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The Influence of Interaction on Active Learning, Learning Outcomes, and Community Bonding in an Online Technology Course

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THE INFLUENCE OF INTERACTION ON ACTIVE LEARNING, LEARNING OUTCOMES, AND COMMUNITY BONDING IN AN ONLINE TECHNOLOGY COURSE

A dissertation submitted to the
Division of Research and Advanced Studies
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DOCTOR OF EDUCATION (Ed.D.)
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ABSTRACT

The purpose of this qualitative case study was to examine the influence of interaction on active learning, learning outcomes, and community bonding in an online technology course. Participants in the study were 65 students and four instructors of undergraduate computer courses at a two-year suburban branch campus of a large urban, midwestern university. The courses met three times for an orientation and two testing sessions. Online interaction occurred via email and the virtual classroom (chats) and discussion boards of an online instructional software called Blackboard®. Qualitative and quantitative data were collected from face-to-face class observations, synchronous chat observations and transcripts, learner-to-instructor emails, instructor-to-learner emails, discussion board messages posted by the participants, semi-structured interviews, semi-structured focus groups, and course documents.

Many participants were technology majors. The online instructors required a demonstration of online technology knowledge by the end of the first week of the course. Therefore, this research offered a unique opportunity to focus on the active learning, learning outcomes, and community bonding without the online technology barriers faced by many online students.

The results suggested that the synchronous virtual classroom chats had the most influence on active learning, learning outcomes, and community bonding in these online technology courses. Furthermore, the virtual classroom student participation positively correlated with test grades in three of the four online classes with one class exhibiting statistical significance.
Dedication

To my husband, Michael C. Hammer; sons, Ryan, Mark, Matthew, and Brandon Hammer; and parents, Arthur and Janet Van Velzel, for their love and encouragement.
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I would like to thank my departmental colleagues at the Raymond Walters College of the University of Cincinnati. Their professionalism and pursuit of excellence have inspired me to achieve.

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CHAPTER ONE: INTRODUCTION

General Statement of the Problem

In this dissertation the researcher explored through in-depth interviews, focus groups, course documents, observations, and other qualitative techniques, interaction in online technology courses at a two-year college. The research problem was: What is the influence of interaction on active learning, learning outcomes, and community bonding in an online technology course?

The qualitative research process was used to investigate the experience of students taking an online technology course at a two-year college. In this study, the primary methods used were analyses of interviews, focus groups, chat session transcripts, course documents, course interactions, and observations of students enrolled in four online technology courses. The interview sample included a range of ages, ethnicity, and online course experience.

Importance of the Study

A large quantity of research has been completed on distance education, including some studies addressing the interaction. In the last few years, more studies have been conducted on online instruction. However, few studies have been published on interaction in an online course. The researcher could not find any research on interaction in an online technology course at a two-year college. Providing this needed research is part of the significance of this study. Many educational institutions are spending large amounts of funding on online education. Many instructors are designing online courses. It is very important to research online course design.
Online instruction is exploding. Vrasidas and McIsaac (1999) explained that "online education has captured the interest of educators at all levels. Teachers are being asked to adapt their courses for Internet delivery, while students are being promised more flexible learning formats" (p. 22).

This research will provide guidance to online course development. This study may impact online course design and be critical to online course success. This study will add to the literature of interaction in online technology instruction.

Online technology instruction is becoming a popular option at many educational institutions. At the two-year college, the source of data for this study, most sections close with waiting lists of interested students. The researcher has heard instructors challenge the literature claiming the importance of interaction. As it is computer instruction, the instructors believed that the course materials and the computer were the only essential elements. This research investigated the influence of interaction in online technology courses. Because many of the students were technology majors, this research was able to go beyond the technology barriers faced by many online students. Thus, this study was able to concentrate on the interactions of course content and learning.

This study is important today because of:

1. Money--Large amounts of funds are being spent on distance education, including online instruction. In Ohio alone, a $600 million system called Ohio SchoolNet has been teleconferencing and using the Internet to link students and teachers all over the state. Many secondary schools, colleges and universities are developing online courses. The Peterson's Guide to 2000 Distance Learning Courses details 1,000
degree and certificate programs available from nearly 900 institutions. The money will be well spent if funneled into effective programs.

2. Developing Knowledge--Online instruction is still a relatively new way of teaching. There is a growing body of research being conducted and published concerning online instruction. However, few studies are published detailing online technology (computer) instruction. Online instruction research is important for the field of education. It will prepare instructors to design better online courses.

3. Professional Obligation--More theories and research are needed in online instruction. This research will be important for the educational institutions developing online courses, the instructors designing online instruction, and the students taking online classes.

Online instruction is impacting all levels of education from secondary to graduate to post-graduate training. However, this research concentrated on the post-secondary level at a two-year college. Online instruction is particularly applicable at this level. Ryland (2000) describes the current higher education environment to "have a much different character from that to which we've become accustomed in the past:

- Much of the demand comes from new markets of learners of all ages, motivated by career changes, personal interests, and personal development

- Today's learners demand that education be customized to the individual learner rather than provided in lockstep with students of varying preparation, learning style preference, and expectation
Today's learners expect the time, place, and pace of education to be at the convenience of the learner, not the provider, to facilitate balancing work, family, and personal demands with learning.

Today's learners have less interest in gaining mastery of a predetermined volume of content (much of which will soon be obsolete as new content is generated) than they have in learning work-related skills that will measurably enhance their employment and earning prospects, and learning how to work collaboratively, find needed information, think critically, and use technology in their work" (p. 1-2).

**Purpose of Study**

This study explored interaction in online technology courses at a two-year college. Online instruction is still a new phenomenon. The Internet has impacted education as well as everyday life for many people. Furthermore, the newer technologies allow multiple types and newer uses of interaction to enhance the online learning process. The longer lasting goal of this study was to help provide a basis for improving online courses. The findings of this study should be of use to all educators specifically involved with online computer instruction and for other educational technology instructors generally.

**Research Questions**

The three specific research questions for this study were: What is the influence of interaction on active learning in an online technology course? What is the influence of interaction on learning outcomes in an online technology course? What is the influence of interaction on community bonding in an online technology course?
Definition of Key Terms

Interaction (learner-to-instructor, instructor-to-learner, learner-to-learner) is an important component of an online class. Wagner (1994) states that "interactions are reciprocal events that require at least two objects and two actions. Interactions occur when these objects and events mutually influence one another. An instructional interaction is an event that takes place between a learner and the learner's environment. Its purpose is to respond to the learner in a way intended to change his or her behavior toward an educational goal" (p. 8). Vrasidas and McIsaac (1999) defined interaction as "the process consisting of the reciprocal actions of two or more actors with a given context" (p.25). This is the definition of interaction that was utilized for this study.

Asynchronous means not occurring at the same time. Asynchronous interaction in an online course is the threaded discussion boards and email messages. Synchronous means at the same time, simultaneously. Synchronous interaction in an online course is the chats, live classroom sessions, and phone calls.

Bonwell and Eison (1991) described active learning as "instructional strategies that involve students in doing things and thinking about what they are doing, as opposed to passively listening to a lecture" (p.1). This is the definition that was utilized for this research.

Hull et al. (2000) stated that "learning is an active process. Using the philosophy that learners actively construct their own knowing, the system for developing an online course must be consistent with the idea of authentic problem solving in learning. Learners are then able to transform information into knowledge" (p.90). Askew and Fountas (1996) said that "active learners are constructive, self-directed learners; that discover new things for themselves; cross-check for information; and self-correct" (p.1).
Learning outcomes are the measurable changes that occur cognitively in learners because of their participation in a course or unit. Gagne (1984) stated that "human performance can be classified into five categories of learning outcomes or capabilities:

- Intellectual skills (procedural knowledge), which includes concepts, rules, and procedures.
- Verbal information (declarative knowledge), which includes the ability to state facts, rules, and principles.
- Cognitive strategies (strategic knowledge), which include the ability to manage one's own learning, to think creatively, and to be an effective problem solver.
- Motor skills, which include the ability to perform physical tasks.
- Attitudes, which include the determination of feelings, opinions, and a system of values and ethics" (p.377).

Shipley (1995) defined learning outcomes "as the significant, essential, transferable, and verifiable learning that must be demonstrated to receive credit for a course or unit" (p.1). That was the definition that was utilized for this research. Thus, the students' test and course grades were the learning outcomes for these online courses.

**Brief Summary of Existing Research**

Most research in distance education has addressed correspondence or video-delivery courses. Only in the past decade have studies been published on online instruction. Only in the past couple of years have studies been published on interaction in online courses. Vrasidas and McIsacc (1999) researched factors influencing interaction in an online course. They found that structure, class size, and prior experience with technology influenced interaction. Hillman
(1999) analyzed patterns of interaction in asynchronous computer-mediated classrooms and face-to-face classrooms. He found that interaction in computer-mediated classrooms resembled discussion and interaction in face-to-face classrooms resembled recitation.

Earlier, Hillman, Willis, and Gunawardena (1994) examined learner-interface interaction in distance education. They stated that most research in interaction addressed Moore's (1989) three types of interaction of learner-content, learner-instructor, and learner-learner. They recommended instructional design that will support the students' need for the acquisition of the technology skills necessary for the electronic classroom.

No research was located on interaction in an online technology class at a two-year college. Thus, this study should shed light on an area where lots of educational activity is taking place.

Theoretical Framework of the Study

Moore's Theory of Transactional Distance (1989) states that dialogue, structure, and learner autonomy are important elements to a distance education course. Dialogue is the communication between students and instructor. Structure constitutes course organization and delivery. Learner autonomy is the learner's perception of independence or interdependence in the educational activity. Transactional distance is the interpersonal closeness between learner-to-instructor and learner-to-learner in a distance education course. Moore theorized that high structure and low dialogue promoted remote transactional distance. He hypothesized that low structure and high dialogue promoted close transactional distance.

Holmberg's (1989) theory of distance education is a type of communication theory. He described distance education as a guided didactic conversation. Holmberg said that effective
distance education teaching involves students' feelings of belonging and cooperation as well as mediated communication about course content. He theorized that the core of teaching consists of interaction between learners and instructors. In 1995, he broadened his theory to include cognitive knowledge and skills and affective learning. He said that all of these were provided for by distance education. He added that distance education is based on learning as an individual activity that is guided and supported and feelings of belonging promote student's motivation to learn.

Keegan (1986) categorized distance education theories into three groups: theories of independence and autonomy, theories of industrialization of teaching, and theories of interaction and communication. He said that independence of the student is paramount in distance education.

Perraton's (1988) theory of distance education combined existing theories of communication and philosophies of education. He said that distance education could maximize education by reaching students not accessible by ordinary means. He theorized that distance teaching should be organized to increase dialogue and that group discussion is an effective method of distance learning by bringing relevant information to the group. He stated that effective distance learning materials should engage students in frequent and regular activities over and above reading, watching, and listening.

Simonson, Schlosser, and Hanson's (1999) Equivalency Theory of Distance Education stated that distance education should be designed on the concept of equivalency of learning experiences. The four elements of the theory are equivalency, learning experience, appropriate application, students, and outcomes. They theorized that the more equivalent the learning experience of distance learners is to local learners, the more likely that distance education will be
accepted. They stated that it is the instructor's responsibility to design appropriate learning events for distant learners including the technologies available to the student.

Short, Williams, and Christie (1976) theorized that the critical factor in communication is its "social presence". This is defined as the degree to which a person is perceived as a "real person" in mediated interactions. Intimacy and immediacy enhance social presence.

Pask (1975) theorized that learning occurs through conversations about a subject matter. Teachback, when one person teaches another what they have learned, is a critical method of learning according to this conversation theory.

Cross' (1980) adult learning theories stated that choice in availability and organization of learning materials is important to adult learners. Online instruction is particularly suited to these choices.

Bruner (1960), Jonassen (1994) and Vygotsky (1978) stated that social constructivist learning theory views knowledge as constructed by people based on experience and prior knowledge. Furthermore, knowledge is constructed through social interaction and collaboration with others. Constructivist learning is based on students' active participation in problem-solving and critical thinking regarding a learning activity which they find relevant and engaging. The teacher is a facilitator or coach in the constructivist learning approach. The teacher guides the student, stimulating and provoking the student's critical thinking, analysis, and synthesis throughout the learning process.

Significance of the Problem

Many courses are being offered in an online format at two-year colleges. Many technology (computer) courses are being delivered online at two-year colleges. This study examined interaction in that exact topic and setting. Newer online technologies are allowing
instructors to include more interactivity into online courses. However, training and support for online course delivery have been minimal from some institutions. Furthermore, quality distance education is paramount to the future of two-year colleges. Their nontraditional, working adult students demand more flexible and convenient educational options. This research study should help enlarge the knowledge base of educational technology.

Limitations and Delimitations of the Study

Any research is constrained to the extent that there are possible human errors. This study was limited by the number of courses analyzed, the number of subjects, and the reliance on the instructors for some of the data collection methods. Furthermore, this study was delimited by the use of one two-year branch campus of a large midwestern university and of data drawn from only Autumn Quarter, 2000.

Some instructors in the study emphasized interaction more than others. This impacted the amount of interaction. One instructor exhibited a slow response time in feedback to online students. This upset some students. A few of the synchronous chats encountered technical problems. Students could not enter the virtual classroom. Plus, some students were "kicked off" several of the chats. This situation affected interaction. Some of the online students already knew the course material. However, they had to take the course because it was required for their degree. This prior knowledge impacted the active learning and learning outcome portion of the study. Some of the instructors did not keep accurate records of the live interaction phone calls of their online students. This oversight slightly affected the descriptive statistics of total interaction.
CHAPTER TWO: REVIEW OF THE LITERATURE

Introduction

Interaction (learner-to-instructor, instructor-to-learner, learner-to-learner) is an important component of an online class. Learning outcomes measure the learning component of a course. This review of literature will illustrate the importance of these indicators to the success of online instruction. This review will show that interaction influences active learning, learning outcomes, and community bonding in an online course.

Interaction in Distance Education

Interaction in distance education is an indicator of effective instruction. Moore (1989) states that interaction is of great importance in distance education program design. He describes three types of interaction in distance education: learner-content interaction, learner-teacher interaction, and learner-learner interaction. Learner-content interaction is the basis for all types of education. Moore (1989) states that feedback and the testing of new knowledge are the most important features of learner-teacher interaction. Online education can possess superior components in this area, since the communication between student and instructor can be individualized. "Learner-learner interaction is a new dimension of distance education that will be a challenge to our thinking and practice in the 1990s" (Moore, 1989, 103).

Shale and Garrison (1990) state that "in this most fundamental form education is an interaction among teacher, student, and subject content" (p.1). Sewart (1982) found that all "educational transactions lie somewhere on an interaction continuum, with learner-instructor..."
interaction at one end and learner-content interaction at the other" (Hillman, Willis, and Gunawardena 1994, 31).

Researchers (Hillman, Willis, and Gunawardena 1994) call for investigations of interaction in distance education instruction. They suggested that multiple types of interaction could occur in distance education in this high-technology, telecommunication era with synchronous and asynchronous possibilities. Sherry, Fulford, and Zhang (1998) developed an interaction survey designed for reflection on peer, instructor, and overall interactional instances. Walker and Hackman (1992) reported on the need for interpersonal interactions within these "virtual communities".

Thompson (1990) found that interaction in a distance education course promoted positive learner attitudes. Fulford and Zhang (1993) reported that interaction promoted overall satisfaction with the instruction.

Thomerson and Smith (1996) explained that the immediacy of interaction of new distance learning technologies have increased the acceptance of distance education by higher education institutions. Anderson and Garrison (1995) stated that learning activities that capitalized on the interactive potential of the distance learning technological medium must be planned and developed. This instructional design influenced students' perception of the learning. They found that distance education instructors must develop methods of regular and sustained interaction between learners and the teacher.

Bates (1991) and Kelly (1990) challenged designers of distance education courses to make instruction more interactive and more interesting to students. However, Ritchie and Newby (1989) found that learners must be put at ease with the technology in order to facilitate interaction. In addition, Hillman, Willis, and Gunawardena (1994) stated that "when developing
instruction delivered via communications technology, the instructional designer must bear in mind that the user cannot begin to deal with the content of instruction if he or she is unable to first interact with the interface" (p. 35-36). They recommended a "technology credit course that all distance learners are required to complete before enrolling in a technology-based distance education program" (p. 39). Furthermore, Vrasidas and McIsaac (1999) suggested that structure of the online course, class size, feedback, and prior experience with computer-mediated communication all influenced interaction.

Tallman (1994) found that the instructor's timely return of lessons, the instructor's quick response to questions, and the student feeling comfortable communicating with the instructor predicted student satisfaction in a distance learning course. Hackman and Walker (1995) report that when the distance instruction system allows interactivity and when instructors are immediate and present, students learn more and are more satisfied.

**Active Learning in Distance Education**

Moore (1994) noted that in traditional education, learners are very dependent on instructors for guidance. Thus, the teacher is active and the student is passive. In distance education, the student must be responsible for the conduct of learning. The student becomes a more active learner.

Garrison (1997), Jonassen et al.(1995), and Riel (1990) found that computer conferencing is a powerful social constructivist tool in distance education, because it supports interaction and collaboration. Jonassen et al. (1995) concluded that "distance learning will be more effective when it takes place in stimulating learning environments designed on constructivist principles" (p.22).
Feedback interaction is very important for active learning in distance education. Wagner (1994) stated that "Feedback refers to any information that permits learners to judge the quality of their performance" (p.12). Shen (1991) observed that "feedback automatically elicits the correct response without the student being actively aware that learning is taking place. In contrast, cognitivists maintain that feedback serves as information to the learner: the learner actively interprets the information and uses it to generate responses" (Wagner 1991, 12).

Hull et al. (2000) described online instruction as "the learner has access to multiple modes of representation. The teacher coaches and helps the learner analyze strategies used to learn and to solve problems. When a student makes an error, the information is used as an opportunity to get feedback on the student's learning. Self-evaluation occurs as opportunity for learning how to correct the work emerges and is revealed" (p.91).

Ryland (2000) found that "active learning exceeds lecture and in-class delivery of content in its effectiveness, and that understanding comes from involvement" (p.9). She stated that "Technology facilitates customization of educational offerings, producing learner-centered education" and that the "community college should employ technology to facilitate:

- Exploration and problem-solving, both individual- and team-based, using both information resources and access to masters and experts.
- Multimedia and multisensory presentations of materials to learners.
- Student presentations to teacher and fellow students to enable "learning by teaching".
- Enhanced class discussion, made possible by electronic availability of study materials.
- Teamwork, facilitated by technology-based collaboration and groupware tools.
- Freeing faculty to serve as mentors and coaches, not just content deliverers."
• Communication outside of class by means of electronic mail between the teacher and the student, among students, and beyond the class to fellow learners" (p.9).

Hull et al. (2000) emphasized the importance of active learning in online instruction. They stated that "learning is a collaborative process by which teachers and students interact, create, and share information" (p.91). They found that asynchronous threaded discussion and email was a reflective approach that enhanced learning and allowed the learners to "explore complex issues, consider alternatives, and craft responses." In addition, they explained that "computer mediated learning provides access to multiple modes of content representation and is designed to be holistic, spiral, and readily available. An authentic learning experience is made available by providing a collaborative medium that can be shared by teacher and learners from the comfort of their own homes or offices" (p.94).

Kerka (1999) dispelled the myth that "self-directed learning (SDL) is based in the autonomous, independent individual who chooses to undertake learning for personal growth" (p.1). She stressed the "social construction of knowledge and the social context of learning" and called "for wider recognition of the interdependent and collaborative aspects of SDL." She claimed that "the speed of information proliferation and the complexities of new social networks and workplace transformation will make SDL abilities imperative." Dede (1996) explained that "giving learners constructivist experiences with applying the ideas they have assimilated is important in facilitating their full comprehension, long-term retention, and ability to generalize instructional material" (p.12).

Learning Outcomes in Distance Education

Simonson, Schlosser, and Hanson (1999) stated that learning outcomes are divided into the two areas of instructor-determined outcomes and learner-determined outcomes. Instructor-
determined outcomes are course goals and objectives. Learner-determined outcomes are the accomplishments that the learners hope to achieve as a result of participating in the learning, such as applying skills to their jobs or continuing courses.

Souder (1993), Moore and Thompson (1990), Ritchie and Newby (1989), McCleary and Egan (1989), and Cookson (1989) found that off-site students perform academically as well as or better than on-site students. Barker and Platten (1988), Beare (1989), Kabat and Friedel (1990), Nixon (1990), and Wagner and Craft (1988) state that the cognitive achievement of distance education students and traditional classroom students are comparable.

Furthermore, Anderson and Garrison (1995) concluded that instructional design had a greater influence over learning than the technological medium in distance education. Biner, Dean, and Mellenger (1994) suggest that distant learner satisfaction directly affects lower attrition rates, increased student motivation, more student referrals, and enhanced learning. They contend that student satisfaction is as important as student performance in distance education.

Community Bonding in Distance Education

Granger (1990) urged educators to focus more on creating a community of learners in distance education, because of the importance of discussion and group learning. Gunawardena and Zittle (1996) found that social presence is a strong predictor of satisfaction in a text-based medium type of distance education. Social presence is the degree to which a person is seen as a real person in mediated interactions.

Biner, Welsh, Barone, Summers, and Dean (1997) reported that small remote size groups impacted positive satisfaction in interactive distance education. Clark (1993) said that student satisfaction with distance education is related to the fact that many students would not have been able to advance their education without it.
Burt, Grady, and McMann (1994) found that the nature of groups and communication in groups are changed when interactions are computer-mediated. However, McDonald and Gibson (1998) concluded that computer-mediated communication and interaction in online courses do not have an effect on group development.

Dede (1996) stated that "virtual communities that provide support from people who share common joys and trials are a powerful means of enhancing learning. Learning is social as well as intellectual. Individual, isolated attempts to make sense of complex data can easily fail unless the learner is encouraged by some larger group that is constructing shared knowledge" (p.20).

In addition, Smith (1992) and Dede (1996) found that computer-supported learning is motivating for many students who would otherwise be uninterested in educational experiences delivered by instructional technology. Wide ranges of participants are attracted to cooperative virtual environments because they gain something valuable by collaborating together. Social network capital (an instant web of contacts with useful skills), knowledge capital (a personal, distributed brain trust with just-in-time answers to immediate questions), and communion (psychological/spiritual support from people who share common joys and trials) are three types of collective goods that bind together virtual communities enabled by computer-mediated communications (Smith 1992) (Dede 1996, 17).

Jonassen et al (1995) believed that "technology can be used to create communities of learners and practitioners and can facilitate the interactions and activities necessary for solving real-world problems. Constructivist principles provide a set of guiding principles to help
designers and teachers create learner-centered, collaborative environments that support reflective and experiential processes” (p.8) in distance learning.

