

Community College Students Taking On-Line Courses: The Student Point-of-View

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(ABSTRACT)

This study is a qualitative examination of community college students' experiences taking on-line courses. The study addresses the research question, "How do community college students construct their on-line experiences?" In order to answer this question, the following foci were examined: What are the characteristics of students taking on-line courses?, Why are they taking on-line courses?, What are facilitative or debilitating dimensions or features that promote or inhibit success in on-line courses?, and, How does the community college infrastructure support students taking web-based courses?

The results of the study were grouped into 4 categories: Interpersonal Support, Student Characteristics, Course Issues, and Infrastructure Support. All but 2 of the findings of the PRCC Study are supported by research. The first factor not mentioned in the literature is that some students choose to take a course on-line if they are not interested in the content of the class. The second finding not implicated in the research is that electronic distractions of Instant Messaging™ and the lure of surfing the Web seem to be more debilitating than interruptions from other sources such as family and work.

Other implications of this study involve concerns that are common to both on-line and on-site instruction, as well as the connection between constructivism and on-line learning. Facilitative and debilitating dimensions or features that promote or inhibit success in on-line courses imply that faculty and institutions need to be adapting to the demands of teaching and learning on the Web. Implications of the Study examine improvements to the study and ideas for future research.

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Introduction

Over the past decade, the number of distance education courses has grown tremendously (NCES, 1998; NCES, 2000; Juge, Hartman, Sorg, & Truman, 1997; “Report of the Distance Learning Steering Committee,” 2000). For example, the 2000 report from the National Center for Educational Statistics (NCES) indicates that enrollment in all college-level distance education courses between 1997 and 1998 was 1,661,100, which represents an increase of 907,460 students since 1994-1995.

Although the increase in distance learning courses and enrollments in 4-year institutions is remarkable, it is even more evident in the community colleges. The 1998 and 2000 NCES reports state that the majority of students enrolled in distance learning courses attended public 2-year colleges. According to the “Report of the Distance Learning Steering Committee on Distance Learning in the Commonwealth” (2000), in Fall 2000, the Virginia Community College System (VCCS) offered over 1500 distance learning courses, which was a 3 fold increase over 1997. In 1997, there were 8,629 Virginia community college students taking on-line classes; 2 years later, 18,890 students were enrolled, reflecting an increase of over 10,000 students (2000).

As a result of the increase in distance learning, the amount of research conducted on distance education has also grown. However, while much has been published about distance education from the designer’s, administrator’s and instructors’ points-of-view, little has been written about the student perspective of this new learning environment (Hara & Kling, 2000; Miller & Husmann, 1994; Roblyer, 1999; Schlosser & Anderson, 1994; Wang & Newlin, 2000). Hara and Kling state that, “Clearly, we need more student-centered studies of distance education that are designed to teach us how the appropriate use of technology and pedagogy could make distance education more beneficial for more students” (p. 22). They continue by pointing out that there need to be more “detailed descriptions of on-line classrooms” as well as indications about how problems develop and how students deal with these concerns (p. 3). Miller and Husmann also arrived at this conclusion while conducting their study involving 70 successful distance education students at the University of Nebraska-Lincoln. These authors

discovered that most research on distance education focuses on administrative or faculty issues. However, they state that in order to truly understand distance learning, educators must know the learner, who is “the critical component in determining the quality and success of distance education programming” (p. 107).

Research reveals that there is a need for studies from the on-line student’s point-of-view and that the majority of on-line courses are offered by community colleges. As a result, the purpose of this dissertation study is to enrich the literature on distance learning by providing observational and ethnographic data to describe the perspectives of community college students taking on-line courses.

In order to solicit data to provide a rich description of the experiences of community college students taking web-based offerings, the study focuses on the overarching research question, "How do community college students construct their on-line experiences?" The specific research questions are:

- (a) What are the characteristics of students taking on-line courses?
- (b) Why are they taking web-based courses?
- (c) What are facilitative dimensions or features that promote success in on-line courses?
- (d) What are the debilitating dimensions or features that inhibit success in an on-line course?
- (e) How does the community college infrastructure support students taking web-based courses?

To investigate the research questions, the dissertation is divided into 5 chapters, which are presented in the following order: (a) literature review, (b) methodology, (c) results, (d) discussion, and (e) conclusion. All of the chapters except the Results are organized according to the 5 research questions. A glossary is provided to define technical terms used within the context of this study.

CHAPTER ONE: LITERATURE REVIEW

Introduction

To date, the research literature on students' perspectives of web-based distance education is scarce, and studies concerning community college students on-line are even more difficult to locate. Literature that is evident only provides rudimentary details about these students' experiences (Hara & Kling, 2000; Miller & Husmann, 1994; Roblyer, 1999; Schlosser & Anderson, 1994; Wang & Newlin, 2000). Empirical and qualitative studies rarely provide in-depth examinations about who these students are, why they take on-line courses, facilitative and debilitating features of on-line courses, and infrastructure support.

The purpose of this literature review is to provide a foundation for the study of community college student perspectives of the on-line learning experience. Included in this review are empirical studies, as well as observations and recommendations from institutions and scholars who have published their experiences in the design and implementation of web-based distance education. Since the literature about on-line learning in the community college is so scarce, the research discussed in this chapter addresses web-based course design issues for 4-year as well as 2-year educational institutions.

This chapter is organized according to the following questions:

- (a) What are the characteristics of students taking on-line courses?
- (b) Why are they taking web-based courses?
- (c) What are facilitative dimensions or features that promote success in on-line courses?
- (d) What are the debilitating dimensions or features that inhibit success in an on-line course?
- (e) How does the community college infrastructure support students taking web-based courses?

What are the Characteristics of Students Taking On-line Courses?

Locating information on the age, gender, ethnicity, and other demographics for distance education students has been surprisingly difficult. After using a wide variety of keywords to search many sources such as the Department of Education, National Council for Educational Statistics (NCES), ERIC clearinghouse search engines, web searches, and a myriad of other sources, detailed national demographics about students taking distance education courses could not be located. The NCES provides statistics for the number of classes and students enrolled nationally (which include but are not limited to on-line courses), but nothing on age, gender, and ethnicity. Some states and individual educational institutions maintain specific demographic data on distance learners, but the level of detail varies from state to state and institution to institution.

Two categories of information are evident in the research when discussing who takes distance education classes: (a) demographics and (b) student characteristics. The first category discussed in this section addresses the demographics of the population, specifically, (a) number of classes and students enrolled, (b) gender, and (c) age. The second category delineates the student characteristics of (a) self-direction, (b) willingness to interact with others, and (c) miscellaneous traits such as locus of control and inquisitiveness.

Demographics

This section of the literature review looks at (a) number of classes and students enrolled in distance education courses nationally (b) gender, and (c) age.

Number of Classes and Students Enrolled

In their literature review and description of their on-line experiences as instructors, Juge, Hartman, Sorg, and Truman (1997) report that in the U.S. at the time of the study, 1,343 universities and 1,064 community colleges delivered web-enhanced or totally on-line courses. In terms of the sheer number of students taking distance learning courses, which include on-line classes, the 1998 NCES report states that in the academic year 1994-1995, there were 753,640 distance education students; the majority of whom,

414,160 or 55 percent, were enrolled in public 2-year colleges. The 2000 NCES report indicates that enrollment in all college-level distance education courses between 1997 and 1998 was 1,661,100, which was an increase of 907,460 students since 1994-1995. As in the earlier findings, public 2-year institutions enrolled more students in distance education than any other educational facilities. In the 2-year schools, 714,160 students were enrolled, which was approximately 300,000 more than stated in the 1998 report.

According to Virginia's Office of the Secretary of Education's "Report of the Distance Learning Steering Committee on Distance Learning in the Commonwealth" (2000), as of Fall 2000, the Virginia Community College System (VCCS) offered over 1500 different distance learning courses, which is a 3 fold increase over 1997. Ten VCCS institutions offered full degrees via distance learning. In 1997 there were 8,629 students were enrolled in VCCS Online; 2 years later, 18,890 students were enrolled in on-line courses. The VCCS report notes an increase in distance learning enrollment in Kentucky. The Kentucky Commonwealth Virtual University first opened in Fall 1999 with 265 students enrolled. The next semester, Spring 2000, enrollment skyrocketed to 1,732 ("Report of the Distance Learning Steering Committee," 2000).

Gender

Determining gender representation is difficult because there does not seem to be a clear demographic pattern. Some literature reviews and studies indicate that the majority of distance learners are women. For example, among Washington State community or technical college distance learners, 65 percent were female (Fall Enrollment and Staffing, 1998). Dille and Mezack (1999) report that out of the 188 community college students who participated in their study of on-line learners, 71.5 percent were female and 28.5 percent were male.

However, other research shows that the majority of students in distance education are men. In his survey of 32 on-line community college students in Georgia, Roblyer (1999) found that 54.4 percent of his participants were male and 39.4 percent were female. Ouellette (2000) conducted a study with 29 students getting their Master's degree

in Management and Technology from the University of Maryland Graduate School of Management and Technology. In this study, 60 percent were male and 40 percent were female. Of the 1,542 students taking courses on-line at Virginia Tech in Fall 2000, 57 percent were male and 43 percent were women (Robbins, 2000).

Age

The age of students taking courses on-line is reported to range from 19 to 50 years old with the average being in their late 20's to mid 30's. Of the 32 students in Roblyer's (1999) study, 66.7 percent were between the ages of 19 and 30. In Ouellette's (2000) study, 35.1 percent of the 29 students were 34 years old. The typical Washington State community or technical college distance learner was a 25-year-old female, which is 3 years younger than students in seat courses at the same institutions ("Fall Enrollment and Staffing," 1998). The average age of the 188 students in Dille and Mezack's (1999) study was 27.5. Juge, Hartman, Sorg, and Truman (1997) found that the average age of their 72 adult learners ranged between 20 and 50 years old. By looking at these numbers, it can be roughly estimated that the average on-line or distance learning student is older than the traditional 18-21 year old taking seat-courses.

Student Characteristics

This section of the literature review discusses student characteristics, the second major category of available information about who is taking on-line courses. Properties of this category are (a) self-directed, (b) willingness to interact with others, and (c) miscellaneous traits, such as locus of control and inquisitiveness.

Self-directed

In order to persist in their on-line courses, students must be self-directed (Bonk & Cummings, 1998; Broderick & Caverly, 1996; Harasim, 1990; Juge, Hartman, Sorg, & Truman, 1997; Kerka, 1996; Mannix, 2000; Major & Levenburg, 1999; Seagren & Watwood, 1995; Schrum, 1995; Smaldino, 1999). A self-directed student exhibits the following characteristics: motivation, self-discipline, and responsibility (Broderick & Caverly, 1996; Harasim, 1990; Juge, Hartman, Sorg, & Truman, 1997; Kerka, 1996;

Major & Levenburg, 1999; Mannix, 2000; Miller & Husmann, 1994; Schrum, 1995; Seagren & Watwood, 1995; Smaldino, 1999; “Teaching at an Internet Distance,” 2000). An in an interview, the Dean of the Stanford University School of Engineering is quoted as saying, “If you are not disciplined, you really should not engage in this kind of learning’” (Mannix, 2000, p. 36).

The report of a year-long faculty seminar composed of 16 faculty from all 3 of the University of Illinois campuses states that students’ levels of self-motivation are a result of their age, background, intellect and “psychological makeup” (“Teaching at an Internet Distance,” 2000, p. 21). The same report continues, “the mature nontraditional student is inherently more self-motivated than the young, traditional student” (p. 21). Major and Levenburg (1999) wrote in an editorial that successful distance learning students are active, self-disciplined, and self-directed learners. They define self-directed students as those who have the metacognitive skills to “know what they know,” can manage their time, and, in the face of technical difficulties, problem solve and act proactively. Miller and Husmann (1994) define self-direction as the student’s ability “to claim greater individual responsibility for their own learning” as well as playing “the lead role in the identification and direction of educational programs” (p. 113).

According to Wolcott’s (1996) review of the literature, student autonomy or self-directed learning, personal responsibility, and interdependence are essential to the success of on-line learners. Schrum (1993) also discovered that students must be responsible for their own learning, especially when using computer mediated communication tools, such as discussion boards. A self-directed learner can also be defined as an autonomous learner (Hartman, Sorg, & Truman, 1997), which, based on her literature review, MacKeracher (1993) is defined in Table 1.1.

Table 1.1

Characteristics of Self-directed or Autonomous learners

	Separate/Autonomous Learner
Learning Concerns	<ul style="list-style-type: none"> • Mastery of content • Individual achievement • Ask questions to prove truth or worth of ideas. • Identifying truth
Learning Activities	<ul style="list-style-type: none"> • Challenging ideas of others. • Convincing others through logic, order maintained through agreement to abide by rules • Conflicts resolved through detached imposition of existing rules. • Involves doubting or excluding ideas until their worth has been proven • Attempts to reveal truth that is general, impersonal & grounded in rational, logical thought or generalized perception of reality • Prefers self-directed activities; competition in group activities • Objectivity maintained through adopting frame of reference of discipline (e.g. biology, history) or authority (e.g. the law, the instructor) • Prefer to hold thought & feeling separate
Preferred Thinking Styles	<ul style="list-style-type: none"> • Analytical • Based on patterns and exemplars
Nature of Truth & Knowledge	<ul style="list-style-type: none"> • Truth resides in reliability & validity of knowledge • Knowledge separate from knower
Nature of Evaluation	<ul style="list-style-type: none"> • Opportunity to correct errors in selection of facts and logic used • Individual accountable for own learning

Willingness to Interact with Others

In addition to being self-directed, distance learning students need to work together to build learning communities and avoid over-dependence on the instructor. In her article “Learning to Learn Online,” Mannix (2000) states that students who want to feel connected in this inherently lonely medium, need to “show initiative and be aggressive” in order to interact and communicate with their fellow classmates. MacKeracher (1993) indicates that instructors must inform students of the self-directed nature of on-line education, which requires that they take responsibility for their own learning as well as that of others. In addition, students should create learning communities by validating and building on the knowledge of their classmates. Juge, Hartman, Sorg, and Truman (1997) also say that successful students need to construct their own knowledge from what they

have learned independently and from what they have gleaned from interactions with their classmates and instructor.

Miscellaneous Traits

Other traits of successful students were located in the literature; however, these characteristics could not be neatly included in a specific category, so they are discussed under this heading of “Miscellaneous Traits.”

Laube’s (1992) study of 181 secondary students found the following characteristics to be evident in students who persisted in their on-line courses. They had post-secondary education goals and a positive attitude about their graders and tutors. They also studied often. Wang and Newlin (2000) learned that students with the following 3 characteristics were successful in their web-based courses in terms of grades: they spent a lot of time on the site as indicated by number of hits they logged personally, they were “inquisitive,” and they had a high internal locus of control (p. 140). Dille and Mezack (1991) studied 188 community college students to identify predictors of high risk for attrition. Dille and Mezack found that successful students were internally oriented (internal locus of control), older, and married. These researchers said that students with a higher level of internal locus of control “would be expected to persevere more than their more external classmates because ‘internals’ perceive events as contingent upon their own behavior” (p. 29).

In summary, given that the data is sketchy, most students taking on-line classes appear to be in their late 20’s to early 30’s. Determining which gender tends to take more on-line courses than the other is difficult to determine since the literature in this area is inconsistent. What is clear, however, is that self-directed students with a willingness to interact with others have a greater chance of success in their on-line course than those without these characteristics. In addition, those with an internal locus of control, a positive attitude, and the patience to spend many hours working on-line will also do well in their on-line course.

Why are Students Taking Web-based Courses?

Emphasizing the need for more studies about students taking distance learning courses, Roblyer (1999) says, “Few studies in the distance learning literature deal directly with the issue of why students choose distance learning over traditional learning systems” (p. 158). According to the literature, students enroll in web-based courses for 2 reasons: (a) the class is necessary for completion of a degree, which is the key to improved employment opportunities (Ouellette, 2000), and (b) the convenience of time-and-space independent distance learning courses (Faith & Coulter, 1988; Prummer, 1994; Roblyer, 1999).

Improved Employment Opportunities

Completing a post-secondary degree is often the first step towards improving a student’s employment status. According to the NCES, empirical and qualitative literature show that the primary motivating force for students to attend post secondary educational institutes is to advance their employment status. White’s (2000) year-long survey of 3 on-line courses with an undisclosed number of students also found that they were taking courses to further their career or to change vocations. One person interviewed for Mannix’s (2000) article was a manufacturing engineer for General Electric who was working towards a Master’s degree via on-line classes from the Georgia Institute of Technology in Mechanical and Industrial Engineering. In spite of the sense of isolation he experienced, his motivation to persist in the course was “The call to get the degree.” (p. 36).

Convenience

Students may take post-secondary courses to further their career goals, but they take them on-line because these classes are convenient as a result of their space and time independence (Faith & Coulter, 1988; Prummer, 1994; Richards, 1994; Richards & Ridley, 1997; Roblyer, 1999). Roblyer’s (1999) 32 Georgian community college students indicated that they took distance learning courses because they appreciated the control they had over the pace and timing of the class. In fact, 75 percent of these students said that although they “would prefer FTF [face-to-face] courses [they] probably

choose distance learning courses because they offered more control over time” (p. 168). Richards' (1994) descriptive study based on questionnaires and interviews of on-line students in 12 sections of English and marketing at an urban community college in Ohio also found that computer/modem instruction was more convenient than seat courses for students who encountered time and space conflicts imposed as a result of employment, travel requirements, and family obligations. In their examination of an unspecified number of students taking on-line courses at Christopher Newport University, Richards and Ridley (1997) also discovered that scheduling conflicts between meeting work and family responsibilities were the primary barriers to educational progress for students. Based on his experiences teaching web-based courses at Stony Brook’s Electronic Extension Program as part of the State University of New York system, Edelson (1998) found that in addition to solving time conflicts, on-line courses provided the convenience of allowing learners to log on and consider the course material whenever they chose. A student in 1 of Edelson’s classes stated that it was preferable to log on to his/her course throughout the week rather than to sit through a 3-hour class: “It is certainly better to be able to log on many times a week instead of trying to absorb [at 1sitting] a 3-hour lecture” (p.11).

To summarize why students take on-line courses, distance education opportunities allow many men and women a convenient means of obtaining a post-secondary education. These degrees, in turn, will lead to improved employment.

What are Facilitative and Inhibitive Features of Student Success in On-line Courses?

According to the literature, student success in on-line courses is related to interaction opportunities, how well the courses are designed and managed, and whether or not the student has access to a computer and an internet connection. Students must also know how to use the technology in order to be successful in their courses. This section of the literature review is organized as follows: (a) the need for interaction, (b) interaction through learning communities, (c) well designed and managed courses, (d) well designed

and managed discussion board activities, and (e) access to and knowledge of computers and the Internet.

Need for Interaction

The issue of interaction between the instructor and the students and students with their classmates is the most commonly mentioned feature in connection with the success of distance learners (Berge, 1999; Bonk & Cummings, 1998; Chickering, 1991; Edelson, 1998; Feenberg, 1999; Galusha, 1997; Harasim, 1990; Harasim, Hilz, Teles, & Turoff, 1995; Kirkup & Prummer, 1990; Mannix, 2000; Miller & Husmann, 1994; Smaldino, 1999; “Teaching at an Internet Distance,” 2000). Interaction refers to any correspondence between the instructor and students, which can include feedback on a paper or exam as well as comments on a discussion board. According to Edelson (1998), interaction is key to alleviating the sense of isolation many on-line students experience, which he refers to as the “loneliness of the long distance learner” (p. 8). This concern is reflected when students ask: “How can the instructor possibly ‘know’ me? How can other students know what I am like?” (Edelson, 1998, p.8). Hara and Kling also found isolation to be an issue. The students in their study discovered that difficulties, which could have been easily resolved in a face-to-face course, had to be worked out alone when studying on-line.

Kirkup and Prummer (1990) conducted joint survey research at the Fernuniversitat in Germany and the Open University of the United Kingdom. At the German university, they had 1,193 student responses to their questionnaire and 1,615 student responses from the Open University for response rates of 49 percent and 65 percent respectively. Based on this survey research, Kirkup and Prummer concur with Edelson (1998) that, “Distance study can be a very socially isolated experience-more for some students than others, and more uncomfortable for some students than others” (p. 25).

The instructor can alleviate students’ sense of isolation by providing a variety of methods of interaction and feedback. Visser, Plomp, and Kuiper (1999) conducted a developmental research study where they sought to develop a motivational model for

distance learning students. In their study of 81 students, the researchers found that 1 dimension of interaction is through instructor feedback: “Frequent, timely, adequate and encouraging feedback is an important satisfaction strategy. Other strategies are personal remarks and informing the student on how far they [students] have come already” (p. 404). As the Director of Training Systems and Head of the Instructional System Design graduate program at the University of Maryland, Berge (1999) emphasizes the importance of feedback and interaction: “What is essential to any educational system is the possibility for interaction in the form of feedback to the learner as he or she is practicing skills or acquiring knowledge” (p. 9).

In discussing the importance of interaction, the 16-member faculty seminar at the University of Illinois drew from Chickering’s 1991 Seven Principles for Good Practice in Undergraduate Education. Although Chickering was not specifically discussing distance learning in his work, the Illinois group stated that the principle of interaction could be applied to distance education. A summary of The Seven Principles published on the Web, states: “Frequent student-faculty contact in and out of class is the most important factor in student motivation and involvement. Faculty concern helps students get through rough times and keep working” (<http://www.byu.edu/fc/pages/tchlrnpages/7princip.html>). In a review of the literature and discussion of his experiences, Andrew Feenberg (1999) reinforces the concept that instructors must make an effort to interact with their students in order to encourage learning. He states:

The best way to maintain the connection [between on-line education and the values of traditional education] is through ensuring that distance learning is ‘delivered’ not just by CD ROMs, but by living teachers, fully qualified and interested in doing so on-line. ...Interaction with the professor will continue to be the centerpiece of education, no matter what the medium. (<http://www-rohan.sdsu.edu/faculty/feenberg/TELE3.HTM>)

In spite of the recognition that interaction is key to student success in on-line instruction, it is not always easy to implement. First of all, providing interaction for

students is extremely time consuming for the instructor. The report of the University of Illinois faculty seminar found that teaching the same number of students on-line is more time intensive than on-campus instruction (“Teaching at an Internet Distance,” 2000). According to Everhart (2000), because of the changed environment and demands for interaction and feedback, faculty spend 50 percent more time communicating with their on-line students than they would in the traditional classroom. Mannix (2000) interviewed a professor at Penn State who spends about 3 hours a day responding to email in order to provide his students with the sense that there is a person on the other side of the screen. He spends more time with the distance-learning student than with his in-class students: “It [email interaction] allows me to focus more on the individual student’s needs. If I don’t do that, I will lose some people. You can’t go to a common denominator in this particular medium” (p.37).

In addition to the amount of time it takes to provide interaction, the nature of the Internet makes communication difficult because “we strip the communication environment of much of its richness” through technology (Wolcott, 1996, p. 24). Students are not used to creating relationships with people they cannot see, and they are unaccustomed to communicating in the absence of non-verbal cues. Edelson (1998) agrees with Wolcott: “The biggest intellectual and behavioral hurdles for faculty and students to clear is overcoming the anxiety caused by the disunities of time, space, and action,....” (p. 5). Because the primary mode of communication is through writing, Hara and Kling (2000) emphasize the importance of both instructors and students creating a “strong social presence in a written medium” (p. 22), which requires time and expressive ability. Since some students are not used to communicating electronically, they need to be trained to interact in an on-line medium (Smaldino, 1999).

Interaction Through Learning Communities

Berge (1999) found that interaction improves learner motivation because it provides for support not only from the instructor but, perhaps more importantly, also from fellow students. Mannix (2000) observes that students who take courses on-line learn as much from each other as they do from the instructor. In their review of the

literature, “A Dozen Recommendations for Placing the Student at the Centre of Web-based Learning,” Bonk and Cummings (1998) refer to the role of the instructor as the “guide by the side” rather than the “sage on the stage” (p. 85). These authors also state that students are interested in the instructor’s opinion, but only after they have explored issues on their own or in small groups. Berge states that “When students have the opportunity to interact with one another and their instructors about the content, they have the opportunity to build within themselves, and to communicate, a shared meaning, to ‘make sense’ of what they are learning” (p. 8). By making sense of the material together, students are mutually constructing their learning (Wang & Newlin, 2000). This mutual construction results in students developing learning communities which makes on-line learning especially inviting to instructors who adhere to the constructivist point-of-view (Major & Levenburg, 1999; “Teaching at an Internet Distance,” 2000).

The report of the Illinois faculty seminar states that both cognitive constructivism and social constructivism can be practiced in on-line instruction. Cognitive constructivism occurs when students build knowledge by interacting with the environment, and social constructivism is evident when the student creates knowledge in concert with others (“Teaching at an Internet Distance,” 2000). Harasim (1995) seems to agree that social constructivist activities are appropriate for on-line instruction when she focuses on the need for the students to construct their knowledge with the instructor acting as a facilitator rather than the source of knowledge; the instructor is “the chief guide and expert, he or she is really only the facilitator of the shared learning process” (p. 188).

Well-Designed and Managed Courses

An on-line course needs to be carefully designed and managed since it is the only interface students have with an instructor and the content. For example, assignment specifics, expectations, and structure should be clearly defined and managed in on-line courses (Bonk & Cummings; 1998; Hara & Kling, 2000; Juge; Hartman, Sorg, & Truman, 1997; Price, 1996; Simonson & Smaldino, 1998). All of the literature cited in this section is based on the authors’ experiences instructing on-line. In the article, “A

Model for the On-line College-level Guided Study Course,” Price urges faculty members teaching at a distance to keep in constant contact with their students via email to make sure assignments are clear and students do not have any questions. Bonk and Cummings found that on-line instructors must provide clear expectations for themselves and the students as well as provide prompt task structuring: “...electronic syllabi must be clearer and more concise than in traditional classrooms” (p. 87). Everhart (2000) says on-line instructors should manage communication, set guidelines and expectations, and tell students when they can expect a response and feedback to their questions and submissions. Reiterating these suggestions, Juge, Hartman, Sorg and Truman found that good elements of on-line course design include clear discussion topics, readings, and assignment schedules. They point out that the schedule should be completely predictable. Miller and Husmann (1994) state the, “distance education teacher must be better prepared and must plan further in advance than the traditional on-site teacher” because of the need to have very specific and clear assignment schedules, expectations, and activities (p. 113).

Kerka (1996) makes the following suggestions for increasing the effectiveness of distance learning through course design and management. The instructor/designer should understand the strengths and weaknesses of the technologies she is using, provide for technical training and orientation for faculty and students alike, plan for technical failures, and build in access to technical support. Through well-designed assignments, on-line teachers should also foster the following skills in their students: learning to learn, self-directed learning, critical reflection, and information management (e.g., teaching students to evaluate material). Mixing modes of delivery into the course design such as email, audio, and video, and designing learner centered activities are also encouraged.

Another feature of a well-designed course is structure. In their study of student distress in taking on-line courses, Hara and Kling (2000) found that if instructors did not provide structure and address learner questions: “Students reported confusion, anxiety and frustration when they wanted prompt feedback from the instructor and when they found ambiguous instructions on the Web and in email messages” (p. 20.) Since much

on-line communication is through writing, the chances for misunderstanding are increased, “When the primary communication medium is written text, resolving ambiguities may be more difficult for many people” (Hara & Kling, 2000, p. 17).

Simonson and Smaldino (1998) include structure as one of the 4 components to work into the design of a distance course. The 3 other components are information, interest, and regulation. Structure, is provided through cognitive maps, content lists, goals, and problem sets. Specifics for each new activity in a “class” period should be outlined. Information must be easy to access, and the syllabus should be expanded to contain an overview of instruction, expectations, evaluation procedures, and vehicles for contacting the instructor if the technology fails. Interest needs to be maintained through interactivity, attracting students’ attention, keeping the learners on task, planning for all learner experiences, problem solving, and including group work. Regulation pertains to assessment and evaluation to determine the level of interaction between the learner and the information.

The American Distance Education Consortium (ADEC) (2000) lists several principles that should be considered when designing effective on-line courses, 2 of which are relevant to this discussion. First, learning experiences must have a clear purpose, tightly focused outcomes, and objectives. In addition, web-based activities should support interaction and the development of communities of interest. Second, the learning environment makes appropriate use of a variety of media and includes problem-based as well as knowledge-based learning.

Bonk and Cummings (1998) advocate taking advantage of the electronic learning environment. They propose that instructors and instructional designers exploit the potential of the Internet to provide for deeper student engagement than might be possible in-class. They caution instructors against trying to duplicate the traditional classroom in the on-line environment. For example, these authors say that it is counterproductive to require weekly quizzes when students have access to knowledge that surpasses that which

the instructor can learn in a lifetime. Instead, they suggest embedding thinking skills and portfolio assessments as integral parts of on-line courses.

Well-Designed and Managed Discussion Boards

Interaction is a facilitative feature of on-line instruction, and computer conferencing is essential to providing a means of interaction; therefore, electronic communication mechanisms such as discussion boards and synchronous chats need to be incorporated into on-line course design. Based on her experiences teaching between 6 and 70 students in an undisclosed number of on-line courses, Harasim (1990) found that 2 critical factors of success in computer conferencing include: adequate user access to equipment and the instructor's effort and skill in teaching on-line. Burge and Haughey (1993) agree that the teacher's skill at using computer-mediated communication for "real" dialogue is important to positive on-line learning outcomes: "We have to learn to make the hardware transparent, and to refocus our facilitation techniques on listening and responding rather than talking and directing" (p. 110). Correspondingly, MacKeracher (1993) suggests that hierarchies that develop between students and the instructor can be alleviated through collaboration. Bonk and Cummings (1998) suggest that hierarchical communication between the instructor and students in on-line discussions can be avoided by adhering to a horizontal communication structure rather than a vertical one. In other words, the instructor and students are allotted equal status rather than using the more traditional vertical model of communication where the professor's ideas are at the top of the hierarchy and are distributed downward.

Harasim (1990) provides detailed directions for creating and conducting successful computer conferencing. For example, instructors should provide an on-line "help" space and structure conferences by type of work, size of group, duration of task, and scheduling of task. In separate articles, Harasim and Easley (1991) list over twenty different formats for computer conferencing, ranging from assigned debates to simulations and role-playing. Easley based his suggestions for conferencing from a review of the literature on distance learning as well as on his experiences teaching web-based courses at Boise State University. Harasim provides the following guidelines for designing a computer-mediated conference. The instructor needs to set up mechanisms

where she can intervene in discussion, set up conferences that allow groups to function, organize and focus messages to maintain a clear flow of information, and avoid text overload. In addition, the teacher should plan extensively, hold electronic office hours, assign groups, and assign roles within groups, for example an editor, coordinator, and facilitator. Harasim and Price (1996) state that 2 types of conferences are needed: one that is course-related, and one for informal discussions i.e., electronic café and help. The informal spaces are essential “to building on-line community and supporting the socio-affective aspects of knowledge building” (Harasim, 1990, p. 27).

In managing discussion boards, Harasim (1990) found that students and teachers should use first names, respond to each other promptly, use reinforcing phrases such as “good idea,” and use personalizing remarks by making references to the poster’s environment i.e., working at home, what the weather is like and so on. Hostile or curt remarks should be avoided and humor should be displayed. All members of the discussion are encouraged to promote cooperation by offering assistance and support to others. A student’s on-line account should be removed if he/she demonstrates rude, discourteous behavior, user accounts with real names should be implemented in order to avoid anonymity or pseudonyms, and confidentiality should be ensured by locking discussions.

In using a discussion board, instructors need to avoid redundancy. If an instructor asks all of the students to answer the same question, “you set the discussion on a course for low productivity and boredom” (Eisley, 1990, p. 37). In his article, “Enterprise Systems and Distance Learning: Creating Services for Connected Learning,” Everhart (2000) states that threaded discussions are better than chronologically organized discussions, especially for large classes. Threaded discussions are arranged according to topic, so the students can locate information more easily than when the messages are organized by the time they are posted. Instructors should also give specific guidance on how to interact and maneuver in synchronous or asynchronous discussion environments (Everhart, 2000). As a result of the amount of time necessary to read and respond to computer conferences, design or work in group activities, and create or complete

assignments, students and instructors report that the amount of time spent on-line “far exceeds that of traditional face-to-face classes” (Harasim, 1990, p. 32).

Bonk and Cummings (1998) list several activities that can both personalize the web experience as well as provide interaction and interesting assignments using advanced technologies and discussion boards:

- Occasional videoconferencing
- Synchronous discussions with a guest speaker
- Small group work where everyone plays a role; i.e., sage, comic, adventurer, observer, pessimist, optimist, CEO, etc.
- Small group work where everyone adopts a character identity; i.e., Ghandi, Robin Williams, Dr. Martin Luther King, Clint Eastwood, etc.

Bonk and Cummings also state that students need to be provided with several choices of activities and opportunities to explore the Web. Some suggestions include using various on-line databases and visiting chats and discussion boards of their choosing. These authors also say that assignments should be recursive, in other words, discussion board activities should build on one another. Students should be required to re-enter the discussion forums and submit replies based on what they have learned from their peers in previous discussion threads.

Access to and Knowledge of Technology

Although interaction, well-designed and managed courses, and well-designed and managed discussion boards are facilitative features of student success in on-line courses, if they cannot access the technology or if they do not know how to use the technology to participate in their course, then the above dimensions are meaningless. In order to be successful in a Web-based class, students need access to a computer, and they need to know how to use it (Broderick & Caverly, 1996; Galusha, 1997; Hara & Kling, 2000; Juge, Hartman, Sorg, & Truman, 1997; Kerka, 1996; Schrum, 1995). Harasim (1990) includes the necessity of access to functioning computers in her discussion of facilitative features critical to on-line success. Fast Internet connectivity is also important since slow

modems hamper delivery (Kerka, 1996). Juge, Hartman, Sorg, and Truman state that the majority of the students in their distance learning program lacked the necessary technical skills. They found that among the 72 students enrolled in their on-line courses, over 50 percent said that they seldom used email, and 75 percent had never surfed the Web.

Students seem to agree that they need more technical training. As part of a study done at Christopher Newport University (CNU), students were asked for suggestions on how to improve the distance learning program. The students said additional computer skills training would encourage others to enroll in on-line classes. The greatest perceived technical needs among CNU students were learning how to receive and transfer files, using email, and using Windows (Richards & Ridley, 1997). Faculty at Grant MacEwan Community College (GMCC) in Canada said that students need “advanced preparation” in technology before taking distance courses via the Internet because, “they feel that some students overestimate their computer skills” (White, 2000, p. 68).

Students with more experience using technology and prior knowledge of on-line courses are at an advantage over those without this background. At CNU, 2 groups of students took the second part of a 2-sequence course on-line. Some had taken the first part of the course on-line and others had taken it on-campus. Their performance was then compared using whether or not they took the first part of the sequence on-line or in-class, “Students with the on-line prerequisite experience outperformed those with the standard classroom course background” (Richards & Ridley, 1997). Even a short time of on-line course experience can be beneficial as when students at GMCC reported that by the end of the semester, difficulties they had navigating in the on-line course at the beginning of the term had decreased (White, 2000).

In summary, the facilitative features that affect the success of community college students taking on-line courses are that interaction is provided, the courses and discussion boards are well-designed and managed, and learners have access to and knowledge of computers and the Internet. Inhibitive or debilitating characteristics are the lack of or poor execution of any of these facilitative features.

How Does the Community College Infrastructure Support Students Taking Web-based Courses?

This portion of the literature review examines how the infrastructures of institutions address the needs of on-line learners. In his article, “Good Teaching is Good Teaching: An Emerging Set of Guiding Principles and Practices for the Design and Development of Distance Education,” Ragan (1999) emphasizes the significance of support to the success of a distance learning program: “Among the most important components in the design of distance education programs are those that establish the organizational and administrative infrastructures to ensure that such programs can be efficiently and effectively developed, managed, and executed” (p. 5). In order to provide these services, Ragan suggests that institutions offering distance learning programs adhere to the following 5 principles:

- Provide a “comprehensive” system of technical support to ensure that distance learning technologies are used effectively (p. 5).
- Provide faculty with support and development services in applied instructional technology and distance learning methods.
- Provide support systems to faculty and learners 24 hours a day, 7 days a week.
- Provide for feedback mechanisms to assess the support systems in place.
- Extend institution policy to accommodate distance learners and instructors.

If the results of a survey study from 417 institutions conducted by the Western Cooperative for Educational Telecommunications (WCET) and summarized by Dirr (1999) are any indication, many institutions need to apply Ragan’s (1999) principles. The WCET survey is examined here in detail, and this section of the literature review is built around the findings and organizational structure of this survey.

The WCET survey examined “the current landscape of student support services provided to distance learners by a representative sample of all institutions of higher education in the United States” (Dirr, 1999, p. 16). The results of this survey reveal that

although technology is being used to conduct learning in a revolutionary way, support services are still operating under a space-bound paradigm. What follows is a brief summary of the findings of the WCET survey. Of the 417 4- and 2-year institutions that completed the survey:

- 95 percent have not developed a retention plan for distance learners;
- 90 percent offer academic advising but only on-campus;
- 76 percent have not arranged for social support networks to help distance learning students overcome a sense of isolation;
- 71 percent do not ensure that students have the appropriate technical support or technical skills needed to take distance learning courses;
- 37 percent require students to obtain textbooks on their own rather than receive help from the bookstore in obtaining them;
- 31 percent do not provide special access to library materials;
- 27 percent have not developed promotional materials or campus information to attract distance learners;
- 15 percent require registration for distance learners to be conducted in-person at a fixed site. (Dirr, 1999, p. 16)

This section of the literature review is presented in the following manner. First, an overview is provided describing how infrastructures are supporting students. Then using the WCET study as a framework, these issues are discussed: (a) retention, (b) advising, (c) social support networks, (d) technical support, (e) text purchases, (f) access to library resources, (g) campus information, (h) and registration.

Overview of How Infrastructures are Supporting Students

Although 1/3 of 2- and 4-year postsecondary institutions offered distance education courses in 1997-1998 (NCES, 2000), enrollment outpaced support for students in these programs. Based on their experiences as a counselor and a faculty member at Eastern Tennessee State University (ETSU), Robin Plumb and Darcey Coffman (1998) found that their distance education students needed support in the following areas:

advisement, library access, registration, and scheduling. For example, will the student register on-line, use phone registration, or drive on-site to register? In their review of the literature, Rice and Meyer (1989) found that other issues which must be considered by administrators when supporting on-line students include publication of course offerings, textbook purchasing, administration of exams, and library access.

In her study involving 466 students at a Georgia technical institute, Frye (1997) discusses the role of the infrastructure in relation to retention for adults. Frye found that barriers from the infrastructure included: inflexible scheduling, inaccessible locations, lack of information on programs, and lack of interesting programs or practical programs. Further, she found that academic variables that led to attrition for the general population of community college students included: poor study skills, lack of academic advisors, absenteeism, uncertainty about a major, low GPA, poor academic ability, and type of program. In her article, "Barriers to Learning in Distance Education," Galusha (1997) found that a barrier was the lack of student support and services. All of the above variables are also addressed in the WCET survey of distance education programs (Dirr, 1999). In the following sections, the findings from the WCET survey are presented as a starting point for discussion, and then supporting literature is provided.

