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The purpose of this study was to determine if differences existed in sense of classroom community for computer-mediated instruction (CMI) students in terms of learning style (defined as a preference for independent/individualistic or social/cooperative learning). Differences in sense of social community were investigated, as well as differences in sense of learning community. Differences in sense of classroom community were also investigated in terms of gender, age group, and extent of previous successful CMI experience. In addition, the study sought to identify any differences that existed in learning style preference with respect to gender, age, and previous successful CMI experience.

An online survey consisting of 52 questions was provided to a population of 616 students enrolled in 49 CMI courses offered by a rural community college in the southeastern United States. The survey embodied the Learning Preference Survey for Students (LPSS) to measure learning style preference, the Classroom Community Scale (CCS) to quantify perception of social and learning community, and several demographic questions. The 360 useable responses resulted in a 58.4% return rate. To provide a point of triangulation for the quantitative survey and to identify pertinent patterns and themes which might clarify or expand the quantitative data, telephone interviews were conducted with 20 of the survey respondents, ten representing extremely independent learners and ten representing highly social learners, as measured by the LPSS.

Using scores from the two subscales of the LPSS, participants were separated into four learning style preference groups: (1) highly independent, low social learners (HILS), (2) highly social, low independent learners (HSLI), (3) learners who expressed strong preference for elements of both learning styles (HIHS), and (4) learners who expressed low preference for elements of both learning styles (LILS). Membership in one of these four learning style preference groups constituted the first independent variable in the study. Other independent variables were gender, age group, and experience with CMI. Dependent variables were sense of social community and sense of learning community from scores on the CCS subscales. Learning style preference scores on the two LPSS subscales also acted as dependent variables in determining their correlations and relationships with age, gender, and previous experience with CMI.

The combined results of the quantitative and qualitative methods of this study suggested that not only was there a significant difference in the perception of social community in the CMI environment by learners possessing different learning preferences but, also that the perception was a self-fulfilling phenomenon. These CMI learners perceived the social community which they themselves created by their own actions – actions which developed out of their own personal learning preferences. Quantitative data also revealed no significant difference in perception of learning community among learning style preference groups. Qualitative themes also reinforced satisfaction with the learning taking place and overall satisfaction with CMI by the sample population.

Other significant findings were the lack of any indication of gender difference in perception of social community in CMI, and the lack of a female proclivity for social

learning. Females in this sample also displayed a significantly higher perception of learning community than their male counterparts. No differences in social or learning community were revealed based on ethnicity or previous experience with CMI, but non-traditional aged students (26+) displayed a significantly higher sense of learning community than traditional aged college students (18-25). However, no direct correlation between age and learning style preference was discovered. Neither was there an indication of any relationship between learning style preference and previous experience with CMI. Themes extracted from the telephone interviews suggested a strong preference for a high degree of structure in the CMI curriculum, copious and timely instructor feedback, and flexibility in assignment due dates.

LEARNING STYLE PREFERENCE, SENSE OF CLASSROOM COMMUNITY, GENDER, AGE, AND PREVIOUS EXPERIENCE WITHIN COMPUTER-MEDIATED INSTRUCTION (CMI)

by

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Approved by

_____
Committee Chair

To my wife Margaret who has stood by me through my long and sometimes torturous educational advancement, and through countless other obstacles which I would have never surmounted without her tireless love and support.

APPROVAL PAGE

This dissertation has been approved by the following committee of the Faculty of The Graduate School of The University of North Carolina at Greensboro.

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CHAPTER I

INTRODUCTION

Background of the Study

Learning theories such as that of Dunn and Dunn (1978) suggest that an individual's learning style depends on multiple dimensions including environmental, emotional, sociological, cultural, and psychological characteristics. Optimal learning is dependent upon the correct interaction of these multiple dimensions, at any given time.

Other learning theorists, such as Schmeck and Geisler-Brenstein (1991) and Gregorc (1979), contend that optimal learning depends primarily on the cognitive processes of the individual, which are developed over time as a result of life experiences. DeBello (1990) further asserts that these cognitive processes eventually will predispose the learner to a particular learning style.