Summary

The central theme in many of these studies was the importance of the interaction in distance instruction. The interaction should be timely and frequent. Students should feel comfortable to interact. Interaction should be carefully planned in the organization of the course. The current research study qualitatively investigated interaction in online technology courses and its influence on active learning, learning outcomes, and community bonding. The literature documented the importance of interaction in distance education, but the researcher could not find many studies specifically on online technology (computer) instruction. This was a major reason for the research, which is reported in this dissertation.
CHAPTER THREE: METHODOLOGY

Design of the Study

The qualitative research process was used to investigate the experience of students taking an online technology course at a two-year college. In this study, the primary methods used were analyses of transcripts of interviews, chat sessions, and focus groups, course documents, course interactions, and observations of students enrolled in four online technology courses. The interview sample included a range of ages, ethnicity, and online course experience.

This was a qualitative descriptive case study. Data collection for this study was accomplished by field notes for the direct observations of four classroom orientations, eight required test sessions, and class chat sessions; audiotapes and field notes for the eight student interviews; and audiotapes and field notes for the two focus groups. Also, the course syllabus, discussion board postings, email messages, chat transcripts, assignments, and student grades from the courses were utilized. Furthermore, the course interactions were documented and categorized. Quantitative data were also analyzed to perform correlational statistical tests.

The Setting

The study took place at a suburban branch campus of a large urban midwestern university. The college offered the first two years of programs that transfer to baccalaureate colleges and universities and two-year programs in terminal, career-oriented programs. In addition, one-year certificates and professional certificates for baccalaureate-holding students seeking technical skills were also offered. Furthermore, the college also hosted graduate courses in education and business. A training center was also available for contracting with local industry.
The college enrollment was 3500 students, of which 40% attended during the day and 60% attended during the evening or weekends. The college population was 60% female and 40% male. The average age of students college-wide was twenty-six. The student population was 10% minority with the foreign-born student population growing yearly.

The college was entirely designed for commuter students with no housing on campus. There were twenty student organizations and an active student government. There were intramural, but no club or intercollegiate, sport activities. Social activities on campus were only held at lunch times.

The main campus of the university was twenty minutes away. Students received some privileges, such as athletic and theater tickets from the university. Approximately, 20% of the students eventually transferred to the main campus to complete baccalaureate degrees.

The courses took place during Autumn Quarter, 2000. The college observed a ten-week quarterly academic schedule. The orientations took place during the third week of September and the final exams were conducted during the second week of December.

Students were required to attend one orientation and two testing sessions at the college campus or the college training center located in a modern, industrial office park. The classrooms contained seventeen computers and a display computer for the instructor.

Context

The online course offerings are expanding at the college. This was the third quarter of online instruction in the technology department at the institution. After initial objections to distance education from some of the college faculty, students are now permitted to take a maximum of eighteen credits of online coursework per degree program.
The popularity of the online courses is increasing. The courses closed with a maximum of 15 students and a waiting list. The instructors allowed a few extra students into the course. Seven students officially withdrew from the course. Nine students unofficially withdrew. In other words, those 16 students stopped participating in the class and did not complete the course requirements.

The courses were supported by online instructional and computer conferencing software called Blackboard®. This was the first time that instructors had utilized the software. The instructors were assisting each other on effective ways to use the new software. As previously the university used an in-house online instructional software called Classware®.

Participants

The participants were four online instructors (n=4) at the college and 65 students (n=65) taking online technology courses in hypertext markup language--HTML, microcomputer applications, database theory and applications, and word processing applications (see Appendix D). This was the first online course for the microcomputer applications instructor. For the database and HTML instructors, this was the second experience for online teaching. The database instructor had previously taught the same online course. The HTML instructor had taught an online word processing course in a prior quarter. However, this was the first time that she had conducted the HTML course in an online instructional format. Furthermore, one instructor was the most experienced with this being the third online course assignment. She had taught spreadsheets online twice before. However, this was the first time that she had taught word processing online.
The HTML course enrollment was 17 students. There were sixteen female students and one male student ranging in age from 19 years of age to the late fifties. There were three minority students.

The microcomputer applications course enrollment was 16 students. There were nine female students and seven male students ranging in age from 20 years of age to the early fifties. There were two minority students.

The database theory and application course enrollment was 17 students. There were nine female students and eight male students ranging in age from 20 years of age to early fifties. There was one minority student.

The word processing application course enrollment was 15 students. There were seven female students and eight male students ranging in age from 20 years of age to the late thirties. There were three minority students.

Most of the students were Computer Support Technology majors. Three were Office Information Technology majors, five were Web Management majors, and three were community students (undeclared major). Computer Support Technology is the computer hardware troubleshooting, software application development, and computer network administration curriculum area. This program has been the fastest growing major at the college for the last five years. Office Information Technology majors prepare for positions as administrative assistants and office managers. Web Management was a new curriculum area at the college preparing students for web design and web content management.

The instructors are members of an innovative information technology department with an excellent reputation in the business community for graduating highly-qualified students. Several departmental faculty have earned teaching awards from professional organizations including the
National Business Education Association, the North Central Business Education Association, the Ohio Business Technology Educators Association, and the Southwestern Ohio Business Education Association. The HTML instructor was a regional and state teacher-of-the-year. The microcomputer applications instructor was a regional, state, and national teacher-of-the-year. The database instructor was a regional and state teacher-of-the-year. The word processing instructor was a regional teacher-of-the-year.

Data Collection

Data collection for this qualitative study was accomplished by field notes for the direct observations of the online classroom orientations, two required test sessions, and weekly chats; audiotapes and field notes for the eight semi-structured student interviews; and audiotapes and field notes for the two semi-structured focus groups. Also, the course syllabus, assignments, discussion board entries, emails, chat transcripts, and student grades from the course were utilized. All data were imported into Folioviews®.

The researcher observed the scheduled face-to-face meetings in person and attended each weekly online chat. During the last four weeks of the quarter, the researcher conducted semi-structured interviews and focus groups using questions developed from the literature review. The main purpose of the interviews and focus groups was to obtain the participants' points of view on interaction (see Appendix B). In addition, all the messages from the teacher's email inbox were collected, providing information on how often each student interacted with the teacher. The discussion boards and archived chats were downloaded. The instructors also kept logs on inperson visits and phone calls (see Appendix C). Finally, the researcher collected the detailed grading sheets from the instructors for each student.
Convenience sampling was used for student participation in the class. Purposeful sampling was utilized to select students for the interviews--one high-achieving Caucasian female in her late forties, one middle-achieving African American female in her mid-twenties, one middle-achieving male in his early thirties, one high-achieving African American female in her late twenties, one high-achieving African American female in her early fifties, one low-achieving Caucasian female in her early forties, one high-achieving Caucasian male in his early fifties, and one lower-achieving Caucasian male in his early twenties. This sampling plan was chosen to produce a wider spectrum of rich data.

Purposeful sampling was also used for the focus groups. The first focus group contained three females and two males. The second focus group consisted of three female and four males. Again this sampling plan was chosen to produce a wider spectrum of data.

Observations of Class Meetings

The researcher observed four orientation sessions and eight testing sessions. The informed consent documents were distributed at the orientations (see Appendix A). These sessions were scheduled for two hours in the evening on previously-published dates. The orientations were held during the first week of the quarter. The midterm sessions were conducted during the fifth week of the ten-week quarter. The final exam sessions were held during the eleventh week of the quarter.

The orientation sessions were designed to educate the online students about the online software being utilized. Three instructors held their sessions in a computer laboratory on the college campus. The microcomputer application instructor conducted her session at the college's training center. At this session three students were late, because of searching for the unfamiliar college training site. This session also experienced several technical problems from computers
not turning on to the installation of an older Internet browser that would not recognize many facets of the online instructional software. This instructor utilized the older in-house university online instructional software called Classware®. This was the instructor's first online orientation and first online course.

The campus-based sessions did not experience technical problems. All three instructors used the commercially-prepared online instructional software called Blackboard®. The word processing instructor brought food for the students. The instructors navigated the course software with the students and explained the course policies and procedures. Three instructors had the students stand up and introduce themselves to fellow classmates. However, the microcomputer applications instructor did not conduct introductions. The students enrolled themselves in the course software and practiced posting on the discussion boards. Only the HTML instructor lectured on course material. There was a question and answer period at the end of each session.

Each class had a midterm exam. All instructors had previously given practice tests to their students, either during the chats or at the campus in the open computer laboratory at the student's convenience. The word processing instructor brought food again for the students. All instructors asked for feedback from the students on how the course was progressing for them. Several students gave a non-verbal positive response. At the beginning, each instructor, with the exception of the microcomputer applications teacher, asked the students to reintroduce themselves. The instructors explained that it was important to connect faces to the names in the chats, emails, and discussion boards. The microcomputer applications instructor invited her students to introduce themselves, but they collectively declined. Then, all instructors conducted a brief question and answer session. Next, the instructors distributed the tests. The midterms
consisted of a true-false objective tests. The students were not permitted to look at the texts, notes, or the computers. Then they brought the tests up to the teachers.

Next, the students started the hands-on, production portion of the midterm. They were able to consult the texts and their class notes. The word processing instructor gave the students a choice of a hands-on test totally prepared by the teacher or a hands-on test prepared by the instructor using Sam 2000® software. This software was an assessment product designed by Course Technology Publishing Company®. The students were tested live in the computer application. The instructor gave the students the opportunity to practice the software during the previous week by coming to the campus computer labs. The students did not have to keyboard on the Sam 2000® test as much as on her personally-prepared, hands-on midterm. At the end of the testing sessions, all instructors had some students remain to ask personal questions about the course.

The final exam consisted of true/false, multiple choice questions, and hands-on tests for the microcomputer applications and word processing classes. The HTML students presented their web page project as the final exam. The database students completed a hand-on final test. Then, they had a choice of objective testing or presentation of their final project. Seven students decided to present their projects in lieu of the true/false, multiple-choice tests.

Observations of Chats

The researcher observed all synchronous chat sessions. Each instructor conducted a weekly chat. Three instructors required attendance at five chat sessions. The HTML instructor required attendance at three chat sessions. One online database student even chatted from a vacation site by arranging for Internet access with the hotel management. The microcomputer application instructor held the first chat using Classware® chat utility program. However,
because of several technical problems including several students being bumped out of the chat, she switched to the Blackboard® chat for all remaining sessions.

All chats began with accepting questions from the students on the weekly assignment. Then six chats consisted of the instructor asking the students to define terms. Seven online quizzes were administered during the chats. Two chats consisted of instructor-lead content discussions explaining future material. One instructor tried a group activity during the chat.

The Blackboard® chat utility program offered a whiteboard feature. All participants could view text, drawings, or posted web pages at the top of the chat screen. The instructor or students had the ability to add items to the whiteboard. Only the instructor could delete items from the board. The microcomputer applications and word processing instructor experienced problems with students posting inappropriate information on the whiteboard, such as scribbling, miscellaneous web pages, and one cuss word. The students claimed that they did not know that all participants could view their entries on the board. These instructors had to correct the students and erase the postings during the chats. After two corrections from the instructor, these inappropriate entries stopped.

The HTML and word processing instructor posted web pages on the whiteboard to illustrate concepts to the students. The HTML instructor used web sites to illustrate course concepts such as framing. The word processing instructor posted a word processing document that she had saved as an HTML document. Then, she transferred the file (FTP) to a web folder on her university web site, so that the document would be active for viewing. The microcomputer applications instructor used the text tools on the whiteboard to post a chat agenda. The database instructor did not utilize the whiteboard.
Three instructors used the chat conventions of: q for asking questions, c for comments, a for having the answer, and ga for go ahead. These conventions were used in an attempt to control the speed and organization of the dialogue.

Each instructor exhibited a chat style. The HTML instructor had a very active, conversational dialogue style. However, she missed a few questions from students due to the speed of the conversations and the need to post several sites on the whiteboard during the chats. The word processing instructor utilized the chat conventions more effectively by slowing the dialogue speed and answering every question. The word processing instructor even selectively chose students to answer questions, so that more students could participate. The more computer-experienced, higher-achieving, and faster keyboarding students had the advantage in the speed of their responses. Furthermore, the students with faster modems and cable modems could respond quicker. This instructor even adopted a time-delay procedure before choosing students to answer the questions. The microcomputer application instructor used a more formal and serious chat dialogue style. It was noted that these chat styles also matched the live dialogue styles of the instructors.

Finally, the student participation of the chats was tallied for the descriptive statistics of the study. These totals were added to the interaction variable for each student and later used in the Pearson Correlation analysis of interaction.

Semistructured Interviews

The interviews were conducted in a faculty office on the college campus during the last four weeks of the quarter. The interviews lasted one hour. All students, but one, responded to email requests for an interview. One interview had to be rescheduled due to student illness. One interview had to be rescheduled due to student work responsibilities. Two students arrived
unexpectedly and the researcher quickly arranged for tape-recording equipment delivery, so that the interview could proceed. These unexpected arrivals were due to email response delays to the researcher. All students who responded to the interview request elected to participate.

All interview participants were very busy, working adults. However, they were very generous with their time and open with their comments. The students seemed flattered to be asked for their opinions.

Semistructured Focus Groups

The two focus groups were conducted in the evening during the sixth week of the quarter in the faculty conference room at the college. The sessions lasted ninety minutes. A casual dinner was served. Several possible participants were contacted by email. Two students did not respond. All students who indicated that they could participate arrived at the sessions with one exception. That student had an ill child and could not attend. He emailed the researcher about the situation.

The first focus group consisted of a male in his late twenties studying Computer Support, a male in his early twenties studying Computer Support, a female in her early forties studying Office Management, a female in her late thirties studying Office Management, and a female in her early 50's taking HTML (she eventually dropped the course) and majoring in Medical Transcription.

The second focus group consisted of a male in his thirties studying Computer Support, a female in her twenties in Computer Support, a female in her late forties in Computer Support, a male in his early twenties in Computer Support, a male in his thirties in Computer Support, and a female in her thirties in Web Page Management. Most participants were busy, working adults.
One student was a full-time student. However, they were again generous with their time and grateful to be asked for their opinion.

A student, who eventually dropped the HTML course, dominated the conversation of the first focus group. She was struggling with the content and did not understand the importance of the subject material. The course was a requirement for her degree.

**Collection of Email Messages**

The instructors placed the researcher on the email address list for their classes, so that all generally broadcast email messages would be received. The microcomputer application and word processing instructors printed all email messages from learners-to-instructor and from instructor-to-learners for the researcher. The microcomputer applications instructor delivered the printouts continuously during the course. The word processing instructor gave the printouts to the researcher at the end of the course. The HTML and database instructors forwarded all email messages to the researcher immediately after the quarter ended. Then, the researcher printed the messages.

The researcher read the messages and eliminated duplicates. Then, the messages were divided into instructor-to-learner and learner-to-instructor areas. Next, the messages were categorized into content and online technology areas. Content dialogue consisted of instructional questions about the course material or course assignments. Online technology questions consisted of online instructional software concerns, Internet connection issues, or email transmission questions. Online instructional software concerns consisted of problems with accessing the Classware® or Blackboard® programs. Internet connection questions dealt with the ability to access the chat sessions properly. Email transmission questions described concerns
about sending or receiving assignments. Finally, the email messages were counted for each student and added to the total interaction variable for the study.

Collection of Class-Related Documents

The instructors added the researcher to the participant list of each class in the online instructional software. Then, the researcher had access to all the course materials of syllabi, assignments, posted lectures, announcements, archived chats, and discussion boards. Finally, the course documents were downloaded into Folioviews® for data analysis.

Collection of Participants' Grades

After the quarter ended, the instructors provided a copy of the online students' grades to the researcher. Two instructors made a copy of their gradebook. Two instructors provided the spreadsheet file that was used to calculate student grades. The information also contained assignment grades, chat participation counts, midterm grades, and final examination grades in addition to the final average grade for each student. All instructors used numerical grades for calculation. A ten-point scale was utilized with 90-100 for an A, 80-89 for a B, 70-79 for a C, 60-69 for a D, and below 59 for an F. Two instructors used the plus-minus option.

Data Analysis and Interpretation Procedures

The researcher followed the inductive and deductive stages during data analysis as proposed by Erickson (1986). Assertions were generated during the inductive stage of data analysis. All the data were collected, transcribed, and imported into Folioviews®. Next the data were coded following data analysis procedures (Miles and Huberman 1994). The codes were developed from the literature review. Upon reviewing the data, questions came to mind, which
were recorded in notes containing those issues that emerged as important. From these, assertions were generated.

Then, the analysis entered the deductive stage. This stage involved the examination of the data. Next, evidence that supported or unsupported the assertions was identified. Descriptive statistics were used to report findings regarding the interaction.

Source triangulation was utilized in this study. The field notes of the direct observations, the questions in the interviews and focus groups, the discussion boards, chat transcripts, the email messages, and the inperson check sheets kept by the instructors triangulated interaction. The field notes of the direct observations, the questions in the interviews and focus groups, the chat transcripts, and the course documents triangulated active learning. Learning outcomes were triangulated by the course grade sheets and the questions in the interviews and focus groups. The findings were further studied in order to yield other appropriate generalizations and recommendations for future research.
CHAPTER FOUR: RESULTS

This study researched interaction in online technology courses and its influence on active learning, learning outcomes, and community bonding. First, the overview of the use of interaction in each course was presented. Next, the student views of interaction in their online educational experience were described. The findings were then categorized into the emerging insights on interaction's influence on active learning, learning outcomes, and community bonding. Finally, emerging themes of interaction and quantitative results in each course were described, analyzed, and interpreted. They are reported in this chapter.

The Use of Interaction in Class #1-HTML

The HTML course encompassed telecommunication theory, principles of web page design, Hypertext Markup Language (HTML), and file transfer protocol (FTP). The course objective was to develop and post a well-designed web page.

Students accessed the course content via the required textbook, lectures in PowerPoint® posted on the Blackboard® course web site, and weekly chat sessions. The students completed weekly assignments and submitted them to the instructor via email attachments in Notepad with the final project submitted by email address. The university provided web site posting access to all students.

The assignments involved writing HTML code in progressively difficult applications. The final project was the development of a web site using the principles learned from the course. The instructor assessed the students by grading the weekly assignments, an objective midterm exam, an objective final exam and the presentation and submission of the posted final project.
The HTML instructor used the synchronous interactions of chat and in-person meetings and the asynchronous interactions of email. The instructor did not utilize synchronous phone interaction or asynchronous discussion board interaction (see Table 1). She introduced the discussion board to the students in the orientation session. However, it was not used. Therefore, the instructor-planned interactions were the weekly chats, the required orientation and testing sessions, the optional help session, and the email for assignment submission. The in-person optional help session was added after the instructor determined that several students were struggling with the course content.

Each student was required to participate in a minimum of three chat sessions. Chats were used to answer questions on assignments, present new content material, and give practice quizzes. The instructor had a lively conversational style of chat. The chat conventions of "q" for question, "a" for answer, "c" for comment, and "ga" for go ahead were introduced, but not continually utilized. This professor, the computer applications instructor, and the database instructor were the only ones to use instructor-lead new content presentations during the chat sessions. The instructor also utilized the whiteboard feature of the chat utility to illustrate features in web sites.

The instructor explained new material in the synchronous chat sessions. She explained new concepts not yet assigned or attempted by the students. This chat style involved preplanning of web site identification to illustrate HTML examples and lecture development. New content presentation comprised about thirty minutes of chat time. The remaining thirty minutes were devoted to question and answer sessions on past and future assignments--the first fifteen minutes on past assignments and the last fifteen minutes on future assignments.
### TABLE 1

FREQUENCY OF TOTAL STUDENT INTERACTION FOR CLASS #1

**HTML**

<table>
<thead>
<tr>
<th>Student #1-1</th>
<th>Chat</th>
<th>Phone</th>
<th>In-person</th>
<th>C-Email¹</th>
<th>T-Email²</th>
<th>Discussion Board</th>
<th>Total</th>
<th>Grade³</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td></td>
<td>2</td>
<td>UW</td>
</tr>
<tr>
<td>Student #1-2</td>
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<td>0</td>
<td>4</td>
<td>24</td>
<td>3</td>
<td></td>
<td>33</td>
<td>C</td>
</tr>
<tr>
<td>Student #1-3</td>
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<td>0</td>
<td>3</td>
<td>3</td>
<td>0</td>
<td></td>
<td>11</td>
<td>A</td>
</tr>
<tr>
<td>Student #1-4</td>
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<td>3</td>
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<td>0</td>
<td></td>
<td>11</td>
<td>B</td>
</tr>
<tr>
<td>Student #1-5</td>
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<td>5</td>
<td>2</td>
<td></td>
<td>8</td>
<td>W</td>
</tr>
<tr>
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<td>4</td>
<td>1</td>
<td></td>
<td>13</td>
<td>A</td>
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</tbody>
</table>