Retention

According to Dirr (1999), 95 percent of institutions offering distance-learning programs have not developed a retention program. This statistic is evident in that numbers for retention and completion of distance education courses and degrees are difficult to locate. Langhorst (2000), the contact person for distance learning programs in the Virginia Community College System, states that there are no system-wide statistics gathered as to attrition and retention of distance education students.

As reported by the WCET study, 32 percent of the 417 institutions queried did not provide academic support for distance learning students with poor study skills. When examining attrition of adult learners, Frye's (1997) study found that study skills were the most "obvious explanatory variable" for drop out (p. 74). Adult students in Georgia

community colleges have a 39 percent graduation rate as opposed to 68 percent for traditional students, ages 18-22; however, information is sparse as to why adult students drop out in terms of identifiable variables.

Study skills and academics are only 2 areas where students need to be supported in order to promote retention in distance learning programs. In their descriptive study of data taken from 139 students enrolled in 5 distance learning courses, King and Doerfert (1996) found that interaction between learner and instructor is important to student satisfaction and persistence in on-line learning. Plumb and Coffman (1998) also found that if students can make contact with 1 person, the more likely they are to be retained. In addition, Frye (1997) points to the importance of student contact with faculty and staff, especially the student-advisor relationship, as essential to adult persistence in post-secondary education.

Advising

Adequate advising works hand-in-hand with increased retention. Plumb and Coffman (1998) define advisement as a “continuous, interactive process between an advisor and student which facilitates the development of the student’s overall goals” (p. 1). Dirr (1999) reports that in the WCET survey, 90 percent of the institutions offered academic advising; however, this advising was available only on-campus. When asked for additional comments to the WCET survey question about academic advising, some respondents offered options for off-campus academic advising such as having advisors available at satellite campuses or local community centers, sending advising materials via the U.S. postal service or email, and installing toll-free phone lines so students can call advisors free of charge.

In 1988, Oudshoorn stated that tutoring and counseling were ignored in the design of distance education programs, and this trend seems to be the same according to what Plumb and Coffman (1998) found at Eastern Tennessee State University (ETSU), and what Dirr (1999) reports from the WCET study. At ETSU, distance students at remote sites do not have access to full-time advisors. Personnel who advise are responsible for

all departments and are only available during peak times such as registration. In their article, “Learner Success in Distance Education Environments: A Shared Responsibility,” Major and Levenburg (1999) reiterate the importance of providing academic advising as well as personal counseling for distance learners.

Social Support Networks

Related to the issue of advising and retention is the importance of providing students with a mechanism for understanding the culture of the institution and for social support networks. The WCET survey shows that 76 percent of the responding institutions had not established social networks for distance learners (Dirr, 1999). Grace (1994) states that the institutional culture can be integrated into the students’ worlds by sharing their experiences with others in the home, workplace or other settings, and when the administration at the institution provides “access to an alternative cultural setting which could become an increasingly important part of the person’s life” (p. 20). Grace does not define what constitutes this “alternative cultural setting”; however, it could refer to extension centers or the “virtual” meeting places via discussion lists and email. Other possibilities for social networks include participation in chat rooms, bringing students together physically at local meeting places, and encouraging students to exchange phone numbers and to work together, when possible, either virtually or physically. Dirr points out that the instructor is expected to implement most of these means of interaction, not the institutional infrastructure.

Technical Support

Not only are issues of retention, advising, and social support important but there are also questions about technological assistance. If they do not have access to technical assistance, the institution’s infrastructure is not adequately supporting its distance learners or educators (Hara & Kling, 2000; Major & Levenburg, 1999; Ragan, 1999). According to the WCET survey, 71 percent of the institutions surveyed do not ensure that students have the appropriate technical skills to take distance-learning courses. In the comments section for the question on technical support, an unspecified number of educators stated that their schools provide information to help students understand the

demands of distance learning, and one school has a “screening quiz” that allows students to determine whether they have the technical skills necessary to take distance learning courses (Dirr, 1999, p. 6). Other institutions try to meet technical needs by providing on-line courses about computers and the Internet, help desks, training videos, pre-screening instruments, course pre-requisites, and tutorials. Technical support is often provided by the faculty, help-desk, or other institution staff such as librarians and distance education personnel (Dirr, 1999).

The results of the WCET study show that 66 percent of the institutions surveyed offered orientation sessions (Dirr, 1999). Schools use orientation sessions as a means of making contact with and educating distance students about the technology they will need to use in taking an on-line course (Richards, 1994). One community college offers a 60-minute session where the administrators first talk about how students can be successful at distance learning, and then students have an opportunity to meet their instructors in person to go over the syllabus and discuss other aspects of the course (Franklin, 1998).

Bookstore

The WCET report reveals that 37 percent of the institutions surveyed had distance learning students drive to campus to obtain their textbooks. When institutions assisted students in obtaining their texts, it was usually by having the books and other materials available at a specified location such as a satellite campus or community center. Most, but not all, bookstores that sent texts to the students charged for shipping costs (Dirr, 1999).

Access to Library Resources

The WCET survey found that almost 1/3 (31 percent) of the 417 schools that responded do not make special arrangements for distance education students to obtain library materials. They also discovered that community colleges and vocational/technical institutions are more likely than 4-year schools to “let students fend for themselves in securing library services” (Dirr, 1999, p. 7). When access is provided, it is through computerized databases, catalogs, and periodical indexes; however, getting full text

services is difficult because of bandwidth problems. A few schools put reference materials on a CD-ROM for distance learners. Many institutions rely on interlibrary loan services to provide materials to remote students, who usually have to call long distance to secure a loan. Some schools provide interlibrary loans through FAX or email (Dirr, 1999), but these options would not work for books or journals. Arrangements are also made with local libraries so that students can use those materials. Twenty percent of the institutions surveyed hired a librarian whose sole purpose is to work with distance learning students. Some schools use private document delivery services for distance students. When institutions provide access to electronic materials, they do not always allow for student training in how to logon and use the materials. Because of the difficulties of aligning distance students with library materials, many faculty do not require that their students use resources other than the course text and the Web (Dirr, 1999).

Library access is also a problem for ETSU distance students. If there are library sources at off campus satellite centers, they are primarily reserve materials for specific courses. Although the off-campus centers of ETSU have computer links to library records, registration, and so on, there are still problems in that library access to books and journals are limited (Plumb & Coffman, 1998).

Campus Information

Dirr (1999) reports that 27 percent of the 417 institutions surveyed have not developed recruitment or promotional information about distance learning programs. For those schools that have promotional materials, the primary means of dissemination is through brochures. Other methods include: announcements on web sites, ads in newspapers, computer disks containing information about distance learning, billboards, and flags in WWW search engines. Announcements are also included in class schedules, which are sent out to local residents. Some creative approaches to advertising distance learning courses are stuffers in cable company bills, slides shown at local movie theaters, promos used in broadcasts of TV courses, notices on Web sites that collect distance

education courses, notices sent to local high schools and professional associations, ads in Baer's and Petersens' guides, and ads printed on bank envelopes.

Based on her experience teaching a course via distance learning in Canada, O'Rourke (1994) found that distance students do not have easy access to news that traditional on-campus students could find on bulletin boards, in school newspapers, or by word of mouth. Therefore, according to O'Rourke, the institution needs to be cognizant of the imbalance of power between the institution and student access to knowledge and information.

Registration

The WCET survey shows that 15 percent of the 417 responding institutions require distance learners to register for classes in-person at a fixed site. Alternatives for on-site registration included: sending materials by mail, talking to registration personnel on the telephone, by FAX, and automated touch-tone phone registration (Dirr, 1999). At Eastern Tennessee State University, registration for distance students was conducted via the Internet, telephone, or on-site (Plumb & Coffman, 1998).

In summary, judging by the research, many institutions offering distance learning are struggling to provide appropriate services to students taking courses via the Internet or through other distance methods. Based on research, the following areas need to be considered when developing an infrastructure designed to support distance learners: retention, advising, social support networks, technical support, text purchases, access to library resources, campus information, and registration.

Literature Review Summary

In the literature reviewed for this study it was found that demographic characteristics of distance learners are difficult to generalize since these factors are not carefully tracked. In terms of student characteristics, the 2 primary features of successful on-line students are being self-directed and willing to interact with others. The

characteristic of self-direction is an umbrella for traits such as independence, self-motivated, self-actualized, self-disciplined, autonomous, and responsible.

Research shows that students take on-line courses because they are pursuing a post-secondary degree in order to improve their employment status. They also take distance learning courses because they are convenient and allow the students to meet family and employment responsibilities.

The need for interaction seems to comprise the bulk of the research on facilitative and debilitating features that influence the success of on-line learners. Everything from course design to management of discussion boards hinges on whether or not the students feel a connection with the instructor and their classmates. The need for interaction stems from the inherent sense of isolation that comes with the territory of taking a course on-line. According to the research, the facilitative features that affect the success of community college students taking on-line courses are that courses and discussion boards are well-designed and managed to provide interaction between instructors and students and students with students, provide for learning communities, and learners have access to and knowledge of computers and the Internet. Inhibitive or debilitating characteristics are the lack of or poor execution of any of these facilitative features.

Based on the research, consideration of the following areas is required when developing an infrastructure designed to support distance learners: retention, advising, social support networks, technical support, text purchases, access to library resources, campus information, and registration.

Using the literature review as a basis for developing questions, the next step in answering the research question, “How do community college students construct their web-based experiences?” was to ask students to address issues that focus on the following 5 areas: What are the characteristics of students taking on-line courses? Why are they taking web-based courses? What are the facilitative dimensions or features that promote success in on-line courses? What are the debilitating features that inhibit success in an on-line course? And How does the community college infrastructure support

students taking web-based courses? The next chapter, Methodology, discusses how the study was developed in order to explore the student point-of-view of taking a web-based course.

CHAPTER TWO: METHODOLOGY

Introduction

The intent of this study is to provide a description of how community college students construct their on-line experiences. According to Hammersley and Atkinson (1995), "Concrete descriptions usually cover many different facets of the phenomena they describe: they give a rounded picture and open up all manner of theoretical possibilities" (p. 208). Although this study does not propose theories pertaining to distance education, it does describe the many phenomena that community college students encounter when taking on-line courses.

In order to create a concrete description of the on-line student's experiences, the researcher followed a constructivist paradigm when developing the methodology for the study and when analyzing the data. In this sense, constructivism "emphasizes the actor's definition of the situation" and seeks to understand how people, in this case students, "recognize, produce, and reproduce social actions, and how they come to share an intersubjective understanding of specific life circumstances" (Schwandt, 1997, p. 19). The "life circumstance" being described in this study is the student's participation in taking an on-line course. The "intersubjective understanding" refers to the researcher and the student working together through written and verbal conversations in order to mutually construct a description of the student's web-based experiences.

Data were collected via 3 questionnaires, 29 interviews, and 20 observations. There were 35 responses to the first questionnaire, 13 on the second, and 20 on the third. Questionnaires were used in order to cast a wider net to gather more data than could be elicited from a limited number of interviews. Whereas questionnaire data was broad but shallow, it was hoped that the interviews, although limited in number, would result in more in-depth descriptions of what it was like to take on-line courses from a student's point-of-view. The field notes from site visits were taken when the researcher interviewed the respondents in their homes or places of employment. These notes were used minimally but shed light on the environment in which the students did their coursework. Information from these 3 sources was used to triangulate the data.

Briefly, the methodology for this study was carried out in the following stages over the course of 4 consecutive semesters beginning in Spring 1999 and concluding Spring 2000 (see Appendix A):

- Development of questionnaire and interview instruments,
- Location of subjects,
- Distribution of questionnaires and completion of interviews,
- Transcription of interviews,
- Close reading of questionnaires and interviews,
- Identification and labeling of phenomena in questionnaires and interviews,
- Coding and categorizing labeled phenomena,
- Summarization of categories.

In order to delineate the methodology used in this study more specifically, this chapter is divided into 5 sections: (a) setting, (b) participants, (c) data sources and collection procedures, (d) interpretation and analysis procedures, and (e) trustworthiness of data.

Settings

The on-campus setting will be discussed first, and then the on-line environment will be investigated. In describing the on-line setting, the following areas will be delineated for each of the 8 on-line courses: (a) course interface, (b) assignments (c) submission of assignments, (d) use of multi-media, (e) use of discussion forums, and (f) assessment methods.

On-Campus

This study involved a volunteer sample of students who attended a small community college in a rural county of a southern state. PRCC was selected for the study because the researcher had taught at this institution for 6 years and was familiar with the student body, faculty, and administration. It was also selected because it was a community college that instituted on-line instruction 3 semesters prior to the study. The

pseudonym for this community college is Pleasant River Community College (PRCC). PRCC serves 2 counties, which encompass 3 cities. The community college has 2 satellite campuses and enrolled 2, 776 full-time and part-time students in Fall 1999. Distance learning students have to drive to campus to buy their books, register, and take tests.

On-Line

Aside from buying books, registering, and taking tests, the actual course setting was on-line rather than on-campus for the 168 students enrolled in the 8 cybercourses at PRCC in the 1999 summer session; therefore, the characteristics or “setting” for each of the cybercourses will be given. The courses are labeled according to their discipline and a number: Liberal Arts 1, Liberal Arts 2, Liberal Arts 3, Liberal Arts 4, Technology 1, Technology 2, Technology 3, and Social Science. Each course ran for a ten-week summer semester and was worth 3 credits. Since the focus of this study is how students construct their experiences of taking an on-line class, the descriptions of the courses are based entirely on the students’ reports, not on the researcher’s observations. The following descriptions elaborate the features of each course, which are (a) course interface, (b) assignments, (c) submission of assignments, (d) multi-media, (e) discussion forums, and (f) assessment.

Course Interface

All of the on-line courses were created using Microsoft Office’s FrontPage™ and were composed of a homepage that contained links to each week’s assignments, the syllabus, and a discussion board, if there was one. Announcements were usually posted on the homepage.

Assignments

- According to the 2 interviewees enrolled in Liberal Arts 1, this course had a link for each week that contained notes explaining points the professor wanted to emphasize. The assignments consisted of reading 2 or 3 excerpts from the text and answering study questions. Self-grading practice quizzes were also available.

Introductory information was provided for each topic or individual being studied. The instructor also included a Frequently Asked Questions (FAQ) link covering issues about quizzes, the final, and journal topics. The “Other” Board was a discussion forum where students could ask class-related questions. The instructor had assignments available 2 weeks in advance so students could work ahead if they wanted to. Some assignments were due on Saturdays. One of the major assignments for this liberal arts course was a weekly 400-word journal that students were expected to do without reminders from the instructor. The journal was collected twice a semester and submitted via email. The students had a choice of journal topics and the final exam questions were taken from the journal questions. The instructor did not provide feedback to the journal entries other than a grade. In order to get a sense of what the instructor expected, the students had to submit a sample journal before they began writing the graded journals.

- The 3 interviewees taking the Liberal Arts 2 course reported that their instructor provided general, bulleted notes, study questions, and a web resource for each topic. The web resource was the same for all of the topics. The study guide was made up of literal level questions. The weekly links were closed after a certain amount of time, so the students could not go back and review the instructor’s notes or questions and answers posted on the discussion board.
- Based on reports from the 4 interviewees taking Liberal Arts 3, this course required the most assignments of all of the cybercourses offered. Some of these assignments were due on Saturdays and Sundays. Every 3 days the students were to read a chapter and answer approximately 12 study guide questions per chapter. In addition to reading the textbook, the students also read 3 additional works, such as Machiavelli’s The Prince. They were required to come to campus to watch a video, but the video was stolen before any of the students in the class had a chance to view it. Two electronic maps were also assigned, where the students were to click and drag names of country-states to the correct spot.

- Liberal Arts 4 was offered at a community college located 1 1/2 hours from PRCC and was taken by 1 interviewee. The only required assignments were to read chapters and answer study questions. Each study guide had 4 short answer items and an essay question that covered the 3 weekly chapters. The students could only use 4 sentences or less to answer each short answer item. The essay questions had to be answered in no more than 4 paragraphs. The instructor responded with a grade but provided no other feedback.
- The Technology 1 course had a hands-on lab component, which made it somewhat different from the text-based liberal arts and social science courses. The 3 interviewees enrolled in this computer class stated that students were required to read the text, answer review questions, log on to the discussion board to answer a weekly question, complete computer program exercises, and come on-campus for a final project and exam. The instructor was also teaching this course face-to-face and used the same syllabus for each class. The students would link to the weekly assignment where the instructor provided an outline with definitions for each chapter. The outlines could be printed and used as study guides.
- The interviewee taking the Technology 2 course reported that students in this class used a program that came on CD-ROM with the textbook. The program guides the user through a lesson, an experiment, and then a quiz. This class is a paper and pencil course where the students solve math problems.
- Two interviewees took the Social Sciences course. In this course, the instructor posted an assignment every week: a chapter reading and a web source reading. The students were required to write an essay based on 2 questions. One essay was a comparison of the textbook reading with the web assignment. The second paper was about the students' personal experiences in relation to what they read in their textbook. A discussion board component was optional. All of the links were open so the students could work ahead if they wanted.

Most of the instructors took advantage of the Internet by providing the students with web addresses to review as required or supplementary assignments. One instructor included web resources with pictures that supported the readings. This instructor also gave referrals to many other sites that provided additional information on the topics being taught. While this professor supplied a number of resources, another referred to the same Uniform Resource Locator (URL) as a source for supplementary material for each assignment. Another instructor listed optional URLs that the students were encouraged to use to answer study guide questions.

Submission of Assignments

All but 2 of the courses required the students to submit their work by email. For Technology 1, the students used email to send their review answers. The instructor would send an email to the class containing links to problems from the book to be answered using the computer program being taught. The files that contained the answers to the problems were sent as email attachments.

The second method of assignment submission was through student web pages. Two instructors had the Instructional Technology staff create a web page in their respective classes for each student. The web page consisted of a form into which the students copied and pasted their assignments. When they selected the “submit” button, the text they typed into the form appeared on the web page and was entered into a FrontPage™ file. Then the instructor typed comments directly into the form, clicked “submit,” and his comments appeared in the webpage; thus, they were instantly available to the student.

Multi-media

One course implemented multi-media files. Music files played as background each time a page on the site was loaded, and there were optional video clips for each topic. The instructor eventually put pause buttons on some of the pages so the students

could stop the music if they wanted to. The videos were not required but provided supplemental information.

Discussion Forums

For 5 of the 8 on-line courses, the discussion forum was integral to communication and assignments. Liberal Arts 4 and Technology 3 did not use the discussion board. Although the Social Science course had a discussion board, it was not part of the assignments and was rarely used. For the 5 courses which did use the discussion board, each was set up somewhat differently from the others. One common method for using discussion boards was to have a forum where the students replied to required content-oriented questions and another dedicated to student questions about the course and administrative concerns. Two instructors had a third board that was supposed to be only for students to discuss whatever issues they chose, following in the cybercafé model where students exchange messages for informal discussions.

In the Liberal Arts 1 course, the 2 boards were threaded, which means they were organized according to topic rather than by time. In this class, each week had its own discussion forum, so there were 10 separate discussion boards instead of having a single discussion board for the entire course. In order to keep the discussions more manageable, and to allow the students to get to know each other better, the instructor divided the class into 2 groups based on last name. For the first discussion board assignment, each student provided information about him or herself as well as a picture, when possible. Thereafter, the students were required to answer questions that the instructor posted, which were based on their study guides. They then had to respond to the replies of at least 2 other students; thus, creating a “discussion” where students traded information amongst themselves. The instructor rarely interjected, and if he did, it was only to agree or support what the students were saying.

The students had to make a minimum of 3 comments a week before Saturday and the messages had to be sent on 2 different days. Although the forum was closed after Saturday, the students could still go back and read replies. They could even continue to

post their ideas, but these messages would not count as a graded assignment. Entries in the discussion forum counted as class participation, but students could miss a week and not be penalized. Towards the end of the class, people responded more to other comments rather than start their own thread, and they waited towards the end of the week to post their messages.

The Liberal Arts 2 instructor set up the discussion forums so that students had to make 2 replies: an answer to a required question and then a response to another student's answer. The questions were usually opinion rather than fact based. They had to respond within a week, but they could post both messages on the same day. Unlike other forums, these discussions were not threaded, so the students had to read through comments that were organized chronologically rather than topically. This instructor had 1 board rather than 2. As a result of only having 1 board, many of the comments on the forum had to do with issues other than the required question/ answer.

Liberal Arts 3 had 3 discussion forums, one for informal student discussion, one for discussing class material, and one for administrative questions, such as when assignments were due. The class forum was a formal discussion site where students answered 1 question for each chapter. They were supposed to answer the question and "bounce our answers off of each other."

Assessment

The majority of the on-line courses used traditional assessment methods such as exams. Most of the final exams had to be taken on-campus. In one course, all of the quizzes and exams were on-line, but even though the final was web-based, the students still had to come to the school lab to take it. The instructor in Liberal Arts 1 had an intricate system for posting grades that were listed on a web page accessible to all students in the class. Grades were listed according to a point system using random numbers to identify the students.

Liberal Arts 2 final exam was a paper and pencil test that the students took at the campus site. Other graded assignments included an on-line midterm, a comparative paper, and participation in the discussion board. The on-line midterm for Liberal Arts 3 was taken at home, on-line, timed, closed note, and closed book. In Liberal Arts 4, study questions were the sole method of assessment. The social sciences professor required that his students write 2 papers a week rather than have them take any tests or quizzes.

The chapter tests for Technology 3 were pledged, taken at home, and on-line. When all of the students had taken their exam, the instructor would provide feedback. Students could take their chapter tests ahead of time, but they could not find out the answers or grades until everyone had taken the assessment. The students also had to submit computer exercises, which were graded. Discussion board participation was evaluated on whether or not the student submitted responses rather than on the accuracy of their answers. The final project in Technology 1 was to give a presentation on-campus to the entire class about a program they developed. This would have been the first and only time they would have seen their classmates. Presentations were given the same day as the final exam.

Participants

In discussing participants, this part of the methodology chapter is divided into 2 sections: demographics and participant selection.

Demographics

The pool of participants came from 168 community college students taking at least 1 web-based course at Pleasant River Community College (PRCC). All of the instructors teaching the on-line courses agreed to let their students participate in the study. Fifteen students were interviewed, 35 respondents answered the first questionnaire, 13 replied to the second, and 20 answered the third. Demographic data are discussed by looking at (a) gender, (b) ethnicity, and (c) age, parental, and marital status. These specific student characteristics are examined since they address the question of “What are the characteristics of students taking on-line courses?”

Gender

According to the PRCC Office of Institutional Research and Data (2000), statistics from 1997 show that 56.2 percent of PRCC distance learning students were women; 43.8 percent were men. In 1998, the percentage of women rose to 58.8 percent; whereas, 41.2 were men. In 1999, the year of the study, 55.6 percent were female and 44.4 percent were men. Among the interviewees, 73 percent were female. Data from the first questionnaire from this study reveal that of the 35 respondents, 69 percent were women.

Ethnicity

PRCC's Office of Institutional Research and Data (2000) reported that in Fall 1997, of the 32 on-line students, 100 percent were white. In Fall 1998, of the 85 on-line learners, 90.5 percent were white, 3.5 percent were African American, 1.1 percent were American Indian, 1.1 percent were Hispanic, 1.1 percent were Asian, and 3.1 percent were Other. In 1999, the ethnicity of on-line learners was 92.2 percent white, 2.0 percent African American, 1.5 percent American Indian, 0.5 percent Hispanic, 0.5 percent Asian, and 3.0 percent Other.

Questionnaire respondents for the PRCC study were asked to enter their own description of ethnicity. The majority, 55.4 percent, withheld or did not know this information. However, of those who responded to this question, 41.1 percent were white, 1.8 percent Hispanic, and 1.8 percent were Asian. The majority of the interviewees (86.6 percent) were white, 6.7 percent were Native American, and 6.7 percent were Hispanic.

Age, Parental and Marital Status

The Office of Institutional Research at PRCC does not maintain statistics for the age, marital, or parental status of distance learners. However, in data from the first of 3 questionnaires for the PRCC study, of 35 students, 48.6 percent were married, and 45.7 percent were parents. The majority, or 57.1 percent, of the on-line students who responded to the survey were between the ages of 20 and 29; 22.9 percent were between

30 and 39; 17.1 percent were 19 or younger; and, 2.9 percent were between 40 and 49. So a general composite of the on-line questionnaire respondent was a married female between the ages of 20 and 29 with no children.

The background characteristics of the interviewees can be summarized as follows: 93 percent were employed; 66 percent were women; 60 percent were married; 54 percent had children; and 46.6 percent were in their 30's.

In general, the interviewees were married women in their 30's with children.

Table 2.1 summarizes the data from the study questionnaires, interviews, and statistics on asynchronous distance learners from the Office of Institutional Research at PRCC.

Table 2.1
Summary of PRCC Demographics

	Questionnaire Respondents (%)	Interviewees (%)	PRCC Fall 1998 CyberCollege (%)	PRCC Fall 1999 CyberCollege (%)
Female	69	66	58.8	55.6
Male	31	34	41.1	44.3
< 19	17.1	6.7	-	-
20 – 29	57.1	40.0	-	-
30 – 39	22.9	46.6	-	-
40 – 49	2.9	6.7	-	-
White	37.5	86.6	90.5	92.2
African American	0.0	0.0	3.5	2.0
Native American	0.0	6.7	1.1	1.5
Asian	1.8	0.0	1.1	0.5
Hispanic	1.8	6.7	1.1	0.5
Withheld	55.4	0.0	2.3	3.0
Unknown				

Participant Selection

The selection procedures are discussed in the following order: (a) locating instructors, (b) sampling, and (c) contacting students.

Locating Instructors

When the study was first initiated in Spring 1999, the Instructional Technologist at PRCC was contacted. He supplied the researcher with the names and email addresses of the instructors teaching on-line courses. The researcher sent an email message to these instructors, and they all agreed to the informed consent contract (see Appendixes B and C). Although the study was not conducted that spring because of a lack of student volunteers, when it was re-initiated that summer, the same instructors were teaching cybercourses. Each of these instructors still agreed to allow their students to participate in the study.

Sampling

Sampling was somewhat purposive in that the students selected for participation in the study were community college students taking at least 1 on-line course. However, sampling was not entirely purposive since selecting interviewees and questionnaire respondents was dependent on volunteers. The study was initiated in Spring 1999; however, no students volunteered to be interviewed. When the study was re-initiated in Summer 1999, the researcher offered to pay each interviewee \$20.00 per interview. This enticement was successful, and 15 students volunteered to participate in 2 interviews, once at the beginning and once at the end of the semester. The questionnaire respondents were also volunteers.

An email was sent to all 168 of the students taking on-line courses asking them to fill out the questionnaires (see Appendix D). The number of questionnaire respondents for the first questionnaire was 35, 13 for the second, and 20 for the third.

Contacting Students

The instructors provided the researcher with the email addresses of the students in their web-based courses. Since the researcher contacted all of the students, the instructor did not know which students agreed to participate; therefore, avoiding possible problems with preferential treatment by the instructor. The researcher contacted the students via

email with an explanation of the study (see Appendix D), an explanation of the importance of the study as well as the vital nature of their participation, and the informed consent contract (see Appendix E). The students were told that throughout the semester they would be asked to answer 3 questionnaires about their web-based experiences. In addition, these 168 students were solicited to volunteer to be interviewees and told that those who agreed to participate in 2 personal interviews would be paid \$20.00 per interview. Fifteen students agreed to be interviewed. Since the informed consent contract for the questionnaires was sent electronically, the respondents emailed that they had read and understood the contract and agreed to its conditions. The interviewees signed their contracts at the first interview (see Appendix F). Once the questionnaire respondents agreed to the informed consent contract, they were given the web address to the form for the first questionnaire (see Appendix G).

Data Sources and Collection Procedures

The different data sources and collection procedures are described in the following order: (a) questionnaires, (b) observations, (c) daily checklists, and (d) interviews. The interview procedure is further broken down into (a) schedule, (b) setting and duration, and (c) sequence. The timeline in Appendix A outlines when these activities took place.

In order to secure the privacy of the students, the on-line questionnaire forms were anonymous. A pseudonym was used for the name of the community college in reporting the final results in the dissertation. The interviewees were referred to by fictitious initials, and the courses were given generic labels which indicated the type of course offering and the number of courses of that type. For example, there were 4 liberal arts classes, so they are referred to as Liberal Arts 1 through Liberal Arts 4.

Questionnaires

The purpose of the questionnaires was to glean a general picture of who was taking the on-line courses and what they experienced while taking these classes. By asking respondents to answer 3 questionnaires throughout the semester, it was also

possible to gauge any changes in student attitudes and strategies in relation to their on-line course. For example, if a student had never sent an email attachment before taking the course, how did he or she learn how to perform this operation?

PRCC has their web-based students fill out demographic information on-line as part of the initial logging on process before they access their web-based cybercourse for the first time. The PRCC form contained some of the same items that appeared on the first study questionnaire, which was distributed at the beginning of the semester. To avoid redundancy, the Instructional Technologist at PRCC requested that the students not be asked the same questions that were on the PRCC website. In order for the researcher to have a complete picture of who was taking these courses, the Instructional Technologist at PRCC shared the information he gathered from his questionnaire.

Students who agreed to the informed consent contract in the 8 on-line classes were sent the web address for the first questionnaire (see Appendix G). The questionnaires were developed and put on-line using Microsoft Office's FrontPage™, which allows for form results to be automatically submitted to an email address as well as saved in a secure file. During week 5 and week 10, the respondents who signed the informed consent contracts were sent another email with the web address for the second and third questionnaires. The responses to the 3 questionnaires were collected in Excel files and then converted into an Access database for easier compilation of statistics. When appropriate, charts were developed using Excel.

Daily Checklists

The purpose of the daily checklist was to collect information about students' on-line activities in relation to the course and their study habits (see Appendix H). Interviewees were asked to fill out a daily checklist form, which was given to them by the researcher. The students were to use the checklist to log information about the amount of time they spent on-line, situations they encountered, new technical skills they learned, and how many times they were interrupted. The checklists were to be collected and discussed at the second interviews. The data was to be compiled and coded to provide a

picture of the student's daily activities. Unfortunately, only 2 of the 15 interviewees remembered to maintain their daily logs. Therefore, the data from this source were not used in the results.

Observations

The purpose of the observations was to provide information about the environment where the students worked as well as to see how they physically interacted with the technology. When possible, the interviews were conducted wherever the students usually accessed their computers. These informal observations were conducted at each interview in order to literally “see” how the students interacted with the web-based course and how they handled technical issues (such as sending or receiving an attachment, downloading a file, or cutting and pasting from a word processing program into an email). These observations took place during 20 of the 29 interviews. As a result of scheduling conflicts, the 9 other interviews had to be conducted on-campus rather than at the student’s home or workplace.

At the first interview, when a computer was available, the students were asked to demonstrate how they accessed the web-based course and how they maneuvered in the site interface. Some students also went on-line during the second interview when they wanted to demonstrate something they had learned or thought was interesting about their course. On 3 occasions, the researcher had to assist the interviewees and show them how to send an attachment or conduct other tasks associated with the on-line course. Although the researcher was hesitant that such assistance might have biased the interview, she decided that it was important that the student learn how to manage information on-line, regardless of the source of assistance.

After the interview, observations were either recorded onto the same audiotape as the interview or written into a notebook as field notes.

Interview Procedure

Since the interviews were the primary source of data, the procedures involved in their collection will be discussed in more detail than was done with the other data sources. This section of the methodology will outline the interview (a) schedule, (b) setting and duration, and (c) sequence.

Schedule

The first interview with the 15 respondents took place during week 3 and the second interview was conducted during the last week of the 10-week summer session. The interviewer would have preferred to have conducted 3 interviews (at the beginning, middle, and end of the semester); however, the short 10-week session made it impossible to schedule and conduct the interviews within that time-frame.

Two interview sessions more accurately depicted the students' total experience than a single interview at one point in time would have. Hammersley and Atkinson (1995) cite Ball (1983) who discusses the cyclical nature of education, "Most universities and schools, for example, have terms whose beginnings and endings are important benchmarks for staff and students" (p. 225). Conducting the interviews at 2 different occasions took advantage of these natural breaks in time. At the beginning of the semester, the students were less familiar with the content and logistics of the course even if they had taken a web-based class before. At the end of the semester, they were able to discuss what they thought about the course as well as have an idea of what grade they earned and what they learned throughout the semester. While analyzing the data, the researcher was cognizant that, "Data of whatever kind, recorded at different times, need to be examined in light of their place within the temporal patterns, short or long term, that structure the lives of those being studied" (Hammersely & Atkinson, 1995, p. 226).

Twenty of the interviews took place in the students' homes. Since some of the students were taking courses on-campus, they preferred to meet with the researcher at PRCC. Therefore, 9 of the interviews were conducted at PRCC. When interviews took

place at the student's home, the interviewer made observations about the conditions under which the student worked. The interviews ranged from 20 to 60 minutes.

Interview Sequence

Initial interviews were scheduled via email or by phone. At the first meeting, before the interview proper began and after the informed consent agreement was signed, the student was asked to answer some basic demographic questions about age, major, and family situation (see Appendixes I and J). Gathering demographic information provided statistics and served as a tool to reduce formalities to allow the student and interviewer to relax and get to know each other. In the second interview, before getting into the substance of the questions, the researcher took Hammersley and Atkinson's (1995) advice "to give over some interview space to casual conversation about current events in the interviewee's life," (p. 226), which was useful in creating rapport. The interviewer had come to care about the interviewees and was genuinely interested in how their lives were unfolding in reference to their academic careers and the on-line course.

Since these interviews were non-scheduled, not all of the interview questions were asked directly. Some of them were covered in conversations related to other questions. This type of interviewing is difficult, but the interviewer became more skilled in asking questions as the study progressed. It was necessary to be aware of inconsistencies in interview quality when analyzing the early data as opposed to the interviews conducted later in the semester. See the section on Trustworthiness of the Data for a more detailed discussion of this topic.

Following each interview, the interviewees were asked if they wanted to set a date for the next meeting or if they wanted to be contacted closer to the end of the semester. All of them chose to be contacted later. Therefore, they were called or emailed 2 to 3 weeks prior to the end of the semester. All but 1 individual was contacted. The student who could not be contacted had had trouble with her email address; however, she was finally contacted. Although she could not be interviewed due to time constraints, she did email her reactions about the last half of the semester of taking an on-line course.

The interviews were audiotaped and a Dictaphone™ was procured for transcribing them. The audiotapes were transcribed by the researcher, which took approximately 3 to 5 hours for each hour of an interview. Although painstaking and time consuming, transcribing the interviews allowed the researcher to think about coding and notice categories as she was typing, which gave her a head start on analyzing the data as well as intimate knowledge of the raw data. Conventional rules of transcribing were followed as outlined in Dr. Nespor's web page (<http://www.tandl.vt.edu/nespor/int.html>).

Every effort was made to transcribe the interviews from the first session before the second session; unfortunately, this was not always possible. However, before conducting the final interviews, the researcher listened to the audio-tapes of the first interviews in order to refresh her memory of what the students had said.

Interpretation and Analysis Procedures

Once the interviews were transcribed and the questionnaire responses were compiled into a database, the data were interpreted and analyzed. Explanations of the (a) sequence of analysis, (b) the basic procedure, and (c) open coding will be discussed in this section.

Sequence of Analysis

After the 29 interviews were conducted, they were transcribed (the 30th “interview” was an email message from a student who could not be contacted in time for the last interview). The interview and questionnaire data were labeled, coded, categorized, organized into note cards according to categories, and then developed into an outline, which served as the basis for the results chapter.

Basic Procedure

In brief, the following sequence of steps for analysis were followed based on Hammersley and Atkinson's (1995) Ethnography: Principles in Practice: a thorough reading of the data, generating concepts based on the data, and recoding previously coded

data as new categories emerged. These authors state that, "The ultimate aim, of course, is to reach a position where one has a stable set of categories and has carried out a systematic coding of all the data in terms of those categories" (p. 213). A stable set of domains, categories, and properties was developed by coding, recoding, and using note cards to organize the data in each category that grew from the codes. During transcription, the researcher began to develop a sense of how the data in the interviews could be grouped into domains and categories. The data could be organized along the lines of the interview and questionnaire questions, which were based on the research questions. However, different threads not related to the research or interview questions were also evident.

The domains and categories are not mutually exclusive in that data in one area could also be appropriate in another. For example, the category of distractions from children and spouses appears in both Interpersonal Support Issues and Student Characteristics. Distractions are an Interpersonal Support Issue and how the students manage their time to avoid interruptions from family members is a Student Characteristic. In spite of overlap of some data in some domains and categories, this categorization scheme was the most effective in teasing out information from the data. The reader is alerted when data cross over to more than one category.

Each domain is made up of properties and each category is made up of properties, which are defined by Strauss and Corbin (1990) as "Attributes or characteristics pertaining to a category" (p. 61). Appendix K outlines all of the domains, categories, and corresponding properties. For example, the largest domain, Student Characteristics, has 8 categories (see Appendix L). Table 2.2 shows how the data from each domain relates to the research questions. The researcher held the primary responsibility for determining whether a factor was facilitative or debilitating to a student's success in an on-line course. However, some data would address whether or not it was facilitative or debilitating based on the question to which it was a response. For example, answers to the question, "What were the benefits of taking an on-line course?" would point to facilitative features; whereas, answers to the question, "What were the drawbacks to taking an on-line

course?” would indicate inhibitive features. At times the students would explicitly indicate that an issue was a problem or a benefit.

Table 2.2
Research Questions

Domain	1. Who	2. Why	3. Facilitative	4. Debilitative	5. Infrastructure support
Interpersonal Support	✓	✓	✓	✓	
Student Characteristics	✓	✓	✓	✓	
Course Issues		✓	✓	✓	✓
Infrastructure Support			✓	✓	✓

Open Coding

Very simply, the steps involved in open coding are labeling phenomena or properties, grouping labels into categories, and discovering domains based on the categories. Suggestions for open coding were implemented from Strauss and Corbin's (1990), Basics of Qualitative Research: Grounded Theory Procedures and Techniques. Labels were placed on “discrete happenings, events, and other instances of phenomenon” (Strauss & Corbin, p. 61) that the researcher found in the data. Based on these labels, the data was further grouped into higher order categories that are defined by Strauss and Corbin as:

A classification of concepts. This classification is discovered when concepts are compared to one another and appear to pertain to a similar phenomenon. Thus the concepts are grouped together under a higher order, more abstract concept called a category. (p. 61)

According to Strauss and Corbin (1990), the process of open coding provides a framework for dissecting the data and forcing the researcher to examine it from a variety of perspectives, which assists in avoiding bias and hastily drawn assumptions.

After the interviews were transcribed, each transcription was read through a minimum of 3 to 4 times. During these readings, phenomena were labeled, grouped into categories, and organized using Strauss and Corbin's (1990) guidelines. A peer checker, Dr. Magliaro, also labeled 1 or 2 transcriptions and compared her coding with that of the researcher's to see whether or not there was agreement on how the labels, categories, and domains were identified. There was little discrepancy between the 2 reader's categories; however, having the peer checker forced the researcher to reconsider the coding labels and definitions. After refining the labeling procedure and going through the transcripts several more times, a stable set of categories was developed into which almost all of the interview data could be placed.