A definition of learning style was adopted by a national task force, comprised of leading theorists in the field and sponsored by the National Association of Secondary School Principals. This group defined "learning style" as the composite of characteristic style dimensions; cognitive, affective, and physiological that serve as relatively stable indicators of how a learner perceives, interacts with, and responds to the learning environment. The task force accepted the following definitions of the three style dimensions: *cognitive styles* – information processing habits which represent a person's typical mode of perceiving, thinking, remembering, and problem-solving; *affective*

styles – motivational processes viewed as the learners' typical modes of arousing, directing, and sustaining behavior, and *physiological styles* – biologically based modes of response established in gender-related differences, personal nutrition and health, and accustomed reactions to the physical environment (Keefe, 1979).

Over the past 30 years, a body of scholarly research has accumulated within the learning literature, involving computer-mediated instruction (CMI) that addresses several cognitive/psychological characteristics which are linked to a broader concept of either an independent/individualistic or a social/cooperative learning style. These studies have investigated the effects of components of independent/individualistic versus social/cooperative learning styles on CMI participants' actual and perceived learning success and overall satisfaction with the learning experience. These studies can, with some latitude, be placed in three general categories: (a) *field dependence/independence,* (b) *locus of control,* and (c) *self-directed/self-regulated learning readiness.*

The cognitive model of field dependence/independence as originally put forth by Witkin et al. (1977) is perhaps the element of independent/individualistic learning style which has received the most attention in both traditional and computer-mediated instruction (CMI) environments. Hofstede (1997) professed a similar concept in his paradigm of individualism versus collectivism, more specifically defined as the extent to which individual or group needs and interests dominate. Witkin et al. (1977) defined the tendency to rely primarily on "internal referents" as being field-independent and the tendency to rely consistently upon "external referents" as being field-dependent. Table 1.1 presents a general cognitive style comparison between field-dependent and field-

independent individuals. Triandis (1995) expanded on these concepts to identify three chief attributes upon which field independents (individualists) and field dependents (collectivists) differ: (a) conception of self, wherein individualists define self as an autonomist entity independent of the group psyche, and collectivists define self in terms of group connectedness; (b) goal relationships wherein personal goals take priority for individualists, as opposed to collectivists who subordinate these to group goals; and (c) relative importance of attitudes and norms, wherein social behavior for individualists is more likely to be driven by their own beliefs, values and attitudes, while those of collectivists are more likely steered by social norms, responsibilities, and obligations.

Table 1.1

Cognitive Style Comparison.

Field-Dependent Characteristics	**Field-Independent Characteristics**
Perceive elements as a part of a total picture	Perceive elements as discrete from their background
Do best on verbal tasks	Do best on analytic tasks
Learn material which has a human social content and which is characterized by fantasy and humor	Learn material that is inanimate and impersonal more easily
Performance influenced by authorizing figure's expression of confidence or doubt	Performance not greatly affected by the opinions of others.
Style conflicts with traditional school environment	Style matches up with most school environments

Notes: From Sanchez & Gunawardena (1998), adapted from Anderson (1988).

Locus of control refers to the source of an individual's motivation to participate in and positively address life tasks. That motivation can be derived from internal or external resources. A person with an internal locus of control believes that the outcomes of events are contingent upon his or her own actions or behaviors. In contrast, an external locus of control results in a person's perception of outcomes as being controlled by luck, fate, the manipulations of others, social forces, the natural environment, supernatural forces or any other factor not subject to his or her control (Rotter, 1966).

Knowles (1975) described the self-directed learner (also often referred to as the self-regulated learner) as one with the ability to assess their own learning needs, develop learning goals, identify and locate resources for learning, select and implement effective learning strategies and evaluate their own learning outcomes. Lee and Gibson (2003), extrapolating from the work of several authorities in the field, suggested three dimensions which constitute the self-directed learner: (a) the ability of the student to exert control or self-management of the learning situation, (b) self-monitoring, or the ability of the student to critically reflect on his or her own work, and (c) a willingness on the part of the student to assume responsibility for the success or failure of his/her own learning. Schunk (2004) expressed a similar concept when he suggested that self-directed students have the ability to identify, choose and generate their own motives for learning. A necessary predicator and component of a self-directed learner is the presence of *self-efficacy*, which is the belief of individuals that they have the inherent ability to succeed at a learning task and therefore the competency for self-direction in the achievement of that task (Hargis, 2001).