*By Category*

¹ Email concerning content of the course
² Email concerning online technology problems
³ The special symbols used by the college for special grading situations include:
   I incomplete
   UW unofficial withdrawal, student did not contact instructor
   W withdrawal, student completed official university procedure
An example of this instructor-lead, new content presentation chat style was:

instructor > Do you have your books
Student 2 > yes
student 1 > yes
instructor > Good -
instructor > Any image map that has clickable areas is an image map - see p. 4.25
instructor > Go to www.concierge.com sometime - it has great pictures
instructor > an image map can be a button bar rather than a list of links
instructor > www.asu.edu - is another good one
instructor > it shows button bar
instructor > buttons are usually created in a program like Paint Shop Pro or Illustrator and saved as gifs or jpps
instructor > One problem with images is that if viewer has a slow browser they take a long time to down load
instructor > look at 4.29
student 1 > ok
Student 2 > im there
instructor > this is the opening code - they used a table to set up the image in the first row, first data cell
- text is in 2nd data cell
instructor > Before the image goes in - you need to determine the area that you want to make clickable
Student 2 > yeah, I was wondering how you determine that in the paint program
instructor > We use the Paint program in Accessories - 1st step is to open Paint
instructor > 2nd open the image in Paint
instructor > This does work best in Windows 98 (95 had some problems)
instructor > there are full-fledged image mapping programs out there and they are mentioned in your book - For ease of use - we use Paint
instructor > p. 4.20 now
student 1 > ok
instructor > After you load image in Paint - you need to "map" the coordinates
instructor > Coordinates are x (horizontal) and y (vertical) point of upperleft and lower right of rectangle
instructor > This example uses the rectangle - you can use the circle, polygon also
instructor > Use rectangle tool and draw a rect around first surfer
instructor > Hi (student 3) - we're on p. 4.20 of book
student 3 > Hi, thanks
instructor > The upper left corner illustrated on 4.21 gives x, and y coordinates
instructor > place crosshair on lower right corner to get those coords
instructor > You will need to write coords down on a piece of paper as you "map"
instructor > So you find the coords for all three images
instructor > Are you all with me so far?
student 1 > yup
student 3 > yes
instructor > so now you have the image coords and you've set up your page - now you can code the image
instructor > p. 4.23 gives the MAP tag and attributes needed in table 4-2 and 4-3
instructor > Also - we are creating a client side image map - as opposed to a server side map that must be put out on a server then downloaded to the viewer's browser.
instructor > You'll read more about that in the chapter. We will not be working with server-side images
instructor > there are two main image mapping tags
instructor > AND
instructor > Start image maps with MAP tags
instructor > the AREA tag is used to insert the coords and the location of where we want to link
instructor > Inside AREA we also have to identify the shape
instructor > now go back to p. 4.29
student 1 > ok
Student 2 > allright
student 3 > ok
instructor > look at the IMG SRC tag - **Error! Unknown switch argument.**
instructor > WE put image name in, space between image and text, and the USEMAP attribute. This
sets up the target to the image map. Look familiar?
instructor > we used the # to set targets within a document too
instructor > AFter the rest of the text for the paragraph is entered, and the mailto information, there is a
small table under the picture to identify text links.
instructor > See the picture on 4.35
student 1 > ok
instructor > After all that is entered you need to code the coords for image map - go back to page 4.32 to
view tags and text in complete form
instructor > It starts with MAP tags and then the AREA tags with SHAPE, COORDS, AND HREF
attributes
instructor > You have to name the shape as RECT, CIRCLE, POINT, OR POLY in "s - then the
COORDS also in "s and then the hyperref also in "s
instructor > Any questions so far?
student 1 > no
student 3 > i have one
instructor > Notice on p. 33 - the mapping code is at the bottom of the page after the tag
instructor > Ok (student 4) - what's your ?
student 3 > never mind--I just found it in the book
student 3 > go ahead
instructor > OK -
student 1 > ?
instructor > So that is basically it - it is a 4-step process - 1. select an image to use; 2. sketch in the
hotspots in Paint; 3. "map" the image coords and then 4. Code the image
student 1 > How many sets of coords does one need for, say a polygon?
instructor > Mapping a circle is a little tricky - You don't have to do it any of the problems you have but I'll
show you on the white board -
student 1 > ok
student 3 > ok
instructor > There are 3 coords for a circle
instructor > I'll give you a minute to write this down somewhere - unfortunately - the white board does not
save
student 1 > ok
instructor > It's not explained very well in the book
instructor > You subtract the x border axis from the x center axis to get the radius
instructor > If you try to do this later and have trouble let me know - and let me know when you're
finished with this
student 1 > finished
instructor > I'll leave it up for a while and you can copy later
instructor > Now, go back to p. 4.17 -
instructor > Figure 4.18 shows all of the mapping areas for different shapes
instructor > the point only requires one set of x,y coordinates
instructor > I meant 4.16
instructor > In your homework, you have a polygon and rectangles - go to p. 4.51
instructor > Any questions on shapes and coords?
student 3 > no
Student 2 > no
student 1 > no
student 4 > I'm confused on the 5 points needed for the polygonal-shapes in Lab 4-3
instructor > You just have to have a set of coords for each angle in the polygon -
instructor > I'll show you in a second - go to p. 51 now
Student 2 > ?
instructor > here you are going to get coords using a rectangle -
instructor > (student 2)
Student 2 > what is the border axis when finding the coordinates for the circles
instructor > On the white board - follow the line from center to horizontal edge
Student 2 > ok
instructor > OK
Student 2 > thanks
instructor > OK with RECT on 4.51
instructor > you'll make 3 sets of coords
instructor > Same as tutorial
instructor > In the lab 1 on p. 52 - look at this
instructor > It is set up as points and you are told to use points -
instructor > but points don't work - it causes large rectangle and they overlap
student 4 > I found that out!
instructor > Instead use small rectangles over the points on the map
instructor > I know you did (student 4)
instructor > For in the lab 2 - you are just going to use rectangles p. 4.53
instructor > one over monitor and one around books
instructor > The last one uses a polygon - take a look at lab3 p. 54
instructor > Drag the poly tool (it will be a line) from point to point - Example whitehouse points are top, down left side to inset, inset to center point, and then back up to inset and finally to the top
instructor > So you'll have how many sets of coords?
instructor > anyone - take a guess
student 4 > 5
student 1 > 10
Student 2 > not sure what you mean by insets
student 4 > Where the sides meet
instructor > thanks (student 4)
Student 2 > ok
Student 2 > 10
instructor > actually there are 4 sets - one for top, one for inset, one for centerpoint, one for right inset
instructor > You don't do the top twice
student 4 > That's what confused me. The book stated 5 for polygons ... I could only determine 4 for this lab.
student 1 > can you show on whiteboard?
instructor > This is just for the whitehouse poly
instructor > I'll try
instructor > Do that for each of 5 points on the star - so you'll have 4 sets of coords for 5
instructor > Did that help?
student 1 > um we'll see..
student 4 > Yes. But why did the book state 5 sets are needed.
instructor > After you've had a chance to work with the rectangles and coding, you'll see it
student 1 > ok
instructor > Its 4 sets of coords for 5 star polygons
student 4 > ok
instructor > You'll get it fine!

The instructor presented new content by directing the students to certain textbook pages and web sites. She repeatedly asked for responses to clarify student understanding. This chat style involved a lot of instructor keyboarding. However, students seemed to like the instructor-
lead, new content presentation component as illustrated later in student views. Only a few students attended, but more could view the discussion in the chat archives.

The instructor offered a face-to-face session as this course content was difficult for many students. Plus, this instructor used email interaction to receive and answer content questions on an individual basis. A few students asked online technical questions, also.

The Use of Interaction in Class #2-Computer Applications

The computer applications course consisted of computer literacy concepts including computer terminology, Windows®, word processing, databases, spreadsheets, and presentation software. The course objectives were the introduction of several different software packages with hands-on experience. Students accessed the course content via the required textbook, lectures in PowerPoint® posted on the Blackboard® course web site, and weekly chat sessions. The software being studied would change every two weeks. The instructor assessed the students by grading weekly hands-on assignments, an objective and hands-on midterm exam, and an objective and hands-on final exam.

The computer applications instructor used the synchronous interactions of chat, phone, and in-person meetings and the asynchronous interactions of email and discussion board (see Table 2). In addition, this instructor assigned a group project with group interaction components. The instructor-planned interactions were the weekly chats, the required orientation and testing sessions, the email for assignment submission, and the group email or chats for the completion of the group assignment. It is notable that this instructor used all available interaction methods. This was the only researched class that utilized group project interaction.
Plus, this instructor posted chat agendas, controlled the chat dialogue, and administered four practice tests and hands-on exercises during the chats.

### TABLE 2

**FREQUENCY OF TOTAL STUDENT INTERACTION FOR CLASS #2**

**COMPUTER APPLICATIONS**

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<th>T-Email²</th>
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</tbody>
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¹ Email concerning content of the course
² Email concerning online technology problems
³ The special symbols used by the college for special grading situations include:
   I incomplete
   UW unofficial withdrawal, student did not contact instructor
   W withdrawal, student completed official university procedure
Each student was required to participate in a minimum of five chat sessions. Chats were used to discuss content, answer questions on assignments, and give practice tests. The instructor had a formal, but very friendly, conversational style of chat. The chat conventions of "q" for question, "a" for answer, "c" for comment, and "ga" for go ahead were introduced and were used more than the HTML chats. The instructor used the whiteboard feature of the chat utility to post a chat agenda. This instructor gave the most practice tests in chat. The students appreciated this use of chat as illustrated later in their comments. An example of this practice test chat style was:

**instructor** > After I answer any questions you may have, I have a practice quiz for you to do tonight. This will help you to know what you will be expected to know.
**student 3** > q
**instructor** > ga
**student 3** > Can you brief us on query? I think all my queries were incorrect so I'm obviously doing something wrong.
**instructor** > Let'
**student 3** > Make it FILTER. sorry.
**instructor** > You did not have to do the part on filters. It is rather advanced for the beginner class.
**instructor** > Hi
**student 6** > hello everyone
**instructor** > Let's go ahead and do the practice database. I will give you instructions here and they are repeated in the directions as well.
**instructor** > You can minimize Chat
**instructor** > Sorry, don't minimize Chat yet.
**instructor** > Go to Assignments and click on the People Database/Practice Database.
**instructor** > Print the instructions so you can complete the exercise in Access.
**instructor** > At this point you can minimize Chat, but leave it open.
**instructor** > Complete the database exercise.
**instructor** > Either minimize or close Access.
**instructor** > Maximize Chat in Blackboard and return here to chat to discuss the database.
**instructor** > Hi
**student 7** > good evening everyone!
**instructor** > You should be able to go back and forth between Chat and Access if you use the minimize feature.
**instructor** > Come back and ask questions if you need help during the practice.
**instructor** > Go ahead now and I will chat with you when you finish.
**student 7** > Prof, are we to do the practice database now, and is this on a timely basis?
**instructor** > scroll through the Chat to get the directions for completing a practice database.
**instructor** > Yes, go ahead and do the database now. It shouldn't take you more than 15-20 minutes.
**student 7** > ok, thanks
**student 1** > q
**instructor** > ga
**student 1** > When I try to create a query wizard it says I must have a least one query to access
**instructor** > When you use the Query Wizard, make sure you have indicated that you are using the Contact Info table to get the query information.
**instructor** > You do not need a query to create a query.
**student 7** > done
**instructor** > any questions?
student 1 > Okay I will try again
Student 2 > q
student 7 > No, none at all. It went very smooth.
student 1 > it says I have no queries in my data base and I must have at least one
instructor > ga
Student 2 > can I rename columns to fit on one sheet
student 7 > I created my query, my report, and my table.
instructor > No, you cannot rename the fields. To print on one page, change to landscape. if that isn't enough, you may need to reduce the size of the columns or change the font to a smaller size.
instructor > you can go into the Design View and change the name of the fields in the table.
Student 2 > That's what I wanted
student 1 > q
instructor > ga
student 1 > when i try to create a new query using wizard it says I must have at least one in my database
instructor > When you are in the Query Wizard, the first step has a text box asking for the Tables/Queries. Click the down arrow and choose the Contact Info TABLE.
student 6 > finally finished...i got a phone call and thought i was never going to get off the phone
instructor > did you have any questions?
student 6 > none thanks! i am taking access right now also so it was a breeze
student 3 > q
instructor > ga
student 8 > done
instructor > Any questions?
student 3 > Re: #6 - I didn't understand changing the datasheet margins part.
student 8 > No I think I did okay.
student 7 > wasn't changing the margins only if it did not fit the one sheet in print preview?
instructor > If the database is too large to print on one page, you may need to reduce the size of the columns or change the right and left margins or change the font size.
instructor > Yes, if it fit on one page you did not have to change the margins, but you should know how to do that.
student 1 > q
instructor > ga
student 1 > Is this contact table already supposed to be under Tables- if so I do not have this file
instructor > You created a table at the beginning of the database, and named it Contact Info. If you gave it another name, that is what you choose.
student 7 > I have already sent my quiz in the digital drop box.
instructor > Great,!
student 1 > Q
instructor > ga
student 3 > I sent it already as well.
student 8 > Q
student 1 > Since I did my homework on my mom's computer can I send the information tomorrow
instructor > ga
instructor > Yes, that will be OK. Did you find the table you created?
student 1 > I did the table but not on the computer that I am on'
student 8 > Never mind I figured it out!!
Student 5 > Q
student 7 > Q
instructor > ga
instructor > ga
Student 2 > I'm back sorry to take so long, without a printer I have to keep switching screens
Student 5 > on the final will we have instructions like were on the quiz?
instructor > Sorry, I thought about your printing problem, but I didn't know how to get around it.
student 7 > sometime i get confused about the sorting.
instructor > Yes, the final portion of Access will be similar. i will give you another practice test on Access
before the final.

Student 2 > OK just copied the directions to a word document and alt-tab between them

student 7 > #13, am I to go into my design view and his sort ascending for last name first then sort ascending for first name?

instructor > You need to know how to sort using Ascending & Descending buttons in table.

instructor > To sort in the query, you can use the Design View to sort.

student 7 > Actually I can sort either way

instructor > to sort in Print Wizard, you can sort on more than one field in one sort.

student 7 > but, sometimes i am confused when you say sort within a sort

instructor > it is better to use the Design View to sort the query.

student 7 > my last name sorted and what happens to the first name?

student 7 > I did

instructor > If you sorted in query, the first name is not sorted. There are other ways to sort for this info, but we don't usually cover it.

instructor > Sorting in the print wizard lets you sort both first and last names.

student 7 > ok, so when my last name was sorted that i basically all i was looking for, even though i ascended my first name as well.

instructor > To sort within a sort is confusing. Example, sort for City within the State. The State is always the primary sort or first sort, then the city is next.

student 7 > and that is what i do, however you never really see the second sort. Is this correct?

instructor > If you sort on last name in the Design view of query, don't sort the first name.

student 8 > I'm back.

instructor > You will see the sort if you sort in the Report Wizard. I kept saying print wizard and I should have said Report Wizard.

student 7 > understood, thanks

This chat was very positive and conversational with many students participating. The students freely asked questions. The answers from the instructor seemed to help the students understand the material. Plus, the practice exercise and immediate feedback in the chat seemed to reinforce the students' understanding of the course material. This post-exercise dialogue could have faster possibilities in chat than a live course. In a traditional course, the exercise would have to be completed, graded, and returned before this type of dialogue could happen. The students felt comfortable asking questions in chat. This is not always the case in a live class session. This instructor also used a group assignment with group dialogue, extensive email covering mostly content questions, and discussion board.
The Use of Interaction in Class #3-Databases

The database course consisted of introductory and intermediate database management concepts including database design, queries, form and report design, referential integrity, validation rules, and macros. Students accessed the course content via the required textbook, lectures in PowerPoint® posted on the Blackboard® course web site, and weekly chat sessions. The instructor assessed the students by grading weekly hands-on assignments, an objective and hands-on midterm exam, an objective final, and a course project. The course project involved the creation of a database for personal or business use applying the concepts learned in the course.

The database instructor used the synchronous interactions of chat, phone, and in-person meetings and the asynchronous interactions of email and discussion board (see Table 3). Synchronous phone interaction was not used. The discussion board was minimally utilized. The instructor-planned interactions were the weekly chats, the required orientation and testing sessions, and email for assignment submission.

Each student was required to participate in a minimum of five chat sessions. Most chats only lasted thirty minutes. These sessions were the shortest of the researched classes. All other online instructors conducted one-hour chats. Chats were used to discuss content, answer questions on assignments, and give practice assignments. The instructor had an informal, but very friendly, conversational style of chat. The chat conventions of "q" for question, "a" for answer, "c" for comment, and "ga" for go ahead were not utilized. This instructor also adopted a content-driven instructional dialogue to the chats including several sessions devoted to instructions on submitting assignments and answering individual questions from students.
<table>
<thead>
<tr>
<th>Student</th>
<th>Chat</th>
<th>Phone</th>
<th>In-person</th>
<th>C-Email¹</th>
<th>T-Email²</th>
<th>Discussion Board</th>
<th>Total</th>
<th>Grade³</th>
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By Category

Table 3
FREQUENCY OF TOTAL STUDENT INTERACTION FOR CLASS #3
DATABASE

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</table>

Total       | 68   | 0     | 44        | 199      | 43       | 5                 | 359   |        |

¹ Email concerning content of the course
² Email concerning online technology problems
³ The special symbols used by the college for special grading situations include:
   I incomplete
   UW unofficial withdrawal, student did not contact instructor
   W withdrawal, student completed official university procedure
An example of this assignment instruction chat style was:

Instructor > What questions do you have re. project 2?
student 3 > I need a copy of case 2 from project 1 emailed back to me please
student 3 > actually my copy
Instructor > I responded back to you earlier. I will send when I get to the office tomorrow.
student 3 > thank you
student 4 > I have a question
Instructor > Go ahead.
student 1 > Will the answers to the Project Reinforcements be posted for Project 1?
student 4 > When I began my query's I found I missed a record and when I went back to add it it wouldnt let me just insert
student 4 > I had to put at the end
Instructor > yes, probably tomorrow.
student 1 > Thank you
Instructor > I did you try to add the record in a query, form, or table?
student 4 > Table
Instructor > click the Add record button, make sure that you are not duplicating the primary key. That will give you a dialog box indicating such.
student 4 > I thought I tried to add record but I'll check again, thanks
student 3 > on part 8 of lab 2 what does "sort by ascending order by city in front of state" mean
Instructor > Good question
Instructor > When the textbook says sort by name within city within state it means that the first sort must be on the state, then city, then name. It actually works backwards.
student 3 > thank you
student 2 > I have a question
student 5 > I have a question from my other class but relating to Access?
Instructor > Remember sorting on multiple fields must be done from left to right. In this case, I would display as the book says then add additional fields for the city, state, then zip at the end, complete a sort ascending, then do a NO SHOW on the last 3 fields.
Instructor > You can add the same field 2 times, the one field name will change to an expression when 2 fields are displayed. As soon as you change one of the fields to NO SHOW, everything displays correctly.
Instructor > Does that make sense?
student 4 > yes
student 3 > yes
Instructor > When calculations are performed, there are basically 3 parts.
Instructor > Name of the Field, followed by a COLON, then the actual calculation. When referring to a field, it MUST be in brackets [ ].
student 5 > I have question from my other class but relating to Access...I was asked to make a table and put "deleted" as an default value....what does that mean...
Instructor > Example: Total Amount Due:[warranty]+[non-warranty]. If you make a mistake, a dialog box appears indicating syntax, operator error, or some other error. When it returns you to the grid, it will highlight where the error is.
Instructor > Default value is used for items such as state. By placing the default value to OH, it will automatically place OH in the field so you do not need to key in the field information. It serves as a time saver and also increases consistency as well as less typographical errors. Does this make sense?
student 2 > yes
Instructor > We will deal with this in Project 3.
student 5 > But when I put word deleted as an default value it shows error....
Instructor > Another item on calculations. When a percentage is involved you must convert to a decimal. Access does not recognize the percent symbol.
Instructor > Try =Deleted or "Deleted". I usually use the = sign because it will show up in the documentor.
student 5 > ok...
Instructor > I would like to tell you about something not in the textbook that can be very helpful when
troubleshooting problems in table structure.

student 7 > ok

student 2 > ok

Instructor > Close all tables, queries, reports, and forms. Choose Tools, Analyze, then Documentor. You will need to check the tables that you want to analyze, and later when we get to macros, you can print out the macros.

Instructor > After you check the tables, choose OK. It will spin in hourglass for a short period, then display several pages (sometimes 5, 6, 7, or more depending on the number of fields in the table).

Instructor > As you look at the documentor pages, you will see everything that you changed.

Instructor > For example, field size, data type, primary key, etc.

student 6 > good to know

Instructor > I will have you print the documentor with your project so play around with it a little. After we work on project 3, we will get into relationships, default value, required fields, validation rules/text, and all of this will display.

student 8 > when you create the database in the design view, there are drop down boxes. can you create other drop down boxes for the data you will be entering into the table? Or do you just do macros to save time of retyping same info over and over?

Instructor > Basically, any change you make to the field shows. However, sometimes you need to place an = sign before.

Instructor > yes, create your datatype, then select the lookup wizard at the bottom of the data type list. Basically, it is not a data type, but a way to create a combo box.

Instructor > When you are in datasheet view, an arrow will appear, click on the arrow and you can select from the list. Also, you can just type the first character of the word in the list and it will automatically place in the field.

Instructor > This is a wonderful way to place repetitive data and assure that there are no typos.

student 2 > it does make it simpler

Instructor > If you have not installed the wizards, you may need to insert your disk and install the wizards in Office 2000.

Instructor > Once you do this, go into design view, there will be 2 tabs in properties. Select the Lookup tab, and view. Should you need to add a field, it can be done on the Lookup tab.

Instructor > My previous comment does not have anything to do with installing the wizards.

student 8 > ok

Instructor > One other hint I will give you.

Instructor > Grouping Queries, students have a tendency to add too many fields into the design grid. If it says to group by tech number, and then sum.

Instructor > Place the Totals line clicking the sigma (or it looks like a backwards E on the toolbar). A new line appears. This is a toggle key and toggels the total line on/off.

Instructor > Click the Totals line ON, then add Tech Number and Warranty. You want to sum each tech number's warranty.

Instructor > With Tech Number and Warranty fields in the design grid, on the Tech No Totals line it should read Group by, the warranty Totals line should read SUM (click the down arrow that appears on the totals line).

Instructor > Does that make sense.

student 8 > does the book explain this too?

student 1 > yes

student 3 > i thought i read something about this in the book

student 8 > it is hard to say if this makes sense without being able to try it

Instructor > Yes, but remember do not place too many fields on the totals line.

Instructor > I agree.

Instructor > Just keep it in mind.

Instructor > Any more questions?

student 1 > I don't have any.

student 8 > none here

student 4 > I had one from my homework

student 8 > when you create the database in the design view, there are drop down boxes. can you create other drop down boxes for the data you will be entering into the table? Or do you just do macros to save time of retyping same info over and over?

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student 4 > I had one from my homework

student 8 > when you create the database in the design view, there are drop down boxes. can you create other drop down boxes for the data you will be entering into the table? Or do you just do macros to save time of retyping same info over and over?
Instructor > Let me mention one other thing.
student 3 > page A 2.38-A 2.42 talks about what you just explained about grouping
student 4 > when you do like cases in homework, and your making a 2nd table, what logical categories should you chose
Instructor > If you homework says to display certain fields, pay attention to the order. Do not rearrange. Add the necessary fields at the end and then sort asc., etc. and then NO SHOW.
Instructor > Are you talking about Case 2, project 1.
student 4 > I had trouble on what categories to add to the 2nd table, it was the one w/publishers from proj 1
Instructor > Look at the field information. If there is going to be duplication, for example, Publisher Name, then you would create a table for Publisher.
Instructor > Always think 10,000 records. When you create a publisher table, the publisher name is typed one time.
Instructor > When you want to find out the publisher for each book title, you do that in a query. The query must have both tables displayed in the upper pane.
Instructor > A join line should display between the tables. Access will go to the publisher table and extract what information it needs to complete the fields.
student 4 > I'm not sure what I'm trying to say, I just chose the wrong info to place in my chart,
Instructor > There is a Publisher Code in Table I (foreign key) and a Publisher Code in Table 2 (primary key). This allows for the data to be manipulated.
Instructor > Chart???
student 2 > this seems so clear when i am doing it...but it is hard to talk about unless you are actually working with it
Instructor > Joining is about midway through project 2; try it and let me know how you do.
student 4 > thanks anyway
student 8 > it is nice that we can go back to this conversation through the archives - big help!
Instructor > Print out the archives on the Virtual Chat page. This will help if you get into a bind while I am out of town. Also, remember while I am gone, you can call the lab to get help.
student 2 > i agree
Instructor > That has not been available in the past.
student 2 > that is good to know
student 2 > i did not know you could call the lab
Instructor > Try and get a hold of me first, but since I am out of town, they are your second source. You can also post questions in blackboard
student 5 > what about archives?
Instructor > it archives our conversation this evening. You can then print out.
student 7 > bye all ..see you next week!
student 5 > how....
student 3 > c ya
Instructor > go into Virtual Classroom, Click on Archive and the date, our chat will display.
Instructor > Any other questions?
student 5 > oh ok...
student 5 > the one you explained about look up tab..was it related to Macros?
Instructor > no (tables). It is in the textbook. Look in the index for Lookup Wizard.
student 5 > ok...
Instructor > Any other questions?
student 5 > no thanks....
student 3 > none here
student 8 > no
Instructor > Okay then, homework will be due next Tuesday by 9 pm. See you next Monday.
This chat style involved a lot of instructor keyboarding. However, it was an effective way to answer student questions and concerns. Students received immediate feedback.