After coding and re-coding, note cards with the categories as subject headings were used to organize the data. Much like the process of writing a research paper using note cards to record notes, each incident of a phenomenon that belonged to a certain category was written on a card with the appropriate category as its subject heading. Throughout the open coding and note card process, forcing data to fit labels, concepts, or categories was avoided. If a phenomenon did not seem to fit within a certain label, a new concept was created or the incident was set aside for re-examination. In other words, a concentrated effort was made to not force the data into a scheme where it did not belong. This made the process somewhat messy because, at first, not all of the data seemed to fit into a category, so there seemed to be a number of "loose" threads. Eventually, however, after much re-organizing and arranging of labels and categories, almost all of the data fit into appropriate domains. Those phenomenon which could not be integrated into any categories were dropped.

Entering phenomenon onto note cards according to the categories was repeated for each transcription. After all of the note cards were written, they were examined to determine the categories that could represent the data. The note cards were then arranged and rearranged according to category until they were organized in a logical order and an outline for the results chapter was written based on this arrangement (see Appendix K).

Each heading and subheading of the outline corresponded to a note card category heading.

Trustworthiness of Data

The trustworthiness of the data was enhanced by the following characteristics of the study: (a) peer checker, (b) self check, (c) extended time period, (d) avoiding instructor favoritism, (d) interview procedures, and (e) relevant personal experiences. Special consideration is given to the trustworthiness of the interviews since these data are integral to the study. Therefore, interview (a) bias, (b) approaches, and (c) types are discussed in this section also.

Peer Checker

To enhance the trustworthiness of the data, it is important that another reader's interpretations of the coding are the same or similar to the researcher's. Dr. Magliaro agreed to be a peer checker. She reviewed and confirmed the coding, assertions, and categories drawn from the transcripts. In addition, when all of the interviews were transcribed, each interviewee was sent his/her transcripts and asked to read it to check for inconsistencies and agreement. None of the interviewees contacted the researcher to let her know whether they agreed or disagreed with the way the interviews were transcribed. Their silence neither confirms nor negates the coding of the transcriptions.

Self Check

Audiotapes of the interviews were reviewed to see if the researcher's interview style changed, as well as to determine evidence of any bias or pre-conceived assumptions. Although no biases or assumptions were found, it was discovered by listening to the first 2 or 3 interviews that the interviewer (who was the researcher) talked too much and tended to ask leading questions, so she learned to keep silent and let the interviewee talk. Since the researcher was not as adept at interviewing in the first few sessions, data from these transcripts were reviewed more carefully than those where she was more skilled in asking questions and keeping silent. As time passed, the researcher also became more adept at asking open-ended questions. The researcher's interview

skills improved, and she became less nervous and intimidated as the process continued. Listening to the audiotapes of the interviews enhanced the trustworthiness of the data because the interviewee improved her interview style, thus making the interviewees' responses more reliable.

Extended Time Period

The length of the study over a period of 10 weeks and the sampling of data 2 or 3 times throughout the academic session also enhanced the trustworthiness of the data. The intervals of sampling provided a broader picture of the students' experiences than what could be accessed through only 1 interview, observation, or questionnaire.

Avoiding Instructor Favoritism

Another step towards enhancing the trustworthiness of the data was to ask instructors for the class list of email addresses so the researcher could send a request for volunteers to participate in the study. An alternate option could have been to have the instructors ask for volunteers to participate in the study and then forward the email addresses of interested students to the researcher. If the instructors requested volunteers and then sent the appropriate email addresses to the researcher, then the instructor would have known who the participants were from their class. The instructor may then have given the volunteer(s) preferential treatment knowing that they were involved in a study examining their on-line course, which, in turn, could have biased the results. However, the instructors sent the researcher the class list of emails, and the researcher emailed the class directly. Unless the student told the professor that he or she was participating, it is fairly certain that the instructors did not know who the study respondents were, so they could not treat the volunteers differently from those who did not participate.

Interviews

This section on trustworthiness of the data focuses on the interview procedures. Since the interviews are a major component of the study, how they were conducted warrants special attention. The discussion of interviews addresses the following aspects: (a) interview bias, (b) approaches to interviewing, and (c) types of interviews.

Interview Bias

Of the interview biases discussed by Nespors (1998), 4 were relevant to this study. The biases will be addressed in the following order: (a) reactive/respondent bias, (b) role selection, (c) practice effects, and (d) interviewer effects (<http://www.tandl.vt.edu/nespor/int.html>). A fifth bias not discussed by Nespors (e) is self selection. All 5 biases will be addressed in this section.

One instance of reactive/respondent bias occurs when respondents want to make a good impression on the interviewer or when they say what they think the interviewer wants to hear. One of the interviewees, KB, was a student in an English class the researcher taught during the time the study was being conducted. During the interviews, the researcher reiterated several times that KB's answers and participation in the study had no bearing on the English class. However, it cannot be ignored that KB may have felt some need to please the interviewer since she was KB's English teacher. A second aspect of reactive/respondent bias is that, "Your questions may stimulate reflections or interests in topics the participant had not previously considered in the way your question requires" (Nespors, 1998, <http://www.tandl.vt.edu/nespor/int.html>). This was evident when the interviewer asked the participants about their preferences for studying in groups rather than alone. When developing the question, the researcher considered studying alone or in groups as an activity conducted outside of the regular class setting. The question was meant to indicate whether or not the student was an autonomous, independent, learner who chose to learn on his/her own rather than rely on group interaction. However, few of the interviewees considered the question in this light. Most seemed to consider group work to include sitting in a traditional class and listening or participating in whole class discussion rather than a distinct extra-curricular activity. As a result, the interviewer did not "stimulate reflections" in the way the question was intended (Nespors, 1998, <http://www.tandl.vt.edu/nespor/int.html>).

The second type of interview bias, role selection, was difficult to detect in the interviewees' responses. Role selection occurs when, "People try to figure out 'what kind

of person should I be as I answer these questions?’ and shape answers accordingly” (Nespor, 1998). They may also ask themselves, “What kind of person does the interviewer expect me to be?” then decides how to answer based on who they think the interviewer expects them to be (Nespor, 1998, <http://www.tandl.vt.edu/nespor/int.html>). Whether or not role selection was an issue in these interviews was not evident in the transcripts; however, since adopting roles is a silent activity, it is difficult to determine whether or not this bias was a concern.

Nespor (1998) points out that a third type of interview bias is practice effect: “Has the participant answered such questions before?” and “Does one question create a co-occurrence restriction on later responses?” (<http://www.tandl.vt.edu/nespor/int.htm>). Practice effects were evident in this study since all of the interview questions were the same as those on the questionnaires, and 14 of the 15 interviewees answered the questionnaires before participating in the interviews. A benefit to answering the same questions twice (once in the questionnaire and once in the interview) is this repetition permitted the interviewees to expand or further develop ideas from the questionnaire. On the other hand, having answered the questions previously may have resulted in the students parroting the answers they provided on the questionnaires rather than reconsidering their responses.

During the interviews, the researcher tried to be aware of the possible effects of a fourth bias, interviewer effects, which are defined by Nespor (1998) as, “The relative age of the interviewer to the interviewee, their gender, power, and knowledge can influence the responses of the interviewee” (<http://www.tandl.vt.edu/nespor/int.htm>). In an attempt to minimize interviewer effects, the researcher dressed casually, (when possible) met the interviewees in their home, minimized her role as a doctoral candidate and faculty member, and emphasized the importance of the interviewee’s participation. However, no matter what precautions were taken to minimize the effects of the interviewer's gender, age, and education on the interviewee's answers, it was impossible to eradicate who she was and how her “being” may have been reflected in the interview process.

The fifth type of bias, self-selection of interviewees was a concern because individuals who agree to be interviewed may be different from the general population, possibly coloring the data in a manner that could not be detected by the interviewer. The participants were self-selected since they volunteered to be interviewed and received \$20.00 per session. At the end of each interview, some of the students stated that they were not concerned about being paid the \$20.00 and had to be convinced to take the money, but some made statements like, "Hey, it was an easy way to make \$20.00." The monetary incentive may have influenced the type of person who agreed to be interviewed for money as opposed to someone who would volunteer without a concern for pay.

Approaches to Interviewing

An awareness of the bias inherent in the interview process affected the methodology of this study. According to Nespore (1998), there are 2 approaches to conducting an interview. The first is a "positivist" paradigm where the interviewer assumes that if she asks a question and removes all forms of bias, then the resulting answer from the interviewee will be a picture of reality. The problem with this approach is that it is impossible to avoid bias in any interpersonal communication. All of the biases discussed above are part of human nature and cannot be eliminated. Although the researcher was aware of the biases that affected the interviews and tried to diffuse them as much as she could, no precautions could assure that the answers to the questions reflected absolute reality. In fact, there is no reality when dealing with people's perceptions of situations; the best that could be done was to approach the interviews from a second perspective, the "discourse analytic" point-of-view.

Nespore (1998) defines the discourse analytic point-of-view to interviewing as asking questions that produce "situated talk about a subject jointly constructed by interviewer and interviewee" (<http://www.tandl.vt.edu/nespor/int.html>). In other words, in the PRCC study, both the interviewer and interviewee were aware of the context, background, and environment in which they were speaking. They were also cognizant of the topic of discussion and how the meaning of the topic was being developed through the give and take of conversation. This approach complimented the constructivist stance

adopted in examining the data. The researcher's experiences as a teacher, a student, a friend who converses with other friends, a respondent in other studies, and a writer, support Nespor's (1998) contention that, "People are figuring out what they think as they talk and that process of figuring out what they think is inextricably linked to the social context of the interview and the relationship between interviewer and interviewee..." (<http://www.tandl.vt.edu/nespor/int.html>) The discourse analytic point-of-view in interviewing works with the realities of bias rather than attempts to eradicate situations that cannot be ignored. For example, when the researcher was interviewing each of the 15 interviewees, instead of pretending that differences in age, culture, ethnicity, marital status, parental status, background, and education did not exist, the interviewee and interviewer worked together to re-construct the students' experiences taking a web-based course. They arrived at this re-construction by talking, questioning, listening, and building meaning from each other's contributions.

Using the discourse analysis approach, however, does not mean that issues of bias were ignored or considered irrelevant. These issues were recognized and taken seriously. The implementation of Strauss and Corbin's (1990) open coding method of analysis and the use of a constructivist stance in trying to reveal the interviewee's voice helped to soften the effects of any bias. The implementation of the grounded theory approach was intended to allow the researcher "to break through the biases and assumptions brought to, and that can develop during the research process" (Strauss & Corbin, 1990, p. 57).

Types of Interviews

The interviews were standardized but non-scheduled. Charles Briggs (1986) states that standardized interviews "involve the use of a common set of questions with all respondents" (p. 20). Unlike standardized, scheduled interviews, where the order and wording of the interview questions are the same for all respondents, non-standardized, non-scheduled interviews occur when "the interviewer is free to present the questions in the way in which it seems most suitable for each interviewee" (p. 20). Although there was a list of questions to be answered, if a respondent covered a topic in conversation before it was asked, then the researcher did not re-state that specific question. The list of

interview questions served as a guide rather than a strict procedure (see Appendix J). Non-scheduled interviews were used in order to follow up on interesting and relevant threads that arose during the interview even though inquiries leading to these threads may not have been part of the original list of questions.

Relevant Personal Experiences

The last topic in addressing trustworthiness of the data is to consider the researcher's relevant personal experiences and beliefs. Initially, the researcher's stance was one of concern that distance learning may not be effective for some community college students. As the study proceeded, the researcher's stance changed in that she could see where on-line courses could be a sound educational investment for community college students. However, the investigator's initial concerns and growing optimism did not affect her ability to be as objective as possible throughout the process of researching, conducting, and analyzing the data from the study.

Since this was a qualitative study written from a constructivist point-of-view, the researcher's personality, character, and experiences could not be entirely extracted from the procedures involved in the methodology. The researcher's relevant personal experiences were considered underlying issues of the PRCC study because they provided the underpinnings for why this study was conducted, where the data was collected, and how it was analyzed. Please note that this section is written in the first person.

In order to be aware of bias and conflicts that may affect the gathering and interpretation of data, Locke, Spriduso, and Silverman (1993) suggest that a qualitative researcher examine how his/her "personal biography might influence the research process" (p. 114). In addition, the epistemology of the constructivist view is, "The investigator and the object of investigation are assumed to be interactively linked so that the 'findings' are literally created as the investigation proceeds" (Guba & Lincoln, 1994, p.111) [emphasis in original]. Therefore, I needed to be aware of my part in the respondents' constructions, and I took my background and beliefs into account when I analyzed the data.

My roles as faculty member, Instructional Technology intern, and then Assistant Instructional Technologist at Pleasant River Community College helped to form my stance as well as prepare me to conduct this study. I had been teaching face-to-face English courses at PRCC since 1990 and was instructing 2 on-campus courses during the 1999 summer session, when the interviews were conducted. While teaching that summer, I was also an Instructional Technology Intern and then the Assistant Instructional Technologist at PRCC. As a staff member in the Instructional Technology office, I helped develop, maintain, and distribute the courses my interviewees and questionnaire respondents were taking. Since I was a part of the technology and faculty infrastructure at PRCC, and I had previously participated in the Southern Accreditation Commission's review of the college, I understood Pleasant River's administrative and academic organization. In addition, I was very familiar with the population of students who enroll at this institution.

I used a discourse analysis approach to interviewing, which is defined as the condition where the "Question produces situated talk about a subject jointly constructed by interviewer and interviewee" (Nespor, 1998, <http://www.tandl.vt.edu/nespor/int.html>). Because the interviewee and myself were engaged in "jointly constructing" ideas, I had to ensure that during our conversations that I did not express my knowledge of the inner workings of putting their courses on-line so as not to influence the interviewees' descriptions of their experiences. As a result of using this interview approach, I knew that the interviewees and I had to construct a description of their on-line experiences together, rather than me acting as the authority on the subject because of my employment and background. I made a conscious effort not to bring in my experiences to counter or confirm their descriptions or interpretations of their on-line activities.

My love of language and eye for the different meanings of text facilitated coding the data, which required close reading. My experience in analyzing poetry, other forms of literature, and student essays gave me the basic training and patience for carefully

examining threads of meaning which run through text. In fact, I found labeling and categorizing the data were the most enjoyable aspects of conducting this study.

An awareness of my experiences and point of view were important to the outcomes of the study because as Hammersley and Atkinson (1995) point out:

Data in themselves cannot be valid or invalid; what is at issue are the inferences drawn from them. The point is that the ethnographer must try continually to be aware of how his or her presence may have shaped the data (p. 223) [emphasis in original].

Self-monitoring during the interviews and then listening to the interview audio-tapes for signs of bias on my part helped me be more cognizant of how my presence could have affected the study. For example, when talking to the interviewee who was also a student in one of my face-to-face courses, I reiterated that her roles as a participant in the study and as a student in my class were distinct and one did not affect the other.

Summary

The methodology adopted for this study was designed to categorize data from the questionnaires, interviews, and observations in order to develop and organize a concrete description of community college students taking on-line courses. The methodology included:

- Close reading of questionnaires and interviews,
- Identification of phenomena in questionnaires and interviews,
- Coding and categorizing of labeled phenomena,
- Summarization of categories.

In order to discuss the methodology used in this study, the following 5 areas were illuminated: setting, participants, data sources and collection procedures, interpretation and analysis procedures, and trustworthiness of data.

A constructivist paradigm was used to analyze the data. Guba and Lincoln (1994) state that in a constructivist approach, "The aim of inquiry is understanding and reconstruction of the constructions that people (including the inquirer) initially hold" (p. 113) [emphasis in original]. Through questionnaires, interviews, and observations, the students' experiences of web-based instruction were reconstructed in the broad context of school, home, family, and work. In any situation,

it is the total context that creates what it means to be present, to be a participant, to be a member, and to have a role to play. It is that context and those meanings that the qualitative researcher seeks to capture.

(Locke, Spriduso, & Silverman, 1993, p. 99)

The study sought to capture and illuminate "a bounded slice of the world" (Locke, Spriduso, & Silverman, 1993, p. 111). The slice of the world, in this case, orbited around 8 web-based courses offered at a small southern community college.

CHAPTER THREE: RESULTS

Introduction

In order to solicit data to provide a rich description of the experiences of community college students taking web-based offerings, this study focuses on the overarching research question, "How do community college students construct their on-line experiences?" The specific research questions are: "What are the characteristics of students taking on-line courses?", "Why are they taking web-based courses?", "What are facilitative dimensions or features that promote success in on-line courses?", "What are the debilitating dimensions or features that inhibit success in an on-line course?", and "How does the community college infrastructure support students taking web-based courses?"

While some results are drawn from both the questionnaires and the interviews, most findings are derived only from the interviews. The questionnaires were distributed at the beginning, middle, and end of the 10-week summer semester in 1999 to over 168 students taking on-line courses at PRCC. The first questionnaire had 35 responses, the second had 13, and 20 responded to the third. These individuals are referred to in this dissertation as the respondents. The second source of information is drawn from 29 interviews taken from 15 students, who are referred to as the interviewees. These students were interviewed twice, once at the beginning and once at the end of the ten-week summer semester 1999.

To create the description of student experiences taking web-based courses, the data gleaned from the 3 questionnaires, 29 interviews, and 20 observations were first organized into 4 domains. These four major domains are: interpersonal support, student characteristics, course issues, and infrastructure support. Appendix K is an outline that shows how the data is organized into the four domains with their associated categories and properties. Grouping the data into these domains was done to organize the description of the respondent's and interviewee's experiences. The data is reported according to this organizational scheme in order to provide a comprehensive look at what was learned in this study. A secondary analysis was then performed to examine

relationships across domains and categories in reference to the research questions, which is reported in the Discussion chapter.

Including an overview, the Results chapter is organized according to the 4 domains described above: (a) overview of setting and participants, (b) interpersonal support, (c) student characteristics, (d) course issues, and (f) infrastructure.

Overview of Setting and Participants

A brief overview of the setting and a description of the participants is provided here to set the context for the results. Detailed information about the setting and participants is provided in the Methodology chapter.

Setting

The on-campus setting of Pleasant River Community College (PRCC) is a small rural community college in a southern state located in an area where 3 post secondary institutions (a state university, a private university, and a private college) are within a 5- to 10 minute drive. A major research university is located 45 minutes from the community college and another is 2 hours south. The on-line setting is comprised of 8 cybercourses which are described in detail in this chapter under Course Issues.

Participants

The questionnaire respondents and interviewees were asked the following questions in order to address the first research concern: “What are the characteristics of students taking on-line courses?”

Background Questions:

1. How old are you?
2. How many children do you have?
3. What is your ethnic background?
4. Are you single/married/divorced/widowed?
5. Are you male/female?

6. How would you rate yourself as a student? Fair (C-D's), average (C-B's), good (B's-A's), excellent (all A's).

Appendixes M through R are charts of the data provided here. In terms of age, among the 35 respondents to the first questionnaire, 17.1 percent were 19 or younger, the majority, or 57.1 percent, were between the ages of 20 and 29, 22.9 percent were between the ages of 30 and 39, and 2.9 percent were between the ages of 40 and 49 (see Appendix M). Most of these students, 54.3 percent, did not have children, 20 percent had 1 child; 17.1 percent had 2; and 8.6 percent had more than 2 (see Appendix N). Based on the results from the first questionnaire, none of the respondents was African American, 1.8 percent were Asian, 1.8 percent were Hispanic, 41 percent were white, and 55.4 percent withheld their race or did not know (see Appendix O). The slight majority of students were married, 48.6 percent, with 45.7 percent single, and 5.7 percent divorced (see Appendix P). Among those who answered the questionnaire, 68.8 percent were female and 31.4 percent were male (see Appendix Q).

In order to maintain confidentiality, the titles of courses are not referenced when summarizing what courses the students took on-line (see Appendix R). Based on direct references to their courses when answering questions, the researcher could determine what courses the respondents and interviewees were taking. The courses are identified only by general field, such as Liberal Arts and a number: 5.4 percent were taking Liberal Arts 1; 6.8 percent were taking Liberal Arts 2; 8.1 percent in Liberal Arts 3; 2.7 percent for Liberal Arts 4; and 2.7 percent in Liberal Arts 5; 1.4 percent took the social science course and 8.1 percent were taking the social science class. Of the technology courses, 9.5 percent were taking Technology 1 and 8.1 percent in Technology 2.

In answering the question, "What are the characteristics of students taking on-line courses?" the questionnaire data reveals that, in general, the 35 respondents were white females in their mid-20's, with no children.

The interviewee data drawn from the same background questions are summarized in Table 3.1.

Table 3.1
Interviewee (INT) characteristics

INT	Major	Grade received	Age	Ethnicity	Home/Work	College level
CT	Transfer/ criminal justice	Social Science: B Liberal Arts 3: A	20's	White	Lives with boyfriend / no children	Taking a few credits a semester.
ER	Transfer/ psychology	A	20's 30's	White	Married with 2 young children / works part time	N/A
FT	Transfer / Education	A or B*	30's	White	Married with 1 child/works full time	In last semester before transferring.
GT	Law	A	20's	Hispanic	Single	Rising senior at small private liberal arts college
HA	Nursing	A	30's?	White	Married / 2 children / doesn't work	Repeating first year courses in Fall
HL	Information Systems	A	30's	White	Married with 2 children / full time job	Taking a few Credits a semester
JC	Undeclared	C*	20's	White	Lives at home with parents / part time job	N/A
KA	Transfer/ Education	C	20's	White	Lives at home with parents during summer/ part time summer job	Rising junior at a liberal arts college
KB	Transfer / Business	A	40's ?	White	Married / no children / full time job	In last semester before transferring.
MJ	Economics	A	16	White	Lives at home with parents / doesn't work	Rising senior at a liberal arts college
MT	Transfer/ Sociology	Dropped	Early 20's	White	Lives at home with parents	Was a rising junior at small private liberal arts college but then decided to go to PRCC to start new major.
OL	Para-legal	A	Early 30's	Native American	Married with 1 daughter/ full time job	Taking a few credits a semester.
RG	Electronics	B	Mid / late 30's	White	Married / 2 children / full time job	Taking a few credits a semester.
WS	Transfer / Business	Incomplete	Mid 30's	White	Married with 3 children/full time job & home business	Taking a few credits a semester.
YT	Transfer / Business	A	Mid / late 30's	White	Married with 2 children	In last semester before transferring.

* Grades were not available at the time of the interview. The grade indicated is the grade the student expected to receive.

The background characteristics of the interviewees reflected that of the questionnaire respondents in that the majority of them were white women. There were slight differences as the interviewees were a little older and tended to have children.

Interpersonal Support

Data grouped under the domain Interpersonal Support address 3 of the research questions of this study: “What are the characteristics of students taking on-line courses?”, “What are the facilitative dimensions or features that promote success in on-line courses?”, and “What are the debilitating dimensions or features that inhibit success in on-line courses?”

In examining the facilitative and debilitating factors that affected a student’s success in taking on-line courses, 2 issues arose. First, the physical space where the student studied, and, second, the dimensions of support from employers and family members. Answers to these questions also address the more subtle issue of “What are the characteristics of students taking on-line courses?” in that understanding the conditions under which people study describe their characteristics at a deeper level than demographic descriptors of age, gender, ethnicity, and marital status. The conditions under which they studied are described in the following summaries.

Physical Space

Data for examining the physical space where students did their schoolwork were elicited by the question, “Where is the computer you will use located?” Table 3.2 summarizes the 35 questionnaire respondents’ answers.

Table 3.2
Respondent Computer Location

Location	Number
Home	23
Home and Work Combined	2
Other	1
School	1
Work	6

Like the questionnaire respondents, the majority of the interviewees (14 of 15) had computers at home. GT did not own a computer, so he used one at work. In addition to using their computers at home, 6 of the interviewees also used their work computers to logon to their courses and to do their assignments.

Based on observations (if the interviews were conducted in a student’s home) or on what the student reported if the interview was conducted at PRCC, 12 of the 15 interviewees had small, limited, work spaces in high traffic areas of the home, which led to an increase in distractions. Examples of small, limited work spaces include having computers set up on the dining room table, in the middle of the TV room, or in a bedroom with the bed less than an arm’s length away and the printer on top of a dresser. Although GT did not own a computer, he confirmed that his study area was facilitative in that he was able to work from his large office at the well-equipped law firm where he had a summer job. He said that it was beneficial to be able set time aside after work and have a pleasant office in which to study. The rest of the interviewees had a space of their own where they could study, such as their private bedroom, a basement/recreation room, and a study.

Dimensions of Support

All participants were asked 2 questions which were aimed at determining the level of support from employers and family members. The 3 dimensions of support asserted from the data are: physical, emotional, and financial. Physical support includes receiving

permission to use a computer after hours at a job site. Physical support could also refer to a spouse washing dishes, cleaning the house, and taking care of other practical needs in order to allow the student more time to study. Emotional support occurred when employers gave their employees verbal encouragement to continue their education and when children chose to study alongside their student/parent. Finally, financial support was found in that students who were living with their parents often had their computers and Internet Service Providers (ISPs) paid for. If the support aided the students in their studies, then this assistance would be considered facilitative; if support was withheld or counterproductive, then it was considered debilitating to the student's success in an on-line course.

Data for these results show that the students received facilitative support from employers and family across all 3 dimensions: physical, emotional, and financial. The data were drawn from answers to the following questions: "How is your work/family life adapting to your taking an on-line course?" and "What changes have you had to make to your typical schedule as a result of taking this course?"

Support from Employer

Employer assistance was facilitative to most of the students' success in taking an on-line course. With their supervisors' and co-workers' approval, 6 of the 15 students interviewed used job facilities during off-hours to complete assignments. OL, who had no Internet capability and an old computer at home, said, "If it wasn't for the computer at work, I would not be able to do this on-line class." YT also used the Internet connection at work to logon to a course and print out the assignments. She took the printouts home, did the assignments, and then emailed them back to the instructor from work. Since GT did not own a computer, he relied on the computer at his job in order to download, complete, and submit his assignments.

Not only did most students get physical assistance from their employers in the form of computer availability but they also received emotional support when their supervisors encouraged the student to continue his or her education. In an example of

emotional support coupled with physical assistance, OL's co-workers covered for her during work hours if she had to study for a test or catch up on an assignment. By covering for her, they were lending their emotional backing as well as relieving job responsibilities in order to let her study.

Thirteen of the employers were supportive, or at least did not inhibit the students' studies; however, 2 interviewees had negative comments about their supervisors. First, MT said her boss may not have understood if she took off a few hours each week to attend an on-site course, which then necessitated that she take a cyber course. WS's schoolwork suffered because her employer's demands required more and more time. As a result, she had to take an incomplete in her on-line course (as well as a seat course she was also taking). After receiving the incompletes, however, her employer promised to be more supportive for the next semester. This particular employer's lack of physical and emotional support were debilitating in that WS was not successful in her courses as a direct result of the demands of her job.

Family Support

Similar to the findings about employers, the majority of students received emotional and physical encouragement from their families. As 1 respondent put it, "Family must be part of the team. They are critical to making college a success. I have to prioritize and stick to it, family and work must know and respect my decision, and I must make it possible for them to do so by telling them the deal." A third level of support was financial assistance. Parents paid for the computers and Internet Service Providers for students living at home. Emotional, physical, and financial support, were key to the students' success in an on-line course.

Five of the women interviewed said that their husbands (one who is a stay at home father) gave emotional support through verbal encouragement as well as physical assistance by performing household chores and taking care of the children's needs. An example of physical support can be seen when OL came home one evening to find that her husband had left work early (whether he asked to get off early is not clear), cleaned

the house, and did laundry so that his wife could do her homework without having to worry about household chores. In addition, OL's brother would baby-sit if it was necessary. KB's husband, who routinely did all of the housework, was still emotionally supportive even when he began to feel a "little left out" after 3 semesters in which his wife completed 57 credit hours in addition to working 40 hours a week. FT's wife was a homemaker and supported her husband by cleaning house, taking care of their 4-year-old daughter, and cooking meals. In another example of family support, MJ's mother made sure that the computer was always available when her daughter needed it by telling younger siblings that they had to let MJ use the computer when she was ready to study.

A subtle form of emotional support occurred when the children of several interviewees chose to study alongside their parent. In 1 case, HA's son, Adam, would lie on the bed and watch his mother do her computer homework. When she had to do a PowerPoint™ presentation, she let Adam pick out the clip art that he liked. Later, Adam and HA created a PowerPoint™ presentation for 1 of his school projects. In another example of children becoming a part of the study environment, RG let his daughter use the mouse while he told her where to click and drag objects in the software program that he used to do homework. Joining parents in their school activities could be considered a supportive gesture because the children are showing an interest and a willingness to share study time with their parents.

Although some children and spouses tried to be supportive of the students' studies, they also could be distracting and take away from the students' study time and diminish their level of concentration. These distractions were debilitating to a student's academic success. Data pertaining to distractions were derived from answers to the following question from the first questionnaire: "If you are using a computer located in your home, how will family, friends, or work related issues influence your study time?" Most of the answers related to family concerns rather than to specific distractions from a job.

Although 5 respondents said there were no issues with distractions or interruptions, others mentioned being interrupted by their children, “Being at home working on my class, I will have to do it during late evening hours. Children are very demanding of parents’ time. Plus I cannot concentrate with constant interruptions.” One respondent stated that if she had a class on-campus, then she would not have as much trouble with interruptions because she would be away from her friends and family. WS’s husband is a stay-at home-dad, but even with him helping, interruptions still occurred. In fact, 1 evening she could not get any reading done for her on-line course because of her noisy household, so she drove to PRCC and read in the cafeteria. When WS returned home later that evening, her husband said:

We [he and the children] feel really bad about this because I realized that when you first started classes, we were all really gung-ho, and everybody really did their part and you were able to get everything done. We did not have any idea how much the interruptions took away from your study time.

Eight of the interviewees mentioned noise and interruptions from family members as being a hindrance to their studying. If parents had older children or siblings, they had to compete with family members in order to be able to use the computer. To deal with predictable conflicts, students would schedule their time in order to work when there were fewer distractions, such as this respondent who said, “I usually do my work when everyone else is asleep.” Parent/students tried to work early in the morning before the children woke up, or they worked late at night when everyone had gone to bed. One father stated, “The only time I get work done is after my 1-year-old is in bed....” YT and OL said that they needed quiet time, so they also waited until the family went to bed before they began to study. OL did all of her reading in the bathtub because it was the only place where she could have “quiet time.” Another interviewee pointed out, “If work, family, or friends interrupt my study time, the easiest thing to do is to push back study time, until it is later (or earlier) in the day/night.”

Summary of Interpersonal Support

Students' experiences taking on-line or traditional courses, cannot be separated their home and work lives. Interruptions and physical as well as emotional support impact the chances of a student's academic success. Fortunately, the majority of respondents and interviewees for this study had access to computers as well as support from family and work. The level of distraction from children was evident, but the student-parents adopted time management strategies to provide themselves with the study time and conditions that they needed. The issue of time management is also discussed under Learning Preferences in the following section, Student Characteristics.

Student Characteristics

The data in the Student Characteristics section of this chapter address 4 of the research questions: "What are the characteristics of students taking on-line courses?", "Why are they taking web-based courses?", "What are the facilitative dimensions or features that promote success in on-line courses?", and "What are the debilitating dimensions or features that inhibit success in on-line courses?"

The bulk of the data from the questionnaires and interviews could be placed in the domain of characteristics of students taking on-line courses. Eight inter-related aspects of the students' background and characteristics were identified and categorized in the interview data. Some of these aspects include factors that are dependent on outside influences or the interaction with them, such as academic preparation and experience with on-line courses; whereas, other characteristics are internally driven, for example, learning preferences. The data for Student Characteristics are grouped into 8 categories and presented in the following order: (a) student concerns, (b) motivation, (c) perception of content, (d) prior knowledge of content and on-line courses, (e) academics, (f) learning preferences, (g) technological access, and (h) technological experience. Appendix L, outlines the categories and properties of student characteristics. After presenting the above information, a student profile based on a compilation of the data is provided.

Student Concerns

The first questionnaire and the first interview contained the following question: “What concerns do you have about taking an on-line course?” Whether or not these concerns were realized was not directly solicited at the end of the semester. However, some interviewees incidentally mentioned these issues in the later interviews, but the respondents to the questionnaire were not asked to report whether or not their concerns were realized.

Student concerns were grouped into 4 areas: (a) lack of interaction with professor, (b) technical issues with the computer, (c) lack of experience taking on-line courses, and, finally, (d) lack of self-direction. All of these concerns address the students’ perceptions of facilitative and debilitating features that may have affected their success in taking an on-line course.

Lack of Interaction

Most of the distance learning students surveyed for this study said they were aware that not having a professor physically available would be an issue for them. In their responses to the question about initial concerns in taking an on-line course, 12 of the 35 who answered this question said they were uncomfortable with not having instructor interaction: “The only concern is that if we have questions, no one is right there to answer them, we have to email or contact the teacher. We have also lost the personal part of the teacher student relationship.” They were also concerned about the “distance from the professor,” being “unable to get help or discuss reading material,” and “there is no personal contact with the professor.”

Interviewees were also worried about not having an instructor physically available. KB was concerned about the teacher’s unavailability and she said it was harder to learn on her own. RG wondered what he would do since there was no instructor to demonstrate what he needed to learn. HA was worried about not being able to talk to a professor if she ran into a problem. Since the face-to-face interaction was missing, MJ

stated that miscommunication was more likely to occur in an on-line course than in a seat class. Interaction issues will be discussed in more depth in the sections on Learning Preferences, Course Details, and Instructor-to-student Interaction.

Technical Concerns

Technical issues such as: “What will I do if my computer breaks down?”, “What if I lose access to the Internet?”, or “Do I have the technical skills necessary to successfully navigate an on-line course?” comprised the second most common group of concerns among students. The respondents were also worried about technical support. One stated, “I worry that while entering input for study questions that my computer will crash; therefore, losing my information. I would then have to drive 30 minutes away to Pleasant River Community College and try to familiarize myself with their computers.” Nine of the 35 respondents mentioned an unreliable ISP or computer crashes as reasons for concern.

Like the respondents, technical issues caused apprehension among the interviewees. WS mentioned that she was afraid her computer would break down and/ or she would lose her Internet access and have to drive to campus to submit her assignments. Two interviewees said they lacked the necessary technical skills. MT did not know where or how she would get help if she had technical or academic questions. Whether or not students’ concerns about technical breakdowns were realized is discussed under the Technical Issues category.

Lack of Experience Taking an On-line Course

Of 35 questionnaire respondents, 9 said they were insecure about the class because they had never taken an on-line course before, so they did not know what to expect. For example, 1 respondent stated: “My initial concern was how the class was set up, and if it would be a format I was comfortable with.” Another wondered what taking an on-line course would be like “compared to sitting in a classroom” and if he/she would do as well.

Five interviewees also voiced concern over their lack of experience in taking an on-line course, specifically that they did not know how the course would work. HA thought everyone had to be on-line at the same time in order to take the “class.” In addition to misconceptions, CT did not know if taking an on-line class would be “a lot harder,” and JC thought there might be more reading than an in-class course.

Lack of Self-direction

Most students said they were aware of the need for self-direction and time management when taking an on-line course. This respondent summarized the issue: “To take an on-line course a student needs to be pretty self-motivated and able to access information alone.” Some, however, were not confident that they had these skills. One respondent was worried about keeping up with the schedule and added, “I’m a bit of a procrastinator.” Procrastination was the concern of another student: “Procrastination, the Internet can be very distracting and not attending classes, there is the possibility of letting it slide.” Another wondered, “If I have enough discipline to do the work.”

Only 2 interviewees were apprehensive about self-direction. JC said he was afraid he would forget to do his assignments, and CT wondered if she had the necessary discipline to manage her time and employ the appropriate study skills in order to successfully complete an on-line course.

The 4 student concerns discussed by interviewees and questionnaire respondents were: lack of interaction with professor, technical issues with the computer, lack of experience taking on-line courses, and, finally, lack of self-direction.

Motivation

Motivation is the second category of Student Characteristics. Most of the information about motivation is drawn from answers to the following question from the first questionnaire: “Why did you choose to take an on-line course as opposed to an on-site course?” The data on motivation addresses the research question, “Why are students taking on-line courses?”

Motivation can be external or internal, such as a need to make more money (external) and self-improvement goals (internal), that motivate students to complete a course. All of the students were motivated to obtain a post-secondary degree in order to improve their life circumstances. For example, HL was trying to improve her skills for her job by taking a computer course, and RG was changing careers in order to make more money and increase his job security. These motivating factors are usually tangible, i.e. increasing earning potential, ease in finding a new job, improving job skills.

The external motivators that influenced the interviewees and respondents were (a) long-term goals, (b) required courses, and (c) convenience. Two internal motivators were (d) personal goals and (e) attitude.

Long-term Goals

KB, who took 57 credits in 3 semesters while working full time as a senior-level secretary, was motivated by external and internal factors. Externally, her decision to go back to school was based on an evaluation from her boss. He wanted her to make more money, but he could not give her a raise because of the administrative system she is in. If she got a bachelor's degree, "It would be a door wide open for me," as a result, she was "really motivated, just really wanting to get this done."

Like KB, several students were planning to pursue 4-year degrees at local universities and colleges after taking their required transfer credits at the community college. Three of the women were going to participate in a local university's adult degree program. These 3 planned on receiving degrees in business management. ER was transferring to another local university to pursue a degree in psychology, and CT was planning to attend the same university to study criminal justice. See Table 3.1 in this chapter on setting and participants for a break down of the interviewees' programs of study.

Four of the younger interviewees were enrolled in 4-year universities during the regular school year and were taking the community college classes on-line during the

summer. They were taking these courses for 2 reasons: to pay less money for tuition and to get ahead in their course work for the following semester. MJ was unusual in that she was 16 years old and a rising senior at a small, private women's college in the area. MJ was enrolled in a college program for gifted adolescents. Her long-term goals were to pursue dual Ph.Ds in law and economics, and she eventually wants to become the "Chairman"(person) of the Federal Reserve.

Two students had plans to obtain 2-year degrees. OL wanted to complete her Career Studies Certificate in Legal Assisting. RG had been laid off from his job in a local plant and was working towards an AAS degree in Computer and Electronics Technology, so he could improve his chances of getting a job and receive better pay.

Required Courses

In order to complete degrees and obtain long-term goals, students have to take required courses in their program. All of the PRCC courses offered on-line met a requirement for some program. For 2 interviewees, the class met a humanities requirement. Other classes were prerequisites or in the student's major. When MT shifted her major from a technical degree to social services, she dropped her on-line class because it was not a requirement for her new program.

Convenience

Answers to the following questions: "Why did you sign up for an on-line course?" and "What are the benefits of taking an on-line course?" pointed to convenience as being the primary motivator in students' decisions to take an Internet course as opposed to an on-campus course. The convenience of having a time-and-space independent class allowed the respondents to spend more time with their families and to work their jobs without interruption. Seventeen questionnaire respondents said that they were taking a course on-line because of work, family, or childcare concerns. RG could not have taken his course, which was a prerequisite in his program, unless it was offered on-line because he worked swing shift, making it impossible for him to attend day or night classes on a regular basis. Therefore, a space and time independent on-line course met his needs. GT opted to take an on-line course in the summer since he liked to work a 9:00 in the

morning until 5:00 in the evening job from May to August, and he wanted to avoid taking an overload the following fall.

Other issues of convenience included avoiding a long commute, avoiding parking problems on-campus, and a medical condition that excluded travel. Several students explicitly said an on-line course was more “convenient,” and they liked the “freedom” these offerings allowed.