As previously mentioned, a common thread which runs through research and dialogue about field independence, internal locus of control, and self-directed/self-regulated learning readiness is a linkage between these factors and an independent/individualistic learning style and concurrent success and satisfaction with CMI.

If one relates the benefit of independent/individualistic learning style to success and satisfaction in CMI, one must logically infer that those who possess a social/cooperative learning style may be faced with obstacles to success and satisfaction if they perceive a lack of social presence in their CMI experience. A body of research in the professional literature has also addressed this postulate. The concepts of *social interaction* and *social presence* in CMI have been followed in the literature since distance education research began to be taken seriously by the academic community in the mid- to late-1980s.

Early studies in this area dealt less with the examination of affective factors and social atmosphere influencing the computer-mediated learner, and more with the measurement and analysis of the types and quantity of information exchanged in the CMI experience. This more mechanistic perspective was heavily influenced by Moore (1989) who provided a powerful conceptual framework for studying interaction in CMI. He identified three distinct types of interaction within the paradigm: (a) *learner- instructor*, (b) *learner- learner*, and (c) *learner- content*. Hillman, Willis and Gunawardena (1994) pointed out that, for any of Moore's three types of interaction to take place, the learner must first interact with the communications medium. They, therefore, proposed a fourth

distinct category of interaction within the CMI paradigm; that of learner-interface interaction (Hillman, Willis & Gunawardena, 1994).

Studies in social interaction, such as those listed above, made it apparent to researchers that the social environment in CMI was more than a sum of it's individual interactive components; a more complex and holistic phenomenon than merely a collection of postings and chat threads, no matter how carefully categorized and analyzed. Shin (2002) stressed that in order to understand the totality of what is going on in the CMI, one must realize that, in this , as in all instructional paradigms, the process consists of more than just transmission and exchange of information, it is deeply dependent on relationships.

Several researchers of CMI have borrowed the psychological concept of *social presence* to expand the perspective of social interaction in CMI to include relationships and other affective factors. Short, Williams, and Christie (1976), in their seminal treatise on the social psychology of telecommunications, defined social presence as "the degree of salience of the other person in the interaction and the consequent salience of the interpersonal relationships…" (p.65). Gunawardena and Zittle (1997) and Shin (2002; 2003) defined social presence from a narrower social/relational group perspective. Gunawardena and Zittle (1997) equated social presence with a perception of "immediacy," i.e. the psychological distance that a communicator places between himself or herself, and the objects of communication. Shin (2003) expanded the concept of immediacy into a broader model of interaction which he termed *transactional presence*

(TP). TP is defined as "the degree to which a [computer-mediated learner] senses the availability of and connectedness with, each party (in the educational process)" (p. 69).

Rovai (2002b) fused previous research and theory in the areas of social interaction and social presence to develop the comprehensive concept of "sense of classroom community" as

> "a feeling that members have of belonging, a feeling that members matter to one another and to the group, that they have duties and obligations to each other and to the school, and that they possess shared expectations that members' educational needs will be met through their commitment to shared learning goals. One can, therefore, define sense of classroom community as consisting of two components: *sense of social community*; feelings of connectedness among community members and *sense of learning community*; feelings that common learning expectations and goals exist and are being met" (p.322).

Although applicable to all learning within group situations, Rovai's model has been most often applied, by both the author and other researchers, to virtual cohorts in CMI.

Statement of the Problem

Both learning style preference and sense of classroom community have been found to exert a strong influence on computer-mediated learners' actual and perceived success and satisfaction with their learning experience. However, to this author's knowledge, no study exists which has attempted to establish any connection between learning style preference and sense of classroom community. The present mixed-methods study will attempt to fill this void in the literature by determining whether a connection exists between learning style preference and sense of classroom community. The concept of sense of classroom community will be measured in line with the dual

component model of social community and learning community put forth by (Rovai, 2002b), while learning style will be measured as a preference either for independent/individualistic learning or for social/cooperative learning.