The Use of Interaction in Class #4-Word Processing

The word processing course encompassed introductory and intermediate word processing concepts including proper format, tables, styles, and macros. Students accessed the course content via the required textbook, lectures in PowerPoint® posted on the Blackboard® course web site, and weekly chat sessions. The instructor assessed the students by grading weekly hands-on assignments, an objective and hands-on midterm exam, and an objective and hands-on final exam.

The word processing instructor used the synchronous interactions of chat, phone, and in-person meetings and the asynchronous interactions of email and discussion board (see Table 4). Synchronous phone interaction was not used. The instructor-planned interactions were the weekly chats, the required orientation and testing sessions, email for assignment submission, and the discussion board for bonus point content questions posted by the instructor and content discussion by students and instructor.

Each student was required to participate in a minimum of five chat sessions. Chats were used to review terminology, discuss content, answer questions on assignments, and give practice assignments. The instructor had the most organized, but very friendly, conversational style of chat. The chat conventions of "q" for question, "a" for answer, "c" for comment, and "ga" for go ahead were introduced and were used the most frequently of the online courses researched. This
online instructor was the only one to conduct lively review sessions, used the white board repeatedly to illustrate concepts and had the most variety of chat topics.

TABLE 4
FREQUENCY OF TOTAL STUDENT INTERACTION FOR CLASS #4
WORD PROCESSING

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</table>

By Category

1 Email concerning content of the course
2 Email concerning online technology problems
3 The special symbols used by the college for special grading situations include:
   I incomplete
   UW unofficial withdrawal, student did not contact instructor
   W withdrawal, student completed official university procedure
An example of a terminology review chat was:

instructor > Tonight, we'll go over some of the major concepts introduced in proj 3, which deals with templates & wizards.
instructor > But, first let's address any gen'l concerns or questions you may have.
Student 5 > q
instructor > ga (student 5)
Student 5 > I've had problem finding when the bonus question will come up. With my kids, weekends are a hassle.
Student 5 > Whenever I see the discussion board, you
Student 5 > sorry, you've already given credit to a few.
instructor > There's no set time. You will need to check Blackboard Discussion a couple of times each week. Again, some of the bonus questions will have more than one "workable" solution. Be sure to read your classmate's responses first, OK.
Student 5 > Thanks, sorry for my slow computer
student 1 > q
instructor > ga (student 1)
student 1 > I have a general ? re: blackboard. I had a prob. with the archived chat in another class. The helpdesk asked for my Username and password-- should I give it?
student 1 > Our helpdesk at work has a tech supp userid and password.
instructor > I think it would be OK. Since you had to register yourself into this course, they may not have your username & password. In the future, registered students will automatically appear in the class.
student 1 > thanks :-)
8) stated, it has prewritten text, which is generic. You replace the prewritten text with your actual data.

instructor > When you complete the Resume template, you may find it helpful to turn on the Table
gridlines, which are nonprinting vertical and horizontal lines. With these gridlines turned on, you know
exactly where to click and make changes.

instructor > Keep in mind that you need to adhere to the template's formatting. Templates can be
frustrating if you try to do something different. Don't forget the Edit, Undo feature if you run into problems.

instructor > Besides resumes, what are some other templates available in Word?

student 4 > a
student 8 > a
student 3 > a
instructor > ga (student 3)
Student 5 > a
student 3 > Agenda, calendar,
instructor > Right! Webpages, certificates, newsletters, etc.
instructor > Back to the resume template, what are some of the typical resume sections included in this
template?

Student 5 > a
student 8 > a
instructor > ga (student 5)
student 9 > a
Student 5 > work experience, education
Student 5 > experience
instructor > Right. Personal info such as name, address, position objective, etc.
instructor > Tables are introduced in Project 3. What is a table?

student 3 > a
Student 5 > a
student 10 > a
student 8 > a
instructor > ga (student 8)
student 8 > In our homework it was used to add additional info to enhance the cover letter
instructor > Yes, but what is a table?
student 4 > a
student 10 > is basically a collection of rows and columns u can enter data in.
student 3 > a

student 10 > sorry wrong button
instructor > Right. It's a collection of rows and columns. Let's see if I can draw one for you.

student 10 > this should be good
instructor > OK, so I'm not an artist.
instructor > The columns run up and down and the rows run across. What is the name of the area where
the row and column intersect?

Student 7 > a
Student 5 > a
student 3 > a

student 4 > a
instructor > ga (student 7)
Student 7 > Its called a cell.
instructor > Right. That's where you place your data. With Word 2000, the table feature has been
enhanced. You can now create custom tables. In the past, you had to have equal number of columns &
rows. For example I can create a custom table out of this beautiful table I created.
instructor > In Word, your table would look much better than this one. You can create some neat forms
such as an invoice, purchase order, etc.
instructor > After you create the table, then you can format it. Name some formatting options available?

student 4 > a
instructor > ga (student 4)
student 4 > size
instructor > Be more specific
student 4 > hmmm
student 4 > I was thinking the actual size of the table
instructor > OK...you’re off the hook. You can change the width of a column or the row height. Add shading to cells, add borders, format data inside the table, etc.
instructor > As I mentioned earlier, the resume template is set up with a large table.
instructor > I’ve used the table feature for several types of documents in Word. Tables are easier to use than creating tab stops using the ruler.
instructor > The ruler has default tab stops at every ______ inch. Who knows?
Student 5 > a
student 9 > a
student 1 > a
instructor > ga (student 9)
student 9 > half inch?
instructor > Right. Every 1/2”. Tabs can be tricky. Who knows the basic tab types provided in Word?
student 1 > a
instructor > ga (student 1)
student 1 > is it right, left align, center align, and decimal?
instructor > Right! These are the basic tab types provided in all word processing programs. And there’s another tab—the leader tab. Word will placed leaders (dots) between the tab stops. Usually you will use a leader tab for a table of contents page.
instructor > What is the clipboard?
Student 7 > a
student 8 > a
student 11 > a
student 4 > a
instructor > ga (student 11)
instructor > (student 11)?
student 11 > Temporary storage area
instructor > (student 11)?
student 11 > ?
instructor > ga (student 11)
instructor > (student 11), are you still there?
student 11 > yes, Is it a temporary storage area?
instructor > OK. Yes, it’s a temporary storage area. Who can tell me how data is placed in this storage area?
student 4 > a
student 11 > a
Student 7 > a
Student 5 > a
instructor > ga (student 5)
Student 5 > whenever you cut something
Student 5 > it is held there until you paste it
instructor > Right. Whenever you use the Edit Cut or Edit Copy feature. Also, if you press the Print Screen key, the window info is placed in the Clipboard.
instructor > New to Word 2000, you can now have multiple objects in the Clipboard at the same time. In previous Word versions, once you place info in the Clipboard and you performed a second Cut or Copy operation, the previous clipboard info would be replaced.
instructor > I believe you can up to 12 different objects in the clipboard. And you can choose which object you want to paste.
instructor > What does lowering the printer resolution do?
student 4 > a
instructor > ga (student 4)
student 4 > it makes things print lighter in order to save ink
instructor > Yes, you can save on ink. The pages will print faster but not necessarily in the best quality. And it will eliminate overrun errors. What are those errors?
The chat conventions allowed the instructor to control the speed of the dialogue especially with a larger group of students. Different students were selected to answer by the instructor, not just the fastest typists or those with the fastest Internet connection. The terminology review reinforced the course content even for those students who did not answer as
evidenced by student comments that follow. This instructor also used another chat session to
give a practice test and immediate feedback to students in a test review session. That chat
consisted of:

instructor > Tonight, we're going to be reviewing for the first test which is scheduled for next Tues, 6:30-8:30 in Rm 208. There will be a written test with about 50 T/F and MC questions. Then you'll take a hands on test covering projects 1,2,3.
student 1 > q
instructor > i ga Student 1
student 1 > will there be class afterwards or can we leave after the test
instructor > We have the room from 6:30-8:30. When you turn in the test, you can go.
student 1 > thanks
Student 2 > q
instructor > Here's the new thing we're going to try tonight. I want you to leave the Chat Room and click the Course Document link. Download the review test1. Print it and answer it without using your book/notes. Return to the Chat Room at 9:25.
instructor > ga Student 2
Student 2 > So we don't meet online at 9 that day right?
instructor > There will be no chat room on test nights.
student 3 > ok
instructor > See you at 9:25
instructor > Student 8, are you OK?
instructor > go to the Course Document link and download the review test. Print it; answer it and return to chat room at 9:25 to discuss test.
student 4 > 9:25 tonight?
instructor > Yes - we're trying something new :-)
student 4 > i don't have word on this computer.
instructor > Oh.....I'm not sure what will happen when you try to download the file. Try it?
student 4 > just did. it didn't let me download it without Word.
instructor > I'll send you an email with the attachment in a few seconds.
instructor > student 4, I just sent you 2 emails. One with Word attachment and the second one as a text file. You should be able to open the text file in Word Pad. Let me know if you can't.
instructor > Student 5, any problems downloading test?
student 4 > I received it.
instructor > Great!
student 4 > But I can't print it. Is that going to be a problem?
Student 5 > no it is in front of me
instructor > Did you open the text version?
student 4 > It wasn't sent as an attachment the second time.
student 4 > It was sent as inline text.
instructor > Oh, print the email msg.
instructor > Student 5, did you try printing?
student 4 > Um...that's another problem. I don't have a printer connected here either.
instructor > student 4, what am I doing to do with you :-(
Student 5 > Mine worked, I cut it and pasted onto Word
Student 6 > doing?
Student 2 > lol student 6 you know what she meant
Student 6 > yeah, i did :-(
student 4 > What do we have to print it out for?
instructor > Let me know when you're ready to go ahead with the review by indicating GA
student 7 > ga
student 3 > ga
instructor > Great! I'm assuming you were able to print the test (except for student 4). I'll call on you to answer the question. If you don't know, indicate by typing pass. If the answer is F, indicate with a brief explanation, OK.

instructor > Student 3, what is the answer for #1?
student 3 > a sizing handles
instructor > Right, they are used for sizing objects and they also indicate that the object is selected.
instructor > student 6, #2
instructor > student 6?
Student 2 > C backspace
instructor > Right, Student 6 #3
Student 6 > True
instructor > Right, same filename and same location, use Save. If you want to save as a second copy use Save As and indicate with new filename or new location.
instructor > Student 8, #4
Student 8 > A.
instructor > Try again
student 1 > ga
instructor > ga Student 1
Student 8 > oops d double click
instructor > OK, D for double-click
instructor > student 9 #5
student 9 > b
instructor > Try again
student 9 > d?
instructor > Try again
student 9 > pass
instructor > anybody?
student 7 > a
student 1 > a
instructor > ga Student 7
student 7 > c. click at the end of the paragraph . . .
Student 2 > Q
instructor > E is the answer. Center is not on the Insert menu. Items A thru D should work.
instructor > ga Student 2
student 7 > that was a trick question!!!
student 1 > really tricky
Student 2 > aw well forget it now
instructor > Well.... OK... it was
instructor > Student 5 #6
Student 5 > c html format
instructor > Right! saved as an htm or html
instructor > Student 1 #7
student 1 > a
instructor > Right! Student 10 #8
student 10 > I have f
instructor > Right, why?
student 10 > unsure
instructor > Anybody?
student 1 > a
student 7 > a
Student 6 > a
instructor > ga Student 6
Student 6 > a hanging indent moves everything
Student 6 > ?
Student 2 > besides the first line
Student 6 > yes
student 7 > team effort
Student 2 > =)
Student 6 > we’re all a team
instructor > Right, the first line of a paragraph stays at the left margin. All other lines of paragraph are
indented. A hanging indent is basically an upside down paragraph. An example would be an enumerated
items such as 1. ssss 2. xxxx 3. lll
instructor > The numbers stay at the left margin but the text will wrap in
instructor > student 11, #9
student 11 > d. enter
instructor > A hard page break
student 11 > b. Shift enter
instructor > Should be C to create a hard page break. An enter will create a new paragraph.
instructor > Student 7, #10
student 7 > d. all of the above
instructor > Student 3 #11
student 3 > c cell
student 7 > was 10 right??
instructor > Right! Student 2 #12
Student 2 > d
student 7 > q
instructor > Right! Student 8 #13
Student 8 > b template
instructor > OK, When you use a Wizard, Word will take your answers and prepare a document from a
template which has prewritten text and placeholders.
instructor > ga Student 7
student 7 > was #10 d. all of the above?
instructor > Based on the question, A would be the best answer since the Wizard will actually prepare a
template based on the answers provided to the Wizard. Templates and Wizards can go hand in hand but
you can use a tempalte w/out a wizard, too.
student 7 > ok thanks
instructor > student 9 #14
student 9 > It is true
instructor > It would be True if you were to highlight the word and then move the pointer to the menu
which it becomes an arrow. However, if you stay in the document it becomes an I-beam.
instructor > student 10, #15
student 10 > t
instructor > Right! #16 student 11
student 11 > d. none of these
instructor > It should be B to close a file but keep the Word program open.
Student 2 > a
Student 2 > hit enter too late. =)
instructor > Student 7 #17
student 7 > PASS
instructor > Anybody?
Student 2 > a
instructor > ga student 2
student 10 > a
Student 2 > is it true?
student 12 > a
student 9 > a
instructor > True. When you click the Paragraph icon, Word will display raised dots representing the hard spaces you create and paragraph symbols when you press the ENTER key. #18 Student 10
student 10 > b
instructor > Right! #19 Student 8
Student 8 > False
instructor > Why?
Student 8 > its called autocorrect
Student 8 > not autoformat
instructor > Right! #20 student 2
Student 2 > True
instructor > Right #21 student 9
student 9 > t
instructor > This is MC question
student 9 > sorry I looked the wrong question. a
instructor > Right A is correct answer.
instructor > Great job with practice test.

The instructor selected students to answer. This chat experience gave immediate feedback on the correct answers to a practice test. The instructor decided to not give immediate answer feedback on the test itself, but to wait for feedback in the chat. This option allowed group interaction and group response. The instructor again used the chat conventions to control dialogue with a large group. This instructor also used the chat further to explain questions posed in an email. An example of student learning in a chat was:
instructor > You draw a rectangle with the Text tool icon and then you place text inside it such as the pull quote on this page.
instructor > student 1, this is what I mentioned in my email as a possible solution to your problem with tables.
student 1 > ahh! now I get it!

Interaction-Student Voices

Interaction was very important in the online courses. It just did not happen. Interaction was built into the course design with incentives for student participation. Students received
bonus points for Discussion Board entries and class participation grades for chat attendance. One student said,

She really emphasized to us that you need to check the message board, because she would give us extra credit. This class chats every week. It makes us more responsible. We have to come to class, to chat every week on Thursday night.

Immediacy of response from the online instructor was very important. Student learning stalled while waiting for answers to content questions. Frustration increased when a response delay occurred. The learners were very appreciative of quick replies from the instructor. Another student said,

There were several times that she would actually be on the computer and I would get answers right back. I would be amazed. I would work on something else and I would look at my email and there would be an answer from her. That's nice.

Clarity of interaction was important. "She had very good lecture notes posted and additional emails explaining things." The online instructor's ability to explain clearly in print was highly valued by the learner. A student replied,

Another good thing, right before the midterm, she put up more exercises for us to do. I had problems with one and she explained it all. And before the test happened she said, did you read what I sent you?

Online instructors and students needed to be good communicators. Non-verbal cues are absent from online interactions, so written communication skills by both the instructor and learner are very important for understanding and to avoid misunderstanding. Another student explained,

I think that you need to be a pretty good communicator to take an online course without the benefit of face-to-face. Because it is an extremely lot of work just to post the messages. And without the benefit of looking in their eyes, their mannerisms, their dialect, certain things you type, you can mean one way and take another way.
Chat Interaction

Students learned from each other in the virtual chat sessions. The comments of fellow classmates improved knowledge. Online students also wanted their comments to impact others. A student said,

Very important. Because I don't work at the same speed or perhaps I am ahead of other people. And I know that other people are going to benefit from what I say in the chat and I know that I have benefited from some of the things that others have said.

This student expressed the comfort that many online learners appreciated from the synchronous chat interactions. Questions could be asked and answered immediately. There was no response delay and subsequent learning interruption and frustration as sometimes experienced in the asynchronous email interactions. In addition, this student emphasized again the importance of observing other students' questions and concerns.

Off and on they would come in handy, because I would see other questions that everyone would ask on something that I had not thought about yet. It helped me prepare for the next assignment. Plus I also got a chance to ask questions right then and there that got answered immediately as opposed to waiting a day for the email. It made it a little easier. Because sometimes, there were little things that you would forget that you could probably look up eventually. But talking to the professor makes it a lot easier. It is basically like being there.

One student felt that the organization of the chat was important to learning. The student said, "What I have found most interesting is when she takes control of the discussion as if she were lecturing to us. That is what I found most beneficial."

Even if students do not answer questions by keying them into the chat dialogue, they answer to themselves. This is another example of content review and reflection to the correct answer or to the responses of fellow online classmates. When asked if they answered questions posed by the instructor in chat, one student replied,
Well see, a lot of times, I don't answer. because I know that I will not get there in time. So I will answer it verbally and then I will compare what they write. A lot of times you will hear me cursing. But no body is there but me. Like "No you are wrong, you dummy" or something like that.

However, some students just mostly observed during the chat. One student said, "Yes, I have. In the chat rooms, I have asked one or two questions. Mostly though, just observing, not saying very much, just to let her know that I am there now and then."

When asked if the lack of keyboarding speed made the student hesitant to answer, the student added, "Oh no, I try to answer. But by then, I am reading it and trying to type at the same time. But then there is another question, so I just backspace it out and try again. And if someone comes in with my same answer then I just stop keying."

One student would ask certain types of questions during the chats and certain types of questions via email. The student said, "In the chat room, I did ask two questions regarding the subject material. I used email for the questions regarding the assignments."

Chat attendance was very important to many students. The chats were well attended except for those that experienced technical difficulties (see Table 5). There was not a great difference in the number of chat sessions held for each class. When asked if they always try to attend the chat, one student replied, "Always. Throughout the whole thing and until at least ninety percent of the people are gone. Just in case I or someone else will have something to ask."

Another student added, "Yes, because I like to see what was going on. I might miss something." Finally, one student replied, "I go to every chat. It is something that I think that I have to do. But I answer the questions and I usually get the answer right."

The learners went to great lengths to attend the sessions. Some students, who worked in the evening during the chats, took their dinner break at the appointed session
time. Then they participated at their work station. Special arrangements were made with spouses to attend to young children, so the online learner could attend. One student even participated with twin babes in arms. Some students arranged to chat during trips. One student said, "It is important that you don't miss any class anytime for any reason. I went on a trip and I made special arrangements on the hotel computer so I could attend the weekly chat. Those chats are really valuable."

**TABLE 5**

FREQUENCY OF STUDENT CHAT ATTENDANCE

<table>
<thead>
<tr>
<th></th>
<th>Class #1 HTML</th>
<th>Class #2 Computer Applications</th>
<th>Class #3 Databases</th>
<th>Class #4 Word Processing</th>
</tr>
</thead>
<tbody>
<tr>
<td>First Chat</td>
<td>8</td>
<td>0*</td>
<td>13</td>
<td>8</td>
</tr>
<tr>
<td>Second Chat</td>
<td>11</td>
<td>12</td>
<td>11</td>
<td>9</td>
</tr>
<tr>
<td>Third Chat</td>
<td>7</td>
<td>10</td>
<td>10</td>
<td>0*</td>
</tr>
<tr>
<td>Fourth Chat</td>
<td>9</td>
<td>9</td>
<td>8</td>
<td>4**</td>
</tr>
<tr>
<td>Fifth Chat</td>
<td>10</td>
<td>7</td>
<td>11</td>
<td>7</td>
</tr>
<tr>
<td>Sixth Chat</td>
<td>8</td>
<td>10</td>
<td>7</td>
<td>8</td>
</tr>
<tr>
<td>Seventh Chat</td>
<td>***</td>
<td>7</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>Eighth Chat</td>
<td>10</td>
<td></td>
<td></td>
<td>10</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>53</td>
<td>65</td>
<td>68</td>
<td>54</td>
</tr>
</tbody>
</table>

*Online technical difficulties—many students were unable to log onto the chat.
**Extra chat held for students who were unable to participate in the previous chat.
***Instructor conducted a live session for students who were experiencing difficulties with the course content in lieu of a chat.
Some students held individual chats with other students during the course. These synchronous interactions took place at times other than the planned class sessions. One student described,

It is actually interesting. (Another student) and I have been. Actually, it is very strange, because I can't do my work at home. I can't virtual chat at home, but I will check my email at home. I have Instant Messenger®. I entered everybody in the class. So that when they come online, it notifies me. Now whenever we are online together, we will instant message each other and just talk about how are you doing on this assignment. How is it going about that? Do you think that you got this OK? And it has actually set up a virtual chat outside of the classroom.

Another student also used the individual chats during the course to help a fellow classmate, who was struggling. The student said, "I would talk to him, because he would be popping online. We were both online. We were both at work and he would say that he was having trouble with this. I would tell him what to do." These two students even chatted individually during the class chat. The student explained, "We would also be sending messages during the chats when he would need more explanation."

One student described the importance of being prepared for the chat discussion. The student said, "If I don't do the assignment before the chat room, I am totally lost. Like this past one, I did not know one question that she asked. I did not have an idea, because I did not look at the book yet."