When asked about the benefits of taking an on-line class, the respondents’ answers were similar to those explaining why they signed up for an Internet course: “I can stay at home and can decide on my own hours as to when I will ‘go’ to class;” “I can work at my own pace, and at any time of day. I do not even have to pay a babysitter;” “I am able to manage my time in a manner that would be the most beneficial for me without hurting my ability to take the classes that I need.”

Eleven of the 15 interviewees said that they chose to take Internet courses because of the time-and-space independent convenience of on-line instruction. For 3 of the interviewees, convenience was more important than not learning as much on-line versus in the classroom. These students also enjoyed seat classes more than those offered on the Internet, but they still took the cybercourses because of the convenience. The majority of the interviewees cited family, work, and travel as the main reasons they enrolled in on-line courses.

Since students were motivated by the time-and-space independent traits of Internet courses, they were quite intolerant of what they considered the inconvenience of having to come on-campus for exams. One instructor also had the students drive on-campus to view a video. It is interesting to note that this video was stolen the first day of the assignment, so no one had to come on-site to view it.

Personal Goals

Whereas long term goals, required courses, and convenience were external motivators, achieving a personal goal was an internal motivator that the interviewees discussed when answering the question, “Why did you choose to take an on-line course as opposed to an on-site course?” HL began attending PRCC when she was younger and then quit. She said that she needed to “finish something,” so she was taking courses in the computer program. In a similar vein, RG worked for a defense firm during the 80’s and regretted that he turned down the opportunity to go to school at the company’s expense. When RG was recently laid off, the state offered to pay for schooling at PRCC. Not wanting to make the same mistake he made earlier, RG is taking classes to earn a degree. YT, who has a good paying job as a secretary in a local plant, said that in spite of her healthy employment status, she still “wants to do more with my life.”

Attitude

Another internal factor affecting student success in completing an on-line course was the student’s attitude towards the class. Data grouped under the category of attitude addresses the research questions about facilitative and debilitating features that affect a student’s success in taking an on-line course. The data in this category were drawn from responses to almost all of the questions on the 3 questionnaires including explanations of why the student rated the course according to a 1-5 Likert scale. Others were answers to questions about how the course could be improved or about technical problems.

Some students had positive attitudes about their cybercourse. YT was enthusiastic about her class, and HA stated, “So far it’s been fun. I’ve enjoyed it.” KA, on the other hand, was quite dissatisfied with her on-line course and had a negative attitude. She did not like the content, and she said that another course on the same topic was taught more effectively on-site at the school she attended during the school year.

Two interviewees reported that they were motivated in their studies because they liked to learn. FT stated that if he could, he would be in school “24 and 7” [24 hours a

day, 7 days a week]. WS said “I am never happier unless I am learning something,” she continued, “I enjoy learning more than anything else.”

Flexibility was an attitudinal disposition that was evident among some of the interviewees. Whereas other students were easily frustrated by technical problems and course issues, the flexible students had an open and accepting attitude towards taking the class and adapting to technical problems. For example, ER realized that there was no one to explain the material to her, so rather than maintain her old study habits, she was flexible enough to read ahead and study differently than she would for an in-class course. In other words, she adapted to changing conditions. Similarly, if HA had a problem and the instructor did not respond to her email asking for clarification, rather than stop working on the assignment and waiting to hear from the instructor, she would re-read the material and try to figure it out on her own. OL approached the course with an open mind and had a contingency plan: “it seemed like, hey, let’s give this [taking an on-line course] a shot and see how it goes.” She said that if she found she was over her head, she would drop the course. CT also decided to give an on-line class a try, and if it did not work out, she said she would drop it in the allotted time.

In response to technical problems, several interviewees accepted that there were going to be computer-related glitches. JC’s attitude was that if his computer died, he would go to the community college campus and use the labs, “It wouldn’t be that big a deal.” KB had the same approach when she could not logon to work on her course because of ISP problems. She studied for another class, stating that she “had plenty to do.” When her printer quit working, HA had to call the manufacturer. The help desk talked her through uninstalling and reinstalling drivers. She said the printer had not worked because, “I missed a couple of files, no biggy.”

A few interviewees discussed their lack of motivation. These data were usually in response to the following question from questionnaire 2: “At this stage in your course work, what would you say is the greatest drawback of taking an on-line course?” FT, who worked night shift, had a family, and was trying to take 2 reading intensive English

courses (1 on-line and 1 on-campus), found that he was “burnt out” towards the end of the ten-week session. JC was taking a liberal arts course on-line and did worse during the summer session than he had the semester before on the first half of the 2 semester course because he was “not as motivated” and “did not put as much into it.”

In summary, the student category of motivation can be divided into external and internal motivators. The external motivators are: long-term goals, required class, and convenience. Internal motivators were personal goals and attitude.

Perception of Content

In addition to student concerns and motivation, the third of 8 student characteristics that became evident through the questionnaire responses and interviews was the student’s perception of the course content. Grouped within this category were the student’s perception of the course content’s (a) level of difficulty and (b) the level of interest the student had in the material. The second research question, “Why are students taking on-line courses?” is addressed by the students’ perceptions about the course’s level of difficulty and their interest in it. The data about perceptions and interests were derived from a variety of questions such as, “Why did you choose to take an on-line course as opposed to an on-site course?”, and “At this point [midway through the semester], would you take another on-line course if it was appropriate for your situation?”

Level of Difficulty

The students’ perceptions of the level of difficulty of the course content had a bearing on the classes they chose to take on-line. In general, the students said they would take an easy course on-line, not a hard one. For CT a hard course is one she would have trouble understanding; she gave the examples of history and physics. In a similar vein, ER was taking an introductory social science class and said that even if she had the option of taking it as a seat-course, she would take it on-line “because it is such a basic level class.” MT, said that only “simple” courses should be offered on-line, not difficult or “specific” courses like the course she was taking and dropped. MT stated that classes in “something you know” like math or English would be appropriate on-line offerings. In

general, the students' perceptions of the difficulty of a course were a determiner of whether or not they signed up for a class on-line. Students stated that they were more comfortable taking courses that taught content they either considered simple and easy or had prior knowledge of from work or earlier schooling, for example, English and math.

Some students said that on-line courses were inherently harder than seat courses regardless of the content; whereas, others thought cyberclasses were essentially easier. Likewise, some stated that a characteristic of Internet courses was that they are more time consuming, yet others were convinced it took less time than a seat course.

A few interviewees said that a class was easier on-line because it was more convenient. They stated that the time-space independence made them feel less pressured and the course less taxing. For example, MT said she could read in her spare time, did not have to go to a class, take notes, or "listen to somebody." Because she had the freedom to pace her homework, HL said she was under less pressure. GT stated that an on-line course was easier since it was not as obvious when a student was not prepared. If he was in a traditional course and the instructor asked a question, it would be clear whether or not he had read the assignment. However, if he was asked a question in his cyberclass, he opened his book, found the answer and emailed it or put it on the discussion board, so he said he did not have to be as prepared. The predictability of her Internet course made it less demanding for KB, "To say that it's probably easier than it would be in-class, is not fair, but at least it is more focused." She knew what questions she needed to answer, what was due when, and what was expected in advance, and for KB, this predictability made the class easier for her to take.

Three interviewees responded that on-line courses were more difficult than in-class courses. ER said that there was more reading in an on-line course. Both YT and MT believed more work was involved in their web-based courses than there would have been if they were on-campus. Because she had to do extra research in order to understand her assignments, KB also said her Internet class was more difficult than it would have been in

a classroom. If she had taken a seat course, she could have asked the instructor to explain background issues that she ended up having to research on her own.

Level of Interest

In addition to the students' perceptions of the level of difficulty of either the content of the course or of taking it on-line, another student characteristic that affected whether or not they took a course on-line was their level of interest in the class material. They would choose to take a course on-line if they perceived it to be "easy" and uninteresting. Most of the data for this finding were derived from the following question: "At this point, would you take another on-line course if it was appropriate for your situation?"

Although they were motivated to take the course because it was required for completion of their program, 8 of the 15 interviewees said they only took uninteresting classes on-line. WS summarized her reasons for taking an on-line course that she did not find interesting:

I would probably take courses that I am not horribly interested in, things like [the class she was taking on-line] where I did not think I'd want to sit in a classroom 3 or 4 hours at a time listening to it. I would probably attempt to take those on-line and then I could do it at my own pace. If I got sick of it and could only handle it 15 minutes at a time, I could come back to it over the course of a day or something like that. The courses I really, really enjoyed, courses where there is debate or a chance where you are going to get into some sort of real heated discussion or that type of thing, I enjoy that a lot. So any type of those classes, I would really like to be able to be physically in a classroom.

HL and GT said that they would only take courses on-line that they would least benefit from or were "boring." GT said that he would take an on-line course to free up time for an interesting in-class course.

On the other hand, CT said if she took a course on-line, it would have to be in a subject that interested her or else she would not be involved enough in the content. She continued, “If it was something that I really wasn’t interested in, I do not think I would take it on-line because I wouldn’t know enough about it.”

Prior Knowledge

The fourth student characteristic is prior knowledge of the course content and of taking on-line courses. Prior knowledge (a) of content and the (b) on-line environment illuminate the research questions on facilitative and debilitating factors affecting student success in taking an on-line course.

Of Content

Several interviewees said it was beneficial to have some background in the course they were taking. YT said that she would only take a class on-line that covered content with which she was familiar. HL was taking a computer course and wondered how people who did not have some background in the topic were able to pass the course. Both of these students were familiar with the computer program they were studying because they had to use this program on the job, which provided them with both the prior knowledge and external motivation for taking and succeeding in the course. In a similar vein, OL struggled in the first few weeks of her liberal arts course which involved material she was unfamiliar with, but once the class began to discuss content that she had some prior knowledge about, she understood it more easily.

KB and FT had no experience with the content they needed to learn. KB said that she spent a lot of time answering questions on a subject with which she was unfamiliar. FT had difficulty understanding the content he was studying because he lacked prior knowledge in the topic. He spent extra time researching for the class to be able to understand the wording of the questions he had to answer.

Of On-line Courses

In addition to having some prior knowledge about the course content, it was also helpful to have had some experience taking on-line courses. In a follow up email the semester after she took her first on-line course, YT said that she had signed up for another Internet-based class and that it was useful to have taken one the semester before because she knew what to expect. Similarly, since she had a good experience with a previous on-line class, KB said she had more confidence in taking the summer course on-line. GT said that he was at a disadvantage because he had never taken a web-based course, and he did not know how the course worked.

Academics

The fifth student characteristic, academics, involves the student's educational preparation or (a) academic background, (b) grades coming into the course and received in the course, and (c) the learning outcomes as a result of completing the class. A student's academic preparation would address the third and fourth research questions about facilitative and debilitating factors that affect student success in taking an on-line course.

Academic Background

One area of inadequate academic preparation that affected student success was CT's weak grammar skills. CT's instructor gave her consistently low scores on her papers because of grammar errors. Since she did not have a grammar check in her word processing program, the instructor told her that the only way CT could improve her grades was to purchase grammar-checking software. Once she did this, the grades on her papers improved. CT said that she was disappointed that she had to spend \$200.00 on this software in order to get a better grade since she had poor grammar skills.

Grades

If grades are a reflection of academic ability, the majority of the students reported that they were strong in this area. In response to the following question, "How would you

rate yourself as a student? Fair (C-D's), average (C's-B's), good (B's-A's), excellent (all A's)", 5 of the interviewees said that they came into the summer semester with straight A averages. Table 3.3 outlines the students' self reported grades prior to taking the on-line course, the grade they received or expected to receive in the course, what they said they learned from the course, and how they rated the course on a scale of 1 to 5, with 1 being poor and 5 being excellent.

Table 3.3
Interviewee (INT) Grades and Course Ratings

INT	Grades coming into the course	Grade received in the course	Learning outcomes	Course Rating
CT	-	Social Science: B Liberal Arts 3: A	-	Social Science: 5 Liberal Arts 3: 3
ER	A's & B's	A	Learned more from on-line course because self-taught. "Learned a lot"	5
FT	He describes himself as a "terrible student, good intellectual" but would like to think of himself as a good student	A or B*	-	-
GT	-	A	Learned the material that was emphasized in assignments and tests	5
HA	Had to retake all nursing courses	A	Learned the material and applied it in other contexts	5
HL	B student but said she could earn A's if she had more time to study	A	Would have learned more with live instructor contact	4
JC	-	C*	-	3
KA	"I'm the type of person where I have to work hard to get an A or B. It doesn't just come easy."	C	"Somewhat, I think."	1½ - 2
KB	A	A	Learned from study guides, had to search for answers on her own: self-taught	5
MJ	A	A	-	4
MT	-	Dropped	-	3
OL	A's & B's	A	"I learned a whole lot through that class that I never realized before."	5
RG	C's in high school	B	-	4
WS	A	Incomplete	-	-
YT	A	A	-	-

* Grades were not available at the time of the interview. The grade indicated is the grade the student expected to receive.

Learning Outcomes

In response to the following question: “Do you feel that you are learning the required material as well as you would if you were taking an on-site course? Why or Why not?” the majority of the students interviewed said that they had learned the course content. A few of them stated that having to teach themselves rather than rely on an in-class instructor was beneficial to their comprehension of the material. For example, ER and KB said that they learned more from their on-line courses than they would have if they taken a seat class because they had to learn the material on their own. ER said that she “learned a lot.” KB learned from the course because the questions on the study guides:

... were not right on there on the page jumping up at you, so you had to do the digging to find the answer to that question. So you run across a lot more things than you have in a class of ‘do this reading and I am going to test you on definitions.’ I just found I learned more by having to dig for the answers than I would have in a normal classroom.

The factor of student autonomy, or student self-direction as exemplified in KB's statement that she had to "dig" for the answers, is discussed in more detail in the section of this chapter on Course Design.

Although she had been critical of the way the instructor handled the on-line course she took, Liberal Arts 3, OL admitted, “I have to say, I learned a whole lot through that class that I never realized before.” When KA was asked if she learned the content in Liberal Arts 3, she stated, “Somewhat. I think.” Some things “amazed” her, but she said she simply memorized other information because she had to. GT took Liberal Arts 3 also, and he said that he “only” learned the material emphasized in the homework, discussions, or tests. RG had a technology course that relied solely on virtual manipulation of tools and wires through a software program. He said he learned just as well from the virtual environment as he would have if he had been in-class. HA said she

grasped the material in her course and applied some programs she learned to projects outside of class. However, it is not clear how much she actually comprehended since HA seemed unaware that she consistently confused the names and purposes of 2 significantly different software programs. In reference to whether or not she learned from the on-line course, 1 interviewee said she would have learned better from an in-class course. HL stated that she would have retained more if someone explained the content to her before she had to do the exercises.

Learning Preferences

Another student characteristic examined in the Results chapter focuses on learning preferences. Data which refer to learning preferences would answer the first 4 research questions as to who takes on-line courses, why students take on-line courses, and the facilitative as well as debilitating factors that affect student success in an on-line course. As in previous findings, the information in this section was derived from a variety of questions, such as: “How is your work/family life adapting to your taking an on-line course?”, “What changes have you had to make to your typical schedule as a result of taking this course?”, “What study skills have you found successful?”, and “Where do you see improvements can be made in on-line instruction?” Answers to these questions were grouped into categories which delineate the students’ preferences in terms of when they went on-line, with whom they wanted to study, and what study skills they employed. The categories used to define the data for the learning preferences section include: (a) time management, (b) course management, (c) need for structure, (d) interaction, and (e) study habits.

Time Management

Time management is a complex topic involving issues of self-discipline, strong and weak time management practices, logistics of when the students went on-line and/or studied, and the number of hours spent studying for a course.

Four of the interviewees said they possessed the self-discipline necessary to manage their time to be successful in their on-line course. KA stated, “I’m self-

disciplined enough to know that I've got to get this done." CT was concerned that she was not self-disciplined, but said she was pleased to discover that she was more capable in this area than she had thought. YT said that it did not require more self-discipline for her to take an on-line course because she has always had a schedule for studying. KB showed her traits of self-direction by doing 4 modules on her own before the course started because she needed to get ahead.

On the other hand, some interviewees discovered that disciplining themselves was a challenge. JC said he found it difficult to direct himself in an on-line course because working at home he was more easily distracted. When he is on-campus, JC said,

OK, I'm here, I guess I'll do this work; whereas, on-line, you're like in your house and you're like, there's my drums over there, I think I'll go play them. Or should I do this, or 'Wow,' this movie is on right now, so....

JC compared making himself do the work for his on-line course to forcing himself to exercise. CT confirmed JC's experience that it was difficult to study at home and stay on task without watching TV or getting distracted. FT also found self-discipline to be an issue, "I am the world's worst student as far it goes, as far as disciplining myself and sitting down and actually studying." In fact, he thought taking the on-line course would force him to improve these skills. When asked if his ability to discipline himself had improved over the course of the 10-week session, FT said it did.

Self-discipline is related to whether or not the students allowed themselves to be distracted by electronic activities such as Instant Messaging™ and surfing the Web. The issue of being interrupted by Instant Messaging™ surfaced in a response to the first questionnaire. In response to the question about interruptions from family or work, a woman wrote, "They would not really influence my study time because when I am on the computer doing school work, my husband doesn't bother me, it's my time and I just do not answer Instant Messages from friends." During the interviews, 4 of the participants mentioned Instant Messaging™ as an interruption or a distraction. JC stated that he could

ignore the Instant Messaging™ when he was reading, but if he really needed to get some work done, “It is not a huge distraction, but when I’m trying to get [work] done it is, and I can turn it off.” In response to whether or not she encountered many distractions when she was working on the computer, CT replied that in addition to her overly affectionate dog, her main problem was “when people Instant Message me, that’s a distraction...Sometimes I’ll say, ‘I can talk a little bit,’ and so I end up talking for about 15 minutes and that kind of takes away from what I am doing.” KA, who used America On Line (AOL), set up 2 screen names. When she was doing schoolwork, she logged on with a screen name that none of her friends would recognize; therefore, reducing the chances of having to respond to a message. CT was asked why she did not turn off the Instant Messenger or put it on “private” so no one could see that she was on-line, she replied, “I did not even think about it...but then there’s the urge to sit there and want to talk and like the urge to want to look around the website and look for things.” Like CT, the temptation to surf the Web was strong for several interviewees.

Students found that when they were searching the Internet for school-related assignments, they often discovered a half an hour later that they were at a web site that had no connection to their studies. FT said that he got lost on the Web when he was supposed to be looking at web sites for his course:

...it was very easy to get distracted by checking out some of those other web sites and then from there you get kind of an interest in, for me I was like, Oh wow this is like knights and dragons and stuff like that and my thoughts started wandering...But when you can do a left click and open a new window, you know, and go do something else, you can open up more than 1 window, you can get distracted.

Some of the students had stronger time management skills than others. KA was careful to divide her days between studying for her on-line course as well as for the course she was taking on-campus. Realizing that if she knew when things were due and she managed her time, OL said she could study whenever she wanted. KB was taking 5

classes that summer, so she contacted her on-line instructor early and managed her time in such a way that she completed 4 modules before the course began. CT said that her time management skills improved as a result of taking the on-line class. Knowing he had quizzes due every Monday, JC arranged his schedule at work so that he had Mondays off to allow himself more study time. In spite of looking ahead and realizing he would need Mondays off, JC discussed having a problem with time management. He said that he would be better at managing his time if he was taking the course on-campus, “if it’s a classroom, then I would set time that I’d have to be there and that’s when I’d do it and it would get done.”

Procrastination, which is also linked to self-discipline, was the most serious time management problem. All of the men and 1 woman discussed procrastination as a hindrance to their academic success. FT, GT, and JC said that they did their work at the last minute. For example, in JC’s on-line course, students had to submit 3 discussions on 2 different days. JC would do 2 discussions in succession on Fridays, at 11: 45 and 11:50 in the evening, wait 10 minutes and send in his third on Saturday at 12:05 in the morning. He said that his class was difficult for a procrastinator because it was stressful to always have to think about what was due and how he had not done the work yet. In the course FT was taking, he was often the last person to submit his discussion board message; therefore, few students responded to his ideas since the board would be closed. He said that he was disappointed in himself for procrastinating. As a result of putting off his studying, RG did poorly on his final exam because he crammed a few hours before the test and earned a B instead of an A in the class. HA was the only woman who directly mentioned procrastination: “I procrastinate a lot so, so this is fun. As long as it is fun, I keep going. But when the fun wears off, that’s it, it becomes a job.”

The logistics of when students went on-line is an aspect of time management that a number of the students discussed. However, it is important to realize that going on-line and studying were not necessarily the same activity. When students logged on to a course they said that they often printed off the assignments or posted discussion comments, but they read, wrote, and studied off-line.

As was reported in Interpersonal Support, most of the students with families chose to go on-line and/or study when they were least likely to be distracted. For example, OL, KB, WS, and HL worked late at night when everyone else had gone to bed. ER did her schoolwork in the morning or early evening when her young children were asleep. Although she did have family distractions, HA's logon time was dependent upon when the phone line was less likely to be in use, since she did not have a separate line for the computer. MJ divided her time between first, going on-line to get her assignments, and then studying; she logged on at night and studied during the day and on weekends. Since she did not have an Internet connection at home, OL went to her place of employment 2 hours early several times a week to type her assignments and send them to the instructor via email. Finding time when the family was asleep was not a problem for RG and FT who both worked night shift. RG studied after he woke up from working the graveyard shift, (6:00 in the evening-6:00 in the morning). He usually got up at 2:00 in the afternoon and studied until he had to leave for work. When he worked second shift (3:00 in the afternoon -11:00 at night), he went on-line and studied when he got home around midnight. Although finding time alone to study was not a problem for FT, staying awake was. He worked midnight until 8:00 in the morning and came home and tried to read. However, he said he was usually too tired to comprehend what he was studying.

The amount of time students set aside to work on their assignments depended on the course requirements. The students who had the most work to do were those taking the course designated in this study as Liberal Arts 3. According to WS, the course was so reading intensive that she could not keep up with it. The homework consisted of study guides with 12-17 questions per chapter. Each question needed to be answered in 300 words, and it took 4 hours for WS to answer 3 questions. On the other hand, a 12-question assignment in the same course would only take GT approximately 2 ½-3 hours to complete.

Of the interviewees taking Liberal Arts 3, KA had the most difficulty. She said she would study all day before going to her job in the evening, and then she continued to

study while at work. She stated that it took “hours” to answer the study questions. KB was also taking a course on the same topic as the Liberal Arts 3 course, but it was taught by a different instructor at another community college. It took KB about 6 hours to answer a set of homework questions. She stated that the course was time consuming, but, she added that she may have made it that way because she did a lot of research that was not required. Overall, KB said that she spent more time doing work for her on-line courses than she would have for an on-campus class. RG's assignments in Technology 2 did not require as much work as the Liberal Arts courses did. It only took him about an hour to complete a lesson, and there were 13-14 lessons for the entire course.

Course Management

Although the amount of time the interviewees spent on their assignments tended to vary from an hour a day to 6 hours a day, the manner in which they approached the courses were similar. The students logged on to their course site, read any announcements, printed their assignments, and logged off. They would do whatever reading/studying was required and complete their assignments using a word processor. Then they would log back on and submit the assignment either using a web form or email. Part of the requirements for some of the classes was to post comments on a discussion board. Several of the interviewees printed out the discussion boards and saved the printouts in a notebook for later reference and to use to study for tests. Two students either did not have a printer or could not afford paper, so they would print out their work in the college lab where printing was free. All on-line activities would occur at work for those without Internet access at home.

Need for Structure

Three interviewees reiterated that they preferred having a specific course structure and literal level questions to answer on study guides. GT said he liked literal level questions because when he found the answer printed in the book, he would know immediately if his answer was correct. However, he said that general or open-ended opinion questions were too ambiguous since he did not know whether he had the right answer. GT said he would not sign up for a class unless he knew everything about a

course, such as assignments, expectations, what the teacher was like, when the exam was held, and so on. KB also thoroughly researched her classes before she signed up. KB liked the predictability of her on-line class where she knew the same type of assignment was expected from week to week. She enjoyed studying at her own pace and knowing what was expected of her with “no curves.” MJ also said she appreciated having the structure of a predictable weekly schedule. She went to the site each week, did the assignments, saw any videos, and she was done.

Interaction

Another aspect of learning preferences include whether or not the students said they wanted interaction with their course mates and/or instructors. GT and WS said they thought they would not need student interaction but were surprised to find they wanted to communicate with other students. GT used to think he liked being left alone, but at his job he had to interact with people, and he found that he enjoyed personal interchanges. He realized that personal interaction is lacking in on-line courses and discovered he preferred the personal communication an on-site course would offer. Similarly, WS said:

... being independent and as much of a loner as I am, I do not like it [on-line course] as much as I expected to. I thought I would just be gloriously happy because I did not have to put up with any other people. And yet, I found myself missing some of the interactions that I get in the classroom.

She continued, “I think that even just a little bit of the social interaction between students in a classroom is important, I really do.”

Several students were concerned about their classmates’ appearance. Three interviewees wanted to meet their classmates in order to put a face to comments in the discussion board. JC said it was easier to remember names if he had a face to connect it with, because, “You get a little more human; that means you understand them better.” He continued:

When they just type up stuff, there's just like people, . . ., I mean there's just words, and you're just like, 'blah' 'blah' 'blah.' I mean they could just be a number for all I'm concerned; they could be robots, you know it doesn't, there's no personality with it.

WS was also struck by the impersonality of working on the Web. Although she said that there was some level of interaction in the discussion board of her on-line course, she added:

It feels like it is rehearsed and false, and it is not like the kind of relationships that you get [when] you are actually, physically in a classroom. You can talk back and forth, but it is more just kind of cut-and-dried thing. It is not like you actually care about one another.

In addition to the 4 interviewees discussed above, 3 others mentioned that they would liked to have met their classmates in person, in a chat room or to even have access to biographical information and a digital photo. Although CT said it did not matter to her whether or not she knew with whom she was communicating while taking her on-line class, she did make a friend in the class and said she was pleased when her cyberfriend sent a digital photo of herself.

KB, one of the older, more motivated students, wanted to meet with her classmates in order to soften any criticism or comments she might have made on-line. An on-line course she had taken a few semesters before required that students edit each other's papers, without ever having met face-to-face. However, she wanted to see her coursemates when critiquing their papers: "And I think it was so difficult for me not seeing this individual and yet to be, to have to criticize what they've done."

In the Liberal Arts 1 course, students were required to respond to each others' comments in the discussion board. MJ said that she enjoyed reading the comments but said that sometimes she thought that she came across as being "mean." She would, "imply that people were wrong in what they believed." MJ also pointed out that she

would not have made the same comments if she had been in a seat course. She said that on-line she could be more honest, "...you could actually say what you wanted to say, and not what you thought was what other people wanted to hear. Because you do not know these people." For MJ, knowing she will never meet her classmates made it easier for her to say what was on her mind.

Although the students said they wanted to meet with their classmates and get to know them, they did not want to study with others. The students were asked, "What is your preferred study arrangement? Alone? With groups?" Although the opportunity to study in groups during a cybercourse was not an option, this question was asked to see if people who preferred to work autonomously were more comfortable in an on-line course than those who wanted more interaction. Most students said they wanted to have classroom/group experiences to discuss issues but not to study, for example they did not want to work with others to prepare for a test or complete a study guide assignment. In describing her experience, WS also summarized the responses of a number of students:

I work much better by myself with others at a distance from me than I do in a real close group type of thing with lots of feedback...I do miss the social interaction, some, in the classes, the bantering and the discussions and stuff, but for the most part, it really suited me well because I do like independent study, and I just do not have time for anything else.

Eleven of the 15 interviewees said they preferred to study alone. Some would rather study by themselves as a matter of convenience, like GT who did not want to plan his schedule around anyone else's. Outside of class time, KA found other students to be a hindrance to her academic work because she knew what needed to be done, and she wanted to complete her work without being dependent on others. She continued to state, though, that she liked the group aspect of a class because others ask questions from which she can learn. JC did not like to study with others since he said that he "thinks differently from most people."

Some students found working in groups to be distracting. HL said that if she had a problem, she would ask other students or co-workers for assistance; however, she preferred to sit down and study on her own. She pointed out that even though she considers herself "a people person," when it came to studying, she needed to be alone and in a quiet environment to concentrate. HA described herself as more of a loner than someone who works in groups, "I tend to get sidetracked if there's more people around, the more gossip instead of class work."

Three students mentioned some benefits to group work; for example, OL prefers to work in groups when she is first learning new material, but then she wants to be on her own to process what she is learning. RG likes to study with students who know as much or more about a topic than he does.

The interviewees said that they preferred some level of interaction with their course mates, but they did not want to study in groups. However, the majority of the students said they would like to meet with their instructors.

KA went to a small liberal arts college during the regular school year. She chose a very small college because she likes limited class size and one-on-one attention with her professors. She missed the interaction with her instructor in the on-line course:

I did not get that one-on-one, you know, it is all through the computer. And on the computer you can't tell if the professor is being, ..., mean or, ... you can't tell the personality just by what you are reading, you just kind of assume.

She went on to say the course would have been better if the students had met personally with the instructor before the semester started. JC said he felt awkward in that he had to write a journal where, "I have to fill up 400 words to send to this guy whom I've never met." He said not knowing the instructor was not necessarily a disadvantage but it was

“different.” Although CT was not concerned about meeting her classmates, she was very interested in meeting her professor.

In addition to meeting the instructor at the beginning of the semester, other students would have liked more interaction from the instructor throughout the course. MJ wanted to hear more from the professor on the discussion board, but she indicated that she took an on-site course on the same topic and the on-campus instructor did not comment on class discussion either. KB had taken 3 on-line courses prior to being interviewed, and she said she appreciated instructor-to-student feedback and would have preferred generic feedback over none at all. Of the 3 on-line courses, she said the best was the one with the most instructor presence.

In contrast to interviewees who preferred or wanted instructor interaction but who could manage without it, some said they had to have interaction to be successful in the course. HL stated she needed to have the information explained by the instructor before doing the exercises. MT indicated that lack of instructor interaction was a large factor in her decision to drop her on-line course because she said she was not getting the “personal attention” she needed. At the beginning of the summer session, MT stated, “It’s hard not having somebody to stand up there.” She had trouble on the first test because she misunderstood what was expected and said this misunderstanding would not have happened in class. If she had been in a seat class and was confused about what was going to be on the test, MT said she would have kept asking questions until she understood. However, this type of interaction was not available on-line.

Study Habits

In addition to time management, course management, and an affinity for interaction, the interviewees also discussed their preferred study habits. These data are derived from answers to the following question, “What study skills have you found successful?”

Several of the students found the Internet to be a useful supplementary study aid and incorporated work on the Web into their study routine. Even though it was not required, KB did background research using the Web in order to answer study questions, since she said she needed to know more about her subject than she was getting from the textbook. OL also used the Internet to gather resources. When asked whether or not she evaluated sources she got off of the Internet, OL stated that she cross-checked any reference from the Net by either going to the library or locating at least 3 other sites that supported the same idea. FT used the Web because he was discouraged that his professor only provided the students with 1 site as a reference for the entire semester. As a result, FT went out and did his own research and found what he said were more useful and informative sites than the site provided by the instructor, especially when the students were required to read difficult chapters. CT was another student who used the Internet on her own to locate and read supplementary resources so that she could better understand her assignments.

The students used a variety of approaches when reading, studying, and completing their assignments. Some common study habits the students said they employed included: highlighting, writing notes in the margins of their texts, proofreading, and making up and answering their own problems. A number of interviewees like HL and HA had to read their assignments twice. ER read a week ahead because she realized that she did not have an instructor or other student to explain the material to her. She said she was the kind of student who needs time in order to process what she has read, to let the information “sink in.” HL also had to adjust her study techniques to address the restrictions of an on-line course. In a seat course, HL usually needs to hear the lecture and write it as notes. However, in her on-line course, she compensated for the lack of a live lecture by answering questions provided at the end of each chapter, which was not a class requirement.

For each week of the Liberal Arts 3 course, WS read the assigned chapter, downloaded the questions, and found the answers in the book and highlighted them. Next, she put corresponding question numbers next to the answers she highlighted in the

book, went to the computer and typed in the answers, and then submitted the study guide via email. In describing this process, she said, “I do a real quick overview, read it, look at it, and then actually get in it physically and start manipulating it or doing whatever I need to do to learn it.” She added that she wanted to “burn” the information into her brain. WS found that she could not keep up with the assignments and had to take an incomplete in the class. OL was taking the same course and read each chapter 3 times in order to answer the study guide questions. KA also took the Liberal Arts 3 course. When she asked the instructor for advice on how to study for the class, she found that she was already doing what the professor had suggested. This included printing out the questions and reading the assignment while looking at the questions.

Most instructors used study guides and/or discussion boards in their courses, and some students used these assignments to judge their progress in the class. They measured whether or not they understood the material by determining if they could answer the study guide questions or had similar answers to those on the discussion board. Unlike most of the other students, to ensure she could answer the study guide questions and that she understood the material, MJ chose to review her study guide questions after she read. She stated that she knew she should look at them before she read so she could pick up the main ideas, but she could usually do this on her own.

In contrast to the students above, a few of the interviewees admitted having poor study habits. GT stated that he employed a “bad” study skill because he only read to answer the study questions. He would read the question, then skim the chapter or use the index to locate the answer. Although he knows this is not how the instructor intended for the study guide to be used, his “read-to-answer” method worked well for him, and he received an A in the class. KB found herself studying the way GT had by simply reading to answer the questions. When asked about his study skills, JC stated that he followed a “no study” policy. MT skipped reading information in the book that she thought she already knew.

As with students in any course, the interviewees exhibited a variety of study habits when preparing for their on-line class. Some said they were well organized, managed their time, and had effective study habits. Others said they had more difficulty in these areas.

This section of the Results Chapter on Learning Preferences delineated the following categories: time management, course management, need for structure, interaction, and study habits.

Technological Access

While all of the above student characteristics (student concerns, motivation, perception of content, prior knowledge of content and on-line courses, academics, and learning preferences) are applicable to learners taking seat courses, (a) use of and access to technological and (b) technological experience are features that are both critical and unique to students taking on-line courses.

Use of and Access to Technology

The following discussion provides a picture of how often the questionnaire respondents used the Internet and email. It also delineates access to technology by examining where the computer they used was located, their computer's modem speed, and their Internet Service Provider (ISP). These data were elicited in response to questions set forth in the first questionnaire: "How often do you surf the Internet now?", "How often do you use email now?", "Where is the computer you plan to use located?", "How fast is the modem you are using? 14.4? 28.8? 33.6? 56?", and "What Internet Service Provider are you using? (e.g. AOL, AT&T WorldNet)."

When asked how often they used the Internet before taking their on-line course, of 31 respondents who answered this question, 28.6 percent said they went on-line more than once daily; 22.9 percent were on once a day; 20 percent logged on weekly; and 17.1 percent were connected every other day. Just a little over half or, 51.4 percent, of 35 respondents said that they used email more than once daily prior to signing up for their

Internet based class: 28.6 percent once a day; 17.14 percent every other day; and 2.9 percent checked their email once a week. When discussing modem speed, it is interesting that 3 students, or 8.6 percent, of the respondents still had 14.4 modems, which could be problematic if their instructors had sites or options that took a long time to download. However, the majority of respondents (34.3 percent) had a 56 K connection. Of the remaining respondents, 14.3 percent had 33.6 K speed modems; 5.7 percent were on Local Area Networks (LAN); and 5.7 percent had 28.8 K connections. Eleven of the respondents (31.4 percent) did not know the speed of their modems. When signing up for Internet Service Providers (ISP), 25 percent had AOL and 25 percent used Intelos. The rest of the ISPs were spread among 9 other companies.

Like the questionnaire respondents, the interviewees were asked the same questions about their use of and access to technology. Twelve of the interviewees said they accessed email daily either as part of their job or for personal communication. The heaviest users were those who had to utilize it on the job. The Internet was employed less frequently than electronic mail, and when the interviewees did logon to the Internet, it was usually to do research for their classes. Five of the students did not know what their modem speed was, but only 1 had trouble downloading information. The majority of the interviewees had either 56.6 K or 33.6 K modems. GT and KB had access to T1 lines at their place of employment; whereas, YT's employer only had a 28.8 K modem connection. In terms of ISP, 5 used AOL and the rest used a local company, Intelos, or AT&T WorldNet.

Technical Experience

Data about the respondents' technical experience were based on the number of years they had used computers and word processing programs. They were asked about their experience with word processing since this was a skill the students needed to have in order to submit assignments for the majority of the classes offered on-line. The questions asked were: "How many years have you been using a computer on a regular basis?" and "How many years have you been using a word processing program?"

Table 3.3

Respondents: Computing and word processing (WP) experience

Length of experience	Computing	WP
3 months	5	3
6 months	1	1
One year or less	4	4
2-5 years	16	16
6-10 years	7	11
More than 10 years	2	0

The interviewees were also asked how long they had been using the computer and word processing programs. All of the interviewees who were in their early 20's or younger, had been using computers since elementary school or high school and said they were confident about their skills. JC had been using the computer since he was in third or fourth grade and said, "I am pretty fluent with the ways of the computer." JC also said that he would not take an on-line course if he was not comfortable with technology. MJ stated that she had "grown up" with computers. MT had strong enough skills to reload her Windows operating system on her own when her old system was infected by a virus. Although older than most of the other interviewees, KB said she was, "Very computer literate," which could be a result of using computers on the job for a number of years as well as because she has taken several computer courses. GT had perhaps the strongest skills because he was the computer support technician at a law firm.

One characteristic unique to students with strong technical skills was that they were willing to tinker with their computers. In other words, they explored the hardware and software to fix problems on their own, and, as a result, often learned more about the computer and how it functioned. KB portrays the characteristics of a tinkerer in the following quotation:

... some people are afraid to do stuff on the computer and I should be, but I'm not. You know I do not know what I'm doing sometimes, and I'm just doing stuff and it works out. A couple times I've been burned by that. Most of the time I just hunt and peck till I figure out what's going on and what to do. And that is more with software problems. Now, hardware problems, I can do a little bit. I can take a computer down and pack it away and plug it all back up and get all of the places, things in the right ports.

RG had little to no knowledge of basic computer functions. He did not own a computer, did not know how to set up or manage an email account, and had only been on the Internet once during a brief workshop at a local adult learning center. He came to the Instructional Technology office to get help in logging on and learning how to access his on-line course. The Assistant Instructional Technologist, who was also the researcher/interviewer, set up a free email account for him, demonstrated how to logon to his on-line course, and how to use the computerized compact disc that contained the course materials. In spite of his lack of knowledge, RG was not concerned. He did not think it mattered that he did not know much about the Internet or computers before he took an on-line course.

Although she knew more than RG, CT was also a technological novice. She did not know how to send an attachment or where her files were being saved. One of her on-line instructors required that all assignments be sent via email, but CT did not know how to send attachments. She was copying and pasting all of her work from a word processing program into email messages. Her other instructor required that the students submit their work using a web form, which also necessitated copying and pasting. She often did not save the word processing files she was copying from because she did not know where it was saving. This process caused several problems. First, if she accidentally closed her word processing file, she would lose all of her work if it was not saved. She said this happened quite often. Second, if she was cut off from America On Line (AOL) while she was copying and pasting into the email message or the web form, she would have to start

the copying process over again. CT would copy and paste 1 paragraph or sentence at a time rather than selecting the entire document; this piecemeal approach took up additional time. Perhaps the most personally upsetting situation for CT was when she gave her password in an email to a hacker pretending to be from AOL. Subsequently, 815 pornographic messages were sent out in her name. In response to this incident, she received hate mail and had to change her screen name and password.