Purpose of the Study

The purpose of this study is to determine if any significant differences exist in sense of classroom community, within our sample population, based upon the categorization of that population into groups delineated by their learning style preference (measured as independent/individualistic or social/cooperative style). In addition, this study attempts to identify any significant differences in sense of classroom community which may exist within the sample population, based upon the categorization of that population into groups delineated by gender, age and successful CMI experience. This interest, in part, is in response to findings by (Rovai, 2001, 2002b; Savicki et al.,1996; Wolfe, 1999) which indicated that females require a higher-level of classroom community for optimal comfort and learning in CMI, while differences based on age and experience with CMI will be tested, as a supplement to existing research. Finally this study will seek to determine whether any correlations exist, within the sample population, between learning style preference and gender, and learning style preference and previous successful CMI experience. These inquiries will be made as a supplement to research by (Herring, 1998, Savicki et al., 1996, Wolfe, 1999, Barrett & Lilly, 1999, Belenky et al., 1986, Blum, 1999) which identified a preference by female members of CMI cohorts for social connectedness and group-based learning, and the work of Thompson and Knox

(1987) and Ching (1996), which suggested that experience with CMI may skew a student's learning style toward a more independent/individualistic approach.

Research Questions

Standardized survey instruments and semi-structured interviews will provide the basis for the investigation of the following central research questions:

1. Do significant differences in sense of social community exist between groups categorized by learning style preference?
2. Do significant differences is sense of learning community exist between groups categorized by learning style preference?
3. Do significant differences in sense of social community exist between groups categorized by gender, age and previous successful CMI experience?
4. Do significant differences in sense of learning community exist between groups categorized by gender, age and previous successful CMI experience?
5. What correlation, if any, exists between age and learning style preference?
6. Do significant differences in learning style preference exist between groups categorized by gender?
7. Do significant differences in learning style preference exist between groups categorized by the extent of previous successful CMI experience?

Assumptions

The theoretical framework adopted for this study is allied with those learning theorists who consider learning style preference to be, in large part, an inherent set of cognitive, affective, and psychological traits that, regardless of the learning situation, predispose an individual to process information in a certain way. This position does not, in any way, dismiss the effects of social and cultural variables on the development of learning style preference. However, this study restricts its scope to the end product of these causal factors, i.e. a student's resultant learning style preference, not those factors which may have engendered it. Furthermore, this study accepts the many inferences provided in the literature indicating that independent/individualistic learning style preference is linked with the cognitive/psychological factors of field independence, internal locus of control and self-directed/self-regulated learning readiness, while social/cooperative learning style preference is more closely aligned with field dependence, external locus of control, and group-regulated learning preference.

Cited references in this study have used various terminologies to identify the learning situation in which a student is connected to his or her instructor, peers, and course content via a computer-mediated instruction (CMI) interface. Terminology encountered has included distance learning, asynchronous learning, online learning, e-learning, web-based learning and numerous combinations of the above. This study takes the position that the major factor which is unique to all of these terminologies, and most descriptive of the learning process taking place, is the presence of a networked computer environment which links the people and elements of the learning experience together, in

lieu of face-to-face interaction. For this reason, this study considers all studies addressing the topics mentioned above to be subsumed within the category of computer-mediated instruction (CMI) environments.

Limitations of the Study

Limitations of this proposed study are, as follows:

1. The study was limited to a single community college in North Carolina and therefore findings may not be generalizable to other populations.
2. All instructors used the same computer-mediated instruction interface (BlackBoard) and a set of common guidelines for course structure and implementation provided to them by the college. Also, many part-time instructors used the same course which had been designed by full-time instructors. Although the college attempts to offer consistency in computer-mediated instruction, different instructors may integrate disparate levels of interactivity into their courses. This may have influenced the study's findings but, as these students provided a total perspective on their CMI experience at the college and most had taken multiple courses with multiple instructors, the impact of this limitation was weakened within the relatively large sample.
3. As this was a voluntary survey, a certain level of self-selection was active in the final makeup of the sample population. The feelings, opinions, and perspectives presented in this study may reflect a skew determined by the attitudes of those who chose to respond versus those who chose not to respond.

4. A concerted effort was made to assure the participants' anonymity in their responses. However, it is possible that anxiety about reprisals from the instructor or institution, and the general "halo effect" which has been identified in many surveys, may motivate the student to provide answers that he or she believes the researcher wants to hear. Focused interviews in the qualitative phase of this study are intended, in part, to ascertain the severity of this effect.