One student described a comical reaction to the chat. This student had to adjust to the chat-style of interaction. This was common with the older students. Younger students were more adept and experienced with synchronous interaction through their prior use of programs like Instant Messenger®. This student also described the possible dialogue chaos of a session without controlled dialogue. The student said,

I think it did. Just if I could keep up with it. At the very beginning, there were too many people asking too many questions. I had a hard time trying to keep up
with it. And then, when I tried to write it down and I looked up at the screen, it had already been answered and another one was coming and I missed it. So in one way, it was good. But then in another way, I didn't find the chat room myself to be able to jump in there. Because my problem was, and this may be a very poor example and you may kind of get a laugh out of it, but it always reminded me of a game show. You've got two contestants out there ready to press the button. Here is the question. Whoever presses that button first. So like, I am OK, she is going to ask this question. So I'm like, OK, I am going to get this. And I look over and I hit the shift key and I've got all caps. And I think this looks terrible, so I backspace everything out. Then I see another person comes up and here is the answer and it's like if I do that, it looks like I am cheating now. Forget it, backspace-backspace-backspace.

Some students expressed a mixed reaction to the chats. This student described the importance of explaining content instead of just referring students to the text. Plus, the instructor needs to have a planned method for helping students who need remediation.

One student said,

Well, I have not always been ahead of the chats with the assignments. So, I can't say that it did not teach me something. But as soon as somebody would get a little behind she would say that is in the book and then we would all open the book and then you would say OK.

Some students felt that the synchronous chat sessions could be improved. This student described the situation that most of the learning came from the textbook. The online instructor was just repeating in the chats what was presented in the texts. Yet the student still felt the need to attend every session. The student added,

The chat is fairly important. Let me think about how I want to phrase all of this. Because I don't think it is as good as it could have been. But it is pretty good. The students participated very well. Sometimes we just responded to let her know that we were here. It is like politely nodding in class or something. But the student response has been rather good with intelligent remarks and questions. I always wondered how important it is to repeat what is in the book. A lot of what (the instructor) does is repeat what is in the book. And you wonder if I am going to read the book, do I need this and vice versa. And yet, unless the students ask more questions, how can she do otherwise. I think what she is doing is putting it out there and seeing if everybody is OK with it rather than using it to really tell us, because we are learning from the book. I would not want to miss a chat room for fear that I would miss something, but I haven't found it really all that valuable.
Finally, another student thought the chat improved with time. The learner expressed frustration with other students who were unprepared. Yet she described again the comfort afforded in this interaction of similar student content concerns, like a virtual support group.

They have gotten better. I mean the first couple of weeks, I found them to be very boring. I thought kind of like, this is total waste of my time. I mean, I was. Some of the people in the class, I thought come on. Did you read the stuff she told you to read? It's like I am glad that they were not sitting next to me. It's like, you are wasting everybody else's time. You didn't read what she told you to read before class, but they have gotten better. I mean I can't say that I found that I really learned a lot from them, but it is just kind of nice to hear other people ask some of the questions that you have. It is kind of like if you know that answer, that's great. If you don't, it wasn't effecting what you had to do.

Some students complained about the behavior of other online classmates during the chat session. Online students appreciated the instructor structuring the dialogue and student compliance with that structure. One student explained,

It was fine. I did not have a problem with that. I had a problem with people following the directions. OK, she said ask questions. I can see if you come in late, but then you continue to blurt out questions. Like the last chat we had, people were still blurring out questions.

Some online students wanted the communication to remain content-driven only. However, as students became acquainted virtually, some friendly dialogue did surface. Most students enjoyed this interaction. But this student said,

I liked it a lot at the beginning of the quarter, before everybody knew each other in the class. Because it was more just questions and answers, not so much talking between the students. Now there are little lines in there that don't mean anything to me. They are making jokes between each other or something. To me, it does not mean anything.

One hour was the chat time length utilized in three of the four classes. Students expressed preference to the one hour time length and discontent with the shorter times.
One student compared a former online course with the present one. The student wanted the chats to be longer in length. The student said,

(The online instructor's) class has been perfect for me. Everybody learns differently. I learn by hands on more then I do just by chatting back and forth. I learn from doing. (A former online instructor's) English online course was formatted almost identically to (the present online instructor's) class in that he gave online assignments. He gave online tests, practice quizzes and it was very good, the interaction of everybody, our little study groups and then the big online chats. Hers is formatted so that we don't have the separate study groups, but what we do have is good interaction. The chats aren't nearly long enough. An hour would be better than a half-hour. The chat needs to be an hour for me.

Some students described technical difficulties or difficulties catching on to the features of the chat utility program. However, most students adapted to the technology quickly. The importance of answering every student question in chat is also emphasized. One student said,

Yes, and that was my earlier question. I said what is a whiteboard? Because I thought that I was supposed to use it and she never answered. Now of course that she is using it, I see that it is for her to write on like a blackboard and it took a while before I caught on to the fact that you could move the boarder up and down and if she is not using the whiteboard, I can move it up to see more lines of the conversation. And it is hard to follow. If I blink I miss somebody's comment. And this week, it took me awhile to sign on. I don't know why. Two times that has happened. So I was ten minutes late even though I started early. So I tried scrolling back and as soon as somebody asked a question or makes a statement it flops down to the bottom again. So you have a heck of a time trying to read the old stuff to catch up. You can't do it really.

One student again described the importance of answering all the questions posed during the chat sessions. Students felt ignored and angry if their questions were not addressed. Plus, this student described the text as the most important learning tool of the course. The student said,

The first class I did, but since then I haven't, because I have learned that everything that she says that is important is in the book. It is just a very good book. Maybe in other classes, that would not be the case, like in a history course, she could add to it. But here, what you need to know is there. When I said that I
am not participating, I am ready to participate. I am sitting there with my fingers ready to answer a question or add to a question, but it hasn't been anything that has required that often. As I said twice I did. I did not know what a radio button was and frankly she did not answer that question. I finally asked somebody that was at home and knew something about it and they told me. There was something else earlier that I asked and she did answer that.

Another student added, "There have been times that there have been so many questions that my little question has been overlooked. It is not anyone's fault. There are just too many questions." Another student said,

I think that it is hard to get a specific answer in the chat, because they are in front of the computer just like you are. She may have to do a little bit of research if she does not have the answer. And a lot of times when she comes back to answer the question, there are five other questions that are there. So you are trying to read down and figure out whose is whose. One day she said to stop firing questions at me. So I can go back and try to answer some of them. I have learned a few things off of them.

However, one online instructor came up with a solution to handling too many questions at once during the chat. This instructor was a student in an online training course and learned about the controlled chat dialogue conventions of the student keying in "q" for question, "c" for comment, "a" for answer, and "ga" for go ahead. One student said,

In ours, she started to give us a new format on the whiteboard. She said, when I have a question and somebody wants to answer it, you hit a and then I will respond back to you by name and then you answer it. Instead of who is the fastest typist would get the first answer. And then everybody else would be right behind them. And now, it is more like, you raise your hand virtually. And say, I have the answer. Now, I like that. Then, she would pick the third person, because other people have answered other questions. That is more fair, so that everybody can answer.

Some students had negative reactions to the chats. One student said, "Not really, because I have used this program before at work. And a lot of the things that were being talked about in the chat room didn't really help me." Another student added, "Not
important. Pertaining to this class, it is not helpful, because some of the conversations in
the chat room are not even pertaining to the class work. And then some of the questions
that are asked are vague and non-descriptive." Another student explained,

No, I don't take notes. I make mental notes. But the majority of the time the
questions asked in the chat room gives the individual persons concerns. And it is
not overall for the particular class and that is taking up a lot of time during the
chat room. That is part of the instructor giving out information.
Furthermore, one student suggested a better name than calling the sessions a chat.

One student suggested a name change from chat to virtual classroom in an attempt
to improve the students' perceptions of the activity to a more serious educational
endeavor. This student also objected to the uncontrolled dialogue in some sessions. The
student said,

The only thing that I could think of would be to change the name of the virtual
chat to virtual classroom or something. Because people think, oh, chat time. The
problem with the virtual chat is there is too much chat. With all the stuff going
on, it is hard to get questions answered.

Discussion Board Interaction

When asked if the discussion board was important to learning, one student
replied, "The message board has been helpful in seeing the problems that other students
are having. And in seeing if anyone can help besides the instructor." Another student
added, "I just look at them for information. Some of the messages, students picked up an
error, which was helpful. You could go back and read a problem, because there was a
definition that was reworded from the book."

Students learned from each other on the discussion board. One student explained, "But
when you realize that when you have a question, you put it on the message board and you just
don't have the professor answering it, you may have 20 other students answering." Another
student said, "What I really liked about that was not only did I get answers from (the instructor),
but I also got responses from my fellow students. They also sent me emails about why they thought I was having a problem with a particular assignment."

However, another student preferred email interaction to discussion board interaction. The student said,

If there are some things that people want to ask questions about, if it is posted to the message board, let it come out to us, so that we can respond. I know that I am going to be able to respond better from an email than I will from trying to log on just to check for it. I mean, once you get in, you've got to log in, then you've got to go to a page, and then you have to go to the message board page. There are a lot of steps to get to the message board.

Another online student described a mixed reaction. The student said, "It hasn't helped me with my problems, but it lets me know that someone else is having the same problems."

One student did not even know that the discussion board existed. The student said, "What message board? I have never looked at it. Maybe I should. Is there information out there that I should know?" Then the student added, "Maybe it was not emphasized enough."

Some of the classes used the discussion board more than others (see Table 6). The HTML course had no entries. The database course only had a few discussions. These two instructors did not emphasize this type of online interaction. One student wanted more discussions on the board. The student said,

It is rather disappointing regarding the use of the discussion phase of the course, the message board. There were only two discussions. As a matter of fact, I did respond to one of them. But not the other one and I would have like to have seen more activity in the discussion phase of that.

The student then explained, "Yes, I would and I checked it regularly to see if there was a question that needed discussion. In fact only one was a question and I answered it
and it was over with. The other one was not even a question, it was a statement."

Another student said,

"There have been a few messages there. I guess I was expecting a little bit more. I like it in that it does have the stuff there. You can see everything that has been said. I thought it was really good. I was just expecting more."

### TABLE 6

**FREQUENCY OF DISCUSSION BOARD ENTRIES**

<table>
<thead>
<tr>
<th></th>
<th>Class #1 HTML</th>
<th>Class #2 Computer Applications</th>
<th>Class #3 Databases</th>
<th>Class #4 Word Processing</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Course Content Topic</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Learner</td>
<td>0</td>
<td>14</td>
<td>5</td>
<td>69</td>
</tr>
<tr>
<td>Instructor</td>
<td>0</td>
<td>11</td>
<td>0</td>
<td>36</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>0</td>
<td>25</td>
<td>5</td>
<td>105</td>
</tr>
<tr>
<td><strong>Online Technology Topic</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Learner</td>
<td>0</td>
<td>4</td>
<td>0</td>
<td>13</td>
</tr>
<tr>
<td>Instructor</td>
<td>0</td>
<td>5</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>0</td>
<td>9</td>
<td>0</td>
<td>17</td>
</tr>
<tr>
<td><strong>Grand Total</strong></td>
<td>0</td>
<td>34</td>
<td>5</td>
<td>122</td>
</tr>
</tbody>
</table>

Some online instructors and students did not post to the discussion board frequently enough to satisfy its use by other students. Students quickly stopped checking the board if postings were minimal. The student added,
I did try that one time. Sometimes I could actually look at someone else's problems, but there were not a whole lot of responses from the other students. Mostly it was people with a problem and they wanted an answer, but no answers were posted.

One student preferred to ask help from the instructor only. This learner did not value the assistance of fellow students. This was not a popular opinion. The remaining online students enjoyed learning from each other. The student said,

You know to be honest, I think that I would rather go to my instructor instead of going to a message board. I mean not to say that I don't believe that this person couldn't help me out, but everybody has their own way of doing it and I think that I would just prefer having the instructor answer.

Email Interaction

The email interactions considered were learner-to-instructor, instructor-to-learner, and learner-to-learner. This asynchronous interaction style was highly utilized. The Blackboard® online software contained an email utility feature that permitted students and instructors to communicate one-on-one. Broadcast emails could also be easily sent to all students and the instructor in the online class.

Learner-to-Instructor

The online students emailed their instructors often (see Table 7). The microcomputer and database students needed more questions answered. The content in the microcomputer application course changed frequently. The database concepts were difficult for many students. The student frustration of late responses from instructors is expressed here also. When asked if they emailed their online instructor one student said,

I emailed her a couple of times about Access. My project is not coming out the way that I want it to. What do I need to do? Is it in the book? Help me. And the other was the practice quiz. I emailed her and she did not respond yet. Did she get it?

78
TABLE 7

FREQUENCY OF LEARNER-INSTRUCTOR EMAIL MESSAGES

<table>
<thead>
<tr>
<th></th>
<th>Class #1 HTML</th>
<th>Class #2 Computer Applications</th>
<th>Class #3 Databases</th>
<th>Class #4 Word Processing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Content Topic</td>
<td>126</td>
<td>224</td>
<td>199</td>
<td>107</td>
</tr>
<tr>
<td>Online Technology Topic</td>
<td>11</td>
<td>44</td>
<td>43</td>
<td>11</td>
</tr>
<tr>
<td>Total</td>
<td>137</td>
<td>268</td>
<td>240</td>
<td>118</td>
</tr>
</tbody>
</table>

Some students did not email their instructors very frequently. Some students emailed several times a week. Another student added,

But I have also sent one or two emails. One was because I did not fully understand how the assignment was to be sent to her in the fourth week. There was a change in the way she worded it. I had to clarify that. And then, of course, there was communication regarding my inability to come to the class or to take the midterm. I am here today actually to take the midterm two weeks late.

Many students explained in the interviews and focus groups that they used the learner-to-instructor email interaction to check if their assignments had been digitally received by the instructor. One student said, "Besides the chat, just briefly through email about grades, an assignment. Whether or not she had received an assignment." Another student added,

Well, basically all I asked was whether or not she received my email. I had detected a virus on my system and my system was really acting weird. And I believe that I got the virus through email. So I have two accounts, AOL and
MSN, and I really don't like MSN, but I was concerned about completing the class and getting email to her.

The microcomputer applications instructor promptly informed students when assignments were received. In another class, one student did not get a timely response from the instructor on an assignment receipt. The student said, "Right. Oh, I asked her because I did not get a response. Did you get my homework?"

Some students asked many content questions via email. Some students used email for assignment submission and checking on assignment receipt, only. When asked how the student interacted with the instructor, the student added,

Basically thought just email. I haven't really had to ask her any questions. Just did you get the assignment? Or I did not get mine back, type thing. She has been very responsive, as far as I am concerned. So, I can't complain about that. But, I am one, if I can't find the answer, I will go to Help. I am even known to go out and buy another book to find answers.

When asked if the learner-to-instructor email interaction involved content questions, one student explained, "I did not have any problems with emailing. They were more content questions like how do you do this in this particular application. How do you make this thing work? It is not working."

Instructor-to-Learner

The instructors emailed their students often (see Table 8). Again the microcomputer application and database students needed more questions answered. When asked about the importance of instructor response time in the instructor-to-learner email interaction, twenty-four hours was typical and preferred. One student said, "Oh yes, I think that she responded that night actually. I did not get it until the next day. But the time was that same night."
### TABLE 8
FREQUENCY OF INSTRUCTOR-LEARNER EMAIL MESSAGES

<table>
<thead>
<tr>
<th></th>
<th>Class #1 HTML</th>
<th>Class #2 Computer Applications</th>
<th>Class #3 Databases</th>
<th>Class #4 Word Processing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Content Topic</td>
<td>78</td>
<td>273</td>
<td>221</td>
<td>53</td>
</tr>
<tr>
<td>Online Technology Topic</td>
<td>14</td>
<td>22</td>
<td>45</td>
<td>2</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>92</strong></td>
<td><strong>295</strong></td>
<td><strong>266</strong></td>
<td><strong>55</strong></td>
</tr>
</tbody>
</table>

Some students felt that 24-48 hours of response time was acceptable. One student said, "It didn't have to be a day, but more than three days would have been uncomfortable." Another student added, "Yes, she responds within a day or so. And she will even say that she got it. It usually takes her about a day to answer a question. If I send it early enough, she will answer the same day." Another student said, "Right. Weekends are the time that I do the homework and that seems to be when she is online. And it is almost like Bam! It is back already." Another student replied,

> It is the next morning when she walks in. I can tell by the time on my computer. If she does not have an answer she tells me that she needs time to open up everything that you have sent me to try to find your mistake. She is very quick.

Students appreciated quick responses from the instructor and even noticed the response time patterns used. A student added,

> Yes, she always responds very quickly the next day. Usually I work on my homework in the evening and I will send her an email very late. To me the
response that I get is that as soon as she gets in in the morning, she checks her emails and takes care of it. Very quick.

When asked the importance of a timely response from the online instructor, one student replied, "Yes, absolutely. You don't have anywhere else to go." Another student added, "When you have a problem, you need to have some help right then and there."

Some students expressed frustration in waiting for a response. One student said, "About a day or two. I know that it is kind of difficult, because she is teaching. I'm sitting in front of a computer all day, so it seems forever to me." Another student added, "Sometimes, when you are doing homework and you have a problem, you don't want to wait until next week for an answer." A student explained, "Just in this one class. The other online classes were great. This is the only one where I wait for responses." The student then explained,

But for some reason, she is very slow about responding and it is very frustrating. I mean, I have posted them on the Discussion Board. I have sent her a couple of emails. It takes forever, so basically if I don't come in here and say "Hello". I am right in her face. I won't get an answer right away. You know, when it is due in two days. I mean, you need to know.

Student frustration increased as the non-response time increased. When asked how long had she been waiting, the student said,

I can't remember when I sent it to her, it has been so long ago. The main thing that I am having now is that she wanted us to send our project in a little bit early to see where we were with it. I think that I sent it last week sometime. I know that she was going to be out of town. I know that sometimes schedules don't cater to me. But, I still haven't heard from her. I want to know. Do I need to make changes? What do I need to do? In the other class, the grades come back quickly. In this class, the grades don't come back as quickly as I want them to. It could just be me, too. I am an A type personality and I want to know right away.

Another student explained the consequences of waiting. The student said, "Well, you may not be able to complete your assignment. Then if it is late, you are going to get
grades knocked off, because you did not get it there by the time they said. You can't finish, because you are not sure what to do."

**Learner-to-Learner**

Students did interact with each other via email. One student explained, "One or two of them during the first half of the quarter. I would contact them if I had problems." When asked the content of the emails, one student replied, "Content and assignments. Mainly, the other student contacted me about a problem with the assignment, a problem with the software not doing the steps that the assignment asked for." Another student said, "Well, we did both. I did content and asked when certain things were due. One time we were down and I had to check."

Students seemed to pick out fellow students for interaction based on their level of participation in the synchronous chats. A student said,

Yes, I have emailed. You can tell that some people when you are in the chatroom, some respond and talk more than other people. Some people just kind of sit back and watch. I am one of those people that like to participate. I like to answer the questions. So when you get all together, you say, "I disagree with that." So you start talking. So it is like I am going to put their address on my list. If I have a question, they are the one I am going to.

When asked if the students responded, one student replied, "Yes, it is more directed at the person and they feel more obligated to respond to an email. Like a return phone call kind of thing at work." Another student added,

I usually get at least one reply on something or two replies. I have not done it that much. If you send out a group email message, you might get a 50% ratio return. If you send it to 10 people, maybe 5 will send it back.

Students seemed to understand the reason, if they did not get a reply. A student declared, "Sometimes, they may not have an answer, so they would not email me back."
Face-to-Face Interaction

Students met face-to-face with their instructors for content and online technology concerns. One student replied, "Mostly, just email. I stopped in to see her once or twice. When asked why the face-to-face meeting was necessary, the student said, "One time, it was technical and another time I needed help."

Students seemed to need face-to-face interaction when they were struggling with the course content and online interaction was not enough. One student said, "Oh, yeah. She tried to help me in the chat room, but we were both just stepping on each other. So we came in to clarify it."

Face-to-face interaction with the instructor became necessary if email response time was unacceptable. A student said, "Yes, I have had to once. And I probably need to again. She hasn't answered my email yet." One student suggested the following,

If I would have one suggestion, it would be to meet more times. We meet three times. I think that we should meet one more time or five times. Just for people like me. I know that is not the point of an online course. I hate to come in here is meet her and keep her late. If she has to be here, I would not feel bad. It would not even have to be for a whole class, it could be for an hour. If there is a problem, we would set up a specific date to meet.

One online instructor gave the students her home phone number. However, the students seemed reluctant to use it. A student explained, "No, I am not real crazy about calling someone at home, even though she gives her home number. I feel funny about that. I don't know if I want to do that."

Students in the online class did meet face-to-face in other traditional classes on campus. This situation was possible in the study, because students lived within driving distance to the campus. One student said
A couple of kids. They are in other classes with me. I didn't really know them. But, if I would see them in another class, I would say, "He is in my online class". And then, I would go and ask them. It was just kind of like, they were around school and I would see them.

Face-to-face interaction with fellow students seemed to help some students. One student explained, "I didn't this time. The last time I did a lot of calling, because I was quite lost. This time I had another student in the class that I could work with. I was more comfortable this time."

Posted Lectures

Learner-content interaction was also explored. There was a mixed response from students on the lectures posted by the online instructors. Some students did not even know that the lectures were available. One student said, "I did not notice them. No."

Another student said,

I don't really read them all. I should. I don't print them, because they use lot of my ink cartridge. I don't use them that much. I know that they could be helpful, because they tell you step by step, but I don't use them that much.

Some students felt that the textbook was sufficient for learner-content interaction. One student explained, "I have used them, but they have been pretty insignificant, because the book does such a good job." Another student added,

I looked at the first couple of them, but for the most part, I did not bother. They were pretty lengthy and they were exactly going over line per line what was in the book. And the book itself is rather wordy, which is good and bad. It is good in the sense, if you have trouble and if you have the time, you can follow the book step by step. But if you need it for reference, you will have to read through twenty pages.

However, several students felt that the posted lectures were important. One student explained, "Yes, they give me insight and more in detail of what is expected from the students and what she wants us to focus on in a particular project." Another student
added, "Yes, she is very good about that. She gives us an overview of the chapter. She highlights any problems that she thinks might come up. That's before every chapter."

Still, another student said, "I have not been able to download the slides until lately. I do find them helpful. It condenses."

Students used the posted lectures as study guides. One student said, "Yes, as I matter of fact, I relied on those for study for my exams. There were several PowerPoint presentations on her website." Another student added, "Yes, I would use those, too. I would look through them. I did not necessarily look at them before I did the chat, but I would go back and review."