Several other interviewees also had technical difficulties. Like CT, HA also did not know how to send an attachment, and she was required to submit her work using email. ER had not used a computer in 8 or 9 years, and she did not know how to cut, copy, and paste. During her first interview, OL stated that she knew quite a bit about the computer and using the Internet. However, at the end of the course, she said she had over-evaluated her technical knowledge, "I really did not quite understand the process" [Referring to computer processes like how to use email functions]. However, when answering the following question, "How have your computer skills changed by taking an on-line course," the interviewees with weak technical skills said that their technical knowledge improved as result of having to use the computer and Internet in order to take the class.

Student Profile

In order to summarize the data on student characteristics discussed in this section, the profile of a successful on-line student is presented here. First, she might be concerned about the lack of live interaction with an instructor, problems with technology, lack of experience with on-line courses, and lack of personal skills such as self-discipline. However, she would be motivated to enroll in and complete an on-line course because the class is part of a long-term plan to achieve a post-secondary degree. The on-line course is often a requirement in her plan of study. She will also be motivated in taking a web-based course because it is more convenient to logon to the Internet than drive to campus. She will also be motivated to complete an on-line course because of personal goals. The composite student will prefer having live interaction with other students and with her instructor, but she is willing to forgo this interaction in order to complete the required

course. She will only take uninteresting courses on-line and will have a flexible and positive attitude towards technical and content problems that arise in connection with the class. She will only take courses on-line where she perceives the content to be easily learned. This student will have some prior knowledge of the course material as well as with on-line instruction. Academically, the composite student will have an A-B grade point average and will have positive learning outcomes. In reference to learning preferences, she will be self-disciplined, manage her time well, and employ effective study skills such as highlighting and reading for main ideas. She will prefer a clearly structured course and studying alone, although she will miss in-class discussions. Finally, this student will have access to a working computer with an Internet connection. She will have 2 to 5 years of experience using a computer, accessing the Internet, and using word processing software. Technical support will be available to her from friends, family, or the institution from which she is taking the course.

Course Issues

Thus far in the Results Chapter the domains of Interpersonal Support and Student Characteristics have been discussed. The third domain focuses on the characteristics of on-line courses. Data organized under this domain refer to (a) properties inherent to on-line courses and (b) variable properties of on-line courses. A factor which is inherent to on-line courses would be that it can only be accessed via the Internet. Variable characteristics are those properties which are instructor controlled and vary from course to course. As in the discussion of Student Characteristics, drawing from the data provided, the profile of an ideal on-line course will be presented at the end of this section on Course Issues.

Properties Inherent to On-line Courses

The first category of Course Issues looks at aspects of on-line courses that are inherent to any class offered via the Internet. An on-line course is (a) convenient, (b) printable, and (c) novel. This type of course also (d) lacks live interaction and (e) requires student self-direction. Issues of course design address 2 research questions: “What are the facilitative dimensions or features that promote success in on-line

courses?” and “What are the debilitating dimensions or features that inhibit success in on-line courses?”

Convenient

The key factor inherent to on-line instruction is that it is space and time independent, which means that the students can log on at any time from any computer with an Internet connection. As mentioned in the Student Characteristics category under motivation, 11 of the 15 interviewees said that they chose to take Internet courses because of the time-and-space independent convenience of on-line instruction. For 3 of the interviewees, convenience was more important than not learning as much on-line versus in the classroom. These students also enjoyed seat classes more than those offered on the Internet, but they still took the cybercourses because of the convenience. The majority of the interviewees cited family, work, and travel as the main reasons they enrolled in on-line courses.

Printable

The printability of an on-line course is common to all information published on the Web, unless the instructor or site builder intentionally choose a font, color or technical setup that prohibits printing. Eleven of the interviewees printed either the entire course or specific elements of it, such as the discussion board. ER printed every page on the course site in order to read the material in hard copy because she could not comprehend what she read from a computer screen. CT printed out her study questions as well as the web sites she used as resources for her classes.

Novel

As long as on-line courses are considered new and exciting, the novelty effect will be 1 of their characteristics. HL was among the 4 interviewees who mentioned novelty as a reason for taking the course. She said, “I’m more motivated for some reason. Maybe because it is something new. It might not have anything to do with the way we’re learning, maybe it is because it is something new...” When she was asked to clarify if she meant “new” course material or “new” because it was on-line, she replied, “not coming to

school and still taking a class is what I meant by new.” MT thought it would be “neat” to take an Internet based class. KA could have taken both of her summer courses in-class, but chose to enroll for a web-course to experiment and see what it was like.

Lacks Live Interaction

The interviewees said printability and novelty were facilitative features of on-line courses; however, they stated that the lack of live communication with students and instructors was a drawback to taking web-based courses. Interaction is also discussed in the Student Characteristics section under Learning Preferences. This feature of on-line courses is discussed here because lack of live interaction is inherent to asynchronous web-based offerings.

The interviewees said the lack of interaction was more debilitating with respect to their instructors rather than their classmates. FT said the course was not as credible with the professor at a distance. RG and KA preferred learning in-class because they got more from the instructor and had the added benefit of the instructor’s knowledge and immediate help. KA added that in a classroom, the material “sinks in more.” WS summarized her convictions about interaction on-line:

It is very disconnected being on the Internet course, you get the knowledge but you do not get the benefit of anything else, and if you do not get the benefit of anything else, the knowledge is not as complete as it should be. Now if you sit in the classroom, and you get the same knowledge, if it is the same class, but you have people sharing views, and there are corrections made by your instructor, ... it makes the knowledge much more powerful.

JC said he would learn more from in-class situations because of the interaction: “I like classrooms better for the social interaction between the teacher and the student. It just works better that way.” In addition to missing classroom interaction, FT regretted not being able to take class notes from live lectures.

The primary method of interaction between the instructors and students was through email. However, because of the delay in response time and ambiguity of the written word, WS and HL said email was an ineffective communication method. WS discussed how information could be misinterpreted via email:

And if I have a question for [the instructor], it must take me 3 or 4 tries, you know, I email it to her, and she doesn't quite get it, she doesn't understand what I am asking, and she emails back what she thinks is the answer, and I say, 'No, this is not what I meant.' Whereas, if you are sitting in the classroom, they can hear the emphasis in your voice, they can understand where you're coming from and it's a little easier to do interaction like that when you are in a classroom rather than trying to do it over the Internet.

YC said if a student had a question or concern, he or she usually had to wait a day or so for an answer. Although she was taking a different class, KA concurred with YT's opinion that email has a delay factor. The instructor might not respond right away to a student's question, but the problem is still there. Instead of using email, on several occasions, KA called her instructor's office because of a question about an assignment. YT also said it was better to have a person to talk to than to wait for an email response.

Requires Student Self-direction

The fourth property of on-line courses is that it requires students to be self-directed, a logical outgrowth of the lack of interaction from instructors. KA summarized the factor of self direction in the following quotation:

It was different because it was all me, and it was all put on how much I wanted. I mean when you get at school, you have professors, like, they are drilling it in your head kind of, but this was all me, and I had to do it myself, and whatever I learned is what I sit down and learn.

Since instructors were physically absent, students had to be self-directed and teach themselves the course material, which some interviewees found to be problematic and others found to be beneficial to their learning outcomes. ER said she learned more completely on-line because it was self taught, and she had to think and assimilate the information on her own: “I learned a lot. It was a good way to kind of learn by yourself and you really had to think about everything.” In general, FT said an in-class situation was preferable to on-line; however, he stated, “Here [on-line] you kind of have to dig for it, you know, which I am sure has some advantages.”

At least 5 of the interviewees were not comfortable with the responsibilities of being self-directed. MT, who eventually dropped her course, was concerned about teaching herself. In the first interview, she said she was, “Nervous about not having a teacher to sit there and kind of, ‘This is how you do it’ and I kind of have to learn it on my own. It is kind of harder that way because it is a self study kind of thing.” HL also thought the class was more difficult because of the lack of interaction with an instructor and was concerned about not having the teacher readily available: “You are just responsible for sitting there and reading and understanding it.” Although he admitted that self-discovery could be a good learning technique, FT said he was “lost in the woods” because of the lack of direction and assistance from his professor. In his class, JC said the students were forced to make their own decisions and arrive at their own conclusions “Rather than have his [instructor’s] thought meshed in there with it.” Students like KA were not ready to be responsible for their own learning. She gave the course a rating of 1 1/2 or 2 on a scale of 1 to 5 with 5 being excellent and 1 being poor because she had to teach herself both the material and how to maneuver in an on-line environment.

Variable Properties of On-line Courses

Variable Properties of On-line courses are defined as the aspects of a course which are instructor controlled. These data can be used to answer the last 3 research questions: “What are the facilitative dimensions or features that promote success in on-line courses?”, “What are the debilitating dimensions or features that inhibit success in

on-line courses?”, and “How does the community college infrastructure support students taking web-based courses?”

As mentioned in the Methodology chapter, all of the on-line courses were composed of a homepage with links to each week’s assignments, the syllabus, and a discussion board. Announcements were usually posted on the homepage. Some sites provided more detail and guidance than others. Each course was a 10-week summer semester class worth 3 credits. The same course design traits of printability, novelty, lack of interaction, and requires student self-direction also characterized each course. However, the courses were unique in the way the instructor managed instructional material. This section on variable characteristics of on-line classes examines student reactions to how instructors organized and managed (a) discussion boards, (b) assignment submission, (c) web resources, (d) assessment, and (e) instructor-to-student interaction. Specific details of how the courses were set up are covered in the Settings section in the Methodology Chapter. Table 3.4 summarizes the mechanics of each course and which courses the interviewees took.

Table 3.4
Variable Properties of On-line Courses

Course	Interviewee	Email	Student web	Discussion board	Study guides	Required or optional web resources	Video	Audio
Liberal Arts 1	MJ, JC	✓		✓		✓	✓	✓
Liberal Arts 2	FT, CT	✓	✓	✓	✓	✓		
Liberal Arts 3	KA, WS, GT, OL	✓		✓	✓		✓*	
Liberal Arts 4	KB	✓			✓	✓		
Technology 1	HL, YT, MT	✓		✓				
Technology 2	RG	✓		✓				
Technology 3	HA	✓		✓				
Social Science	ER, CT	✓	✓	✓		✓		

* To watch video required student to go on-site to view.

Discussion Boards

No instructor used a synchronous chat function, and all but 1 instructor provided a discussion board on their sites. However, it varied as to whether or not the discussion boards were required, how often they were used, and how they were set up. Some of the sites had discussions that listed messages chronologically, regardless of topic. Others used threaded discussion forums, which listed messages according to topic. MJ said the threaded discussions were easier to read than those organized by time. In the first discussion assignment for Liberal Arts 1, students provided information about themselves as well as a picture, when possible. MJ said this information made the discussions a little bit easier since she knew something about the people she was interacting with on-line.

As mentioned in the Learning Preferences segment under Student Characteristics, students used the discussion board messages to gauge their learning. MJ read all of the comments posted and stated that they helped her understand the material better. She also

said that students were reading the discussion because there were a lot of replies to other comments. In JC's opinion, since an on-line course is primarily self-learning, having the discussion board was helpful in confirming whether or not the student understood the content. He could check his answers and ideas against those of the other students and determine if he was "on the right track." WS said her professor did not interact in the discussion forum, so student did not know if they were answering the questions correctly.

WS said the discussion messages in Liberal Arts 3 were "real stiff," "extremely formal." In addition, the class discussion got boring because students would enter their answers then someone would reply and agree or disagree, most agreed and ended up restating what the other student had written. Because they were discussing the same question, FT observed that in Liberal Arts 2, the students also tended to rehash the same points.

Two instructors used 2 discussion boards in their course. Each had a forum for required course assignments. The Liberal Arts 1 instructor had what was referred to as the "Other Board" where students could post questions about technical and administrative concerns relating to the class. The Liberal Arts 3 instructor had a "Student Board" where students could talk about any issues they chose. GT thought the student board was interesting, but he did not participate because the messages were primarily complaints about the class. GT knew the professor read the student board because in emails to the class, she referred to comments students had made in this forum. He would have complained some about the course too, but he was worried it would affect his grade if the professor read his comments. KA, on the other hand, said she had no qualms using the student board to discuss her concerns about the class. She was discouraged with what she perceived to be an overload of work required for the course, and when she posted a message to the student board to ask if others were struggling as much as she was, no one responded in that forum. However, many of them emailed her personally and said that they were having trouble, too. After this incident, KA reported that she and other students used email to discuss the class and ask questions rather than talk in the student board where the instructor could read their comments.

OL was also taking Liberal Arts 3 and said that talking to other students on both boards was helpful because she could re-process and synthesize ideas using the students' input. OL said that students could speak in "layman's" terms and explain what the teacher meant. She reported that the class members asked each other a lot of questions, which made the class easier and kept them from having to contact the instructor as often. In OL's opinion, the discussion forums did a good job of providing a means of interaction with her classmates.

According to FT, who was taking the Liberal Arts 2 course, the level of student confusion about what was expected in this class was reflected on the discussion board. He reported that comments like, "What am I doing in this assignment? I'm completely lost," were not unusual. FT said the discussion forum was useful but not the same as in-class comments because the former lacked spontaneity. He continued to say that small group discussion in-class was more effective than an on-line forum since students verbalize better than they write. When he wrote in the discussion board, he said that it had to be perfect, and he worried about spelling. FT's opinion differs a great deal from MJ's point that she could write her thoughts more effectively when she had the time to think as is the case with a discussion forum.

Posting to the discussion board in the social science class was encouraged but not required. ER did not find the discussion helpful because it was used primarily by students to post questions to the instructor about comments he had put on their papers. The discussion was for technical problems and administrative issues, not course content.

The Technology 1 course had 28 students enrolled who were all required to post messages to the discussion board as a form of class participation. Discussions were due between Tuesday morning and Monday evening. For the most part, the instructor would ask the class 1 question, which led to overlap and repetition in answers when 28 students responded. The discussion board was only used to post answers, not to discuss issues. The students could also see each other's answers. Some questions were difficult, so if

someone did not want to work to find an answer, he or she could re-word someone else's and post it as their own. HL said that being able to see the other students' answers was unfair because she could have worked hard on her assignment and others could have looked at it and used it. After everyone responded to the assigned question, the instructor would post the correct answer.

On 2 occasions, the instructor for Technology 1 assigned different questions for each student using problems from the back of the book. HL said when the assignment was set up in this manner, the first people on-line chose the easier questions. When everyone answered the same question, HL read all of the responses to compare her answers, but when each student had a different question from the back of the book, she did not look at the board as much.

KB's Liberal Arts 4 course did not have a discussion board. In fact, there was never any interaction between class members. KB said she was not sure if class communication was necessary considering the content. The Technology 2 class also had a discussion board, but the 3 students enrolled in the class never used it.

Assignment Submission

While some instructors had students submit their assignments via email, others had the Instructional Technologist's office set up individual web pages for each student. The students would copy their assignments from a word processing program and paste the text into a form on their web page. ER liked the student web page system, "It is nice to know that there's that private space where your paper is [and] where his comments are." CT also liked the student web page for submitting papers and getting feedback.

Web Resources

Most instructors incorporated web resources into their assignments; however, some did not refer the students to web sites at all. KB said she could not have answered her study questions if she had not been able to refer to different web sites. On the other hand, FT resented being directed to web resources. He said referrals to web sites lacked

credibility because “he’s [professor] just cannibalizing other people’s work.” FT continued by pointing out that it was acceptable to refer students to a web page while in-class since the professor is there to explain and assist, but not if the course was on-line.

Assessment

Instructors created assessments that the students completed on-line from home, but in order to take a major exam, the majority of instructors required that the students come to campus. Issues of security arose when considering assessments taken without instructor supervision. For example, JC assumed the on-line quizzes taken at home were open book. “...it is open book, as far as I’m concerned, and I think it is open book.” JC did not know definitively whether or not the quizzes were open book, and he did not take the initiative to find out if they were or not.

To avoid issues of security, the social sciences professor had students write 2 essays a week. First, the students were to write a comparison of the information from a web site with the chapter they were to have read that week. The second essay was a comparison of their personal experience with the information in the chapter. This professor did not have any assessments or assignments other than these 2 weekly essays.

One instructor listed student grades on a web page accessible by the entire class. Although random numbers were used to identify students and to provide anonymity, MJ said she could still figure out who got what grades by reading the discussion board. In another assessment related issue, the students taking the Liberal Arts 3 course were confused about where they stood in terms of grades because they got checks on their study questions and other assignments. They did not know how much a check mark was worth.

Instructor-to-student Interaction

In addition to being a property of Variable Characteristics of On-line Courses, interaction is also a thread that runs through the Student Characteristics of Student Concerns and Learning Preferences. Data in the Instructor-to-student Interaction category

examines the amount of instructor interaction the interviewees received while taking their on-line courses. These data were drawn from incidental comments made by the interviewees since there was not a specific question about the quality or amount of interaction. Two research questions: “What are the facilitative dimensions or features that promote success in on-line courses?” and “What are the debilitating dimensions or features that inhibit success in on-line courses?” are addressed by the data presented here.

Positive reports of instructor interaction. Interviewees considered positive instructor-to-student interaction to be a facilitative feature that encouraged success in an on-line course. According to the students, the instructor of the Liberal Arts 3 course provided the greatest volume of interaction or feedback to her students. Several of the interviewees commented that the instructor’s responses to their study guide answers were as long if not longer than what they had submitted. For approximately the first 6 weeks, this instructor gave feedback on every single question. Towards the end of the session, however, the instructor did not write as much and would simply state, “Good job.” This instructor was also conscientious about contacting her students if there was a problem. For example, OL thought she had sent 3 assignments, but, unbeknownst to her, they got hung up in the email queue, so the instructor never received them. Rather than give OL incompletes for the 3 assignments, the teacher contacted OL and asked why her assignments had not been submitted. Once OL realized her study guides had not made it through the queue, she was able to send them without penalty. This professor was also willing to provide personal interaction by offering to meet with students at the home or satellite campuses.

The instructor who taught the Technology 1 and 3 courses was also willing to meet personally with students if they had questions. Over a period of 3 semesters, KB had taken 3 on-line courses. She stated that the best course was the Technology 3 course (which KB had taken in a previous semester from the same instructor) where the instructor provided a healthy dose of interaction and assistance. HA also appreciated this teacher’s feedback and quick response time. If she had problems, HA could call and speak to the professor, and if the teacher was not available, HA’s concern would be

addressed on the discussion board. When this professor received students' work via email, a response was sent to let them know that their assignment was received and if there were any problems with it.

The instructor who taught the social science course also provided assistance and interaction to students. Based on discussion board responses, CT described this instructor as "a pretty nice person, laid back," who responded to the students' questions and concerns. One example of this would be when ER discovered her word processor did not convert her papers to hypertext mark up language (html). The teacher took the time to respond to ER's message on the discussion board and point out exactly where she would need to double space and make other edits so her papers would translate to html more easily. On another occasion, ER could not get Adobe Acrobat Reader™ to download to her Macintosh computer. She posted a question to the discussion board, and the instructor responded with some suggestions. This professor also made his presence known on the discussion board and made comments on the students' bi-weekly papers.

Negative reports of instructor interaction. Unfortunately, not all instructors took the time and effort to communicate with their students. The lack of interaction with an instructor is a debilitating feature of an on-line course that the students said hindered their success in the class. The students in some courses reported that because of lack of communication from their professors, they had to do extra or unnecessary work. They said they were also confused and uncertain about assignments and expectations. For example, the students in the Liberal Arts 2 course said that during the first week of the semester, a very large, difficult reading assignment was listed in the syllabus as being due the second day of class. MJ and others read it in 1 day, answered all of the questions, and submitted them. Unfortunately, the assignment was due the second week of the summer session, not the first, but this fact was not communicated to the students. To make matters worse, the instructor was not even in town the first week to receive the assignments and to realize that there was a mistake in the syllabus.

In this same class, all of the posted assignment dates were incorrect because adjustments made to the schedule were not reflected on-line. The midterm was to be taken on-line in week 6. Three interviewees taking this course reported that as week 6 approached, students began posting messages on the discussion board asking if the midterm was still going to be on the date listed in the syllabus, as well as asking what the test was going to cover. Week 6 came and went, but the instructor never responded to the students' messages to tell them the midterm was re-scheduled. The midterm was put up during week 8 without the students being told or prepared.

The students in this class began to complain openly on the message board wondering why no one was responding to their submissions. They also did not know how they were doing on their assignments because there was no feedback and no grades. As CT put it, they would turn in their work and never see it again. The students did not know what grade they got on their midterms until after they took the final exam. Although the final was comprehensive, all the links prior to the midterm were closed, so the students could not access this information to study. However, no one posted a message on the discussion board to request that the links be opened.

RG had trouble contacting the instructor of his Technology 2 course when he had questions. After sending email messages back and forth, RG finally drove to campus and talked with the instructor face-to-face. Sometimes the instructor in Technology 1 did not communicate with the class for a few days, so students had to stop what they were working on and wait for further instructions or clarifications. Since she said it was difficult to access the Technology 1 instructor, HL would get help from someone at work if she had a problem. She said that not being able to contact the teacher would be a drawback for someone who did not have the resources that she did.

Although her instructor did provide feedback and interaction, KA said the quality of communication was lacking. She said the professor in Liberal Arts 3 told the class all about herself and requested feedback about the website; however, the instructor did not ask about the students: "She kind of gave, but she did not take back about us. It was

more like she would just throw out the material and she wasn't really concerned about us as individuals.”

Profile of an Exemplary On-line Course

Based on data from the Course Issues category, the profile of an exemplary on-line course can be compiled. Properties inherent to on-line courses: convenient, printable, novel, lacks interaction, and requires student self-direction, cannot be avoided since these are properties unique to the Web environment. However, through the use of sound instructional design, the positive properties of convenience and printability can be enhanced and the negative property of lack of interaction can be ameliorated.

A well-designed on-line course takes advantage of the convenience of space and time independence by using the electronic week (7-days) and requiring little to no on-site attendance. Students in this course are evaluated through alternative assessments such as electronic portfolios or writing assignments rather than having to come on-campus to take an exam. If a test must be administered and monitored, then provisions are made for proctors at a student's place of employment or at an educational institution such as a high school, which is within close proximity to the student's home.

The exemplary course will have a simple interface with sans serif fonts that print out cleanly. Discussion board and synchronous chat dialogues can be printed so that students can refer to them at a later date.

In order to soften the negative effects of the inherent property of lack of interaction among students and with the instructor, the well-designed course provides multiple arenas for communication. First, a face-to-face orientation session is offered at the beginning of every semester with the option for follow-up sessions. Discussion boards where the students can get to know one another, a space for students to post pictures of themselves, and links to student-created homepages are available. The instructor introduces him or herself at the beginning of the semester through email, a discussion board, and/or a synchronous chat. The instructor encourages dialogue with and

between students. When possible, synchronous electronic office hours are available. The students can also call during office hours and expect to reach their instructor. The instructor of an exemplary course gives guidelines as to how often she checks the discussion board and how long the students should expect to wait for feedback on assignments or answers to questions. Constructive feedback and prompt turn around of assignments provides students with a sense of interaction with their instructor. Group work is also encouraged in order to promote discussion and learning communities among students.

Understanding that students have different tolerances for self-directed learning, the instructor of an exemplary on-line course offers a variety of assignments that meet students' needs for more or less guidance, depending on their learning preferences. However, the course seeks to improve a student's skill of self-direction by slowly increasing the necessity for independent problem solving and critical thinking as the class progresses. The development of autonomous skills is an intended outcome, not a skill the students must acquire to succeed in a poorly designed course where students are forced to fend for themselves with no instructor guidance or feedback.

In terms of variable properties of an exemplary on-line course, all instructor-controlled decisions are made with an eye towards creating a learner-centered environment. The interface of the course is well organized, easy to navigate, and uncluttered. Because of clearly defined expectations, students understand what their assignments are and when they are due. Questions are quickly answered and confusion is rare. A class Frequently Asked Questions (FAQ) page and a discussion board dedicated to class questions are 2 devices used to inform students about any course issues that may arise. In addition, help files on how to navigate through the course and perform computer-based operations (for example, how to send an attachment via email or how to use a threaded chat) are easily accessed and clearly written.

Instructors of well-designed on-line course take advantage of the Web by incorporating Internet research into their assignment requirements. Students locate a

wealth of information, learn how to evaluate web resources, hone their on-line search abilities, and improve their reading and writing skills by summarizing and synthesizing information they've located to share with their classmates.

Threaded discussion boards are used in place of class participation rather than chronologically organized discussion forums, which are difficult to follow. The exemplary on-line course has 3 threaded discussion forums. The first contains messages and threads that relate to course assignments, such as class discussions on the topic of the week. In this format, the forum contains the open-ended question and the students' replies. The second discussion board is for student questions about administrative issues, for example, how to study for the next quiz, advice on how to approach a writing assignment, or how to download a plug-in. The instructor and the students post and respond to these messages. The last board is a place for students to chat about any issues they choose, as long as they adhere to a class constructed set of netiquette guidelines. Students who violate clearly defined rules of Netiquette are quickly taken out of circulation by the instructor.

Student participation in the class discussion is required and clear instructions are provided about how often and when students should post messages. The instructor of the course should visit the class discussion boards at least once a day. However, the instructor does not and perhaps should not visit the student discussion forum, in order to allow the students time to talk among themselves.

An exemplary on-line course provides students with their own web page where they submit assignments using forms and the instructor provides personalized feedback. The use of email for assignment submission as well as for communication is discouraged in order to avoid information overload on the part of the instructor. Posting questions on the discussion board is more efficient than using email because if 1 student has a question, then it is likely that others have the same concern. By posting the answer on the discussion board, the instructor saves time and reaches more students. However, personal concerns are handled via email. Assignments are returned in a timely manner and contain

constructive feedback. Students know how much the assignment is worth and the grade or evaluation they received for it.

In summary, the exemplary on-line course has a clean well-organized interface, provides ample help documentation, and allows for interaction between the instructor and students and the students with each other. Assignments are structured, encourage critical thinking and problem solving skills, and are returned in a timely manner, complete with constructive feedback. The hallmark of an exemplary course is that it is learner-centered where instructional design decisions are driven by pedagogical concerns not by technology.

Infrastructure

The final section of the Results Chapter addresses the last research question: “How does the community college infrastructure support students taking web-based courses?” This issue was mentioned when students discussed technical issues and when they were asked for their opinions about how on-line instruction could be improved. The discussion of infrastructure examines: (a) computer-related technical problems, (b) course-related technical problems, (c) technical support, and (d) student suggestions.

Computer-Related Technical Problems

As can be expected, students experienced various kinds and degrees of technical problems while taking their on-line course. Information relative to technical concerns is organized into 2 properties: computer and course-related. computer-related issues are further divided into (a) hardware, (b) software, and (c) ISP/modem concerns. Students’ technical backgrounds affected how they addressed these matters. Only 2 of the 15 interviewees used the infrastructure provided by PRCC to address technical concerns.

The questionnaire respondents were not asked about technical problems; therefore, the data in this section are derived from the interviewees. The questions to which the students responded were “Have you had any technical problems? How did you solve these problems?”

Hardware

WS ran into difficulties in the middle of the summer session when her home computer became inoperable, and she could not get it fixed in a reasonable amount of time. She could have used her computer at work, but she did not have time, got even more behind, and ended up taking an incomplete in the class. She did not mention the possibility of using computers available in the computer labs at PRCC. HL's home computer was unusable when the hard drive died. After having it repaired, it failed again 2 days later, so she had to buy a new computer. When her printer stopped working, HA had to call the company, and the help desk technician talked her through uninstalling and reinstalling drivers.

Software

In addition to hardware crashes, problems with software were also issues for some of the interviewees. RG could not use the required software package on his home computer because it did not have enough Random Access Memory (RAM), so he used the school computer lab. Although not a problem with her software per se, CT's word processing program did not have a grammar check function. In order to improve the grades on her papers, she had to buy a \$200.00 word processing program that had a grammar checker. ER had a Macintosh and was running an outdated word processing program. For some reason, which she said she did not understand, when she submitted her papers using web forms, her papers converted badly, so she also had to buy a new word processing program. In a similar vein, MT needed the newest version of a software program in order to take her course. Rather than spend the money to purchase the program, she would drive to PRCC and use the computers there, which had the necessary software installed on them.

ISP/Modem

The main problems with Internet Service Providers (ISP) or modem connections were that the students would get cut off and that downloading sites and files took a long time. CT literally could not keep a connection to AOL for more than a minute, so she

called AOL and ended up installing a newer version of the program. Unfortunately, they did not tell her how to save her favorites (bookmarks), so she lost them all. MT and KB also had trouble either connecting or being able to stay on-line as a result of ISP difficulties. Because of a bad phone line, JC said that his modem did not connect at the speed it should have. RG and KA had difficulties with slow modems or processors, which they reported made it frustrating to logon and to download information.

Course Related

Although some hardware, software, and ISP/modem concerns could not be avoided, the interviewees reported that the manner in which some courses were designed caused technical problems.

One instructor added sound files that loaded and played for every page of the course. These files caused difficulties on a variety of levels. First, some of the pages had a pause button that would allow the students to turn off the sound, but other pages did not have this button. Many students liked to listen to music on their computers using the internal compact disk (CD) player while working on their course; however, if the page did not have a pause button, the speakers would be engaged by the sound file, and the student could not hear a music CD. Another problem with the audio in this particular course was that the students had to watch and listen to videos, which downloaded with the web page. If the page did not have a pause button for the background music, then it would be playing at the same time as the video, so the student could not hear the video.

Another teacher had the instructional technologist develop 2 electronic maps. The maps were files the students would download onto their computers, open, and run. They were supposed to be able to drag and drop the names of states and countries to the correct location on the map. However, 2 of the interviewees were not able to load or run the electronic maps, so for both assignments, they had to print the maps, draw their answers in, and drive to campus to submit them.

Another instructor requirement was for students to type a paper according to a specific format, i.e. double-spaced with a cover page. However, the instructor wanted this paper to be copied and pasted into a web form, which was not capable of maintaining double space or separate pages. Therefore, when MJ tried to submit her paper by pasting it into the web form, all of the formatting was lost.

Technical Support

In spite of technical problems, the 15 interviewees persevered and managed to solve or work around these difficulties. The students who did not have a strong computer background turned to a variety of sources for technical assistance.

Most of the students had informal technical support systems comprised of friends, neighbors, and relatives. Four interviewees stated that they had friends with computer knowledge who would be willing to answer questions. CT said that if she had technical problems, she would go to a neighbor. If the neighbor could not help, she would work around the difficulty by going to the college campus to use the lab computers. OL relied on a niece and her niece's husband who live in Connecticut. She emailed or called them for advice, and they responded immediately. RG depended on his teenage children for technical advice and assistance. He also had a friend who knew a lot about computers. RG was the only interviewee who took advantage of technical support available at PRCC's Instructional Technology office. In addition to the college resource, in return for fixing electronic appliances for his friend, RG would receive free technical advice and computer parts. HA had several helpful acquaintances. One showed her how to send an attachment and also loaned her a computer. Another friend had come to the house to try and fix their old computer. In addition to friends, several interviewees had access to computer technicians at their place of employment.

Student Suggestions

Information for this category was derived from the second and third questionnaires that asked: "Where do you see improvements that can be made in on-line instruction?" and "Is there anything you would like to add that is not addressed in these

questions?” When the interviewees were asked for specific suggestions and comments about on-line courses, their ideas were grouped into 3 categories: (a) institutional issues, (b) instructor/course issues, and (c) suggestions to students. Data in these categories can be used to address the last research question concerning infrastructure support.

Institutional Issues

Four interviewees said the college should have provided more information about on-line courses; for example, how to take an on-line course, what would be expected, how their assignments would be submitted, and what to do if there were technical problems. Three interviewees wanted to see the actual course site before they enrolled. CT had the idea that the institution could develop a web site that would address technical concerns. OL stated that students should have to take a placement test for technical skills. If the institution did not want to deny technical novices access to on-line courses, then they could provide a list of skills that a person should have before taking an on-line course. This type of information could also be disseminated at an on-site orientation session. Almost all of the interviewees said they would attend such an orientation session.

Other suggestions included allowing students to call PRCC’s bookstore to order their texts using a credit card and then having the books sent to them. MT reported that advisors should be more informed about on-line courses. Several interviewees said on-line courses should be more widely advertised and the services of the Instructional Technology office be made clear to cyberstudents.

Instructor/Course Issues

When discussing instructors and course issues, the interviewees had several suggestions. First, they wanted instructors to be very specific in what they expected from the students. To avoid students cheating on the discussion board by using other people’s answers, HL thought someone should devise a way that would force the students to submit their answers before being allowed to access to the rest of the class messages. OL wanted to have students post digital photos of themselves so they could see what their classmates looked like. Other forms of communication such as synchronous chats and

audio programs (like Centra Symposium™) were suggested as supplementary methods for promoting discussion and interaction. HL wanted to negate the need for email and encourage students and instructors to post questions to a discussion forum. To avoid having to come on-campus, 1 interviewee wanted to be able to use a proctor when taking a test. This option is available; however, the instructor of HL's class did not inform the class of this possibility.

Suggestions for Students

Only 2 interviewees had suggestions for students taking on-line courses. JC said students should have technical skills. HL, stated that on-line courses should be for more mature students who are already out in the working world. She thought that younger people should take courses on-site in order to experience a campus atmosphere and learn to work with people.

Results Summary

The Result's chapter delineates the opinions and experiences of the interviewees and questionnaire respondents. Most of their comments are grouped loosely into 4 domains: Interpersonal Support, Student Characteristics, Course Issues, and Infrastructure Support. How these data address the who, why, facilitative, debilitating, and infrastructure issues will be presented in the Discussion chapter which follows.

CHAPTER FOUR: DISCUSSION

Introduction

Data from the Results chapter were presented according to the four domains of interpersonal support, student characteristics, course issues, and infrastructure support. For the Discussion chapter, a secondary analysis was conducted to examine relationships across domains and categories and then to connect these relationships with the overall research question, “How do community college students construct their on-line experiences?” and the 5 research questions first presented in the Introduction of this document. To review, those questions are: (a) What are the characteristics of students taking on-line courses? (b) Why are they taking web-based courses? (c) What are the facilitative dimensions or features that promote success in on-line courses? (d) What are the debilitating dimensions or features that inhibit success in on-line courses? and (e) How does the community college infrastructure support students taking web-based courses. A summary of the findings and corresponding research from the literature are presented with each question.

What are the Characteristics of Students Taking On-line Courses?

The first foci to be examined in the Discussion chapter concerns what type of students enrolled in the on-line courses at PRCC. The question of “who” is enrolling in on-line courses can be answered by looking at both the demographic and personal characteristics of the students taking these classes. However, since students’ personal characteristics can also be beneficial or inhibitive features that affect their success in an on-line course, these traits will be presented later in this chapter in conjunction with the sections on facilitative and debilitating features of on-line courses. In response to who is taking on-line courses, this section is divided into 3 areas, data from (a) questionnaires, (b) interviews, and (c) corresponding research.

Findings

In answering the question, “What are the characteristics of students taking on-line courses?” the questionnaire data reveal that of the 35 respondents, 69 percent were female; 48.6 percent were married; and 54.3 percent had no children (see Appendixes Q,

P, and N). The majority, or 57.1 percent, of the on-line students who responded to the survey were between the ages of 20 and 29; 22.9 percent were between 30 and 39; 17.1 percent were 19 or younger; and, 2.9 percent were between the ages of 40 and 49 (see Appendix M). Ethnicity is difficult to determine because 55.4 percent withheld or did not know this information (see Appendix O). So a general composite of the on-line questionnaire respondent was a married female between the ages of 20 to 29 with no children.

The percentages of male and female interviewees reflects that of the questionnaire respondents in that the majority of those interviewed, 66 percent, were women. The majority of the interviewees, 53 percent, were in their 30's; 60 percent were married, and 46 percent had no children. So, in general, the interviewees were married women in their 30's with children. The preponderance of females in the distance education courses may be a reflection of PRCC statistics for the entire college where 60 percent of the students are women.

Corresponding Literature

Data from the literature on gender for distance education courses is mixed. Several studies show that more women are enrolled in distance learning classes than men (Dille & Mezack, 1999; "Fall Enrollment and Staffing," 1998; Richards & Ridley, 1997; White, 2000). For example, of the distance-learning students at Christopher Newport University (CNU) in Virginia, the majority, 59.9 percent, of on-line students were women (Richards & Ridley, 1997). On the other hand, several other studies reported that more men were enrolled in their distance learning programs than women (Ouellette, 2000; Robbins, 2000; Roblyer, 1999). Specifically, in his survey of 32 on-line community college students, Roblyer found that 54.4 percent of his participants were male and 39.4 percent were female. Ouellette conducted a study with 29 students earning their Master's degree in Management and Technology from the University of Maryland Graduate School of Management and Technology. In this study, 60 percent were male and 40 percent were female. Of the 1,542 students taking courses on-line at Virginia Tech in Fall 2000, 57 percent were male and 43 percent were female (Robbins, 2000).

In terms of age, at CNU 43 percent of the students were between the ages of 17-24; 29 percent were between the ages 25-35; and, 17 percent were between the ages 36-45 (Richards & Ridley, 1997), which are very close to the statistics for the PRCC study questionnaire respondents.

Based on the PRCC Study findings and the literature on distance education, there do not seem to be clear demographic patterns to the age and gender of students enrolling in these programs.

Why are They Taking On-line Courses?

All of the participants in the PRCC Study were taking on-line classes for 2 reasons. The first reason was to receive a degree or certification which would qualify them to pursue other careers or for professional advancement. Secondly, they found the courses to be convenient. The literature also reflects these findings (Edelson, 1998; Faith & Coulter, 1988; Mannix, 2000; Prummer, 1994; Richards, 1994; Richards & Ridley, 1997; Roblyer, 1999; White, 2000). This section of the discussion chapter intertwines the questionnaire and interview data from the PRCC Study with the corresponding research.

White (2000) reports that the learners taking distance courses at Grant MacEwan Community College in Edmonton, Alberta, Canada were taking on-line courses to enhance their current on-the-job skills or earn degrees in order to change vocations. In addition to these practical reasons for taking courses, some were also driven by personal goals such as finishing a program started years before, or proving to themselves that they could achieve an academic goal. From among the interviewees in the PRCC Study, 6 stated that they were earning degrees in programs they had started earlier in their lives. For example, HL began attending PRCC when she was younger and then quit. She said that she needed to “finish something,” so she was taking courses in the computer program.

The students’ decisions to take PRCC courses via distance learning were related to career goals, but they took them on-line because of convenience. Edelson (1998) also

found that his students were motivated by convenience to take Internet-based classes. A student in Edelson's class said, "It is certainly better to be able to logon many times a week instead of trying to absorb [at 1 sitting] a 3 hour lecture" (p. 11). Similarly, an interviewee in the PRCC Study said:

I didn't think I'd want to sit in a classroom 3 or 4 hours at a time listening to it. ...if I got sick of it and could only handle it 15 minutes at a time, I could come back to it over the course of a day.

The preference for taking a course on site is often overshadowed by the convenience of distance learning, as another of Edelson's students observed in reference to a web-based class:

[I liked] the flexibility of the course. This is essential to someone of my age, in my point in life, in my career. Although I would likely have signed up for the traditional face-to-face version, at this point in my life I'd have had to withdraw and perhaps never take it again. (p. 11)

Several PRCC interviewees and questionnaire respondents also said they preferred on-campus classes over those offered on the Internet, but they still chose to take the cybercourses because of the convenience. The majority of the interviewees cited family, work, and travel restrictions as the main reasons they enrolled in on-line courses.