Significance of the Study

A preference for independent/individualistic learning as beneficial to success and satisfaction in various forms of technology-mediated learning has been a maxim of educators since the early days of postal-based correspondence study (Holmberg, 1989). Kember's (1995) two-dimensional model of open learning argued that success in computer-mediated instruction is related to the ability of learners to move towards a more independent, self-directed style of learning. Keegan (1990) characterized the nature of CMI programs as teacher-independent and based on the students' ability to direct his/her own studies, while Moore (1972) believed that learner autonomy is particularly important in CMI; also that with advanced technology, learners will decrease their interdependence with the instructor (Moore, 1994), and that, within the past two decades, the increasing development of CMI can be attributed to the discovery of self-directed learning (Moore, 1987). Schuemer (1993) suggested that a high degree of self-discipline, self-organization, and self-planning are essential elements of computer-mediated learner

success, while McVay (1999) insisted that potential computer-mediated learners need to be independent, self-directed and able to set their own goals and manage their own time.

Rovai (2002b) suggested that sense of community can have a positive effect on student persistence in non-traditional learning environments such as CMI. Tinto (1975; 1993) supported this position when he argued that students who possess strong feelings of community are more likely to persist than students who feel alienated and alone. He goes on to stress that any instructional strategy which serves to strengthen sense of community in the classroom, will consequently help increase retention. Although Tinto's observations were directed primarily at the traditional learning environment, his theory of the benefits of community have been adapted to the non-traditional learning environments by Bean and Metzner (1985), and specifically to CMI by Kember (1995) and Rovai (2003a).

Most educators involved in computer-mediated instruction are painfully aware that the dropout rate is generally higher among CMI students (Visser et al., 2002). Carr (2000) stated that:

> Although there is significant variation among institutions--- with some reporting course completion rates of more than 80 percent and others finding that fewer than 50 percent of distance education students finish their courses--- several administrators concurred that course-completion rates are often 10 to 20 percentage points higher in traditional courses than in distance offerings (Carr, 2000, p. A39).

Retention is an ongoing problem in CMI and without a sense of satisfaction with the learning experience and achievement of learning goals there will be low retention in CMI and a resultant lack of academic success. It is therefore, both theoretically sound

and pragmatic to pursue further inquiry into two variables which previous studies have indicated exert a positive impact on the computer-mediated learner's retention.

> There is a critical need for colleges to be able to predict with some accuracy the potential dropout rate of distance education students. By pinpointing possible student characteristics that lead to high rates of attrition, faculty and counselors are given an advanced opportunity to interact with students who are possible non-completers (Parker, 1999, p.2).

The perception among many educators involved in computer-mediated instruction is that some students are more amenable to CMI than others. Furthermore, research has suggested that, at least in part, this amenity, or lack thereof, may be attributable to factors of learning style preference and need for classroom community. Extreme polarization toward a cooperative, socially-oriented approach to learning may result in CMI being a poor learning community for some students. This study is significant in that it contributes to the identification of cognitive and psychological barriers to success and satisfaction in CMI through the identification of differences in sense of classroom community in terms of learning style preference, gender, age group and previous successful experience with CMI, and the correlation of learning style preference, gender, and CMI experience variables. In doing so, original data were generated which may assist educators and administrators involved in computer-mediated instruction to predict student amenity for CMI, and/or the need for enhanced social scaffolding to ensure for some students, a successful and satisfying CMI experience.

Definition of Key Terms

Sense of classroom community - "a feeling that members have of belonging, a feeling that members matter to one another and to the group, that they have duties and obligations to each other and to the school and that they possess shared expectations that member's educational needs will be met through their commitment to shared learning goals" (Rovai, 2002, p. 321).

Cognitive syles – "intrinsic, information-processing patterns that represent a person's typical mode of perceiving, thinking, remembering, and problem-solving" (Keefe, 1979, p.7).

Computer-mediated Instruction (CMI) **–** as used in this study is learning delivered primarily by TCP/IP network technologies such as e-mail, online chat, newsgroups, proprietary applications (e.g. course management systems and virtual classroom software). This environment may include both asynchronous and synchronous interaction between instructor and students and among students depending upon those technologies employed. (Waddington, Aaron, and Sheldrick, 2005).