The importance of posting the lectures in advance was explored. Students expressed frustration when information was not available when needed. One student said,

They are posted too late. I tend to try to work ahead. Usually, I am already half way through the chapter. Even this last time, I was already half way through the chapter before she put it on. I do find it helpful for the test, because all of the bolded words are in there. She has added stuff in there that was not in the book that I have found very useful. Sometimes she would put it on before you actually started. Maybe when you are doing Chapter 3, she would put Chapter 4's on there, too, in case you worked ahead. I would find that real helpful.

Students value the added information that was posted in the lectures. The online learners used the lectures more if the instructor included additional information. One student said, "I mean with ours. Sometimes she does put information in there that is not in the book. If you are really looking to use the software program, this stuff will be helpful." Another student added, "And there were a lot of things that she had on her notes and presentations that weren't in the book. I did find some of those things beneficial." In addition, another student replied,
I like those. Most of the time it is word verbatim of the text. I think, what am I doing, I already read this. But sometimes, there are things on there that are not in the book. A supplement and that is good, too.

Students explained the importance of the posted lectures as a guide for studying. One student replied, "I like it. I always download and I like to print it off, too. So I have a hard copy next to me while I do my homework." Another student explained,

Mostly I use them to review for tests. I had them all printed in my folder. I went through and I read all of the slides. Then I went and took the review test to see how I did. I didn't really use the book or anything. The book is just too much, too spaced out.

One student mentioned that the online instructor posted other information that was helpful to learning. The student said, "But she posts answers to the questions at the end of the projects. She posted little helpful things to help you understand the assignment or the material. And that has been helpful."

Active Learning-Student Voices

Active learning in the online courses was discussed. When asked if the students liked being an active learner, one student said, "Yes. And if you go to class, you know, you can fall asleep or miss part of it and it is gone, but here if you miss, you have to go back and do it. You can't cheat." Another student explained,

Yes. And so, certain kinds of courses, this would not be good for me. But this particular one it is, because I must do every bit of it and I must do it by a certain date and I know it is going to take a long time. And I get at it. I have been pretty much on schedule. I have to admit that I did turn them in on the last day. But I didn't do all of the work the last day.

Another student had a mixed response. The self-motivation to learn was an advantage. The frustration of delayed response in asynchronous interaction was a disadvantage. The student said,
It has got its pros and cons. The good thing is that you have to make yourself do it, you have to learn it. The sad thing is that if you can't get it, what do you do? You can email somebody, but you are sitting there twiddling your thumbs.

When asked if the interactions helped the students understand the course material, one student said, "Oh yeah. They helped redirect you to the right direction." Another student emphasized the importance of the chats to active learning and the efficiency of online instruction. This student added,

I like it a lot. She is there when you need her. During the chat she is there. It is pretty much interactive, but you are not locked down to going to class three days a week or something like that where you have down time. If it is something that you understand well, you really don't need to sit through it. I make a point of going to all of my classes anyway just in case. This way I cut out a lot of the wasted time, because about 80% of what is covered in most classes, you already understand. 10-20% you need help on.

Being a self-directed learner is a large part of active learning. The online students seemed to enjoy that element. One student said, "Some people need someone on their back to do this now. But this is pretty much this way anyway because the online assignment is due on a certain day. You just don't see her. You are still on a schedule."

Another student added,

Yes, I do like that. I like that freedom of self reliance. You do have a deadline. I did not miss the classroom. It did not bother me. I think once you start, you know that you have to be more disciplined. You know what you have to do.

Students appreciated the time efficiency of online learning. It is important to note that this student considered the weekly one hour chat session the one hour of class a week. The student said,

I enjoyed working on my own time, only having one hour of class a week. and being able to work on your free time. A lot of times in previous computer classes of this nature, I found myself very bored as we were going step by step through a procedure that could take 8-10 minutes to do. And I was sitting there for three hours as we went through the overhead. People work at their own pace. I work quickly so for me it was good.
Another student added, "For that type of thing, yeah. I mean I feel that I am capable of teaching it to myself and I don't really need somebody over my shoulder. She is there if you do need help with something." Therefore, the availability of interaction gives confidence to the active learner.

One student was more prepared to be a self-directed learner, because this was the second online experience. The student developed better time management skills for this online class. The student said,

Well, better this time. I plan more. I am doing my homework more ahead of time. Sometimes, the first time I would wait until the last minute. I know what to expect of this class.

Nevertheless, there was also a mixed reaction to being a self-directed learner. Frustration came to the forefront as a disadvantage. Challenge and reward were the advantages. One student described it this way,

It has its advantages and disadvantages especially in the middle of the night when you can't figure out how to do something. And I find if I get too frustrated, if I get up and leave it alone and come back, it will come to me on what to do. I find it challenging as well as rewarding, because you really feel good when you figure out something on what most people would consider difficult. It is a good feeling.

Some students longed to be in a traditional class, especially if they were struggling with the course content. Extra effort was needed to seek out additional information and sources to solve learning problems. Another student added,

Right. But there were times when I wished I was in the class to see how something was done. Maybe it would be less time consuming if it was explained. For instance, like the FTP. I had to call the help desk and he was a real nice guy. He talked me through it and explained everything. Just little things like that were explained in the class, how to access it and everything, but I did not understand what was going on. I sought the information and I got it. So it was not as difficult as I thought it would be.
Some students realized that being a self-directed learner could take a lot of time. Online learning inherently involves self-direction. It is not a quick and easy way to earn knowledge. One student explained,

Well, I have been talking about this to my family. I am spending more hours than I ever thought I would. When I was in day school many years ago, they used to tell me it was 2 1/2 hours of work for a credit hour. That is you went to class for one hour and then you were supposed to spend an hour and a half preparing. I am spending more than 2 and 1/2 hours per credit hour per week on this. The first week I spent six hours doing what you would call the preparatory part of the assignment. That is the tutorial. Six hours. Then it took me another three or four hours to do the assignment that would be handed in and aside that through in the two-hour class the first week. And the second week an hour on the chat room. I was spending a good bit of time getting that first project done. And the second project was very similar. Another six hours of tutorial and another three or four hours to do the assignment. In fact, it has been that way. I just finished assignment number 4 two days ago and I believe I spent the same amount of time on that. And that is more time that I had expected to spend on this.

However, some students enjoyed the time and effort needed to learn, especially if the topic was important to them. A student added,

Well, yeah, but I enjoy it. I get talked about a lot. There she is on that computer. She is going to turn into a screen. She is starting to look like one. I don't watch TV anymore. I am always on the computer. You can't keep me off. I love looking at my creations on the web.

Time was well spent, because the learning level was so high. The online learner critically thinks through problems to solution and the result is a high level of learning. A student said,

Well, you know I think that I have spent so much time trying to figure out things. What can I say? I have learned a lot, but I guess it is with the classes here. They are so accelerated that they really don't stick in your head. It takes time and continuous use. It is just like I've got A's in Visual Basic, but if you ask me how to do something in VB right now, it's gone. Because it has been over a year, since I have used it and ten weeks is just to basically touch on it. And then, you have to keep continue to use it to actually learn it. But I found my niche with web design better than I have anything else.
Students still felt the direction of the instructor. The course organization and assignment schedule lent a driving force for the learner's feel of being part of a class. One student said,

I really did not see it as being on your own or anything. I still saw it as taking a course at the college. It is not like where you are going to be a dealer or a salesman. I didn't feel like I had that freedom at all. I felt like if I wanted to get the problem, I am going to have to start to do it.

The assignment schedule impacted this student, also. The repetitive practice of these assignments increased the learning of this student. The student said,

Right. It was still a course. I still had to get this stuff in. You had the book. I had to practice. That is the only way I get it, by drilling it in. That is what they do on every project. You do it, you do it. You are forced to learn it. I did not feel like I did not have school.

Students enjoyed the resolution of their own problems and the application of critical thinking. One student said, "You had to troubleshoot it yourself. You used critical thinking. So you had to resolve your own problem." Another student said,

I don't like coming up here for 2 1/2 or three hours to watch this being done. I can go home and figure it out. This is just a difficult class for me. Just do the exercise, it clicks and you go on with your life.

The online students realized that self-motivation was important. Plus, if content understanding was not achieved at first, then student initiative was needed to seek help from others. A student said,

Yes, I feel in an online course, you have to be a self-motivator. You can't say that somebody has to push you, because you have to push yourself. No one is there every single day. You have to know that you have to read the material. Figure it out. And then if you do not understand the material, then you have other people to help you out.
Students felt that they learned more by resolving their own problems. Furthermore, another student added, "I felt that if you did have problems and you had to figure it out yourself, it makes you learn more."

Students liked being in control of their time and learning. One student shared, "Oh yes, I have enjoyed it a lot. It was fun. It is kind of like on your own time. If you want to stay up late at night and do it, you can. You know when your deadlines are due."

Another student replied, "Yes, I like them because they are convenient. I am not in class everyday. And I get to work at my own pace. I know what I can do." In addition, another student said,

Yes, I do. I like it where the assignment is posted. Do pages 1-10 and then email me this assignment. I usually take one day like a Saturday to come into the lab. Run down through the assignment. Get it all done and email it in and I am done. I feel like I have control.

Learning at one's own pace motivated this student to try online learning. Plus, the time spent for remedial questions in traditional classes frustrated this advanced learner.

The student added,

I signed up for the inclass one and I thought, "I don't want that". So I had to switch mine around. But actually the reason I did it was I had taken so many in the classroom classes and I wanted to move at my own pace. And sometimes, I get frustrated with all of the questions that I already know the answer to. It is hard to sit there and listen to it.

One student expressed frustration with being a self-directed learner. The student realized that self-discipline was essential to online learning success. The student said,

Yes and no. When I get frustrated, because I am behind. I am having a hard time disciplining myself to get caught up. I think that next class I take will be in the classroom to build my confidence up and to be sure that I can do it. But I have had many, many classes. I have studied for the Certified Professional Secretaries exam on my own. I did not take the review class here and I passed all parts the first time. And I am an EMT (Emergency Medical Technician), so I have taken
many classes there. So I am motivated, but this class has shown me that I was not as motivated as I would have liked to have been. And I think that is my problem.

Another student added, "Well, a few times. Usually those were the times that I could not get ahold of her." Therefore, the delay or lack of interaction impeded active learning.

Another student described problems with procrastination. The online learners seemed to recognize their time management weaknesses and the impact on their learning. The student said,

I like it except when I get to the point where I procrastinate. I think, well, if I wait, I can do this tomorrow. I am going to have all this time. And then tomorrow, something comes along. It's 2 o'clock in the morning and I am scrambling trying to get my homework done. If you are good about making yourself do it, when you need to, it is great. But I don't always do that.

The Influence of Synchronous Chat Interaction on Active Learning-Student Voices

Students commented on the importance of the chats to their learning. However, some students had to get accustomed to this instructional format. The chat quizzes impacted this learner's experience and improved the student's opinion of this synchronous interaction. The student said,

The first two times, I did not think that it was that good. Because it is an hour. Most of the people are just getting familiar. They asked some good questions, but I just did not care too much for it. But then she started giving us some quizzes, which I thought was pretty interesting and those helped me.

Students wrote notes during the chats to improve learning. Even though this student only benefited from half of the dialogue, this percentage was enough to encourage high attendance. The student said, "To me, they are important. I try to take notes and write down things that I think would be beneficial. But a lot of times, the question will be important to me 50% of the time. I have been to all, except one."
When asked if the chats helped them learn the content of the course better, one student said, "Yes. People don't even realize it, but they are always giving shortcuts or hints on how to do something." Another student said, "But, I like them. Because if I have a question, it is nice to have a specific time I know, if I don't figure it out by them, I can ask her then. I like it a lot better than if I actually had to go and sit in a class."

Another student added,

It has been a tremendous help, because even if you do not say anything, you are watching everybody else's problems. First, you feel pretty good about yourself. You are not out there alone. And where I feel I am a little bit behind in this class. With their problems, maybe I have not gotten to that point yet. And I am writing them down and I am thinking, this is going to happen to me. Or they hit something that I am worried about and that's when we really help each other. There are a couple people in that class that are so advanced to me, I really pay attention to what they say. I love the chats. It goes by too quickly.

Some of the online instructors utilized the whiteboard in the chat utility program. When asked if the whiteboard added to their learning in chat, one student said, "I think it clarifies what she is saying. No doubt about that." Another student explained, "Yes, I enjoyed that. It gives you more of a visual of what is going on in the class instead of looking at the book or something. You had the information right there to answer the questions. I did like that better than the last time. I wish that someday we could see her in a video."

One student would open the computer software application of the course in addition to the chat utility. So the student would be participating and observing the chat session and also applying the content being discussed at the same time. This is a multi-tasking learning approach to the synchronous interaction. The student explained,

Yeah, I would be watching what they were talking about. A lot of times I would have two screens open. My presentation I would be working on, my Access I would be working on. If I would come up with a problem, I could ask her right
then and there and I could look at what they were doing and I could see what kind of problems they were having at the same time.

The student explained that he would apply the discussion topic right away in the course application. The student said, "Usually, I would try it right away if she gave me an explanation or if I saw something that was kind of addressing the problem, I would try it out."

Learning Outcomes-Student Voices

Students were very happy with their learning outcomes. One student explained, "Yes, I feel that I am pretty well covering and learning what they were talking about."

Another student added, "I think ultimately, we will be writing a webpage. We have learned quite a bit so far. So I feel confident that I am learning." In addition, a student explained,

Oh yeah. She told us that we were just going to touch on every subject. We are not going to learn the whole thing. That's when we take the classes individual. Yeah, I am ecstatic about what I have learned so far. I find myself at work saying to people "Hey, you are doing that the long way. It would be easier if you did it this way."

One student explained the importance of the clarity of the instructor interactions in achieving learning outcomes. This student said,

Yes. Obviously, (the teacher) knows the material very well. When asked questions, she does respond in an appropriate, concise, clear way. Yes, and the material in the book is marvelous. I can't believe how clear everything is. When I get through there, I mean I really feel that I know that stuff. I feel that the material in the book and her abilities are excellent. I am thrilled.

The online students appreciated the option of making up work. They were motivated to get high grades. A student added,
Yes, I feel like I am learning. She gave me the opportunity to make up things. Sometimes I wished that I could have gotten a better grade on some things that I did, because I missed something on the first time. I could have got that.

One student emphasized the importance of positive interactions from the online instructor. This student replied,

Yes, I'm doing very well in this class. She sends me complements all of the time. She gives me A+. Too bad it does not work on the grading scale. I could pass it along to a couple of other classes to stretch that +.

Students learned from the instructor interaction and from fellow student interaction.

"Yes, definitely. You have the interactions with the teacher. You also have the other classmates. If you don't understand it, they might be able to break it down better for you." "Yes, when I was working through it, their practical examples helped me to look at it from a different viewpoint, which was very important."

Content learning and resulting student achievement were also affected by the interaction.

"The interaction helps especially if you do not understand. It helps a whole lot." "Yes, I think it did. It was more personal than a regular class. I could email a question right to her." "I feel that this online course has been both effective and efficient, because it is teaching me what I need to know in a minimal amount of time. And it is not wasting my time in any way."

Students were satisfied with their grades and the digital grading procedures used by the online instructors. "She tells me the grade and I am satisfied with the grade. On two of them, she pointed out some errors that I had made and it is obvious to me that she was looking very closely at the work, which is important to me to know that." Another student said,

Yes. It does help you to see where you need to improve. Especially if you are not doing it correctly on the homework, you need to know it for the test. If it is not pointed out to you, you can't improve.
However, some students were disappointed in their learning. Yet this online student realized that the disappointment was due to lack of self-discipline and time management skill, not due to the online style of learning. One student said,

Absolutely not. I am very disappointed. I was behind. This test was on chapters 1, 2, and 3. I had done chapters 1 and 2 and just looked at 3. I wanted an A. Now I just hope that I pass. I am not up to what I wanted. I am just not disciplining myself to do it.

The Influence of Synchronous Chat Interaction on Learning Outcomes-Student Voices

Some instructors gave practice tests during the chat. When asked if this assisted in knowledge building, one student said, "Yes, that helped. I did like that. I don't think that we had that during our last course. It made you more familiar of what to expect on the test. Another student added,

One practice test was good for getting a little hands on on something besides your homework. That was good. And mostly she could answer specific questions right away. I could ask why the software was not doing that. That was most of my problems. So, they were able to address that immediately as opposed to well, I have to wait two more days to find out.

One online instructor posted a chat summary after the session. The summaries listed the topics of discussion during the synchronous chat and were originally intended for those students who were unable to attend that specific session. However, students who were in attendance also used the summaries as a study aid. One student said,

I found the summaries beneficial to your studying, because it highlights the points of the chapters. Instead of going back and looking for all the bold words and stuff like that require an emphasis. I am sure that the PowerPoint notes are the same way. I have just never looked at the PowerPoint.

Some of the online instructors gave practice exercises during the chat. When asked if this feature added to their knowledge, one student said, "It reinforced my
knowledge and it made me feel a little bit better that I was learning something. That I am getting better. It helps reduce some of my frustration."

Community Bonding-Student Voices

Being part of a learning community was important to the online students. Some students were surprised that they could feel part of a community in an online class. One student said, "Yes, and it surprised me, because I have a tendency to be a loner and I did feel a part."

When asked if the student felt part of a community, part of a group in the class, one student said, "Hum? I guess you could say, yeah. I'm not going to say the entire class, but there are some particular people that I will call upon and some that I would not." In addition, another student explained the importance of email interaction, "Oh, yeah. And if need anybody, you've got the email there. It just takes a little longer that's all." Another student added,

I do. The first class we went around over and over to learn everybody's names. At least then, when you are online, you can kind of identify them. There are still people in the class that I think, "I don't know who that is". But at least at times, it's like yeah. And then, some of them, I know from other classes. And when you get online, it's like "hi" to everyone who is in. Everybody is kind of a group, yeah. At least, I feel that way.

Students felt that being a part of a community was important to their learning. One student said, "Right. It is important for the learning aspect, because there are people that you can relate to and talk to how to do this and that and it helps to talk to them to get another perspective on it."

Some students felt more of a community of learners in an online class than in a live class because they had everyone's email address. One student replied, "You can talk
to them anytime you want by email." Another student added, "The only way you can see students in a live class is in that one hour class." Furthermore, another student said, "The only way to do that in a regular class is if you go around and collect phone numbers. Sometimes you do in some classes, especially some of the tough ones."

The Influence of Synchronous Chat Interaction on Community Bonding - Student Voices

Interaction again played a huge role, especially the synchronous chat interaction. One student explained, "I like to go (to chat). I have not missed one, because it just kind of gives you a sense of belonging." Another student added,

Yes, you should be a part of it. I mean if you don't feel part of the group, you may not get along. You should be able to participate or be able to learn from others. That's why I would like to get online, because sometimes I would think that I don't feel like getting online. But when I get online, I think that I need to get online, because I might miss something. I could learn from someone else. There is a lot of information that I did not know. That does help to be part of the group, to give information or to even receive information from others.

When asked what made the class bond, several students said that the synchronous weekly chats were most important. One student replied, "It brings everybody together once a week and it makes you feel part of a group." Another student added, "Usually, classmates get online about 15 minutes before we start and we just shoot the breeze for a while. And that is fun. Before she gets on, we have fun. You can see what we talked about." Finally, a surprised student said, "But I do. I really do. This chat group. We comment to each other. We say hi to each other. I really do feel part of this group. I can't imagine why."

Another student described, "And sometimes you don't even get to connect the faces with the names from the chat until later. But then once you get the sense of seeing
that particular person's name, you kind of get a sense of evolving into a group." Another student said,

Yes, during the chats, you get to talk to people. Some of the people I see in the chat room every week, I barely remember what they look like, because I only see them once or twice, but I recognize their name. Because they are the ones in the chat room all of the time.

The online learners felt like they bonded with fellow students, especially those students who chatted frequently. Another student added,

I do. I mean, I have bonded with these names. The more they chat, the closer I feel. If they don't chat to me, the name doesn't mean much. But just jump in there and talk to me. I feel like I know them. I mean, I would not recognize their face. But, I think that we are bonding here.

Finally, another student explained, "I feel like a part of a group, just because we are there, chatting and stuff. It is not something that I necessarily need. But it is nice to know who I can talk to about questions, if I have them."

The chats added to the feeling of community by equalizing the students, by reducing barriers. One student said, "In the chat room, I almost feel part of an equal. I am just one of the group. In the classroom, I am the old lady sitting on the side."

The student explained how he set up individual chat sessions. These sessions added to the bonding of the students in the class. The student said,

When I first got the entire list of emails, I entered them into my Instant Messenger®. So whoever had AOL® would pop up. So I would say "Hey, I am in your class". (Another student) and I said, "Well, who are you?" And I said that I sat in the second row back and I am a tall guy with glasses. And she goes well I have dark hair. And I said, I think that I know who you are. So then, when we had the midterm, it was like "Hi, how are you doing?"
Students even chose their favorite virtual classmates by their style of interaction. One student said, "Well, I could get along with most anybody. I just pick out the ones that are smart, that are answering everything."

Emerging Insights on Chat Interaction in Class #1-HTML

Chat interaction participation exhibited a slightly negative correlation to test average (see Table 9), but a statistically significant positive correlation to grade average (see Table 10). The correlation to grade average should not be weighted highly as chat participation was calculated into the final course grade average. The emerging themes from the course chat dialogue, student interviews and focus groups demonstrated that this content material was difficult for some students and the interaction was critical. The instructor had to call a face-to-face session for those struggling students. Plus, an instructor-lead content chat style was adopted to assist those students who were experiencing difficulty with the course content. In addition, this instructor used the whiteboard, but did not give practice tests, terminology reviews, or group projects or utilize controlled dialogue during the synchronous meetings.

Emerging Insights on Chat Interaction in Class #2-Computer Applications

Chat interaction participation exhibited a statistically significant positive correlation to test average (see Table 11), and a statistically significant positive correlation to grade average (see Table 12). The emerging themes from the course chat dialogue, student interviews and focus groups demonstrated that this content material was constantly changing for some students and the synchronous interaction was critical especially for the beginning computer learners. In addition, this instructor was the only case studied that used all chat styles of practice tests, terminology reviews, group projects, instructor-lead content, controlled dialogue, and the whiteboard.
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<th>Student</th>
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\[ r = -0.33, \text{ df=11} \]

*Students did not participate in the testing sessions. These students were not included in the statistical calculation, so n=13.
TABLE 10
FREQUENCY OF CHAT PARTICIPATION-STUDENT COURSE GRADE CORRELATION
FOR
CLASS #1-HTML

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<th>Student</th>
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Total                  53  
Chat Participation

r=.546**, df=9

*Students did not complete the course. These students were not included in the statistical calculation, so n=11.