What are the Facilitative Dimensions or Features that Promote Success in On-line Courses?

In discussing the facilitative dimensions or features that promote student success in on-line courses, it is important to realize that the converse of a beneficial characteristic is that the lack of this feature could be inhibitive. For example, to say that interaction is advantageous to student success is also to say that the lack of interaction is problematic. Therefore, for every point made in addressing the issue of facilitative dimensions, a corresponding point can be made about debilitating features. In some cases, a feature can

be both beneficial and a drawback depending on the student and the situation. For example, the characteristic of being self-directed in order to learn on one's own was advantageous to some students' success in their on-line course but debilitating to others. One interviewee said she learned better by having to teach herself, but another dropped the course, in part because she wanted more instructor guidance.

The findings of this study reveal that in order to achieve some level of success in an on-line course, students should possess certain personal characteristics and be supported by their families, employers, co-workers, faculty, and educational infrastructure. A number of these support issues are unique to on-line learners, especially those that involve technology; however, other support dimensions apply to individuals taking traditional seat courses as well as distance learners.

In general, data supported by literature and revealed in the PRCC Study indicate that the following are facilitative features necessary for student success in distance learning. Students need (a) interaction, (b) well-designed and managed courses, (c) physical and emotional support, (d) motivation, (e) self-direction, (f) prior knowledge of on-line courses, and (g) technical skills. These 7 features will be discussed in the order listed above. Data from the PRCC Study questionnaires and interviews are intertwined with the corresponding research.

Interaction

Research shows that interaction between learner and instructor is critical to student satisfaction and persistence of students in on-line learning (Berge, 1999; Bonk & Cummings, 1998; Chickering, 1991; Edelson, 1998; Feenberg, 1999; Galusha, 1997; Harasim, 1990; Harasim, Hiltz, Teles, & Turoff, 1995; King & Doerfert, 1996; Kirkup & Prummer, 1990; Mannix, 2000; Miller & Husmann, 1994; Smaldino, 1999; "Teaching at an Internet Distance," 2000). According to Berge, interaction improves learner motivation because it provides for support from classmates and instructors. In their responses to the question about initial concerns in taking an on-line course, 12 of the 35 respondents to the first PRCC questionnaire said they were uncomfortable with the lack

of instructor interaction: “The only concern is that if we have questions, no one is right there to answer them. We have to email or contact the teacher. We have also lost the personal part of the teacher-student relationship.” They were apprehensive about the “distance from the professor,” inability “to get help or discuss reading material,” and lack of “personal contact with the professor.” Berge states:

When students have the opportunity to interact with one another and their instructors about the content, they have the opportunity to build within themselves, and to communicate a shared meaning, to ‘make sense’ of what they are learning. (p. 8)

As a result of these concerns, a facilitative feature of an on-line course would be that the instructors are responsive to student needs.

Although 7 of the 8 courses examined in the PRCC Study used discussion boards, only 5 instructors tried to conduct this type of computer mediated communication in order to create a learning community. In these 5 courses, the students answered questions posed by the instructors. Depending on the assignment, sometimes the students also had to respond to their classmates’ comments. In this way, they were supposed to build shared meanings of the topic being discussed. At least 5 of the interviewees in the PRCC Study mentioned how they read the discussion messages and used this information as study material. Therefore, in order for this type of communication to be effective, the instructor has to provide feedback about student answers so the class knows whether or not the information they are gleaning from the discussion is correct.

Well-Designed and Managed Courses

The manner in which instructors design and manage their courses has an affect on student success (Bonk & Cummings, 1998; Hara & Kling, 2000; Juge, Hartman, Sorg, & Truman, 1997; Price; 1996; Simonson & Smaldino, 1998). The first step in a good design is that expectations are well defined. Since distance learners do not have recourse to raising their hands and asking questions to clarify assignments or other issues, it is

critical that on-line instructions are clear and unambiguous: “To allow a student to be satisfied, it is important to describe the task to be done carefully...” (Visser, Plomp, & Kuiper, 1999, p. 404). Everhart (2000) states that faculty need to manage communication by setting guidelines, creating expectations, and telling students when they can expect feedback on assignments. Because of the unavailability of immediate verbal and non-verbal communication, Everhart found that there is 50 percent more faculty communication time in a distance learning environment than in a traditional classroom.

When they expressed a desire for clear directions and guidance, the opinions of the students in the PRCC Study reflect findings from the literature. CT said the on-line course that she learned the most from was very well organized:

...everything was planned out really well and for each assignment, it was the same thing, write 2 papers on this and write another paper on this, so it was the same thing over and over, so you knew what you were doing.

KB stated that she liked her on-line course because she always knew what was expected and that she was never “thrown any curves.” When discussing his course, FT said that the professor did not provide clear directions, so when students went into the class discussion board, many of the messages reflected frustration: “Well, he has the message boards up there, but that’s usually like, uh, ‘What am I doing in this assignment? I’m completely lost’.”

In addition to providing clear structure and expectations, a well designed on-line course provides avenues for instructor feedback. Visser, Plomp, and Kuiper (1999) reiterate the importance of feedback when they say, “Frequent, timely, adequate and encouraging feedback is an important satisfaction strategy. Other strategies are personal remarks and informing the student on how far they have come already” (p. 404). Without feedback, students do not know whether they are correctly comprehending the material.

The discussion board is a particularly important tool for providing instructor feedback. How instructors manage and organize discussion boards can affect student learning as well as their level of satisfaction. Threaded discussions are effective because they allow students to discuss issues by topic (Everhart, 2000). At least 2 of the PRCC instructors employed threaded rather than chronological discussions. Discussions organized chronologically are difficult to manage since students and instructors have to sift through replies listed in the order in which they were posted to locate messages on particular topics. When used correctly, a threaded discussion is organized by topic, or thread, which allows the reader to follow 1 particular line of thought without needing to scroll through unrelated posts.

Three of the PRCC professors maintained 2 discussion boards in each of their respective courses, which aligns with Harasim's (1990) recommendation. She suggests that instructors employ 1 discussion board for course-related activities and 1 for informal communications, such as an electronic café or help. The informal spaces of an additional board are essential "to building on-line community and supporting the socio-affective aspects of knowledge building" (p. 27). In her interview, OL touched on the idea of a learning community when she said that writing to her classmates on the discussion board was helpful because she could read their messages and then re-process and synthesize her ideas based on their input. OL also stated that students could write in "layman's" terms and explain what the teacher meant. She reported that the class members asked each other questions and provided answers in order to clarify the content among themselves.

Physical and Emotional Support

In discussing the facilitative characteristic of support, Schrum (1995) found "support from significant others is essential" (p. 7). With respect to their course work, all 15 of the interviewees, and those questionnaire respondents who commented on support, reported that they enjoyed physical and emotional encouragement from their families. This seems to be an improvement judging from earlier research which suggests that employed women and full time homemakers did not have emotional support at home when they sought to further their education (Grace,1994). Grace also found that women

who were employed received more encouragement from their work mates than from their families. Two of the interviewees were inhibited in their studies by their workload, but the other 13 said their employers were understanding.

Motivation

Issues of motivation are documented in connection with student achievement in distance learning (Broderick & Caverly, 1996; Harasim, 1990; Kerka, 1996; Schrum, 1995). Harasim includes motivation in her list of elements critical to on-line success: “student characteristics (students motivated to work on-line, who are self-disciplined and have access to computers are likely to produce superior outcomes)” (p. 26). Another aspect of motivation, the desire to achieve long-term goals, can be found in the literature about on-line instruction (Richards & Ridley, 1997; White, 2000). In the PRCC Study, all of the interviewees and questionnaire respondents had a long-term goal associated with achieving a post-secondary degree. Similarly, Richards and Ridley found that “having a degree objective strengthened student persistence” in their institutions’ on-line program (p. 495).

Self-direction

Self-direction is another personal characteristic identified in this study that is key to enhancing success for on-line learners. Kerka’s (1996) work supports this finding when she states that in order to be successful in on-line education, a student needs to be “self-directed” and possess “learner motivation, self discipline, and responsibility” (p. 3). In addition, Schrum (1993) states that students must be self-directed and self-disciplined in order to thrive in on-line education. Seagren and Watwood (1995) also found that successful students were “self actualizers” (p. 516). In her interview for the PRCC Study, KA summarized the factor of self-direction in taking an on-line course:

It was different because it was all me, and it was all put on how much I wanted. I mean when you get at school, you have professors, like, they are drilling it in your head kind of, but this was all me, and I had to do it myself, and whatever I learned is what I sit down and learn.

Since on-line instructors are physically absent, students have to be self-directed and teach themselves the course material, which some interviewees found to be debilitating and others found to be facilitative to their learning outcomes. ER said that the content she learned on-line was complete and rich because it was self-taught, and she had to think and assimilate the information on her own: "I learned a lot. It was a good way to kind of learn by yourself and you really had to think about everything." In general, FT said an in-class course was preferable to an on-line class; however, he stated, "Here [on-line] you kind of have to dig for it [information], you know, which I am sure has some advantages."

Prior Knowledge of On-Line Courses

Another finding of this study supported by research is that prior experience in taking on-line courses is beneficial to the success of distance learners. In a study done at Christopher Newport University, students taking the second part of a 2-sequence course on-line were compared using the dependent variable of whether or not they took the first part of the sequence on-line or in-class: "Students with the on-line prerequisite experience outperformed those with the standard classroom course background" (Richards & Ridley, 1997, p. 490). In her follow-up email for this study, YT said that she had signed up for an Internet-based class the semester after she was interviewed, and she found that it was useful to have formerly taken this type of course since she knew what to expect. Similarly, KB had a good experience with a previous on-line class, which she said gave her more confidence in taking a second course on-line. GT found this lack of prior knowledge to be a concern until he became more familiar with the on-line course environment.

Even a short time of on-line course experience can be beneficial as when students at Grant MacEwan Community College reported that by the end of the semester, difficulties they had navigating in the on-line course at the beginning of the term had decreased (White, 2000). CT and RG also stated that they had learned enough about the technology from the beginning of the semester to the end to be more comfortable and knowledgeable about taking a course on-line and navigating the Internet.

As will be discussed in the section of this chapter addressing Infrastructure Support, several students said it would be desirable before enrolling in an Internet course to see what the class looked like and how it worked. By previewing the class beforehand, even if they had never taken a web-based course, they would have some idea of what to expect. GT reiterated this point when he said, “I think that if I had taken any kind of web course before, I probably would have assumed that stuff [how an on-line course worked], but the thing is I had never had any of experience before.”

Technical Skills

Not only is it important to have some prior knowledge or information about the logistics of web-based instruction, it is also helpful to know about the technology involved. The necessity of having some technical background and knowledge is echoed in this study as well as in the literature on distance learning. Broderick and Caverly (1996) found students need technical skills in order to be successful. Kerka (1996) also states that distance learners have to know how to use a computer and navigate on the Internet. One of the questions interviewees and respondents answered in the PRCC Study centered on their level of expertise using the Internet and word processors. Schrum (1995) was also concerned about word processing skills. She states that learners need to “have technological skills so that they are comfortable with computers and able to use a word processor” (p. 7). Faculty at Grant MacEwan Community College said that students need “advanced preparation” before taking distance courses via the Internet because, “some students overestimate their computer skills” (White, 2000, p. 68). This was the exact sentiment of OL, an interviewee who said she needed to know more about the computer before she took her on-line course. She explicitly stated that she had “overestimated” her computer abilities. Like JC, who said that learners should have technical skills, students in a study done by Richards and Ridley (1997) agreed that additional computer skills training would encourage more students to enroll in distance learning classes. Specifically, the greatest perceived technical needs among Christopher Newport students were receiving and transferring files, using email, and using Windows. These were also the skills that caused the greatest amount of trouble for novice computer users in the PRCC Study. Interviewees like ER, CT, RG, MT, and HA had difficulties

with all or some of the following computer functions: copying and pasting, saving files using Windows, using a discussion board, and sending attachments via email.

A facilitative feature related to both technology and personal characteristics is that students with flexible, open attitudes towards technical difficulties and the course in general, seemed more capable of problem solving and continuing in the course in spite of frustrations they encountered. Kerka (1996) supports the contention that success for distance learners depends on technical skills “as well as the ability to cope with technical difficulties” (p. 3). Hara and Kling (2000) emphasize the importance of problem solving when they state that in order to be successful, students need to “deal effectively with their frustrations” (p. 19). A student’s ability to adjust to circumstances when technology fails is another indicator of flexibility. For example, JC’s attitude was that if his computer died, he would go to the community college campus and use the labs, “It wouldn’t be that big a deal.” KB had the same approach when she could not logon to work on her course because of ISP problems. She studied for another class, stating that she “had plenty to do.” When her printer quit working, HA had to call the manufacturer. The help desk talked her through uninstalling and reinstalling drivers. She said the printer had not worked because, “I missed a couple of files, no biggy.”

In summary, research supports the findings of this study concerning facilitative features or characteristics that promote student success in on-line courses. Data gathered from PRCC and supported by the literature show that in order to thrive in an on-line course, learners need interaction, well-designed and managed courses, physical and emotional support from significant others in the home and work arenas, motivation, self-discipline, prior knowledge of on-line courses, and technical skills.

What are the Debilitative Dimensions or Features that Inhibit Success in On-line Courses?

As mentioned in the discussion of facilitative features, the absence of a beneficial characteristic could be inhibitive to student success in taking an on-line course. Therefore, the following issues could be considered debilitative: lack of interaction,

poorly-designed and managed courses, lack of physical and emotional support from significant others in the home and work arenas, low motivation, poor self-direction, no prior knowledge of on-line courses, and weak technical skills.

The debilitating factors discovered in the PRCC Study and corroborated by research which will be discussed in this section are: (a) lack of interaction, (b) poorly-designed and managed courses, and (c) technical difficulties. These features will be discussed in the order listed above and will intertwine data from the questionnaires and interviews with corresponding research. Two other dimensions will also be discussed, (d) distance education's perceived lack of credibility and (e) electronic distractions. Although these features are not corroborated by research, they were evident in the PRCC Study and pose interesting questions.

Lack of Interaction

An inherent feature of on-line instruction is the lack of live, face-to-face, physical interaction. PRCC students and researchers alike found this characteristic to be a drawback to communication and learning. When taking an Internet-based course, students may wonder, "How can the instructor possibly "know" me? How can other students know what I am like?" The sense of isolation from which these questions arise has been referred to as the "loneliness of the long distance learner" (Edelson, 1998). In order to answer these questions and to alleviate the students' feelings of isolation, an on-line course must be designed to provide as much interaction as possible. At PRCC, the primary method of interaction was through the use of discussion boards. However, if instructors did not respond to posted questions, set up guidelines and help features, implement small group activities, or provide feedback, then the discussion board was a hollow and ineffective exercise which provided little to none of the interaction on-line students need.

Wolcott (1996) states that the reason for a decrease in interaction on-line is that "we strip the communication environment of much of its richness" through technology

(p. 24). JC reflects this opinion in the following statement about the need for interaction with an instructor:

Well, I think the interaction with the teacher, that's a big thing because you can ask them questions, and you can get back answers on the Internet, but you cannot get like the emotional backing behind it with voice texture- it's just words....

Edelson (1998) states that, "being together physically in the same room (or being able to see each other) provides visual cues that can be reassuring and familiar" (p. 5). Not having these cues can cause discomfort and impede interaction and communication. Wolcott (1996) agrees, "...students often find it difficult to establish a relationship with others they cannot see" (p. 24), which may explain several interviewees' desires to either see their classmates in person or to have access to a digital photo. JC said that it was better to know what a person looked like and what his or her concerns were so that he could "understand where they were coming from." Although these alternatives are poor substitutes for weekly personal interaction, the students still said that being able to put a face to a name would be beneficial. When asked if he would attend an on-campus, live orientation session, GT responded:

I would have been interested in who was the one that said such and such comment in the required class discussion or on the informal 1. ...I think, beforehand, I wouldn't have been able to place names with comments because there wouldn't have been any comments, but after that, I think after the first week or something, that would have been interesting.

At the time of the PRCC Study, neither the instructors nor the Instructional Technology/Distance Learning office at PRCC held any on-site sessions or provided a mechanism to download digital photos.

Poorly-Designed and Managed Courses

A course must be well-designed and managed in order to provide adequate interaction. Managing well-designed assignments on a discussion board is 1 of the primary methods of creating some means of interaction between students with each other and with the instructor. However at PRCC, only the Liberal Arts 1 professor constructed assignments to promote discussion and interaction between the students. The discussion board is not only an appropriate medium for one-on-one communication, it is also necessary for well-organized group activities that, according to Buchanan (2000), increase socialization among distance learning students. According to the interviewees and respondents in the PRCC Study, however, none of the PRCC instructors employed group work in their on-line courses. Apparently, not having the opportunity to meet instructors or classmates face-to-face or to work in on-line groups is not unusual. According to a study done by the Western Cooperative for Educational Telecommunications (WCET), based on data gathered from 417 institutions, 75 percent of the distance learning programs did not provide activities for on-line social interaction (Dirr, 1999).

When discussion boards are used for class assignments, they need to be free of redundancy. The students in PRCC's Technology 1 and Liberal Arts 3 classes found the discussions un motivating because all of the points were rehashed and repetitive. If an instructor asks all of the students to reply to the same question, as was the case in Technology 1 and Liberal Arts 3 classes, "you set the discussion on a course for low productivity and boredom" (Eisley, 1990). The instructor needs to prepare multiple questions to be posted for the students to answer to avoid redundancy and to make sure that the students are doing the work required to post their answer. When the 28 students in the Technology 1 course were all posting the same answer to a question, students said that others were cheating. HL stated that being able to see the other students' answers was unfair because she could have worked hard on her assignment and others could have looked at her reply, re-worded it, and submitted it as their own. Poorly designed discussion board activities are problematic because they become the on-line equivalent of

literal level worksheets that do not promote creative thinking, problem solving, or evaluative thinking. The students get bored and lose their motivation to participate, thus turning the course into a “necessary” hassle.

In addition to carefully designed discussion board activities, instructors should provide guidance on how to communicate on-line (Everhart, 2000). For example, although threaded discussions are efficient because they are organized by topic, they can be confusing for novice users like HA and MT, neither of whom understood how to submit their replies or to scroll down to read other messages in a threaded discussion. Specific directions should be given on how to manage any electronic communication.

Not only should the mechanics of a discussion board be well conceived but the quality of discussion and the students’ comfort level in using this communication technique should also be considered. Although her instructor in Liberal Arts 3 provided feedback and interaction, KA said the quality of communication was poor. She said the professor told the class all about herself and requested feedback about the website; however, the instructor did not ask about the students: “She kind of gave, but she did not take back about us. It was more like she would just throw out the material and she wasn’t really concerned about us as individuals.” WS said that the Liberal Arts 3 discussion forum was “real stiff,” “extremely formal.” FT worried about posting messages in Liberal Arts 2 because he was worried about making spelling and grammatical errors. FT’s concerns address the point that the quality of distance learning communication tends to be better than in-class discussions because students have more time to craft answers (Everhart, 2000). However, if the students are worried about spelling and grammar, one might wonder about the creative aspects of their replies if they are concerned about technical rather than content issues. Harasim, Hiltz, Teles, and Turoff (1995) state that instructors should provide guidance as to whether or not grammar and spelling are important, try to set a tone of openness and collegiality so the students feel some measure of trust when posting their messages, and express genuine concern about the students’ well being both in and out of the educational milieu.

When discussing what faculty need to do to support distance learning students, Boettcher and Kumar (2000) state that the instructors must check into the class discussion board at least once a day and inform the students if they are going to be off-line for longer than a day. They state, “Criticisms of distance learning courses often surround a lack of interaction and feedback from instructors” (p. 47). Instructors must provide interaction and feedback via the discussion board so that the students know whether or not the information being posted is correct, “What is essential to any educational system is the possibility for interaction in the form of feedback to the learner as he or she is practicing skills or acquiring knowledge” (Berge, 1999, p. 9). Berge points out that interaction improves learner motivation because it provides for support from students and instructors. This contention can be applied to MT’s lack of success in her on-line course. MT stated that she dropped her course in part because she was not getting the interaction she needed: “[I] just felt like I wasn’t getting; it wasn’t anybody’s fault or nothing, but I just felt like I wasn’t getting the instruction that I needed personally.”

The instructor of Liberal Arts 2 was creating a debilitating environment on the discussion board by not responding to student questions in a timely manner, or by not responding at all. As a result of his lack of interaction, during the first week of classes the students read a very large assignment and submitted the study guide in a 24-hour period when, in reality, the assignment was not due until the following week. The instructor was out of town the first week of classes and did not realize that the students misunderstood when the assignment was due, so when they submitted their work, he was not on-line to receive it. In another case of non-communication in the Liberal Arts 2 course, the on-line assignment schedule was incorrect, but the students were not made aware of this fact, and the instructor never corrected it. Therefore, according to the erroneous assignment schedule, the students thought that their mid-term was going to be posted during week 6. Several weeks prior to this, they began using the discussion board to ask questions about the mid-term. According to 3 interviewees who took this class, the instructor never replied to their queries about the mid-term exam. Week 6 came and went without the exam being posted. It was put on-line during week 8 without any explanation as to why it was 2 weeks late. Other problems in Liberal Arts 2 involved lack of feedback. If the

instructor returned student work, it was weeks later; for example, the midterm was not returned until after the final was due. The final was comprehensive, but he did not re-open the links to the previous weeks' lessons, so the students could not refer back to earlier discussion boards or retrieve other resources. Problems such as these would be as problematic in-class as they were on-line. However, students on-campus could visit the professor during office hours to ask questions or raise these issues before, during, or after class. On-line students do not have this type of recourse. As in the case of the Liberal Arts 2 class, on-line courses which are poorly designed and managed hinder learner success.

Technical Difficulties

Instructors need to carefully design and manage their on-line courses to provide guidance and interaction, and they need to take into account any technical problems or issues that students may encounter. For example, at least 3 PRCC interviewees reported that they had difficulty sending assignments using email. White (2000) found that on-line learners at Grant MacEwan Community College also had trouble submitting assignments via email. Perhaps these problems could have been avoided if the students were provided with directions on how to send attachments. Such directions could be included in a webpage on a course site that gives hints and tips about using Internet and computer applications, or technical instructions could be incorporated into the text of assignments. Another option could be to provide links on individual course webpages that connect to the institution's distance learning site where technical instructions and help files are provided. If students cannot submit, save, or create their work through electronic means, then their success in the course may be compromised.

Other technical difficulties involve slow modems hampering delivery of course content (Kerka, 1996). This problem may be exacerbated when instructors place unnecessary graphics on their sites or ask that students download large files; for example, the Liberal Arts 1 course contained sound and video files. Although the 2 students interviewed who took Liberal Arts 1 did not have difficulty downloading the sound and video files, it would be interesting to know how students with slow modems were able to

cope with these multi-media programs. Another question is whether students with weaker technical skills could download required plug-ins and helper applications, such as Adobe Acrobat Reader™, QuickTime™ or Real Audio™, to run these multi-media files.

Lack of Credibility

Two debilitating dimensions or features not covered in the literature that were evident in the PRCC study are that, for the students, distance education seemed to lack credibility and electronic distractions are perhaps more pervasive than educators realize.

A silent inhibitive feature relative to the experience of taking a course on-line is the attitude that distance education is “second best” and that it cannot compare favorably to in-class learning. Wolcott (1996) points out, “Distance education is viewed as less credible and less effective” than on-campus instruction (p. 25). If students, administrators, and faculty state that distance learning is not credible, then the motivation to take, administer, fund, support, or teach an on-line course may be compromised. Specific to the PRCC Study, 8 of the 15 interviewees stated they would only take courses on-line that they found to be uninteresting; thus, reserving their time and energy to attend on-campus classes they care about. This attitude could be debilitating to student motivation since it implies that a course taken on-line is not as credible or important as one taken in-class. Two interviewees referenced this point. FT explicitly stated that his on-line course was not as “credible” with the professor at a distance, and JC did not consider an on-line course to be a class: “If it was in person it would be like a class and I’d see it as a class,” instead, he saw it more as an exercise or a “hassle” necessary to getting 3 required credits.

Electronic Distractions

Another finding from the PRCC Study that could not be located in the literature was the amount of distraction students encountered by simply being on the Internet. The invasive capabilities of Instant Messaging™ (IM) and the lure of searching for interesting non-course related information on the Internet are electronic distractions that seem to be prevalent in the on-line student’s study environment. During the interviews, 4 of the

participants mentioned Instant Messaging™ as an interruption or a distraction. Two discussed how they would find themselves surfing the Web for information unrelated to their assigned class work. In order to counter-act these distractions, instructors should caution their students to turn off IM programs and to try and stay on task when performing web research for their classes.

The debilitating factors discovered in the PRCC Study and corroborated by research are: lack of interaction, poorly designed and managed courses, and technical difficulties. Two findings not mentioned in the research but evident in the PRCC Study are that students may tend to take on-line courses only in subjects they are not interested in, and students taking on-line courses may be distracted by Instant Messaging™ and surfing the Web.

How does the Community College Infrastructure Support Students Taking Web-based Courses?

Ragan (1999) emphasizes the significance of infrastructure support to the success of a distance learning program: “Among the most important components in the design of distance education programs are those that establish the organizational and administrative infrastructures to ensure that such programs can be efficiently and effectively developed, managed, and executed” (p. 5). Overall, it appears as if the infrastructure at PRCC performed well in supporting its distance learning students. None of the 15 interviewees and 35 respondents in the PRCC Study reported difficulties registering, finding out how to logon to the site, buying books, advising, or conducting any other administrative activities.

Students only had 2 suggestions for improvement of PRCC infrastructure support: (a) publicize information about on-line courses, and (b) address technical issues. The questionnaire and interview findings will be intertwined with the corresponding research.

Publicize Information About On-line Courses

When asked for recommendations about how to improve distance learning at their institution, 26.9 percent of the students surveyed at Christopher Newport University

agreed with the PRCC students that information about on-line courses needed to be publicized more widely (Richards & Ridley, 1997). According to the WCET survey of 417 institutions, 27 percent had not developed promotional materials or campus information to attract distance learners (Dirr, 1999). In the PRCC study, CT and GT both mentioned that they only heard about the on-line courses by word-of-mouth, and they stated that they thought more publicity should be conducted.

In addition to publicizing the courses, GT suggested that PRCC distribute a booklet to provide information on how to take an on-line course, how much time and work are involved, what minimum hardware is required, and what technical and personal skills a cyberstudent needs. He also said it would be helpful to know that these classes are time-and-space independent and students may be required to travel on-campus to take an exam. PRCC has a web site that provides most of the information that GT was looking for; however, he and most of the other interviewees were not aware of this site's existence.

KB discussed the importance of knowing how each class is designed and managed. The web-based course she took was open to the public at all times, so she was able to see how it was set up and learn about her assignments before enrolling. When asked what she would have done if she did not have the option of evaluating the class beforehand, she said, "I wouldn't have taken it. I've looked at all of the sites before I've registered." Therefore, it may be helpful to have on-line courses open for student inspection or have sample sites available to display how an on-line course is set up.

Address Technical Issues

Other support concerns that affect students taking on-line courses are that faculty and institutions need to plan for technical failures and provide access to support, technical training, and orientation sessions (Kerka, 1996). In the PRCC Study, CT suggested that the institution develop a web site that would address technical concerns. Some points that could be contained on this site might involve basic skills such as downloading and installing Adobe Acrobat Reader™, sending attachments, saving work in word

processing files, copying and pasting rather than typing directly into an on-line form, and responding to a threaded discussion. This type of information could also be disseminated during an on-site orientation session. In addition to an informational website and on-site orientation, the services of the Instructional Technology/Distance Learning office could be promoted on each course site. Only 1 of the 15 interviewees contacted PRCC's Instructional Technology/Distance Learning office when he needed technical help. When CT, KA, HA, and ER were asked whether they had considered calling the Instructional Technology/Distance Learning office when they had technical troubles, they all responded that they did not know the office existed.

In the comments section for the question on technical support in the WCET technical support, a respondent wrote that their school had a "screening quiz" that allows students to determine whether they have the technical skills necessary to take distance learning courses (Dirr, 1999, p. 6). HL also suggested that PRCC require students to take a screening quiz.

PRCC seemed to be supporting its on-line students fairly well considering that the interviewees and questionnaire respondents in this study did not report difficulties enrolling, getting books, or performing other administrative tasks. They did, however, suggest that the institution publicize information about on-line courses and address technical issues.

Summary of Discussion

Although the age and gender of the majority of students taking on-line courses is unclear from the literature, in the PRCC study, the majority of students taking on-line courses are women ages 20 to 39 with children and full time jobs. The primary reason why students take courses on-line is that they are a convenient means to achieving educational and vocational goals. The facilitative dimensions are interaction, well-designed and managed courses, physical and emotional support from significant others in the home and work arenas, motivation, self-direction, prior knowledge of on-line courses, and technical skills. It is important to recognize that the corollary of the facilitative

characteristics is that the lack of these features could be debilitating. In addition, the negative factors discovered in the PRCC Study and corroborated by research that affect student success in taking an on-line course are: lack of interaction, poorly designed and managed classes, and technical difficulties. Electronic distractions from Instant Messaging™ and surfing the Web are two findings that are not corroborated by the research but were evident in the PRCC study. In response to what the college infrastructure can do to support distance learners, the respondents and interviewees only had 2 suggestions. They recommended that the institution publicize information about on-line courses and address technical issues.

CHAPTER FIVE: CONCLUSION

Introduction

This study provides a qualitative examination of ethnographic data to construct a description of community college students' experiences taking on-line courses. In order to solicit data to provide a rich description of the experiences of community college students taking web-based offerings, the study focused on the research question, "How do community college students construct their on-line experiences?" The specific research questions addressed were: "What are the characteristics of students taking on-line courses?", "Why are they taking web-based courses?", "What are facilitative dimensions or features that promote success in on-line courses?", "What are the debilitating dimensions or features that inhibit success in an on-line course?", and "How does the community college infrastructure support students taking web-based courses?"

Almost all of the data from this study are supported by the literature on distance learning and on-line instruction. Only 2 findings are not supported or found in the research. These findings are: students take courses on-line that they do not find interesting, and electronic distractions from Instant Messaging™ programs and surfing the Web are debilitating.

The researcher has been investigating, developing, gathering, and analyzing data from the PRCC Study for over 2 ½ years. During this time, she has had the opportunity to construct and re-construct the implications of the study. This chapter is a compilation of the researcher's thoughts concerning these implications. The conclusion discusses the following issues in this order: (a) need for the study, (b) issues common to on-line and on-campus instruction, (c) constructivism and on-line learning, (d) who is taking web-based courses, (e) why students take web-based courses, (f) facilitative and debilitating dimensions or features that promote or inhibit success in on-line courses (g) improvements to the study, and (h) implications for future research.

Need for study

Educational researchers agree that there is a need for studies on distance learning from the student point-of-view (Hara & Kling, 2000; Miller & Husmann, 1994; Roblyer, 1999; Schlosser & Anderson, 1994; Wang & Newlin, 2000). Why aren't there more studies from the student stance? Perhaps because instructors, administrators, and instructional technologists have a voice and venue, students do not. Those who publish are the faculty, administrators, and other educational professionals who write about their experiences. Hara and Kling state that the literature written by educators often glosses over student problems because those who publish have a vested interest in the success of distance learning.

Issues Common to On-line and On-campus Instruction

Students taking on-line courses have the same essential needs as those taking on-campus courses; they need quality instructors and well-designed and managed courses. Chickering (1987) delineates 7 principles for good practice in undergraduate teaching. Although he was referring to on-campus instruction, all of Chickering's principles apply to on-line education.

1. Good practice encourages student-faculty contact.
2. Good practice encourages cooperation among students.
3. Good practice encourages active learning.
4. Good practice gives prompt feedback.
5. Good practice emphasizes time-on-task.
6. Good practice communicates high expectations.
7. Good practice respects diverse talents and ways of learning.

Correspondingly, suggestions for good practices and conditions for teaching and learning on-line are also appropriate for on-campus courses. Some examples would include well-designed and managed courses and student characteristics such as self-direction, prior knowledge of the content, and good study skills.

Since on-line students do not have the opportunity to meet face-to-face with their instructor or classmates, the needs addressed by Chickering's principles are magnified. For example, if an assignment is poorly designed or inadequately explained, an on-line instructor will have greater difficulty clearing up student misperceptions using the discussion board and other electronic means than the on-campus instructor who can address specific questions from students in the immediacy of the classroom. Students studying on-line can least afford poor instruction and/or poor course design. They have a limited number of hours to get work done because of employment and family responsibilities, and they do not have ready access to their instructors.

Constructivism and On-line Learning

Distance learning was traditionally conceived of as an activity where the student studies and learns completely autonomously, following the correspondence course, independent study, or programmed study mode of teaching. With this history, it is interesting that learning communities and constructivist learning methodologies are found to be appropriate in on-line education (Major & Levenburg, 1999; "Teaching at an Internet Distance," 2000).

Two types of constructivism are appropriate methodologies for on-line teaching and learning. Cognitive constructivism, patterned after Piaget's theories, emphasizes presenting the students with ideas, facts, situations, and other content that they incorporate and build into their own knowledge base or system. Instructors do not tell the student what to learn, instead, they show students where and how to locate information and guide them in constructing their own knowledge base. Social constructivism, patterned after the theories of Vygotsky, emphasizes the construction of knowledge when students integrate what they have learned with the ideas of others.

Some students may need to be taught how to construct their own learning or how to build upon the experiences of others, especially older students who went to school before educators began to advocate active learning, learning communities, and constructivist approaches. Students need confidence in themselves and in their

classmates in order to analyze, synthesize, and evaluate information on their own with the instructor acting as a facilitator rather than the font of all knowledge.

Who is Taking On-line Courses

Demographic patterns of age and gender are inconsistent; therefore, it is difficult to determine exactly what type of person is enrolling in on-line courses. What is clear is that community colleges offer more distance learning options and enroll more students in these courses than 4-year institutions (Dirr, 1999). The range in age and gender of students in distance education perhaps shows that these offerings are meeting the needs of a wider audience rather than being the specific domain of 1 demographic group, i.e. women in their mid-30's or men earning technical degrees.

Some important student characteristics for success in on-line instruction are motivation, prior knowledge of the content and of web-based instruction, self-direction, flexibility, willingness to interact with others, and access to and knowledge of technology. A student's perception of the difficulty of the content and attitude are also important.

If students perceive that they can learn the content with ease and that learning on-line will not be difficult, then they will be more likely to succeed in their web-based course. Correspondingly, if students have a positive attitude about their course and the instructor, they are also more likely to succeed. Both perception and attitude may reflect students' sense of self-confidence. If they have enough self-confidence to believe that they can master the content and that they can learn on-line, then they will most likely have a positive attitude. On the other hand, if they doubt their ability to master the content, if they think it is too hard for them or that learning on-line is difficult, they may have a negative attitude.

Although all of the characteristics described above are valuable, the 2 most important are self-direction and flexibility, which, to some extent, are dependent on self-confidence. If students are confident in their abilities to direct and be responsible for their

own learning, and if they realize that they can problem solve and be flexible in the face of difficulties, then they are likely to succeed in an on-line course. Students who do not have confidence in their ability to direct their own learning and adapt to any problems they may encounter, may have more difficulty in a web-based course.

When this study was first developed, the researcher was working under the impression that distance learning was, by default, a solitary activity, since this type of education was traditionally thought of as programmed instruction following the correspondence course mode. Therefore, the researcher wanted to determine whether or not students who were autonomous, i.e. prefer to study alone, enjoy independent study, and reject options to work with others (see Table 1.1), were more successful in their on-line courses than those who needed or wanted interaction in order to learn (Wolcott, 1996). What was discovered in the literature and the results of the PRCC study was that interaction is important to the success of all students, whether they are autonomous learners or not. As a result of this discovery, the researcher realized that successful students could not be completely autonomous because a well-designed on-line course would demand some level of interaction and social constructivist learning. Two interviewees, SW and GT, reflected this finding when they stated that they were independent, autonomous learners but discovered that they also needed interaction. WS said:

... being independent and as much of a loner as I am, I do not like it [on-line course] as much as I expected to. I thought I would just be gloriously happy because I did not have to put up with any other people. And yet, I found myself missing some of the interactions that I get in the classroom.

Students need to be autonomous enough to solve their own problems, follow directions, and construct their own learning but not so autonomous that they cannot interact or be active participants in learning communities. Those who are self-directed will do better in a facilitated, constructivist environment because they do not need the top-down structure of the “sage on the stage” paradigm to provide guidance and ready-made knowledge.

Another criterion for student success seems to be flexibility, the ability to adapt to changing circumstances and to draw on different personal strengths. According to the Illinois faculty seminar, flexibility tends to be a characteristic of older, non-traditional learners, which are also characteristics of community college students (“Teaching at an Internet Distance,” 2000). If their ISP is not working, students cannot toss up their hands in disgust and wait a day or 2 until the connectivity problem goes away. They need to find alternative ways to study, for example read an assignment off-line, rearrange their time in order to come back and log on later, or use computers at the public library. Flexible and self-directed students do not wait for someone else to answer their questions; they problem solve until they arrive at the best possible solution. KB, JC, and HA were 3 interviewees who exhibited flexibility. When they encountered technical problems, these students found alternatives and continued their studies with an attitude similar to HA’s who said, when her printer drivers needed to be reinstalled, “No biggy.”

Related to the characteristic of flexibility and self-direction is a willingness to tinker with the technology in order to learn it or fix it. Students who wait for someone else to show them how to work with the technology may never have their problems solved. KB and WS both emphasized how they corrected computer software and hardware problems by clicking every button and reading every menu option or performing any action they knew in order to fix it, learning new skills along the way.

Why Students Take Web-based Courses

According to the literature, students enroll in web-based courses for 2 reasons: the class is necessary for completion of a degree, and the convenience of time-and-space independent distance learning courses (Faith & Coulter, 1988; Prummer, 1994; Richards, 1994; Richards & Ridley, 1997; Roblyer, 1999). One finding of the PRCC Study not corroborated by the literature is that some students may choose to only take courses on-line that they find uninteresting. Eight of the 15 interviewees said that they only took uninteresting classes on-line. HL and GT said that they would take courses on-line that they would least benefit from or were “boring.” GT said that he would enroll in an on-line course to free up time for an interesting in-class course. FT explicitly stated that his

on-line course was not as “credible” with the professor at a distance, and JC did not consider an on-line course to be a class: “If it was in person it would be like a class and I’d see it as a class,” instead, he saw it more as a “hassle” necessary to getting 3 required credits. Some students will also only take what they perceive as “easy” courses on-line. Perhaps students choose to take uninteresting, boring, or easy courses on-line because they have the attitude that distance education is “second best” and that it cannot compare favorably to in-class learning.

Facilitative and Debilitative Dimensions

This section of the conclusion examines (a) faculty responsibilities and (b) responsibilities of the infrastructure.

