know the
161 path can be efficient, they'll take it. So we can see
162 where it can go.