**statistically significant at the 0.10 level (2-tailed)
TABLE 11
FREQUENCY OF CHAT PARTICIPATION-STUDENT TEST AVERAGE CORRELATION FOR CLASS #2-MICROCOMPUTER APPLICATIONS

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r=.7**, df=10

*Students did not participate in the testing sessions. These students were not included in the statistical calculation, so n=12.

**statistically significant at the 0.05 level (2-tailed)
TABLE 12

FREQUENCY OF CHAT PARTICIPATION-STUDENT COURSE GRADE CORRELATION
FOR CLASS #2-MICROCOMPUTER APPLICATIONS

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<td>Student #2-2</td>
<td>6</td>
<td>A</td>
</tr>
<tr>
<td>Student #2-3</td>
<td>7</td>
<td>A</td>
</tr>
<tr>
<td>Student #2-4</td>
<td>5</td>
<td>B</td>
</tr>
<tr>
<td>Student #2-5</td>
<td>5</td>
<td>B</td>
</tr>
<tr>
<td>Student #2-6</td>
<td>7</td>
<td>A</td>
</tr>
<tr>
<td>Student #2-7</td>
<td>6</td>
<td>A</td>
</tr>
<tr>
<td>Student #2-8</td>
<td>7</td>
<td>A</td>
</tr>
<tr>
<td>Student #2-9</td>
<td>4</td>
<td>B</td>
</tr>
<tr>
<td>Student #2-10</td>
<td>7</td>
<td>B-</td>
</tr>
<tr>
<td>Student #2-11</td>
<td>3</td>
<td>D</td>
</tr>
<tr>
<td>Student #2-12</td>
<td>3</td>
<td>W*</td>
</tr>
<tr>
<td>Student #2-13</td>
<td>0</td>
<td>UW*</td>
</tr>
<tr>
<td>Student #2-14</td>
<td>0</td>
<td>UW*</td>
</tr>
<tr>
<td>Student #2-15</td>
<td>0</td>
<td>UW*</td>
</tr>
<tr>
<td>Student #2-16</td>
<td>0</td>
<td>UW*</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>65</strong></td>
<td></td>
</tr>
</tbody>
</table>

r=.673**, df=9

*Students did not complete the course. These students were not included in the statistical calculation, so n=11.

**statistically significant at the 0.05 level (2-tailed)
Emerging Insights on Chat Interaction in Class #3-Databases

Chat interaction participation exhibited a slightly positive correlation to test average (see Table 13), but a statistically significant positive correlation to grade average (see Table 14). The correlation to grade average should not be weighted highly as chat participation was calculated into the final course grade average. The emerging themes from the course chat dialogue, student interviews and focus groups demonstrated that this content material was difficult for some students and the interaction was critical. An instructor-lead content chat style was adopted again to assist those online learners who were finding the material difficult to understand. This instructor used terminology reviews and instructor-lead content, but did not utilize practice tests, group projects, controlled dialogue or the whiteboard during the chats.

Emerging Insights on Chat Interactions in Class #4-Word Processing

Chat interaction participation exhibited a slightly positive correlation to test average (see Table 15), but a statistically significant positive correlation to grade average (see Table 16). The correlation to grade average should not be weighted highly as chat participation was calculated into the final course grade average. The emerging themes from the course chat dialogue, student interviews and focus groups demonstrated that this content material was difficult for some students and the interaction was critical. A content review chat style was adopted with effective use of chat conventions to control dialogue in large chat groups. This instructor used practice tests, terminology reviews, instructor-lead content, and the whiteboard, but did not utilize group projects during the synchronous sessions.
TABLE 13
FREQUENCY OF CHAT PARTICIPATION-STUDENT TEST AVERAGE CORRELATION
FOR CLASS #3-DATABASES

<table>
<thead>
<tr>
<th>Student</th>
<th>Chat Participation</th>
<th>Test Average Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Student #3-1</td>
<td>5</td>
<td>69</td>
</tr>
<tr>
<td>Student #3-2</td>
<td>6</td>
<td>96</td>
</tr>
<tr>
<td>Student #3-3</td>
<td>4</td>
<td>95</td>
</tr>
<tr>
<td>Student #3-4</td>
<td>5</td>
<td>81</td>
</tr>
<tr>
<td>Student #3-5</td>
<td>7</td>
<td>99</td>
</tr>
<tr>
<td>Student #3-6</td>
<td>1</td>
<td>0*</td>
</tr>
<tr>
<td>Student #3-7</td>
<td>7</td>
<td>81.25</td>
</tr>
<tr>
<td>Student #3-8</td>
<td>4</td>
<td>87</td>
</tr>
<tr>
<td>Student #3-9</td>
<td>6</td>
<td>90</td>
</tr>
<tr>
<td>Student #3-10</td>
<td>5</td>
<td>81.25</td>
</tr>
<tr>
<td>Student #3-11</td>
<td>5</td>
<td>80</td>
</tr>
<tr>
<td>Student #3-12</td>
<td>7</td>
<td>82</td>
</tr>
<tr>
<td>Student #3-13</td>
<td>4</td>
<td>84</td>
</tr>
<tr>
<td>Student #3-14</td>
<td>0</td>
<td>0*</td>
</tr>
<tr>
<td>Student #3-15</td>
<td>0</td>
<td>0*</td>
</tr>
<tr>
<td>Student #3-16</td>
<td>1</td>
<td>0*</td>
</tr>
<tr>
<td>Student #3-17</td>
<td>1</td>
<td>0*</td>
</tr>
</tbody>
</table>

Total                  | 68                  |
Chat Participation

$r=.159, \ df=10$

*Students did not participate in the testing sessions. These students were not included in the statistical calculation, so n=12.
TABLE 14

FREQUENCY OF CHAT PARTICIPATION-STUDENT COURSE GRADE CORRELATION
FOR CLASS #3-DATABASES

<table>
<thead>
<tr>
<th>Student</th>
<th>Chat Participation</th>
<th>Course Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>Student #3-1</td>
<td>5</td>
<td>I*</td>
</tr>
<tr>
<td>Student #3-2</td>
<td>6</td>
<td>A</td>
</tr>
<tr>
<td>Student #3-3</td>
<td>4</td>
<td>A</td>
</tr>
<tr>
<td>Student #3-4</td>
<td>5</td>
<td>B+</td>
</tr>
<tr>
<td>Student #3-5</td>
<td>7</td>
<td>A</td>
</tr>
<tr>
<td>Student #3-6</td>
<td>1</td>
<td>W*</td>
</tr>
<tr>
<td>Student #3-7</td>
<td>7</td>
<td>B</td>
</tr>
<tr>
<td>Student #3-8</td>
<td>4</td>
<td>A-</td>
</tr>
<tr>
<td>Student #3-9</td>
<td>6</td>
<td>A-</td>
</tr>
<tr>
<td>Student #3-10</td>
<td>5</td>
<td>B</td>
</tr>
<tr>
<td>Student #3-11</td>
<td>5</td>
<td>B</td>
</tr>
<tr>
<td>Student #3-12</td>
<td>7</td>
<td>A-</td>
</tr>
<tr>
<td>Student #3-13</td>
<td>4</td>
<td>I*</td>
</tr>
<tr>
<td>Student #3-14</td>
<td>0</td>
<td>UW*</td>
</tr>
<tr>
<td>Student #3-15</td>
<td>0</td>
<td>UW*</td>
</tr>
<tr>
<td>Student #3-16</td>
<td>1</td>
<td>W*</td>
</tr>
<tr>
<td>Student #3-17</td>
<td>1</td>
<td>W*</td>
</tr>
</tbody>
</table>

Total: 68 Chat Participation

r=0**, df=8

*Students did not complete the course. These students were not included in the statistical calculation, so n=10.

**statistically significant at the 0.01 level (2-tailed)
<table>
<thead>
<tr>
<th>Student</th>
<th>Chat Participation</th>
<th>Test Average Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Student #4-1</td>
<td>2</td>
<td>89</td>
</tr>
<tr>
<td>Student #4-2</td>
<td>7</td>
<td>94</td>
</tr>
<tr>
<td>Student #4-3</td>
<td>3</td>
<td>95</td>
</tr>
<tr>
<td>Student #4-4</td>
<td>4</td>
<td>88</td>
</tr>
<tr>
<td>Student #4-5</td>
<td>5</td>
<td>72</td>
</tr>
<tr>
<td>Student #4-6</td>
<td>6</td>
<td>92</td>
</tr>
<tr>
<td>Student #4-7</td>
<td>2</td>
<td>84</td>
</tr>
<tr>
<td>Student #4-8</td>
<td>7</td>
<td>90</td>
</tr>
<tr>
<td>Student #4-9</td>
<td>0</td>
<td>0*</td>
</tr>
<tr>
<td>Student #4-10</td>
<td>1</td>
<td>86</td>
</tr>
<tr>
<td>Student #4-11</td>
<td>4</td>
<td>84</td>
</tr>
<tr>
<td>Student #4-12</td>
<td>2</td>
<td>0*</td>
</tr>
<tr>
<td>Student #4-13</td>
<td>5</td>
<td>90</td>
</tr>
<tr>
<td>Student #4-14</td>
<td>4</td>
<td>82</td>
</tr>
<tr>
<td>Student #4-15</td>
<td>2</td>
<td>92</td>
</tr>
</tbody>
</table>

Total: 54

Chat Participation

\[ r = 0.104, \text{ df} = 11 \]

*Students did not participate in the testing sessions. These students were not included in the statistical calculation, so n=13.*
### TABLE 16

**FREQUENCY OF CHAT PARTICIPATION-STUDENT COURSE GRADE CORRELATION**

**FOR CLASS #4-WORD PROCESSING**

<table>
<thead>
<tr>
<th>Student</th>
<th>Chat Participation</th>
<th>Course Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>Student #4-1</td>
<td>2</td>
<td>B+</td>
</tr>
<tr>
<td>Student #4-2</td>
<td>7</td>
<td>A+</td>
</tr>
<tr>
<td>Student #4-3</td>
<td>3</td>
<td>A</td>
</tr>
<tr>
<td>Student #4-4</td>
<td>4</td>
<td>A-</td>
</tr>
<tr>
<td>Student #4-5</td>
<td>5</td>
<td>B-</td>
</tr>
<tr>
<td>Student #4-6</td>
<td>6</td>
<td>A</td>
</tr>
<tr>
<td>Student #4-7</td>
<td>2</td>
<td>B-</td>
</tr>
<tr>
<td>Student #4-8</td>
<td>7</td>
<td>A</td>
</tr>
<tr>
<td>Student #4-9</td>
<td>0</td>
<td>F*</td>
</tr>
<tr>
<td>Student #4-10</td>
<td>1</td>
<td>C-</td>
</tr>
<tr>
<td>Student #4-11</td>
<td>4</td>
<td>A-</td>
</tr>
<tr>
<td>Student #4-12</td>
<td>2</td>
<td>W*</td>
</tr>
<tr>
<td>Student #4-13</td>
<td>5</td>
<td>A-</td>
</tr>
<tr>
<td>Student #4-14</td>
<td>4</td>
<td>B</td>
</tr>
<tr>
<td>Student #4-15</td>
<td>2</td>
<td>B</td>
</tr>
</tbody>
</table>

**Total**

| Chat Participation | 54 |

\[ r = .649^{**}, \text{ df}=11 \]

*Students did not complete the course. These students were not included in the statistical calculation, so \( n=13 \).

**statistically significant at the 0.02 level (2-tailed)**
Emerging Themes

All online courses utilized the interactions of synchronous chat and in-person sessions (see Table 17). All courses used asynchronous email interaction. Three classes used the discussion board. One instructor and students interacted via the telephone. However, the emerging themes from the student interviews and focus groups illustrated that the chat interactions had the most influence on active learning, learning outcomes and community bonding. Chat was the most frequently referenced interaction type in all student interviews and focus groups as having the most influence on their learning and bonding.

**TABLE 17**

INTERACTION COMPARISON OF ONLINE COURSES

<table>
<thead>
<tr>
<th>INTERACTION TYPE</th>
<th>CLASS #1 HTML</th>
<th>CLASS #2 COMPUTER APS</th>
<th>CLASS #3 DATABASES</th>
<th>CLASS #4 WORD PROC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chat-weekly</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>-practice tests</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>-terminology review</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>-group project</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>-instr-lead content</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>-whiteboard</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>In-Person</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Phone</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Email</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Discussion Board</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

One class exhibited a statistically significant correlation of chat participation to test averages. This instructor used various chat styles and all modes of interaction (see Table 17) to be instructionally effective. The content of the computer applications class lent itself to the need for continual interaction. Four different applications were presented to beginning computer students- word processing, spreadsheets, databases, and presentation software. The application changed every two weeks. Students required constant contact to keep abreast of the changing
content. In addition, this online instructor administered the most practice tests during the chats. Plus, the initially lower computer content knowledge of the students and the changing content topics made the interaction critical to their success.

Interaction influenced active learning, learning outcomes, and community bonding in these online technology courses for most students. Interaction was critical when students experienced difficulties in active learning. The students with the lowest learning outcomes and grades in the course interacted very little or not at all. These students did not participate regularly in the chats or discussion board. The HTML students who withdrew from the course exhibited low interactions levels. The microcomputer applications students who achieved the grades of A or B showed high interaction levels. The database students overall followed the same interaction trends. The word processing student who failed exhibited a very low interaction level. Synchronous interaction added to the community bonding of the online students as described by the online students in the interviews and focus groups. Furthermore, students who withdrew from the online course exhibited low interaction levels. However, some advanced students did succeed with minimal interaction. Therefore, the major emerging theme was that interaction was important for all students, especially those students needing instructional support.

The synchronous nature of the interaction provided structure and comfort to this level of online student. The learners of this study were primarily college freshman in elementary computer courses. This weekly activity was important to student time management and content mastery management. Most students required this kind of structure to succeed. Content was reviewed, discussed, and practiced once a week. Computer skills need drill and practice. Many students said it was like attending class. Finally, it was comforting to the students to know that questions would be answered immediately at this weekly session and frustration was reduced.
CHAPTER FIVE: OTHER GENERALIZATIONS

This study illustrated the importance of interaction in online instruction. Interaction influenced active learning, learning outcomes, and community bonding in these online technology courses for all students, especially those students needing instructional support. Instructors must take the lead in encouraging interaction among all class members and in modeling the interaction style they expect of their learners. Interaction should be built into the design with incentives for student participation as explained by Moore's (1989) and Perraton's (1988) theories of distance education. The online instructor must be prepared to respond quickly to student questions. Plus, students learn a lot from each other in an online course.

The importance of interaction is well documented in distance learning research. However, interaction technologies keep advancing and improving. This research illustrated the importance of including synchronous virtual classroom chats in the online course design. The sessions can take several forms, including question-and-answer formats, practice tests and assignments, and instructor-lead content chats. The students appreciated a variety of chat formats within a single course. The students also learned from the visual capabilities of the virtual whiteboard included in some chat utility programs. The students enjoyed the immediate responses to questions during the chats, and some students even immediately applied the synchronous topic via split computer screens and multi-opened computer programs. Online students also helped each other via synchronous individual chats.

Online instructors need to learn synchronous chat techniques. The researcher observed that the instructor's live dialogue style emerged on the chats. Online instructors need to be aware of this phenomenon in case communication improvement is needed. Furthermore, some students
were inexperienced and needed direction from the instructor in chat techniques. In addition, students explained that one hour was the optimal time frame for the synchronous interaction.

Online instructors must be mindful of the differences and treatment of students during the synchronous discussions. Keyboarding and modem speed can impact student participation in the chats. The students appreciated instructor chat techniques whereby chosen students could answer questions, not just the fastest keyboarding students. The online students in this study described the importance of the online instructor answering every question posed during the chats. The students felt ignored and frustrated if their questions were not answered.

Virtual synchronous classroom management was important. Students wanted to stay on task. They became impatient with fellow classmates who were conducting side conversations or were not serious during the sessions.

Interaction's Influence on Active Learning

The online students were active learners. They enjoyed being active learners. They liked being self-directed learners and responsible for their learning. This result is supported by Cross' (1980) adult learning theories. Interaction was an important part of their learning when they needed help and assistance. Some students achieved active learning quickly (see Figure 1). Some students required additional interactions to aid their learning (see Figure 2). The social constructivist learning theories described by Bruner (1960), Jonassen (1994), and Vygotsky (1978) and Keegan's (1986) distance education theory support this result. The online students learned from the interactions of the instructor and fellow classmates as supported by Pask's (1975) conversation theory. The timeliness of instructor responses had a great influence on their active learning. However, they did experience frustration if they had to wait for responses.
FIGURE 1

THE INFLUENCE OF INTERACTION ON ACTIVE LEARNING FLOWCHART #1

Course Textbook

Online Student

Posted Course Assignments

Synchronous Chats

Active Learning
FIGURE 2

THE INFLUENCE OF INTERACTION ON ACTIVE LEARNING FLOWCHART #2
Some students had to resort to face-to-face interaction if online interaction was not sufficient for their learning. Finally, the students thought that online instruction was a very efficient way to learn.

The synchronous chat again came to the forefront in influence. The students learned from questions asked by the instructor even if they themselves did not answer. They learned from seeing the responses of fellow classmates. The students benefited from practice tests, chat exercises, instructor-lead content chats, and the use of the whiteboard during the weekly chat meetings.

Interaction's Influence on Learning Outcomes

The online students were confident that learning outcomes were being achieved. They were satisfied with their learning and achievement. Interaction again played an important part if their learning needed assistance, as supported by Simonson, Schlosser, and Hanson's (1999) equivalency theory of distance education. The number of chats attended influenced the students' course grades. The HTML students who attended more chats received the higher grades. The number of chats attended by the computer application students impacted the course grade. Even though the database instructor only awarded grades of "A" and "B", the number of chats attended slightly influenced the course grade. The word processing student grades definitely illustrated the importance of the synchronous chat session attendance. Also, the students noted the personal quality of the online interactions with the instructor.

The students built confidence in their achievement of learning outcomes by their ability to answer questions in the synchronous chats. The students also explained that the practice
exercises and tests during the chats increased their learning outcomes. Furthermore, the
timeliness and clarity of the instructor's feedback was important to learning outcomes. The
students appreciated the precise digital grading techniques of the instructors. The drawing tools
used on their graded assignments clarified their learning outcomes.

Interaction's Influence on Community Bonding

Interaction for community bonding is important in distance education as explained in
Holmberg's (1989) distance education theory. To achieve this result, an online course should
have a variety of synchronous and asynchronous interactions. This study found that the
synchronous chat interactions had the most influence on community bonding (see Figure 3), as
supported by Short, Williams, and Christie (1976) in their social presence theory. The online
students felt that community bonding was important to their learning. They were surprised, but
happy, that they felt part of a community.

The online instructors led the formation of community bonding by adding student
introductions into the orientation sessions, requiring chat attendance, and assigning group
projects. Some students felt more of a community in the online class than in a live class.
Furthermore, the online interactions equalized the students and reduced barriers to community
bonding.

This was a descriptive case study. The results of this study may not be generalizable to
the entire online instructor and student population. The online students in this study were
geographically close to the college campus. Face-to-face meetings were part of the course
experience. The instructors and students were able to agree on a mutually-convenient
synchronous chat time. Students, who traveled during the course, made special arrangements to
participate. Students, who worked during the evening chat times, took their dinner breaks at the weekly chat time.

FIGURE 3
THE INFLUENCE OF INTERACTION ON COMMUNITY BONDING FLOWCHART

Online instructors may be separated from their students by many miles and time zones. However, this research illustrated the importance of including regular synchronous chat
interaction in an online class. Chat participation exhibited a positive correlation to test averages in three classes with one class, Microcomputer Office Applications, being statistically significant at the .05 level. Chat participation exhibited a statistically significant correlation to course grades in all classes. Online instructors should arrange convenient chat times even if students are learning from distant locations. The results of this study showed that synchronous chat interaction had the most influence in active learning, learning outcomes, and community bonding in an online technology course at a two-year college.

Summary

In conclusion, the researcher recommends the following activities to prepare instructors for synchronous interaction. Online instructors should:

- Become familiar and comfortable with synchronous virtual dialogue by communicating with family, friends, colleagues and students via a real-time chat utility, such as AOL Instant Messenger®.
- Participate in online community chats offered by many commercial web sites, such as http://cnn.com.
- Enroll in an online course or training session offering synchronous as well as asynchronous interaction and a keyboarding course if skill below 35 wpm.
- Observe an experienced online instructor's synchronous instructional chat session.

The researcher offers the following synchronous interaction suggestions for effective instructional impact. The online instructors should:

- Plan each instructional chat
- Post an agenda.
• Use the chat utility whiteboard for visual learning.

• Allow time at the beginning and end of each chat for general questions.

• Create a variety of chat activities.

• Use controlled dialogue conventions, such as "q" for question, "c" for comment, "a" for answer, "ga" for go ahead.

• Allow many different students to ask and answer questions.

• Meet once a week for at least one hour.

• Monitor the chat dialogue so participants stay on content topic.

• Archive the chats for reflective learning and for students with chat time conflicts.

• Develop group activities with group synchronous, as well as, asynchronous interaction requirements.

• Encourage student interaction by incorporating discussion board and chat participation in course grade.

Some suggested instructional chat activities are:

• Answering questions.

• Explaining assignments.

• Presenting new content.

• Reviewing terminology.

• Administering practice assignments.

• Organizing group activities.

• Administering practice tests with the recommendation of immediate answer review and discussion in the same chat.

• Presenting exam reviews.
Some recommendations for synchronous chat utility software manufacturers are:

- Develop easier ways of posting documents on the whiteboard; for example, file attachment instead of File Transfer Protocol to another web site for display.
- Include chat dialogue text color options to differentiate instructor comments from student responses.
- Design digital options to illustrate students virtually raising hand to participate in the dialogue.
- Include better instructions in the online software for the instructor and student use of the chat utility.
- Investigate ways of including video technology in the chats, so participants can see each other and view instructor demonstrations during the synchronous sessions.
- Include voice recognition technology in the chats, so that keyboarding deficiencies will not impact instructor and student participation.

This research illustrated that synchronous interaction in an online course offers the following instructional advantages:

- Provides immediate feedback.
- Promotes active learning.
- Reduces student learning delay and frustration.
- Improves student learning comfort and confidence.
- Improves student achievement.
- Promotes feeling of community.
Recommendations for Future Research

Online instruction is still in its infancy. As technology advances, online instructional methods will change and improve. Continued studies are needed with each new technology.

Because the students in this study were primarily computer technology majors, this research was able to include data on the impact of the content interactions instead of the interactions of online technology deficiencies. Nevertheless, this research should be replicated.