Faculty Responsibilities

In short, good teaching is good teaching, and poor teaching is poor teaching regardless of whether the class is on-line or on-campus. The quality of instruction can make a class a success or a failure; it is not necessarily the medium that ensures or negates worth. One example of an instructor whose behavior would be unacceptable in-class as well as on-line would be the instructor of Liberal Arts 2 who posted incorrect due dates, did not return assignments in a timely manner, did not answer student questions, and gave no explanation when he posted the mid-term 2 weeks later than he said he would. This class was unsuccessful as a result of instructor error, not because it was a web-based course. Unfortunately, critics of on-line learning tend to equate the quality of a course with the medium, but this does not seem to occur when discussing on-campus instruction. For example, individuals do not say that an on-campus course was a failure because it was in a blue classroom or on the second floor; they look to the instructor for explanations.

Faculty teaching on-line have a humbling responsibility to provide a facilitative environment in a medium without face-to-face communication. They need to maintain interaction and provide prompt and timely feedback. In the on-line class, instructors communicate by reading student messages and responding carefully through writing

rather than listening and speaking in the immediacy of the on-site classroom. As a result of the necessity for communicating by writing and the lack of physical proximity, not all instructors will be comfortable in this medium. Instructors who are verbal and get their energy from face-to-face interaction with their students may not be motivated to teach on-line. On the other hand, for those who are comfortable using writing to communicate and who do not need face-to-face interaction to be motivated to teach, on-line instruction may be appropriate.

Instructors of web-based courses must make sure that assignments are well designed and expectations are exceptionally clear. When creating assignments, they must carefully write out instructions that anticipate every question or area of possible misunderstanding. There is no room for a “bad day” in on-line teaching because the instructor does not have the luxury of walking into a class, revising an assignment on the spot, and then answering student questions relative to the changes. The course must be well structured in that all information is easy to access and logically organized.

A well-designed course can be the instructor’s most useful teaching assistant. In other words, the information the instructor once explained verbally, for example, discussing a critical assignment or how the course was organized, must now be supplied in the text and layout of the on-line course design. Technical and content instructions, for example, need to be folded into the text of the course.

Those who teach or design on-line instruction should not try to recreate the on-campus classroom in the web-based course because what works in 1 medium is not necessarily effective or appropriate in the other (Bonk & Cummings, 1998). In addition, trying to force on-campus paradigms into a web-based course prevents faculty from thinking creatively and using the characteristics of the on-line medium to its greatest effect. Some instructors, like the teacher for Liberal Arts 3, seem to overcompensate for the lack of live interaction and the loss of their lecturing option by assigning inappropriately large reading assignments and projects. If they cannot verbally inform their students about the content they want to convey through lecture, then they have the

students read it. By overcompensating, they are trying to fit the on-campus method of disseminating information via lecture into the on-line course instead of thinking and creating different kinds of assignments and opportunities appropriate for distance learning. For example, rather than having the students read 3 or 4 chapters on a topic, the instructor could put the students in small groups and have each individual research a part of the content. The students would then be charged with finding the information and sharing it with their group members. By using the small group approach, students are discovering, analyzing, synthesizing, and evaluating the information on their own, thus learning the material more completely than they would by passively absorbing it in a lecture. In addition, by sharing what they have found with others, they are able to build upon each other's knowledge base.

In another example of using new methodologies on-line, Bonk and Cummings (1998) state that it is counter-productive for instructors to use weekly quizzes to assess students' grasp of literal level facts when they have access to knowledge via the Internet that surpasses that which the instructor can learn in a lifetime. Instead, Bonk and Cummings suggest embedding thinking skills and portfolio assessments as integral parts of on-line courses rather than relying on traditional, in-class methods of assessment.

Some instructors may discover that their on-site instruction will improve since they are forced to re-visit and evaluate their on-campus assignments when reconstructing them for on-line classes. Instructors who spend a great deal of time developing active, facilitative assignments for their web-based courses may use these same assignments and techniques in their on-campus courses. Re-creating assignments that are appropriate for web-based instruction takes time and creativity, investments that not every instructor can, or is willing to make.

Since many students are accustomed to the lecture mode of instruction, they often have to be taught how to function in an on-line, facilitative, constructivist learning environment. Currently, teachers are charged with instructing their students in how to learn on-line both in terms of participating in a facilitated classroom and in using the

technology, for example, how to download a plug-in or send an attachment. However, if a student in a traditional class needs help in learning how to take notes or directions for driving to campus, would providing this assistance be the instructor's responsibility? This may be an area where the infrastructures of institutions that encourage distance learning need to support distance education students by providing avenues whereby the student can learn how to function in a web-based course. By providing this assistance, the infrastructure will be aiding the student as well as alleviating the instructor of this responsibility.

Responsibilities of the Infrastructure

According to the WCET survey, the needs of distance learning students are not being met (Dirr, 1999). This may be a result of the fact that distance learning is growing faster than institutions' abilities to adapt, or it could be a result of a lack of commitment. If educational institutions are going to promote distance learning, they need to be financially and philosophically committed to serving their faculty and students. In order to provide this commitment, the institution cannot adhere to the philosophy that distance learning is inferior to on-site instruction (Wolcott, 1996).

In order to provide support services, the institution will need to make a financial commitment. For example, faculty need to be given release time to develop on-line courses as well as through the first few semesters of instruction. Students have to have additional services such as 24 hour a day 7 days a week technical support, library and bookstore services, counseling/advising, and off-campus registration options. The institution will have to fund new positions: instructional technologists, distance learning coordinators, and help desk staff. Additional staffing may need to be added to other departments such as registration and library services to meet the demands of an influx of distance learning students.

The institution can, and should, take over some of the tasks that are currently assumed by the on-line instructors, for example, creating social networks and providing technical guidance and support. Other issues need to be addressed such as should the

student have to pay an activity fee, which supports on-campus activities and services like bus transportation? Should they have to pay for having their textbooks shipped?

Another area of concern involves library services. Accessing school owned databases from off-campus is still problematic at many institutions. As a result of download time, students with slow modems or poor ISPs can spend hours trying to access databases and download articles on-line. Other issues involve locating, checking out, and returning books, which cannot be easily transmitted via the Internet.

Improvements to the Study

Having worked on the study for over 2 years, the researcher sees several areas where the project could have been improved. These areas are (a) conduct the study over a 16-week semester, (b) revise questionnaire and interview items, (c) improve interview techniques, (d) increase participant selection, and (e) implement better procedures.

Conduct the Study Over a 16-Week Semester

If the study could have been conducted over a regular 16-week semester rather than the shortened 10-week summer session, many aspects of the project could have been improved. First of all, 3 interviews instead of 2 could have been conducted and the researcher would have had more time to transcribe the interviews between each meeting.

Revise Questionnaire and Interview Items

Two items needed to be reworded in the questionnaire and interviews. One question asked, “Do you work better in groups or alone?” (see Appendix G). When developing the question, the researcher considered studying alone or in groups as an activity conducted outside of the regular class setting. The question was intended to determine whether or not the student was an autonomous, independent, learner who chose to learn on his/her own rather than rely on group interaction. However, few of the interviewees considered the question in this light. Most seemed to consider group work to include sitting in a traditional class and listening or participating in whole class discussion rather than a distinct extra-curricular activity. The question should have been

worded to clearly distinguish between in-class discussion and working in small groups on their own time outside of the classroom.

The second question that needed to be reworded was “When did you usually go on-line? About how much time did you spend on-line a day?” (see Appendix G). Some of the students interpreted “go on-line” to mean “study,” which did not have to occur when the students were logged on. For example, most studying involved reading text chapters and writing assignments, not working on the Internet. When conducting the interviews, the researcher could explain the 2 questions that needed to be re-worded; however, as in any on-line event, this explanation could not occur with the students answering the questionnaires on the Web.

Three questions should have been added to the questionnaires and interviews: 1 on whether or not concerns were realized, 1 on interaction, and 1 about the types of courses they would take on-line as opposed to on-site. Although the second questionnaire contained the question, “Now that you are halfway through the semester, were any of your concerns about taking an on-line course well founded?”, this question should have been included in the last questionnaire as well. It should have been added to follow up more closely on any issues or concerns that the students had. At least 1 or 2 questions that addressed interaction should have been on every questionnaire since interaction is such a pivotal concern in on-line instruction. Since 1 of the findings of the study not corroborated by research was that some students prefer to take uninteresting courses on-line and interesting courses on-site, a question could have been asked about the types of courses they choose to take via the Web as opposed to on-site.

Improve Interview Techniques

Although she had read about interviewing techniques and performed interviews as a requirement for her course on ethnography, the researcher still should have created a situation where she could have practiced interviewing with person who was knowledgeable about interviews and who could have provided constructive criticism. At first, the researcher tended to ask loaded and closed questions, and she talked too much.

Some of the interviews could have been longer, but the interviewer was either fatigued or uncomfortable asking too many follow up questions. However, her interviewing techniques did improve with time.

Having the questionnaire respondents and interviewees answer the same questions provided a means of cross referencing answers, the researcher is undecided as to whether asking both groups the same questions was a good idea. Since 14 of the 15 interviewees also answered the questionnaires before they met with the interviewer, they may have provided the same answers that they entered on the questionnaire rather than put additional thought into their replies. This may explain why some of the interviews seemed too short.

Increase Participant Selection

The study could have been improved if there had been a much higher response rate to the questionnaires. In addition, the study results would be more reliable if the interviewees were randomly selected rather than paid volunteers.

Implement Better Procedures

At the conclusion of the study, the researcher realized that she could have conducted a few of the procedures differently. First, the daily checklist should have been put on-line or dropped entirely since only 1 interviewee completed this task. If the checklist was on-line, it may have been easier for the participants to keep up. Secondly, the interviewer should have taken more field notes and not been so self-conscious about writing notes in the interviewee's presence. Finally, she should have contacted the instructors or the registrar at the end of the summer session to find out how many students withdrew from each of the 8 courses examined in order to determine drop-out rate and if this rate was consistent with the literature.

Implications for Future Research

The results of this study have implications for several areas of research. This section of the conclusion briefly lists topics for further examination that grow directly

from the study. Some areas do not seem to exist in the literature and others have been touched upon but could be examined in more detail.

The following topics seem to be unique outgrowths of the PRCC Study and have not been located in other research on distance education.

- Do students take courses on-line that they find uninteresting? If so, why do they delegate uninteresting or boring courses to the on-line environment?
- How is student success in taking web-based courses affected by Instant Messaging™ and surfing the Web?
- How does a teacher's on-site instruction change as a result of teaching on-line? Do their assignments on-site become more active and constructivist as they adapt them for web-based instruction?
- Are children's study habits and success in school affected by studying alongside their parent who is also a student?
- How can institutions provide students with a preview of their on-line course without sacrificing the integrity of the course?
- What are the implications of having a printed account of everything that occurs in an on-line course as opposed to an on-campus course where most activity is temporal and cannot be permanently archived?
- How often do instructors overcompensate for the lack of live interaction by assigning too much reading and too many projects?
- How can researchers quantify exactly how many technical problems on-line students encounter?

The following areas of research are already extant, but they could be examined more thoroughly.

- How did the link between constructivism and on-line learning develop?
- Do students appreciate that the Web is "blind" and supposedly free of gender/race/age discrimination?

- What are the experiences of unsuccessful on-line students who either do not complete or do not receive a passing grade in their web-based course?

All of the above suggestions for future research would add valuable information to the corpus of literature on distance learning and assist practitioners in creating more effective on-line instruction.

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APPENDIXES

TimelineA
PRCC Instructor's Request For ParticipationB
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Appendix A: Time Line

Spring 1999	Summer 1999	Fall 1999	Spring 2000	Fall 2000	Spring 2001
Developed Methodology/ Prospectus	Re-instituted study at PRCC	Completed Transcriptions	Completed Analysis of Data	Completed writing Results Chapter	Present Dissertation Document
Solicited students at PRCC and another community college for questionnaire and interview volunteers.	Offered \$20.00 per interview	Began analysis of data	Began writing Results	Wrote dissertation document	
Received no interview volunteers	Garnered 15 interviewees and 35 questionnaire respondents				
	Conducted 29 interviews				
	Distributed 3 questionnaires				
	Began to transcribe				

Appendix B: Letter to PRCC Instructors

Date: Thu, 17 Dec 1998 13:58:00 -0500
From: JULIA HARBECK <NRHARBJ@nr.cc.va.us>
Subject: Web-Course dissertation
To: preilaj@pr.cc.va.us, prhudss@pr.cc.va.us, prjobir@pr.cc.va.us,
prlevib@pr.cc.va.us, proechn@pr.cc.va.us, prspei@pr.cc.va.us,
prwengd@pr.cc.va.us
Cc: brcookg@pr.cc.va.us, sumags
X-Mailer: Worldtalk (NetTalk for Windows NT 4.4-g6)/MIME

Dear Pleasant River Colleagues,

I am still here at Virginia Tech working on my Ph.D. in Instructional Technology. I have finished my course work and am doing an internship here at New River. Currently, I am getting ready to begin my study for my dissertation on Web-based Courses in the Community College. I am looking for four community college professors who will let me use their students as respondents in my study. What I am proposing to do is to interview four students from these Web-based courses three times in the semester. These students will also be asked to keep a simple checklist of the times they go on the Web for your course as well as any problems they may encounter. I will also ask all the students in the four classes chosen to fill out questionnaires three times a semester. I will design the questionnaires so as not to repeat questions you already have them answer when they sign up for your classes, for example, "How fast is your modem." The focus of the study will not cover course content. I am more concerned with logistics (for example download time), how the students organize their work/home/family time in order to take a Web-based course, interface issues, and so on. The students' replies will have to be anonymous; however, you will be entitled to a copy of the final results. This is a qualitative study, not a survey based study; the questionnaires are designed to assess how the students have adjusted to Web-based courses throughout the semester. I have my prospectus exam in January where I will outline the study in excruciating detail. If you choose to participate, you will also be given a copy of the prospectus if you want. If any of you are interested in having your classes participate in this study, please let me know. I will get started the first week of Spring classes. I know that you are all busy with end of the semester work; however, if you could let me know whether or not you are interested as soon as you can, I would really appreciate it. If you have any other questions, I will be happy to give you any more information that I can.

Thank you very much and have great holiday. PLEASE REPLY TO BOTH OF MY ADDRESSES (nrharbj@nr.cc.va.us & jharbeck@vt.edu). THANKS
Julia Harbeck

Appendix C: Informed Consent-Instructors

Name of Project: Community College Students Taking Web-based Courses

Investigators: Julia Harbeck, Dr. Susan Magliaro (chair)

I. The Purpose of this Research/Project:

The purpose of this study is to record and analyze the experiences students encounter while taking a Web-based courses offered at two community colleges in Virginia.

I am not intent on make a decision as to whether or not Web-based instruction is good or bad for community college students, rather I want to describe their experiences related to taking a Web-based course at a community college so that researchers and educators alike have a clearer picture than what currently exists in the literature about students' Web-based encounters. I plan to investigate their attitudes towards education and Web-based instruction as well as logistical and technical concerns when taking a Web-based course. In a traditional classroom, the teacher, administrator, instructional designer, and others can see these students at work and talk with them in person about relevant issues. Students studying at a distance, however, are in a black box since they are rarely seen studying or interacting with the on-line course. In order to make valid instructional decisions, I think it is important to determine what they are doing and how they interact with this delivery mode.

To determine what they are doing and how they are interacting with an on-line course, students in three Web-based courses will be asked to fill out three similar but not identical questionnaires throughout the course of the semester. Nine volunteers (three from each class) will be interviewed, observed, and asked to fill in a daily checklist.

II. Procedures:

questionnaires:

Students will be asked to answer three short questionnaires throughout the course of the semester. The questionnaires will be sent to the students via email from the researcher's account, not the instructor's. The students will have an electronic week (Sunday through Saturday) to answer the questions and send them back to the researcher. The questions will focus on issues such as, How much time does the student spend on time a day/week? What problems has the student had accessing or using the on-line course? Were these problems solved? and How? What would the student like to see changed in the way this course is designed? What does the student think should remain the same? What has the student learned about the computer since the last time he/she answered one of these questionnaires?

Interviews:

I will meet with the respondents at a place and time of their choosing, preferably where they usually work on the computer, and I would like to audio record the interview. The interview may last about an hour. I will ask questions which cover the respondent's experiences with the Web-based courses. Sample questions might include, What does the student see as a benefit of taking an on-line course? What are the drawbacks of this type of instruction?

Observations:

During the interview I may ask the students to use the computer to show me how they access the on-line course and any technical problems they might have.

Daily Checklist:

The interviewees will be asked to keep a simple checklist whenever they log on to the computer. On the checklist, they will mark the time they log on and off, problems they encountered with the computer, and how/if they solved them. The student will also be asked to keep track of the number of times he or she is interrupted by outside agents such as children, spouses, significant others, pets, phone calls, and so on.

III. Risks:

There are no risks associated with this research other than those that might occur in every day living.

III. Benefits of the Project:

- The students will probably not see any immediate benefits from this project; however, they will be helping me to examine and learn about designing and supporting Web-based courses.
- Future Web-based course instructors, designers, administrators, and, most importantly, other students will benefit from the respondents' participation in this project.
- By signing this consent form, the student will attest that I have made no promises or guarantees of benefit in order to entice them to participate in the study.
- The student may contact me at a later date for a summary of my research findings.

IV. Extent of Anonymity and Confidentiality:

- All information is kept confidential; pseudonyms and composites will be used to mask the respondent's identity. The name of any identifying towns, colleges, or geographical features will be changed or omitted. At no time will I release the results of the study without to anyone other than individuals working on the project without the student's written consent.
- Audio tapes will be under my possession at all times. They will be stored in my home either in Blacksburg or Harrisonburg and labeled using random numbers for identification. For example, a questionnaire might be coded, Student # 100896b. Students will be identified by a random number, not by name. In the final study, the random number will be replaced by a "John" or "Jane" Doe pseudonym.
- Even with the above safeguards in place, I cannot guarantee complete anonymity; however, confidentiality will be protected to the best of my ability.
- At no time during the extent of the study will the instructor have access to the data from the questionnaires. He or she does have a right to see the final results, which will be available in December, 1999. However, since pseudonyms and random numbers are being used, it is highly unlikely that an instructor will be able to identify a specific student.

V. Compensation:

The student will receive no compensation for participating in this study.

VI. Freedom to Withdraw:

Students are free to withdraw from this study at any time without penalty. If a student chooses to withdraw, he/she will not be penalized by loss of points or grades. They do not have to answer any questions they don't want to.

VII. Approval of Research:

This research has been approved, as required, by the Institutional Review Board for Research Involving Human Subjects at Virginia Polytechnic Institute and State University, by the Department of Teaching and Learning in the College of Human Resources and Education.

VIII. Subject's Permission:

I have read and understood the Informed Consent and conditions of this project. I have had all of my questions answered. I hereby acknowledge the above and give my voluntary consent for participation in this project.

If I participate, I may withdraw at any time without penalty. I agree to abide by the rules of this project.

Your Signature: _____

Signature Date: _____

Should you have any questions about this research or its conduct, you can contact:
Julia Harbeck, Investigator, at 540-552-2058
Dr. Susan Magliaro, Faculty Member, 540-231-5598
H.T. Hurd, IRB director, 540-231-5281

Revised 12/31/98

Appendix D: Explanation of Study to be Sent to PRCC Students

Hello,

I am a doctoral candidate in Instructional Technology at Virginia Tech. My dissertation is about Web-based courses in the community college. Your instructor has agreed to let me ask you for your participation. Your participation is NOT mandatory; I just want to let you know what the study is about, and if you are interested in helping out, I'd greatly appreciate it.

The benefits of your participation in this study are that you will be helping me to examine and learn more about designing and supporting Web-based courses. In addition future Web-based course instructors, designers, administrators, and, most importantly, other students will benefit from your participation in this project.

First, I would like to send you a questionnaire three times this semester. The questions will be about things like, "How much time do you spend on-line?" "What problems have you had accessing the Web-based course?" and "What is the benefit of taking an on-line course?" Each questionnaire will be a little bit different than the one before. I am sending the questionnaire out three times (in the beginning, middle, and end) of the semester to see if your opinions or experiences change. All of your replies will be strictly confidential. Your instructor will not have access to your questionnaires until December 1999. Your names will not be used; instead, I will use random numbers and pseudonyms.

If you are interested in completing the questionnaire, please read the attached Informed Consent contract and email your agreement to me at jharbeck@vt.edu. All you need to do is email me saying that you read the Informed Consent contract and that you understand and agree to the terms. I know this seems like a lot of red-tape; however, these are the steps I must go through in order to protect your confidentiality and to ensure Virginia Tech that I am conducting a reputable study.

I also need two volunteers from each of your classes to allow me to interview them three times in the semester so that I can get a closer look at how this Web-based course works. I am especially interested in finding out about the experiences of single mothers or fathers; however, any input would be valuable. If you are interested in being interviewed, please email me at jharbeck@vt.edu as soon as possible.

Thank you very much for your time and your consideration. Your participation will make a difference in the development of Web-based courses in the future.

Thanks,

Julia Harbeck

Appendix E: Informed Consent: Questionnaire

Name of Project: Community College Students Taking Web-based Courses

Investigators: Julia Harbeck, Dr. Susan Magliaro (chair)

I. The Purpose of this Research/Project:

The purpose of this study is to record and analyze the experiences you encounter while taking a Web-based courses offered at a community college in Virginia.

I am not intent on make a decision as to whether or not Web-based instruction is good or bad for community college students, rather I want to describe your experiences related to taking a Web-based course at a community college so that researchers and educators alike have a clearer picture than what currently exists in the literature about your Web-based encounters. I plan to investigate your attitudes towards education and Web-based instruction as well as logistical and technical concerns when taking a Web-based course. In a traditional classroom, the teacher, administrator, instructional designer, and others can see you at work and talk with you face-to-face about relevant issues. Students studying at a distance, however, are in a black box since we rarely see you studying or interacting with the on-line course. In order to make valid instructional decisions, I think it is important to determine what you are doing and how you interact with this delivery mode.

To determine what you are doing and how you are interacting with an on-line course, you will be asked to fill out three similar but not identical questionnaires throughout the course of the semester

II. Procedures:

questionnaires:

You will be asked to answer three short questionnaires throughout the course of the semester. The questionnaires will be sent to you via email from my account, not your instructor's. You will have an electronic week (Sunday through Saturday) to answer the questions and send them back to me. The questions will focus on issues such as, How much time do you spend on time a day/week? What problems have you had accessing or using the on-line course? Were these problems solved? and How? What would you like to see changed in the way this course is designed? What do you think should remain the same? What have you learned about the computer since the last time you answered one of these questionnaires?

III. Risks:

There are no risks associated with this research other than those that might occur in every day living.

IV. Benefits of the Project:

- You will probably not see any immediate benefits from this project; however, you will be helping me to examine and learn about designing and supporting Web-based courses.
- Future Web-based course instructors, designers, administrators, and, most importantly, other students will benefit from your participation in this project.

- By signing this consent form, you attest that I have made no promises or guarantees of benefit in order to entice you to participate in the study.
- You may contact me at a later date for a summary of my research findings.

V. Extent of Anonymity and Confidentiality:

- All information is kept confidential; pseudonyms and composites will be used to mask your identity. The name of any identifying towns, colleges, or geographical features will be changed or omitted. At no time will I release the results of the study without to anyone other than individuals working on the project without your written consent.
 - Audio tapes will be under my possession at all times. They will be stored in my home either in Blacksburg or Harrisonburg and labeled using random numbers for identification. For example, your questionnaire might be coded, Student # 100896b. You will be identified by a random number, not by name. In the final study, the random number will be replaced by "John" or "Jane" Doe pseudonym.
- Even with the above safeguards in place, I cannot guarantee complete anonymity; however, confidentiality will be protected.
- At no time during the extent of the study will the instructor have access to the data from the questionnaires. He or she does have a right to see the final results, which will be available in December,1999. However, since pseudonyms and random numbers are being used, it is highly unlikely that an instructor will be able to identify a specific student.

VI. Compensation:

You will receive no compensation for participating in this study.

VII. Freedom to Withdraw:

You are free to withdraw from this study at any time without penalty. If you are a student and choose to withdraw, you will not be penalized by loss of points or grades. You do not have to answer any questions you don't want to.

VIII. Approval of Research:

This research has been approved, as required, by the Institutional Review Board for Research Involving Human Subjects at Virginia Polytechnic Institute and State University, by the Department of Teaching and Learning in the College of Human Resources and Education.

IX. Subject's Permission:

I have read and understood the Informed Consent and conditions of this project. I have had all of my questions answered. I hereby acknowledge the above and give my voluntary consent for participation in this project.

If I participate, I may withdraw at any time without penalty. I agree to abide by the rules of this project.

Your Signature: _____

Signature Date: _____

Should you have any questions about this research or its conduct, you can contact:

Julia Harbeck, Investigator, at 540-552-2058

Dr. Susan Magliaro, Faculty Member, 540-231-5598

H.T. Hurd, IRB director, 540-231-5281

Revised 12/31/98

Appendix F: Informed Consent-Interviews

Name of Project: Community College Students Taking Web-based Courses

Investigators: Julia Harbeck, Dr. Susan Magliaro (chair)

I. The Purpose of this Research/Project:

The purpose of this study is to record and analyze the experiences you encounter while taking a Web-based courses offered at a community college in Virginia.

I am not intent on make a decision as to whether or not Web-based instruction is good or bad for community college students, rather I want to describe your experiences related to taking a Web-based course at a community college so that researchers and educators alike have a clearer picture than what currently exists in the literature about your Web-based encounters. I plan to investigate your attitudes towards education and Web-based instruction as well as logistical and technical concerns when taking a Web-based course. In a traditional classroom, the teacher, administrator, instructional designer, and others can see you at work and talk with you face-to-face about relevant issues. Students studying at a distance, however, are in a black box since we rarely see you studying or interacting with the on-line course. In order to make valid instructional decisions, I think it is important to determine what you are doing and how you interact with this delivery mode.

To determine what you are doing and how you are interacting with an on-line course, you will be asked to participate in three interviews and observations throughout the course of the semester and keep a simple daily log of your activities.

II. Procedures:

The primary methods of data collection will be through in-depth interviews, informal observations, and student maintained checklists. In addition to participating in the interviews, you will also be asked to keep daily checklists of when you log on, what problems you encounter, how you solved the problems, and so on. I will also ask you to show me how you access the course on the computer and how you work with technical problems in order to make informal observations of your computer interactions

Interviews:

I will meet with you at a place and time of your choosing, preferably where you usually work on the computer, and I would like to audio record our interview. The interview may last about an hour. I will ask questions which cover your experiences with the Web-based courses. Sample questions might include, What do you see as a benefit of taking an on-line course? What are the drawbacks of this type of instruction?

Observations:

During the interview I may ask you to use the computer to show me how you access the on-line course and any technical problems you might have.

Daily Checklist:

You will be asked to keep a simple checklist whenever you log on to the computer. On the checklist, you will mark the time you log on and off, problems you encountered with the computer, and how/if you solved them. You will also be asked to keep track of the number of times you are interrupted

by outside agents such as children, spouses, significant others, pets, phone calls, and so on.

III. Risks:

There are no risks associated with this research other than those that might occur in every day living.

IV. Benefits of the Project:

- You will probably not see any immediate benefits from this project; however, you will be helping me to examine and learn about designing and supporting Web-based courses.
- Future Web-based course instructors, designers, administrators, and, most importantly, other students will benefit from your participation in this project.
- By signing this consent form, you attest that I have made no promises or guarantees of benefit in order to entice you to participate in the study.
- You may contact me at a later date for a summary of my research findings.

V. Extent of Anonymity and Confidentiality:

All information is kept confidential; pseudonyms and composites will be used to mask your identity. The name of any identifying towns, colleges, or geographical features will be changed or omitted. At no time will I release the results of the study without to anyone other than individuals working on the project without your written consent.

- Audio tapes will be under my possession at all times. They will be stored in my home either in Blacksburg or Harrisonburg and labeled using random numbers for identification. For example, your questionnaire might be coded, Student # 100896b. You will be identified by a random number, not by name. In the final study, the random number will be replaced by a "John" or "Jane" Doe pseudonym.
- Even with the above safeguards in place, I cannot guarantee complete anonymity; however, confidentiality will be protected.
- At no time during the extent of the study will the instructor have access to the data from the questionnaires. He or she does have a right to see the final results, which will be available in December, 1999. However, since pseudonyms and random numbers are being used, it is highly unlikely that an instructor will be able to identify a specific student.

VI. Compensation:

You will receive no compensation for participating in this study.

VII. Freedom to Withdraw:

You are free to withdraw from this study at any time without penalty. If you are a student and choose to withdraw, you will not be penalized by loss of points or grades. You do not have to answer any questions you don't want to.

VIII. Approval of Research:

This research has been approved, as required, by the Institutional Review Board for Research Involving Human Subjects at Virginia Polytechnic Institute and State University, by the Department of Teaching and Learning in the College of Human Resources and Education.

IX. Subject's Permission:

I have read and understood the Informed Consent and conditions of this project. I have had all of my questions answered. I hereby acknowledge the above and give my voluntary consent for participation in this project.

If I participate, I may withdraw at any time without penalty. I agree to abide by the rules of this project.

Your Signature: _____

Signature Date: _____

Should you have any questions about this research or its conduct, you can contact:

Julia Harbeck, Investigator, at 540-552-2058

Dr. Susan Magliaro, Faculty Member, 540-231-5598

H.T. Hurd, IRB director, 540-231-5281

Revised 12/31/98

Appendix G: Questionnaires

Questionnaire #1

In order to answer these questions you have two options, you can click “reply” on your email program and fill in the answers and then send them back to me. Another option is to copy these questions into a word processing program, write your answers, and then either send this back to me as an attachment using your email program, or copy it back into a message to send it to me as a regular email message. If you do not know how to do any of these things, please email me at jharbeck@vt.edu and we can make other arrangements.

Please answer the following questions as thoroughly as you can. Even though your answers are strictly confidential, you don’t have to answer any questions that you don’t want to. Again, I greatly appreciate your participation in this study. If you have any questions, feel free to email me at the above address.

Thanks!

Course Related Issues

1. Why did you choose to take an on-line course as opposed to an on-site course?
2. What concerns do you have about taking an on-line course?

Academic/Study Issues

1. If you are using a computer located in your home, will family, friends, or work related issues provide distractions?
2. How would you rate yourself as a student? Fair (C-D’s), average (C-B’s), good (B’s-A’s), excellent (all A’s).
3. Do you work better in groups or alone?

Technical Issues

1. Where is the computer you plan to use located?
2. How fast is the modem you are using? 14.4? 28.8? 36.6? 56?
3. What Internet Service Provider are you using? (for exp. AOL, ATT WorldNet)
4. How would you rate your computer experience? Beginner, intermediate, advanced.
5. How often do you use email now?
6. How often do you surf the Internet now?

Wrap-Up

1. Is there anything you would like to add that these questions have not addressed?

Questionnaire #2

As in the questionnaire you replied to earlier in the semester, you have two options to use in order to send your answers back to me. First, you can click “reply” on your email program and fill in the answers and then send them back to me. Another option is to copy these questions into a word processing program, write your answers, and then either send this back to me as an attachment using your email program, or copy it back into a message to send it to me as a regular email message. If you do not know how to do any of these things, please email me at jharbeck@vt.edu and we can make other arrangements.

Please answer the following questions as thoroughly as you can and remember that your replies are kept confidential. However, you don't have to answer any questions that you don't want to. Your replies to the previous questionnaire were very helpful, thanks again!

Course Related Issues

1. Now that you are halfway through the semester, were any of your concerns about taking an on-line course well founded?
2. Have any new concerns arisen?
3. At this stage in your course work, what would you say is the greatest benefit of taking an on-line course?
4. At this stage in your course work, what would you say is the greatest drawback of taking an on-line course?
5. At this point, would you take another on-line course if it was appropriate for your situation?

Academic/Study Issues

1. How is your work/family life adapting to your taking an on-line course? Or is your course work suffering as a result of work/family issues?
2. Do you feel that you are learning the required material as well as you would if you were taking an on-site course? Why or why not?

Technical Issues

1. Have you had any technical problems? How did you solve these problems?
2. Are you using email, a listserv, or a chat room to communicate with your instructor or class members? If so, how often?

Wrap-Up

1. Is there anything you would like to add that hasn't been covered by these questions?

Questionnaire #3

This is the last questionnaire and I want to thank you for your participation. Your answers will be used to help design and develop other Web-based courses. If you have trouble sending these answers back to me, please email me at jharbeck@vt.edu and we can make other arrangements. The final results of your replies will be compiled throughout this summer and upcoming fall. If you would like a copy of the results, email me at the above address, and I will send you a copy.

Please answer the following questions as thoroughly as you can and remember that your replies are kept confidential. However, you don't have to answer any questions that you don't want to.

Course Related Issues

1. What were the benefits of taking an on-line course?
2. What were the drawbacks of taking an on-line course?
3. Did this course require more or less work than would be required in an average on-site course? Why?

Academic/Study Issues

1. Were you able to minimize outside distractions?
2. Did you meet or work with anyone from your class?
3. What grade do you think you will get in this class? Is this the grade you expected to make in this class?

Technical Issues

1. Have your computer skills improved or stayed the same by taking an on-line course?
2. Have you learned any computer skills or acquired any computerized habits (like surfing the Net) that will continue after this course is concluded?
3. When did you usually go on-line? About how much time did you spend on-line a day?
4. Do you still have the same computer access that you had at the beginning of the semester?

Wrap-Up

1. Is there anything you would like to add that is not covered in these questions?
2. How would you like to see the answers to these questionnaires used in the future?

Appendix I: Demographic Questions

These questions will be asked prior to the first interview in order to gather some basic demographic information.

1. Is the respondent single, married, divorced, widowed?
2. How old is the respondent?
3. How long has it been since he/she has taken a class or been in an educational setting?
4. Does the respondent have children. If so how many, what ages.
5. If the respondent has children, is there someone to help with childcare?
6. Does the respondent work? Full time? Part time?
7. What is the respondents program of study?
8. Is he/she a full time or part time student?
9. What is the respondent's previous educational experience?
10. What is the respondents home phone number and address?

Appendix J: Interview List of Questions

Interview #1

These questions will be used as guidelines, but not necessarily strictly followed. Some answers may overlap. If a line of inquiry begins that is not covered by these questions, but which seems important to my research questions, I will follow that line of inquiry.

Course Related Issues

1. Why did you choose to take an on-line course as opposed to an on-site course?
2. Have you ever taken a Web-based course before? How was that experience?
3. If you had a choice, say childcare, transportation, time etc, would you rather take a course on-line or at the community college? Why?
4. What are your concerns about taking this class?

Academic/Study Issues

5. If you are using a computer located in your home, will family, friends, or work related issues provide distractions?
6. How do you feel about yourself as a learner?
7. How would you rate yourself as a student? Fair (C-D's), average (C-B's), good (B's-A's), excellent (all A's).
8. Do you prefer to work with others or alone? Why?

Technical Issues

9. How often do you use email now?
10. How often do you surf the Internet now?
11. Do you work better in groups or alone?
12. Do you have 24 hour access to a computer?
13. How fast is the modem you are using? 14.4? 28.8? 36.6? 56?
14. What Internet Service Provider are you using? (for exp. AOL, ATT WorldNet)
15. Do you have a lot of experience using the computer?
16. Do you know how to use email, a word processing program, the Internet? If not, how do you plan to learn?
17. What will/do you do if you have technical problems?

Wrap-Up

18. Is there anything you would like to add that we have not addressed?

Interview #2

I imagine that a good number of the questions for the second interview will grow out of the discussion from the first interview.

Course Related Issues

1. How is the class going for you up to this point?
2. Now that you are halfway through the semester, were any of your concerns about taking an on-line course well founded?
3. Have any new concerns arisen?
4. At this stage in your course work, what would you say is the greatest benefit of taking an on-line course?
5. At this stage in your course work, what would you say is the greatest drawback of taking an on-line course?
6. At this point, would you take another on-line course if it were appropriate for your situation?

Academic/Study Issues

7. How do you feel about yourself as a “cyberstudent”?
8. How is your work/family life adapting to your taking an on-line course? Or is your course work suffering as a result of work/family issues?
9. Do you feel that you are learning the required material as well as you would if you were taking an on-site course? Why or why not?

Technical Issues

10. Have you had any technical problems? Were you able to solve them?
11. Are you gaining confidence in your abilities as a computer user?
12. Are you using email, a listserv, or a chat room to communicate with your instructor or class members? If so, how often?

Wrap-Up

13. Is there anything you would like to add that haven't covered so far?

Interview #3

The interview questions will arise out of issues raised in the previous interviews. The following are some sample questions that might be asked.

Course Related Issues

1. What were the benefits of taking an on-line course?
2. What were the drawbacks of taking an on-line course?
3. Did this course require more or less work than would be required in an average on-site course? Why?
4. Do you think you will sign up for another on-line course? Why or why not?

Academic/Study Issues

5. Were you able to minimize outside distractions?
6. Did you meet or work with anyone from your class?
7. What grade do you think you will get in this class? Is this the grade you expected to make in this class?

Technical Issues

8. Have your computer skills improved or stayed the same by taking an on-line course?
9. Have you learned any computer skills or acquired any computerized habits (like surfing the Net) that will continue after this course is concluded?
10. When did you usually go on-line? About how much time did you spend on-line a day?
11. Do you still have the same computer access that you had at the beginning of the semester?

Wrap-Up

12. Is there anything you would like to add that is not covered in our discussion?
13. How would you like to see your interview responses used?
14. Why did you agree to let me interview you?

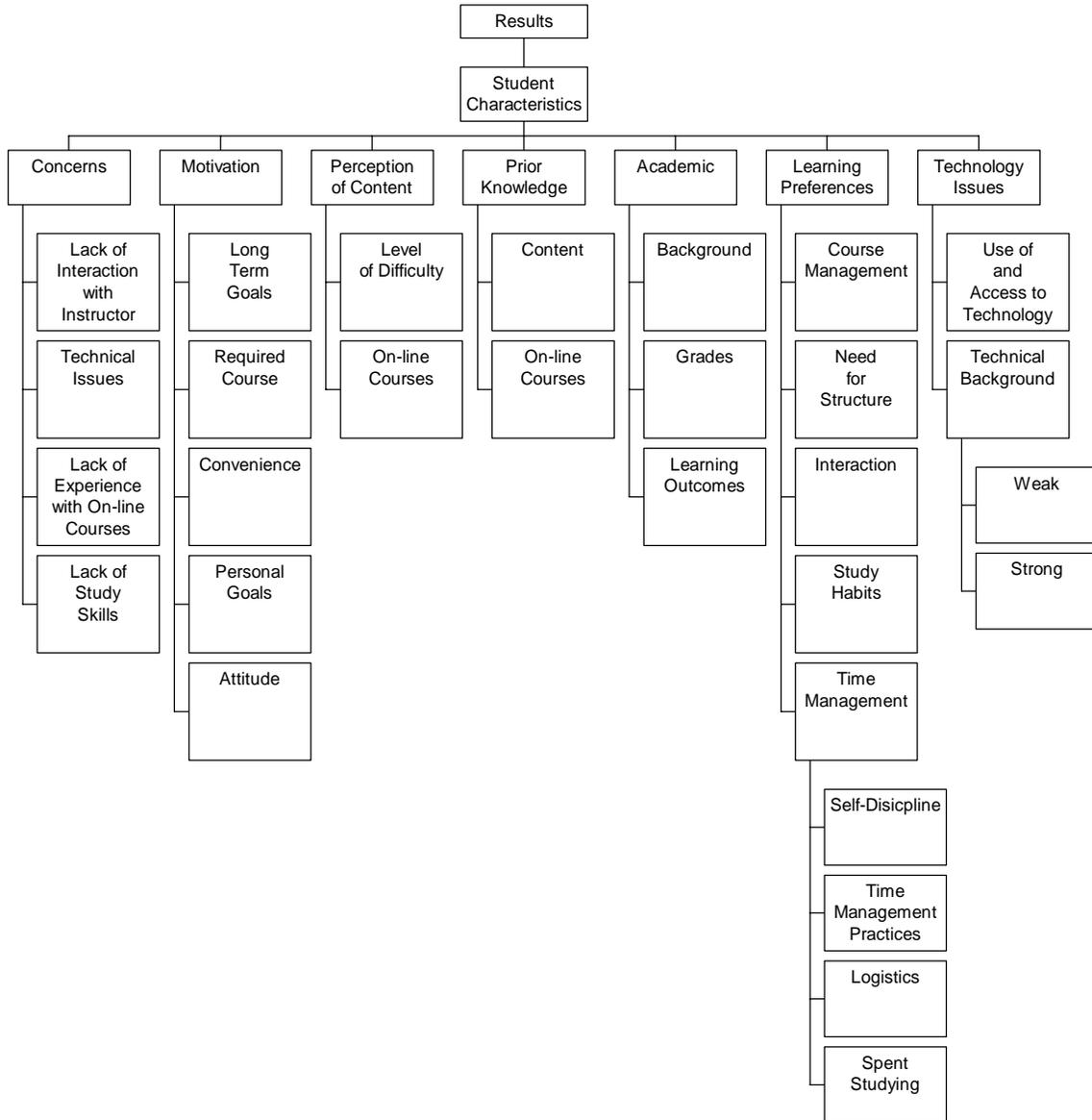
Appendix K: Outline of Categories and Properties

Main headings are categories and subheadings refer to properties

- I. Interpersonal Support
 - a. Physical Space
 - b. Dimensions of Support
 - c. Support from Employer
 - d. Support from Family
- II. Student Characteristics
 - a. Concerns
 - i. Lack Of Interaction
 - ii. Technical concerns
 - iii. Lack Of Experience Taking An On-Line Course
 - iv. Lack of study skills
 - b. Motivation
 - i. Long term goals
 - ii. Required courses
 - iii. Convenience
 - iv. Personal Goals/Interests.
 - v. Attitude
 - c. Perception of Content
 - i. Level of Difficulty
 - ii. Level of interest
 - d. Prior Knowledge
 - i. Of content
 - ii. Of on-line courses
 - e. Academic
 - i. Academic background
 - ii. Grades
 - iii. Learning outcomes
 - f. Learning Preferences
 - i. Time Management
 - ii. Course Management
 - iii. Need for Structure
 - iv. Interaction
 - v. Study Habits
 - g. Technological Issues
 - i. Use of and Access to Technology
 - ii. Strong Technical Skills
 - iii. Weak technical skills
- III. Course Issues
 - a. Properties Inherent to on-line Courses
 - i. Convenience
 - ii. Printable
 - iii. Novelty
 - iv. Lack of live interaction

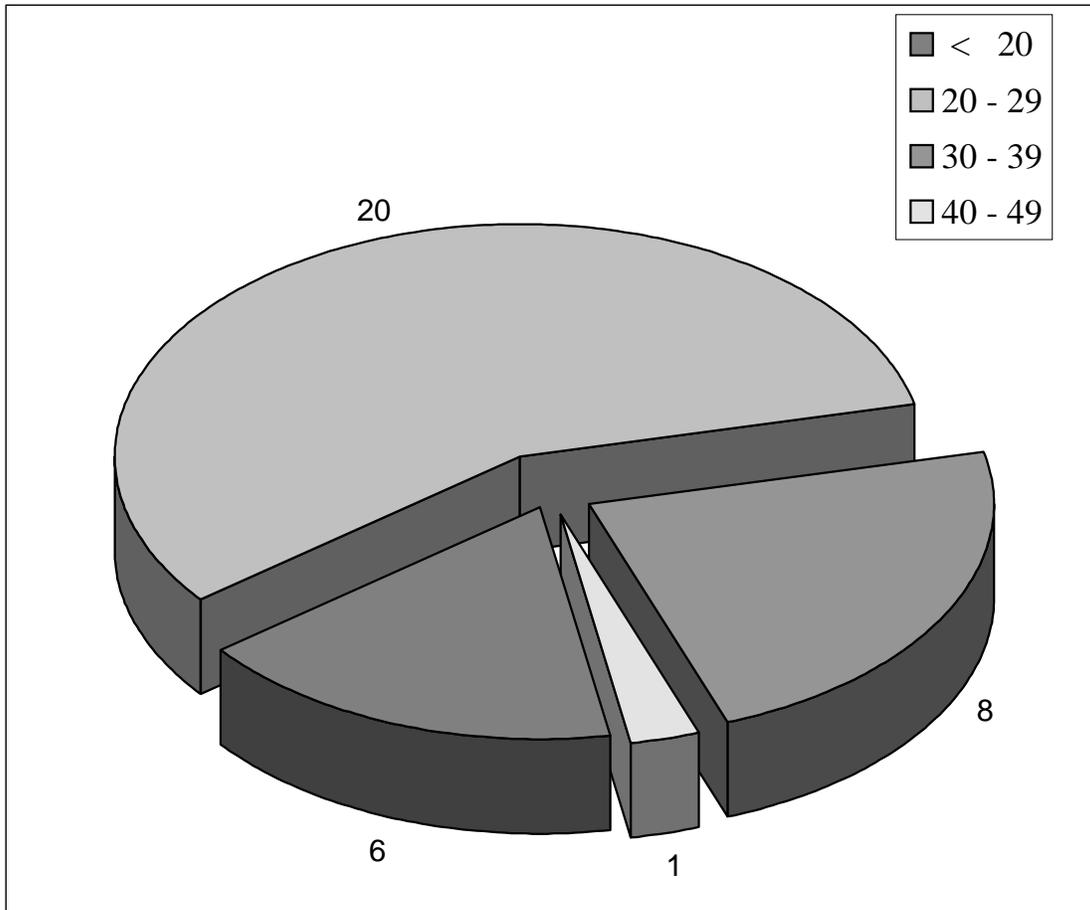
- v. Student autonomy
 - b. Variable Properties of On-line Courses
 - i. Discussion boards
 - ii. Assignment submission
 - iii. Web resources
 - iv. Assessments
 - c. Instructor-to-student Interaction
 - i. Positive reports of instructor interaction.
 - ii. Negative reports of instructor interaction.
 - iii. Profile of an exemplary on-line course.
- IV. Infrastructure
 - a. Technical Problems
 - i. hardware
 - ii. software
 - iii. ISP/Modem
 - iv. Course Related
 - b. Technical Support
 - c. Student Suggestions
 - i. Institutional issues
 - ii. Instructor/Course issues.
 - iii. Suggestions for Students

Appendix L: Categories and Properties of Student Characteristics



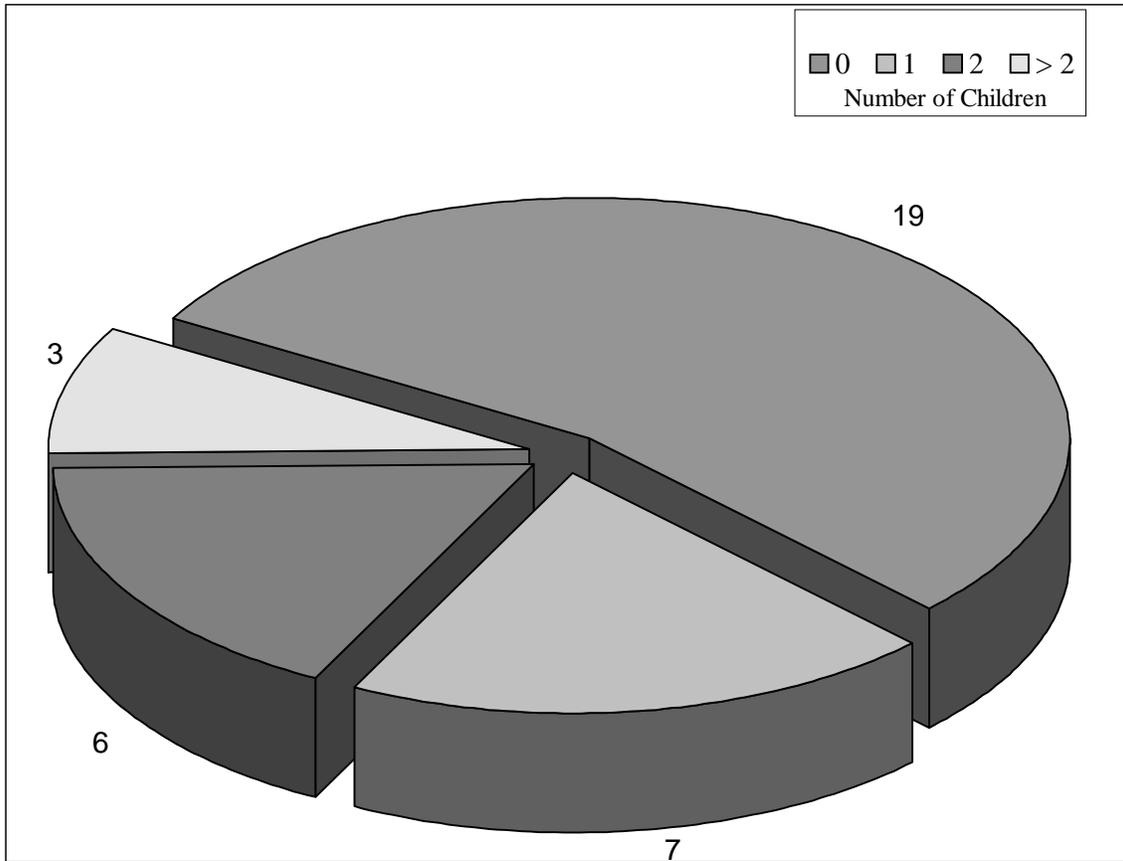
Appendix M: Participants by Age Group

<u>Group</u>	<u>Number</u>	<u>Percentage</u>
< 20	6	17.1%
20 - 29	20	57.1%
30 - 39	8	22.9%
40 - 49	1	2.9%



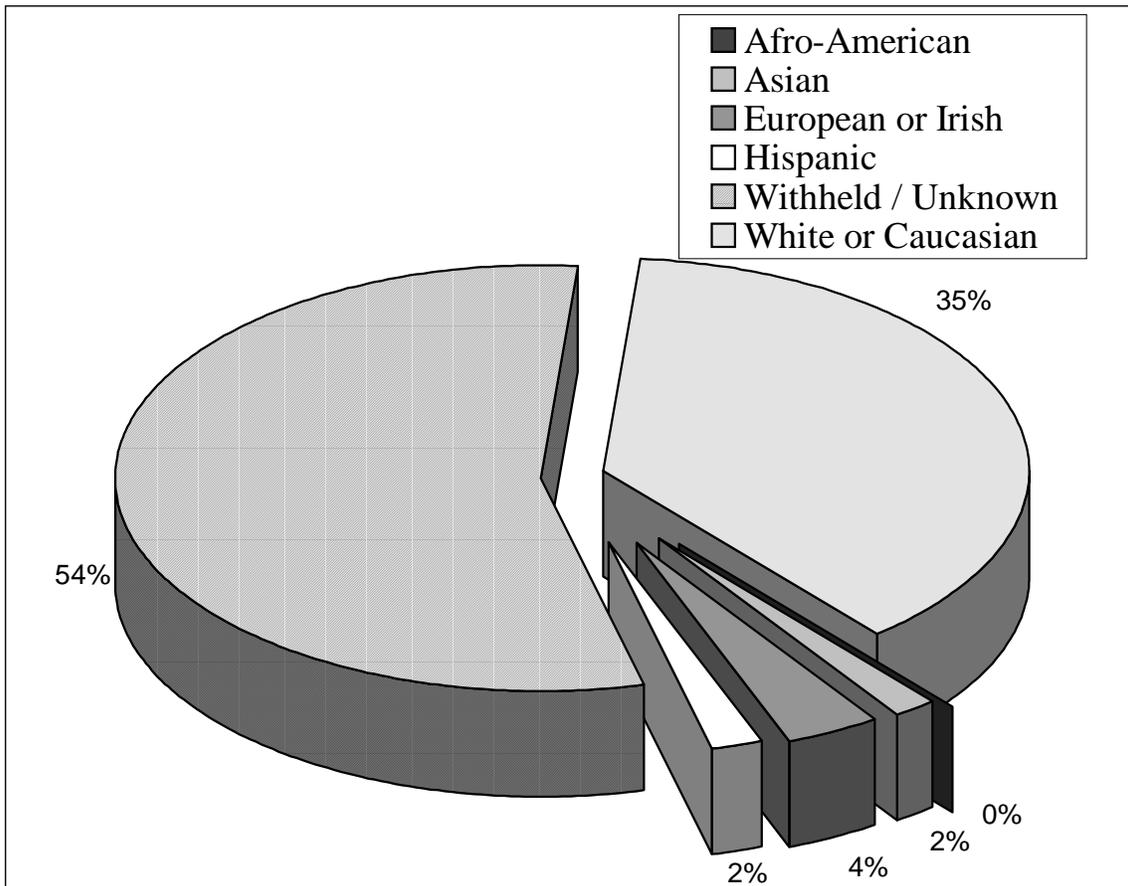
Appendix N: Number of Children

<u>Children</u>	<u>Participants</u>	<u>Percentage</u>
0	19	54.3%
1	7	20.0%
2	6	17.1%
> 2	3	8.6%



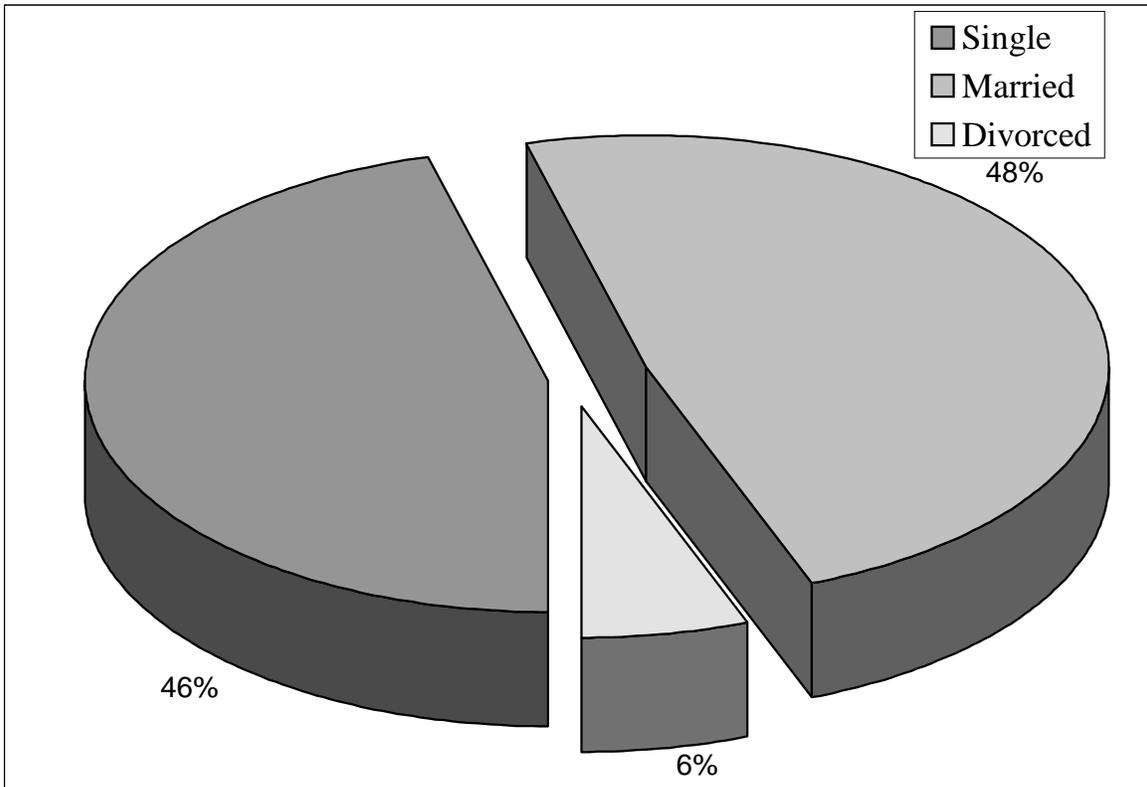
Appendix O: Ethnicity

<u>Ethnicity</u>	<u>Participants</u>	<u>Percentage</u>
Afro-American	0	0.0%
Asian	1	1.8%
European or Irish	2	3.6%
Hispanic	1	1.8%
Withheld / Unknown	31	55.4%
White or Caucasian	21	37.5%



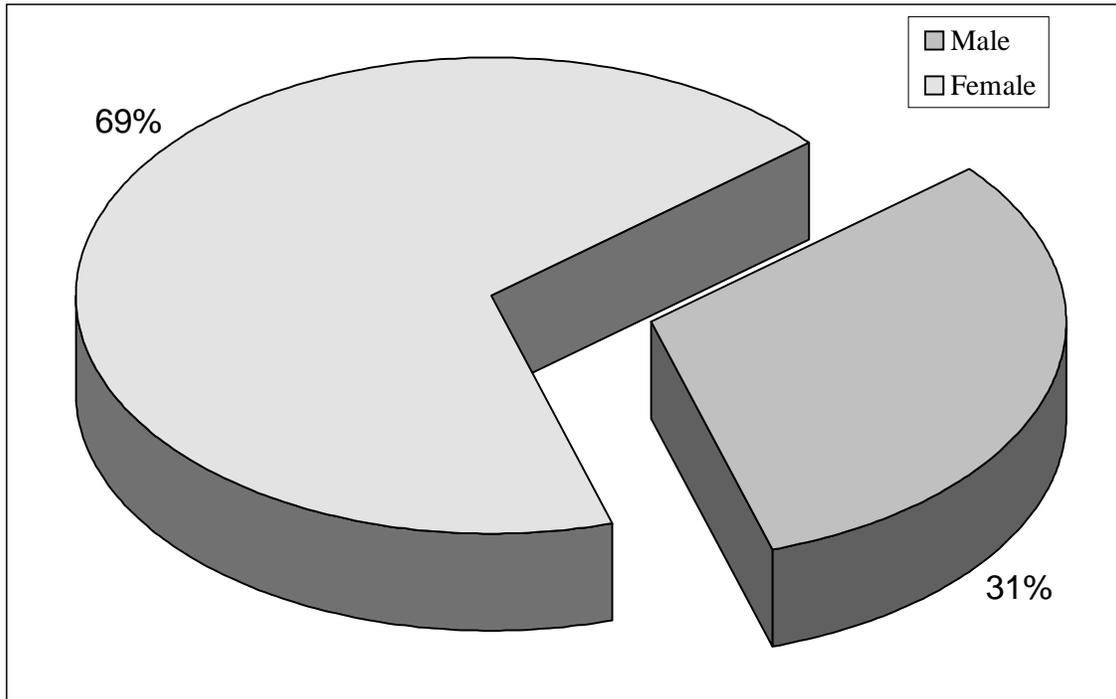
Appendix P: Marital Status

<u>Status</u>	<u>Participants</u>	<u>Percentage</u>
Single	16	45.7%
Married	17	48.6%
Divorced	2	5.7%



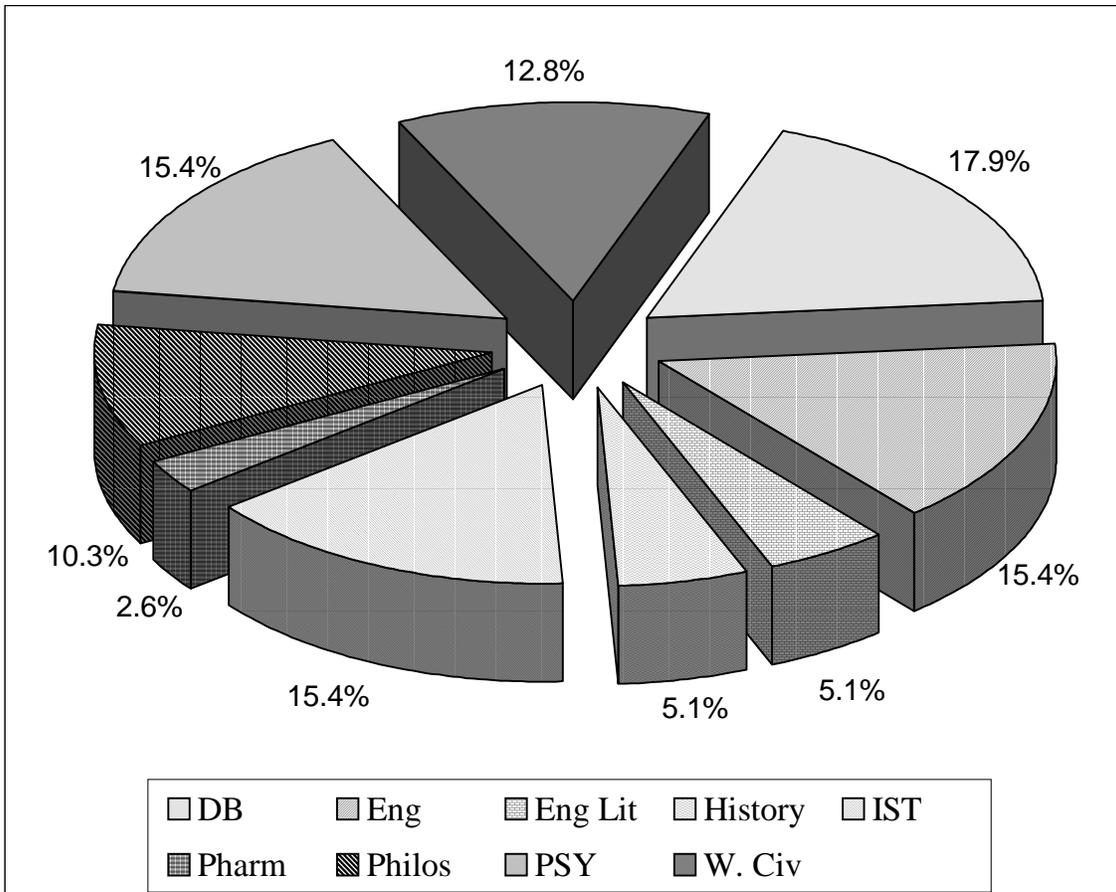
Appendix Q: Gender

<u>Gender</u>	<u>Participants</u>	<u>Percentage</u>
Male	11	31.4%
Female	24	68.6%



Appendix R: Courses Taken

<u>Course</u>	<u>Participants</u>	<u>Percentage</u>
Database	7	9.5%
English Literature	6	8.1%
English	2	2.7%
History	2	2.7%
Information Systems	6	8.1%
Pharmacology	1	1.4%
Philosophy	4	5.4%
Psychology	6	8.1%
Western Civilization	5	6.8%



GLOSSARY

Adobe Acrobat Reader[®]: Software allows the user to view and print Adobe Portable Document Format (PDF) files on all major computer platforms, as well as fill in and submit PDF forms on-line. Instructors may put large documents on-line in PDF format that can only be read if students have Adobe Acrobat Reader on their computers. This is a free download from the Internet

<http://www.adobe.com/products/acrobat/readermain.html>

Asynchronous Communication: Interaction between 2 or more people that is not at the same time, for example, the time when students interact can be delayed by hours, days, or weeks. email is an asynchronous forms of distance learning. The opposite is synchronous communication, such as talking on the phone or videoconferencing.

Category: A collection of concepts. Categories are developed when the concepts they contain are related to each other (Strauss & Corbin, 1990).

Centra Symposium: Centra Symposium is a synchronous and asynchronous delivery system. Its strength is in the real time audio-conferencing capabilities

<http://www.centra.com/products/symposium/info.asp>

Chat: Synchronous electronic communication system such as Instant Messaging[™] or ICQ[™] (I Seek You), where individuals use text to communicate with one another in real time.

Coding: The process of highlighting any phenomenon, labeling it, and based on patterns of data, putting it into categories (Strauss & Corbin, 1990).

Computer conferencing-Using discussion boards, chats, email, or any other kind of electronic means to interact asynchronously or synchronously with others.

Constructivism: The perspective which examines the way people as individuals or together construct the “social and psychological” worlds in which they live (Schwandt, 1997, p. 19).

Cybercourse (cyberclass, cyberstudent, cybercollege etc.): PRCC calls its on-line program a “cybercollege” and affixes the term “cyber” to any noun referring to the on-line program.

Discussion boards: A discussion board is a general term for any on-line "bulletin board" where students and instructors post and reply to messages electronically.

http://whatis.techtarget.com/WhatIs_Search_Results_Exact/1,282033,,00.html?query=discussion+board]

Distance Education/Learning: "The process of extending learning or delivering instructional resource-sharing opportunities, to locations away from a classroom, building or site, to another classroom building or site, by using video, audio, computer multimedia communications, or some combination of these with other traditional delivery methods" (Instructional Telecommunications Council, 1998).

Distance learning system: Combination of technologies to support interactive teaching and learning in a time-and-space independent environment. (Chute, Thompson, & Hancock, 1999).

Domain: The general or supra-ordinate organizational structure under which categories and properties with related characteristics are organized. For example, if fruits is the domain, citrus fruits would be a category under this domain.

Electronic Café/ Cyber Café: Using a discussion board or real-time chat in order to communicate with others rather than meeting face-to-face in a real café or coffee shop.

F2F: Commonly used abbreviation to indicate Face-to-face, personal, physical communication in real time.

Favorites/Bookmarks: Using a World Wide Web browser, a bookmark is a saved link to a Web page that has been added to a list of saved links. When a user is linked to a Web site or and wants to be able to quickly get back to it later, he or she can create a bookmark for it.

http://whatis.techtarget.com/WhatIs_Definition_Page/0,4152,211688,00.html

Flaming: On the Internet, flaming is making humiliating or rude comments in any form of electronic communication such as a chat or a discussion board. Flaming is considered to be in bad taste and against rules of netiquette.

HTML (HyperText Markup Language): HTML (Hypertext Markup Language) is the set of markup symbols or codes inserted in a file intended for display on a World Wide Web browser page

http://whatis.techtarget.com/WhatIs_Definition_Page/0,4152,212286,00.html

Helper Application: Program used to access sound and video programs. These applications run as a separate application and require that a second window be opened.

http://whatis.techtarget.com/WhatIs_Definition_Page/0,4152,212800,00.html

Instant Messaging: A type of communications service that enables you to create a private chat room with another individual. Typically, the instant messaging system alerts you whenever somebody on your private list is on-line. You can then initiate a chat session with that particular individual.

http://webopedia.internet.com/TERM/i/instant_messaging.html

Internet Service Provider (ISP): a company that provides individuals and other companies access to the Internet and other related services such as Web site building and virtual hosting. An ISP has the equipment and the telecommunication line access required for the geographic area served.

http://whatis.techtarget.com/WhatIs_Definition_Page/0,4152,214028,00.html

Multimedia: Refers to a combination of audio, video, and/or computer technologies that provide a range of expression and experience.

On-line: Being in direct communication with a remote computer or computer system, thus enabling communication and/or transfer or exchange of information.

On-line/ Web-based course: An on-line course is defined for the PRCC study as a class delivered entirely on-line with little to no face-to-face interaction between the instructor and students or students with other students.

Phenomenon: “The central idea, event, happening, incident about which a set of actions or interactions are directed at managing, handling, or to which the set of actions is related” (Strauss & Corbin, 1990, p. 96).

Plug-in: Plug-in applications are programs that can easily be installed and used as part of your Web browser to play sound or motion video or performed other functions. A plug-in application is recognized automatically by the browser and its function is integrated into the main HTML file that is being presented.

Among popular plug-ins to download are Adobe's Acrobat, a document presentation and navigation program that lets you view documents just as they

look in the print medium.

http://whatis.techtarget.com/WhatIs_Definition_Page/0,4152,212800,00.html

Random Access Memory: the place in a computer where the operating system, application programs, and data in current use are kept so that they can be quickly reached by the computer.

http://whatis.techtarget.com/WhatIs_Definition_Page/0,4152,214255,00.html

Scheduled and non-scheduled interviews: Refers to standardized interviews where a common set of questions is asked of all interviewees. Scheduled interviews ask the same questions in the same order; whereas non-scheduled interviews ask the same questions, but not necessarily in the same order (Briggs, 1986).

Standardized and non-standardized interviews: Standardized interviews are those which follow a discrete set of questions that do not vary from interviewee to interviewee. Non-standardized interviews do not follow a common set of questions (Briggs, 1986).

Synchronous communication: An interaction between individuals or groups that occurs at the same time, that is, with no appreciable delay between the end of one message and the beginning of another. Face-to-face, telephone, and video teleconference conversations are synchronous.

Time and Space Independent: Refers to learning situations which can occur regardless of the time or place. On-line courses are time-and-space independent because the students can access their class at any time from anyplace as long as they have an Internet connection.

Uniform Resource Locator: A URL (Uniform Resource Locator) is the address of a file (resource) accessible on the Internet.

http://whatis.techtarget.com/WhatIs_Definition_Page/0,4152,213251,00.html

Web form: An e-form (electronic form) is a computer program version of a paper form.

http://whatis.techtarget.com/WhatIs_Definition_Page/0,4152,212039,00.html

Web site: A location on the World Wide Web that is accessed when the computer connects to a site's Internet address (URL). Web sites are repositories of information about a specific topic, institution, organization, person, place, or thing.

World Wide Web (WWW): Also known as the Web. A virtual library of video, audio, and textual data and information stored on the computers of the Internet. These data are accessible to anyone with a modem, a personal computer, a way of connecting to the Internet (through a private or public Internet Service Provider), and a computer application program or “software” called a browser designed to allow a person to explore Web resources.

JULIA DEDRICH HARBECK

Education

Aug 1996-Jan 2001 *VIRGINIA POLYTECHNIC INSTITUTE AND STATE UNIVERSITY*

Major: Curriculum and Instruction (Instructional Technology)

Advisor: Dr. Susan G. Magliaro

Degree: Doctor of Philosophy in Education

Aug 1986-July 1990 *JAMES MADISON UNIVERSITY*

Major: Reading Specialist

Advisors: Dr. Shirley Merlin, Dr. Laurie Nelson-Gill

Degree: Masters of Education

Aug 1982-Dec. 1984 *JAMES MADISON UNIVERSITY*

Major: English

Advisor: Dr. Jay Funston

Degree: Masters Degree in English

Aug 1978-May 1982 *JAMES MADISON UNIVERSITY*

Major: English

Advisor: Dr. Robert Hoskins

Degree: Bachelors of Arts: English, Summa Cum Laude

Teaching Experience

- May 1999-August 1999 *Adjunct Professor*, Blue Ridge Community College
P.O. Box 80, Weyers Cave, Virginia
Taught one section each of English Composition I and II. Incorporated word processing and Internet assignments into lessons.
- Aug 1998-May 1999 *Graduate Teaching Assistant*, Department of Teaching and Learning, Virginia Tech, Blacksburg, Virginia
Taught Foundations of Educational Psychology 3154 for pre-service teachers as well as psychology majors. Researched, organized, and presented lectures and activities for juniors and seniors. Also evaluated their work. Taught two sections per semester while working on doctorate.
- Aug 1990-May 1996 *Assistant Professor*, Blue Ridge Community College, Weyers Cave, Virginia
In addition to teaching five courses, participated on various committees. Helped to research and write the Strategic Directions Plan 1995-2000. An early adopter in using computer technology (such as PowerPoint) to supplement lectures and class discussion. In the early 1990's, held classes in the computer labs and taught students the basics of word processing programs so they could write their English compositions on the computer. Took part in Internet and Pagemaker workshops sponsored by Title III grant.
- Aug 1987-May 1990 **English Teacher**, *Fort Defiance High School, Fort Defiance, Virginia*
Taught three sections of tenth grade college preparatory English courses as well as two sections of remedial English for students with reading disabilities. Incorporated computer technology into remedial classes when possible. Fort Defiance's primarily rural student body consists of a diverse range of socio-economic backgrounds.

Aug 1985-May 1986 *Volunteer, Reading Tutor*, Spotswood Elementary School

Volunteered twice a week at a local elementary school planning and implementing lessons working with a small group of third graders with reading disabilities.

Aug 1985-May 1986 *Graduate Assistant*, Undergraduate supervisor, James Madison University, Harrisonburg, Virginia

While obtaining an M.Ed. in Reading, supervised approximately 40 undergraduate education majors taking a reading practicum. The undergraduates were dispersed among four elementary schools where they were responsible for preparing and administering two reading lesson plans a week for children with reading problems. Visited each elementary school weekly to monitor the children's progress as well as review the undergraduates' lesson plans and monitor their tutoring sessions. Also worked in the reading lab at James Madison University where I administered diagnostic reading tests, tutored, and wrote case studies for elementary aged children. Used Apple computers and educational reading software with the children at the lab.

Jan. 1985-May 1985 *Adjunct English Instructor*, James Madison University, Harrisonburg, Virginia

Taught three sections of freshman English. Responsible for researching, planning, administering, and evaluating lessons for approximately 75 students.

Aug 1982-Dec. 1984 *Teaching Assistant*, James Madison University, Harrisonburg, Virginia

While obtaining M.A. in English, taught two sections of Freshman English per semester. Had sole responsibility for researching, planning, administering, and evaluating lessons for approximately 50 students.

Related Experience

- Jan. 2000-present *Instructional Technologist*, James Madison University, Harrisonburg, Virginia
Develop online materials, convert traditional materials for online delivery using BlackBoard. Project manager for 8 technology projects. Design instruction and layout for stand alone as well as distance learning projects. Instruct faculty in the use of technology in the classroom
- May 1999-Jan. 2000 *Assistant Instructional Technologist*, Blue Ridge Community College
P.O. Box 80, Weyers Cave, Virginia
Assisted faculty in the use of technology in the class as well as in distance learning. Help faculty use technology in adapting existing courses and in developing new courses. Worked with faculty who had technical questions pertaining to software packages as well as hardware issues. Answer questions for students taking on-line courses. Set up and troubleshoot compressed video courses transmitted via VTEL.
- August 1998-May 1999 *Internship*, New River Community College, Dublin, Virginia
Assisted with distance learning orientation, converted faculty handbook for use on-line, and worked with faculty using Web-Course in a Box to put their courses on-line. Also assisted with VTEL classroom.
- May 1998-August 1998 *Administrative Assistant*, Institute of Distance and Distributed Learning, Virginia Tech, Blacksburg, Virginia
Assisted in Faculty Development Institute distance learning track. Presented workshops on VTEL and Zydacron two way interactive video systems, Symposium, Netmeeting, and on-line courses. Helped to develop

webpages for department of distance learning.

August 1996-May 1998 *Graduate Assistant, Housecalls*, Department of Teaching and Learning, Virginia Tech, Blacksburg, Virginia

Worked with faculty and staff in upgrading and troubleshooting Macintosh computer problems. Assisted students in Education Technology Lab with Macintosh computer use and software application. Taught basic computer workshops for faculty and staff on both Macs and PCs.

Related Projects

- Spring 2000 Toolbook II Assistant: 3 hours workshop, New Horizons Workshop
- Spring 2000 Active Server Pages: 6 hour Workshop, James Madison University, Center for Instructional Technology
- Spring 1999 Using WebCourse-in-a-Box, assisted sociology professor in converting his existing course to an on-line course.
- Spring 1999 Volunteered with the Science and Gender Equity (SAGE) of Western Virginia. Daylong workshop to encourage middle school girls' involvement in science and technology.
- Spring 1998 Interviewed 4 and 2 year faculty and distance learning administrators about on-line courses. Wrote ethnographic study based on the interviews.
- Fall 1997 In advanced instructional design course, researched, wrote, and published a paper on designing Web-sites for young children.
- Spring 1997 Independent study to redesign college level developmental psychology course to be delivered on-line.
- Spring 1997 Using FrontPage, developed a tutorial for community college students on how to write the research paper.
- Summer 1997 Assisted and instructed college professors in a weekend workshop sponsored by the Appalachian College Association.

- Fall 1996 Using Media 100, shot and produced video on the African American History of Savannah, Georgia
- Fall 1996 Assisted and instructed K-12 teachers in basic computer applications for 30 hour workshop.

Research

Dissertation: Community College Students Taking On-line Courses. This study is a qualitative examination of community college students' experiences taking on-line courses. The study addresses the research question, "How do community college students construct their on-line experiences?" In order to answer this question, the following foci were examined: What are the characteristics of students taking online courses?, Why are they taking on-line courses?, What are facilitative or debilitating dimensions or features that promote or inhibit success in on-line courses?, and, How does the community college infrastructure support students taking web-based courses?

Publications

Harbeck, J.D. & Schweizer, M. (1998). *The Forest from the Trees: Writing the Research Paper. Proceedings of the Mid-South Instructional Technology Conference.* Discusses the process of developing a tutorial for adult learners in the community college. The tutorial provides step-by-step guidance in how to write the research paper. Covered hazards of faculty taking on large technology projects as well as the benefits.

Harbeck, J.D. & Sherman, T. (1999) *Seven Principles for Designing Websites for Young Children. Educational Technology, 39* (4). Discusses the lack of research on whether or not Internet use is developmentally appropriate for young children. Provides seven principles for instructional designers developing Web pages for young children.

Harbeck, J.D. & Sherman, T. (2000) *Seven Principles for Designing Websites for Young Children. Diskurs*. In Press. Updated and abridged version of previous article focusing on seven principles for instructional designers developing Web pages for young children.

Web-Based Tutorial

Harbeck, J.D. & Schweizer, M. (1998). *The Forest from the Trees: Writing the Research Paper*. An interactive Web-based tutorial designed to introduce adult learners in the community college setting to the fundamentals of writing research papers, including: topic refinement, library research skills, and correct bibliographic citation.

Conference Presentations

- EDUCAUSE (October 2000): Partnering to Train Professional Workforce Educators
- Virginia Institute for Lifelong Learning (VAILL) (July 2000): Preparing Workforce Educators Online
- New Horizons: Virginia Community College System (April 2000): On-line Courses from a Student Point of View. Presentation of dissertation findings.
- First Regional Teaching Learning Technology Conference (April 2000): On-line Courses from a Student Point of View- Presentation of dissertation findings.
- New Horizons: Virginia Community College System (April 1998): The Forest From the Trees: How to Write the Research Paper. Demonstration of the tutorial.
- Mid-South Instructional Technology Conference (MSIT) (April 1998): The Forest From the Trees: How to Write the Research Paper. Demonstration of the tutorial.
- Eastern Educational Research Association (EERA) (February 1998): Designing Web-sites for Young Children.
- New Horizons Virginia Community College System (April 1997): Developing a Tutorial: A Faculty Member's Point-of-View.

Conferences Attended

VITA (Virginia Instructional Technologists Association) 1999

PIDT (Professors of Instructional Design and Technology) 1998; 2000

New Horizons (Virginia Community College Technology Conference) 1996, 1997, 1998;
2000; 2001

MSIT (Mid-South Instructional Technology Conference) 1998

EERA (Eastern Educational Research Association) 1997, 1998

Certifications

Fundamentals for Supervisors: Center for Public Policy, Virginia Commonwealth
University (December 2000)

Professional Affiliations

American Educational Research Association (AERA)

Association for Educational Communications and Technology (AECT)

American Association of University Women (AAUW)

Virginia Instructional Technology Association (VITA)