The courses in this study were beginning computer classes. More research is needed on interaction influences in different types and levels of courses. Advanced courses may require different styles of interaction than beginning courses. Online high school courses may require different interaction support than college online classes. Undergraduate online courses may require different interaction styles than graduate online courses. The topic of study may lend itself to different interactions in influencing learning and bonding.

Future research is also needed in the improvement of interaction quality to further influence the active learning, learning outcomes, and community bonding of online students. The interaction improvement in discussion boards, email communications, and virtual chat sessions needs further study.

Synchronous interaction had a large influence in this study. Furthermore, more research is needed in effective virtual chat instructional methods as technology advancements continuously present new ways to teach and to learn.
References


Informed Consent

Introduction
Before agreeing to participate in this study, it is important that the following explanation of the proposed procedures be read and understood. It describes the purpose, procedures, risks, and benefits of the study. It also describes the right to withdraw from the study at any time. It is important to understand that no guarantee or assurance can be made as to the results. The following form provides an explanation of each of these important areas.

Purpose of the Study
The purpose of this study is to investigate to what extent interactions (student-to-student; instructor-to-student; student-to-instructor) influence active learning, community bonding, learning outcomes and satisfaction in an online technology course. I, __________________________________________ give permission for myself to participate in this research study in which the researcher will observe and interview me.

Procedure
I understand that I will be observed during three class sessions, weekly course chats, emails and message board postings. I also understand that I will be asked to comment on interactions during observations, and that I will participate in a tape-recorded, one-hour interview where I will be asked questions about my satisfaction with the class and how interactions are influencing my active learning and community bonding with the instructor and fellow classmates. I will be participating in this study for one academic quarter and am aware that taped recordings and written material will be kept in a locked file and destroyed following data analysis.

Potential Risks and Benefits
I understand that possible discomfort may result from discussing my thoughts and feelings regarding the interactions and this is, therefore a risk involved with participation in this study. However, should this discomfort occur, I will have the right to determine whether I wish to continue to participate. I realize the participation in this study, or the decision to withdraw my participation, will in no way affect my professional relationship with the researcher. I also have the right to discuss my discomfort with the principal researcher, Victoria A. Hammer, 745-5791, or the researcher's advisor on this project, Dr. Ken Martin, 556-3592.

I realize that this study may provide insight to online course development, therefore, providing possible future benefit.

The Rights of the Participants
I understand that participation in this study is voluntary. I may refuse to participate in this study without penalty. If I choose to participate in this study, I may choose to withdraw my participation from this study at any time with a verbal or written request for termination. I have the right to contact the researcher or the researcher's advisor should any questions arise concerning this investigation.
Confidentiality
I understand that the information from the class session observations, the audio-recorded interview, chats, emails, message board postings and grades from the course are considered data for the study. Individual data will not be shared with the instructor of the course and participation, non-participation, withdrawal from the study, or data will not influence the grade for the course. Confidentiality will be provided by removing names and all personal identifying information from the tapes and written transcriptions. No names will be used in reporting study findings. However, excerpts of the interview may be used to support study findings. The transcriptions will be done by the researcher. Tape recordings will be kept in a locked file. Only the researcher will have access to this file.

Consent Statement
I, the undersigned, have understood the above explanation and have given my consent to voluntarily participate in this study which investigates interaction and its extent of influence on active learning, community bonding, learning outcomes and satisfaction in an online technology course.

__________________________________________  ______________________
Signature of Participant                      Date

__________________________________________  ______________________
Signature of Investigator                     Date
Interview and Focus Group Questions

1. How long have you been a student at Raymond Walters College?

2. What is your major?

3. Have you ever taken an online course before?

4. Why did you decide to take an online course?

5. What is your computer experience?

6. I am studying interaction in an online course. Did you interact with the professor during the course?

7. If yes, did the professor respond quickly?

8. If yes, did you communicate live or online?

9. Did you interact with fellow classmates during the course?

10. If yes, did the classmates respond quickly?

11. If yes, did you communicate with the fellow students live or online?

12. Did the communications help you to better understand the course material?

13. How important were the chats, Message Board, and posted lectures to your learning?

14. Did the interactions influence your self-directed learning?

15. Did you feel part of a community in this class? If so, what added to that?

16. Were you satisfied with the instruction in this class?

17. Were you satisfied with your learning in this class?

18. Did you achieve the learning objectives as stated on the syllabus of this online course?
19. Do you have any suggestions for improvement in this online course?

20. Will you register for another online course?
APPENDIX C

ONLINE RESEARCH
LIVE INTERACTION CHECKLIST

Instructor ____________________

Please enter student name and date in the appropriate column. Check either “Phone Call” or “Inperson” for type of live interaction. Check either “Content Question” (ex. Lab assignment or course content) or “Online Technology Question” (ex. Trouble with email, browsers, etc) for type of question.

<table>
<thead>
<tr>
<th>Student</th>
<th>Date</th>
<th>Phone Call</th>
<th>Inperson</th>
<th>Content Question</th>
<th>Online Technology Question</th>
</tr>
</thead>
<tbody>
<tr>
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APPENDIX D

Syllabi

Fundamentals of Word Processing
Microcomputer Office Applications
Microcomputer Office Databases
Office Telecommunications-HTML
Fundamentals of Word Processing

Syllabus
Fundamentals of Word Processing

Autumn 2000

Course Number: 28-OATN-211-701

Course Title: Fundamentals of Word Processing

Meeting Dates: Tuesdays: September 26, October 24, December 5

Meeting Times: 6:30-8:30 pm

Course Description

An introductory hands-on course using Microsoft Word 2000 software. Covers basic and intermediate word processing including editing, formatting, tabulations, headers, footers, merging, and tables. Designed for CST students.

Prerequisite: 35 words per minute keyboarding speed

Course Objectives

• Creating and editing documents
• Formatting documents
• Saving, opening, and printing documents
• Inserting and formatting clipart images
• Creating and formatting tables
• Creating form letters and mailing labels
• Creating Web pages
• Creating and changing tabs
• Desktop publishing features
• Integrating Word and Access

Requirements

1. In order to complete this course successfully, you will need to spend approximately 3-5 hours/weekly completing lab assignments that will reinforce the concepts discussed in your text. You will email your completed lab assignments as attachments for grading/feedback. Identify each assignment according to its project, exercise #, page #, and step #. Late assignments will be penalized for each day late.

2. Chat Room Participation: I plan to use the Chat Room on Tuesday evenings 9-10 pm to discuss MS Word and word processing questions. Credit will be given for a minimum of four (4) Chat Room sessions. The Chat Room will be monitored; therefore, keep the issues pertaining to Word.
Note: I will not answer email from 6-9 pm during the week since this will be my "family time." And, I will not answer email after 11:30 pm. For email, please include your full name and phone number so that I may call you, if necessary. Again, please include your full name; I cannot guess who is sending the email; for example, if your email name is POLARBEAR.

Text and Materials


SAM 2000 Password (don’t purchase until we discuss this program).

Evaluation

• Lab Assignments, 20%
• Group Work/Chat Room/Email, 20%
• Tests (written & hands-on), 60%

Examinations

There will be two written and hands-on tests scheduled for October 24 and December 5; 6:30-8:30 pm. All tests will be taken at the Professional Development Center. You will be permitted to use your notes and book for the hands-on tests but NO notes or book will be permitted for the written tests.

Incomplete Policy

It is very important that you send me an email with a sample Word attachment by Saturday, September 30, to verify that you know how to use your computer/Internet and Blackboard. If you do not respond by that date, you will automatically be dropped from this online course.

Week 1, Sept 26

Introductions; Overview of course format; Demonstration of Blackboard; Activate Blackboard accounts.
Project 1: Creating and Editing a Word Document
Assignment 1 due Wed, Oct 4.

Week 2, Oct 3

Meet in Chat Room 9-10 pm to discuss Project 1.
Project 2: Creating a Research Paper.
Assignment 2 due Wed, Oct 11.
Week 3, Oct 10

Meet in Chat Room 9-10 pm to discuss Project 2.
Project 3: Using a Wizard to Create a Resume and Creating a Cover Letter with a Table.
Assignment 3 due Wed, Oct 18.

Week 4, Oct 17

Meet in Chat Room 9-10 to review for Written and Hands-on Test 1 for Projects 1,2,3.

Week 5, Oct 24

Written and Hands-on Test 1 (Projects 1-3). Cannot use notes for written but you can use notes for hands-on.
Web Feature: Creating Web Pages Using Word.
Web Feature Assignment due Sat, Oct 28.

Week 6, Oct 31

Meet in Chat Room 9-10 pm to discuss Web Feature and Project 4.
Project 4: Creating a Document with a Table, Chart, and Watermark.
Assignment 4 due Wed, Nov 1.

Week 7, Nov 7

Meet in Chat Room 9-10 pm to discuss Project 5.
Project 5: Generating Form Letters, Mailing Labels, and Envelopes.
Assignment 5 due Wed, Nov 8.

Week 8, Nov 14

Meet in Chat Room 9-10 pm to discuss Project 6.
Project 6: Creating a Professional Newsletter.
Assignment 6 due Wed, Nov 15.

Week 9, Nov 21

No Chat Room scheduled. Enjoy Thanksgiving break!

Week 10, Nov 28

Meet in Chat Room 9-10 pm to review for Test 2 covering Projects 4-5-6.
Integration Feature: Merging Form Letters to E-Mail Addresses Using an Access Table.
Integration Assignment due Nov 29.
Week 11, Dec 5

Written and Hands-on Test 2 (Projects 4,5,6, Integration). Cannot use notes for written but you can use notes for hands-on.
Student Evaluations given.

Note: If you do not have the clipart images or fonts given in the exercises, you may use an appropriate substitution. Also, when you complete a Case & Places exercise, you will need to use all the concepts introduced in that project in order to receive full credit.
Microcomputer Office Applications

Syllabus
Microcomputer Office Applications

28OATN179701

00A

Pre-requisites: E-mail, Internet, keyboard/mouse skills

Class Meets: 6:30-8:30 p.m., Mondays, Sept. 25, Oct. 30, Dec. 4

Credits: 3

Maximum Enrollment: 15

Course Description: A hands-on course introducing the basics of microcomputers in the areas of the operating system, word processing, spreadsheets, charts, databases, and presentation graphics.

Course Objectives:

- To teach the introductory concepts of Windows 98—terminology, formatting a disk; creating folders; naming/rename, deleting, and printing files.
- To teach the fundamentals of word processing using Microsoft Word 2000.
- To teach the fundamentals of spreadsheets using Microsoft Excel 2000.
- To teach the fundamentals of databases using Microsoft Access 2000.
- To teach the fundamentals of charts/graphics using Microsoft Excel 2000.
- To teach the fundamentals of presentation graphics using Microsoft PowerPoint 2000.
- To foster an appreciation of an integration package as a useful tool in the workplace and for personal use.

One high-density 3 1/2” disk.

Homework Policy:
In order to complete this course successfully, you will need to spend approximately 3-5 hours a week completing the assignments that will reinforce the concepts discussed in your textbook. You will email your completed lab assignments as attachments for grading and feedback. Identify each assignment according to the unit, exercise, and page number. Due dates for homework will be published. Late assignments will be penalized. Assignments more than one week late will not receive credit.

CHAT ROOM PARTICIPATION: I plan to use the Chat Room on Monday evenings from 9-10 p.m. to discuss the software and any pertinent issues. Credit will be given for Chat Room participation. The Chat Room will be monitored; therefore, keep the issues pertaining to the topic for the week.
For email, please include your full name and phone number so that I may call you if necessary.

Grading Policy:

HOMEWORK ASSIGNMENTS & CHAT PARTICIPATION (20%)
This course requires reading the published notes, the assigned textbook chapters, and completing all homework assigned. On Monday evening from 9-10 p.m., you will participate in a Chat session. You will receive credit for participating.

SOFTWARE HANDS-ON TESTS (30%)
Two hands-on tests (midterm & final) will be given during the quarter.

WRITTEN TESTS (30%)
Two written tests (midterm & final) will be given during the quarter.

ARTICLE REVIEWS (20%)
Students are required to submit three summaries of articles from current online computer magazines/sites as assigned during the quarter. Each summary should be a minimum of three paragraphs but no more than one page. Summaries are evaluated on content and format. They will be submitted online. You may choose articles in the areas of hardware, software, trends, business uses, etc. for that particular computer topic. See the schedule for a specific topic. Use the Internet to locate and research the topic. One of the articles will be a group project. Some suggested sites are Smart Computing, PC World, Byte, ZDNet, PC Magazine, and PC Computing. The article you research must be more than a few short paragraphs and of interest to you. Don't choose overly technical articles. You must understand the article in order to summarize it.

Include your full name, name of article, and date on each article review. List URL address with your report. Use articles dated 1998 or later. Late reviews will be penalized. Article reviews that are late more than one week will not receive credit.

Incomplete Policy:
It is very important that you send me an email with a sample attachment by Friday, September 29, to verify that you know how to use your computer/Internet and Classware. If you do not respond by that date, you will automatically be dropped from this online course.

Examinations:
There will be two written and two hands-on tests scheduled for October 30 and December 4 from 6:30-8:30 p.m. at the Professional Development Center. You will be permitted to use your notes and textbook for the hands-on tests but NO notes or textbook will be permitted for the written tests. No calculators will be permitted on the spreadsheet portion of the test. Written tests will consist of True/False, Multiple Choice, Matching, and Short Answer.
Miscellaneous:
Students may withdraw from the course before the 58th day of the quarter. Students must initiate the withdrawal. The professor will sign the withdrawal, but it is the responsibility of the student to turn it into the Registrar's Office.

Weekly Schedule:

Week One:
Week 1, September 25; Overview of course format; introductions; activate Classware accounts; demonstration of Classware.

Week Two:

Week Three:

Week Four:
Continue Word; Begin Excel 2000, Excel A-1 thru A-17. Meet in Chat Room on Monday from 9-10 p.m.

Week Five:
Continue Excel, Excel B-1 thru B-19; Excel C-1 thru C-17; and Charts, Excel D-1 thru D-17. Meet in Chat Room on Monday from 9-10 p.m. to review for text.

Week Six:
October 30; Written and Hands-on Test 1 over Windows, Word, and Excel. 6:30-8:30 p.m. You may use your notes/textbook for the hands-on test. NO notes/textbook will be permitted for the written test. No calculators are permitted.

Week Seven:

Week Eight:
Selected features from Forms and Reports. Meet in Chat Room on Monday from 9-10 p.m.
Week Nine:
PowerPoint 2000, PowerPoint A-1 thru A-17 and PowerPoint B-1 thru B-17.
Meet in Chat Room on Monday from 9-10 p.m.

Week Ten:
Group Project for Article 3 (miscellaneous) due on Friday. Selected features of Modifying and Enhancing a Presentation. Meet in Chat Room on Monday from 9-10 p.m. to review for final exam.

Week Eleven:
December 4; Final Examination
Microcomputer Office Databases

Syllabus
Web-based Class

Prerequisite: Microcomputer Office Applications

Web-based classes are not for every student. A student must be self-motivated and self-directed to succeed in a web-based class. You must be able to read the textbook and use the Help feature in Access to troubleshoot yourself out of specific problems. You must be a self-learner.


Please have your textbook prior to the first class.

Software: We will use www.blackboard.com as our medium for communicating with each other. If you are enrolled in the class, please use your last name and your first initial to enter the site. We will use this software for communicating with each other, group projects, and also chat. All of your information should be able to be obtained through this web site.

Course Description: A comprehensive course covering the basic, intermediate, and advanced concepts of database management using a "web-based" learning environment in the application program, Microsoft Access 2000.

Course Objectives: At the completion of this web-based course, the student should be able to:
- define the purpose of databases in business;
- design a database structure;
- apply the necessary edit commands to add, change, and delete records;
- list and print records;
- sort and index records based on specific criteria;
- define the purpose of reports;
- create, modify, and print mailing labels;
- create a merged Word document from Access database;
- create custom forms and reports for individual use;
- use basic mathematical functions in database files;
- develop searches based on multiple search conditions;
- join multiple tables and establishing referential integrity.

Evaluation:
- Lab Assignments 10%
- Course Project 30%
- Tests (hands-on and written) 50%
- Chat Room/Groups 10%
Lab Assignments-In order to successfully complete this course, students will need to spend approximately three hours outside of class using their home computer for class assignments. It is important that class assignments are turned in each week so that a student does not fall behind in the class. This is especially true in a web-based course where it is easy to let work slide.

Homework assignments should be emailed or faxed to the faculty member the evening following the chat room by 9 pm (Thursday 9 pm). Should questions arise in chat room on Wednesday evening, you will then have an opportunity to correct and send the next evening.

All homework should have your last name in every database along with the project and lab assignment. This will prevent any problems with your work not being credited to you. Each project should be a separate database.

When we begin project 2, you will have as many as 10-15 different queries for that project. Use the task number in the lab assignment for the query when you save the item. For example, 13 On Hand Value, 14 Average Selling Price, and so on.

Lab assignments should be emailed as attachments on Thursday evenings. Compact the database prior sending it through email. Do this by choosing Tools, Database Utilities, then Compact and Repair Database. This will help in transferring your homework assignments. I will make an attempt to have them graded and the results emailed to you by Monday of the next week or sooner. When we get into more of the advanced features, you may need to email each project lab assignment separately.

Hands-on Tests: Two hands-on tests will be given during the quarter. Students may use their notes or textbook during the tests.

Written Tests: Written tests consisting of true/false and multiple choice questions will be given prior to the hands-on tests. Written tests are closed book/closed notes

Project: A comprehensive database project will be assigned. A detailed project sheet is included on the web site. Begin thinking about this sheet immediately. If you are presently working, look for ideas in your work environment that you might be able to apply. The project should be your own idea. If you need help with names and addresses, use the telephone book or another registry, i.e., professional associations to which you might belong.

Chat Room Participation: Every Wednesday evening (except on October 18), we will participate in a chat room. Chat room is an opportunity to discuss problems and solutions to the project in which we are working. I will pose questions for enhanced discussion. It is important that you read the chapter and complete as much of the homework assignment as you can. Groups will be assigned so that you can work on one of the cases in the back of each chapter. This will enhance your learning of the software. It is imperative that everyone participates in chat room. We will discuss a time for the chat room session by mutual agreement.
Class Meetings: The class will meet in room 214 at 6:30 pm on Wednesday evenings. This class will meet three times during the fall quarter. The dates are those published in the Class Schedule.

Withdrawal: A student may withdraw from a course according to the University policy. Students may withdraw with a W or F with the signature of the faculty member. It is the student's responsibility to initiate the withdrawal from a class, not the instructor.

Cheating: Cheating on class assignments, tests, project, or homework will be dealt with through procedures established by the College and University. Depending on the circumstances, failure of the course or suspension from the college could be enacted.

Homework Lab Assignments--Fall 2000

<table>
<thead>
<tr>
<th>Week</th>
<th>Dates</th>
<th>Assignments</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>9/20-9/22</td>
<td>In the Labs 2, 3; Case 2--Project 1</td>
</tr>
<tr>
<td>2</td>
<td>9/25-9/29</td>
<td>No homework due this week</td>
</tr>
<tr>
<td>3</td>
<td>10/2-10/6</td>
<td>In the Labs 2, 3; Case 2--Project 2</td>
</tr>
<tr>
<td>4</td>
<td>10/9-10/13</td>
<td>In the Labs 2, 3; Case 2--Project 3</td>
</tr>
<tr>
<td>5</td>
<td>10/16-10/20</td>
<td>No homework due this week; begin setting up your project.</td>
</tr>
<tr>
<td>6</td>
<td>10/23-10/27</td>
<td>In the Labs 2, 3; Case 3--Project 4; send me what you have completed on your project.</td>
</tr>
<tr>
<td>7</td>
<td>10/30-11/3</td>
<td>No homework due this week. Work on project.</td>
</tr>
<tr>
<td>8</td>
<td>11-6/11/10</td>
<td>No homework due this week. Work on project.</td>
</tr>
<tr>
<td>9</td>
<td>11/13-11/17</td>
<td>No homework due this week. Work on project.</td>
</tr>
<tr>
<td>10</td>
<td>11/20-11/24</td>
<td>In the Labs 2 and 3--Project 5</td>
</tr>
<tr>
<td>11</td>
<td>11/27/12/1</td>
<td>Projects due this week in hard copy to me at the office.</td>
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12/4-12/8 Exam
Welcome to Office Telecommunications, a web-based course.

I hope you have an enjoyable and successful learning experience.

Course Syllabus
Text/Materials:

Objectives:
• To introduce concepts related to Telecommunications and the Internet in the business environment.
• To provide students with the ability to develop online skills needed to be Internet literate.
• To understand the logistics of getting connected to the Internet.
• To teach students how to use HTML to create web pages.
• To create a personal web site which includes a resume for publishing on the Web.

Evaluation:
Lab Assignments 25%
Test Average (2) 25%
Participation 25%
Course Project 25%

Lab assignments are based on the text tutorials. All lab assignments will be sent to me by e-mail. Test one will cover projects 1-3, and test 2 will cover projects 4-6. Test one will be on Thursday, November 2 in room 200. Test two will be on Finals night, December 7 in room 200.

Participation is vital to your success in an on-line class. You must participate in the chat room at least 3 times. You are welcome to join at every session. The sessions will be on Thursday evenings from 7-8 except on November 2 (midterm), November 24 (Thanksgiving) and December 7 (final). You may e-mail me at any time and I will get back to you as soon as I can.

Everyone is required to do a Course Project which will be your own web site. These will be posted to your own web page. Directions for transferring files to the server and guidelines for the project will be found in the assignments section of Blackboard.

Withdrawal by a student requires that you withdraw officially (fill out form). You may withdraw with an automatic "W" during the first 3 weeks of the course. After that you
must get a signature from the instructor and submit the form to the registrar's office. Failure to withdraw officially will result in grade of "UW" which will convert to an "F" and be counted in the cumulative grade point average. The last day to withdraw is November 16.

Web-Based Class

Tentative Syllabus

Week 1  9/21  Introduction to Class, Blackboard, HTML
Week 3  10/5  Virtual Chat. Discuss Project 2. Project 2 due 10/11.
Week 4  10/12  Virtual Chat. Introduce Project 3. Project 3 due 10/21.
Week 5  10/19  No Chat due to OBTA Conference in Columbus.
Week 6  10/19  Project 3 due 10/21. Lab 4 posted.
Week 7  11/2  Meet in room 200 for midterm multiple choice/true false questions on Projects 1-3. Go over FTP procedures.
Week 8  11/9  Virtual Chat on Project 5. Project 5 due 11/15
Week 10  11/23  No chat due to Thanksgiving. Project 6 due Monday, 11/27.
Week 11  11/30  Review for final, Projects 4-6. Questions on final project.
Week 12  12/7  Meet in room 200 for Final Exam on Projects 4-6. Presentation of Web Sites.