Social/cooperative learning style – "characterizes students who favor working conjointly with peers" (Sonnenwald and Li, 2003, p. 420).

Dependent/cooperative learning style – as used in this study, refers to social/cooperative learning style.

Dependent/collectivist learning style – as used in this study, refers to social/cooperative learning style.

Field dependent learners – are "field dependent students' whose social skills, attitudes, perception, qualities and feelings are strongly influenced by their physical and social background … field-dependent students rely on others for information, guidance and maintenance of attitudes (Luk, 1998, p. 137).

Field independent learners – are " field independent students who tend to be more analytical, logical and better able to restructure and abstract subtle aspects of a problem… field independent students appear to be less influenced by authority figures, social attachment and external standards and instead are guided by their own needs" (Luk, 1998, p. 137-138).

Independent/individualistic learning style – "characterizes students who prefer having little involvement with others when learning" (Sonnenwald and Li, 2003, p. 420).

Learning style –" the composite of characteristic cognitive, affective, and physiological factors that serve as relatively stable indicators of how a learner perceives, interacts with, and responds to the learning environment" (Keefe, 1979, p. 7).

Locus of control – Internal-external (I-E) locus of control is hypothesized to be a bipolar construct. The locus is internal if a person perceives events to be contingent upon his or her own behavior; the locus is external when events are perceived to be contingent upon luck, fate, the control of others, the environment or anything else not under his/her control" (Parker, 1999, p.3).

Self-direction/regulation – "… encompasses skills for planning, organizing and managing instructional activities; enlisting resources, regulating one's own motivation; and

applying metacognitive skills to evaluate the adequacy of one's knowledge and strategies" (Bandura, 1997, p.174-175).

Self-efficacy – "… belief in one's capability to organize and execute the courses of action required to manage prospective situations. The higher sense of efficacy, the greater the effort, persistence, and resilience" (Hargis, 2001, p. 477-478).

Social interaction – the actual quality of a communication sequence or context… a quality (potential) that may be realized by some or remain an unfulfilled option for others. When it is realized…. There is social presence" (Gunawardena and Zittle, 1997, p. 10-11.

Social presence – whereas social interaction is an "actual measurement", "social presence is a subjective measure of the presence of others"… a "perception of "immediacy", i.e. the psychological distance that a communicator places between himself or herself, and the objects of communication (Gunawardena and Zittle, 1997, p. 9-10).

Transactional presence- "the degree to which a distance education student senses the availability of, and connectedness with, each party (in the educational process)" (Shin, 2003, p. 69).

Overview of the Dissertation

Chapter II, "Review of the Related Literature," contains the most relevant research to the proposed study that has been conducted in computer-mediated instruction (CMI) environments which include: (1) field independence/dependence, (2) locus of control, (3) self-directed/self-regulated learning readiness, (4) social interaction, (5) social presence, and (6) sense of classroom community.

Chapter III, “Methods and Procedures,” includes the following: (1) Participants and the Learning Environment, (2) Data Collection, (3) Instrumentation, (4) Privacy and Security, and (5) Data Analysis.

Chapter IV, “Analysis and Presentation of Data,” consists of statistical analyses of data collected by electronic survey and discourse analyses of data collected by telephone interview.

Chapter V, “Findings, Conclusions, and Recommendations,” provides interpretation of these data and describes the findings and conclusions drawn from the study. Recommendations for future research based on these findings and conclusions are offered.

CHAPTER II

REVIEW OF RELATED LITERATURE

The purpose of this study was to determine if differences exist in sense of classroom community for CMI students in terms of learning style (defined as a preference for independent/individualistic or social/cooperative learning). Differences in sense of social community were investigated, as well as differences in sense of learning community. Differences in sense of social and learning community were also investigated in terms of gender, age group, ethnicity, and extent of previous successful CMI experience. In addition, this study attempted to identify any differences that existed in learning style preference with regard to gender and to previous successful CMI experience.

Learning Style Preference in CMI

An extensive literature review was conducted to identify those cognitive/psychological characteristics which are linked to a broader concept of independent/individualistic and social/cooperative learning style preference, and their effects on computer-mediated learners' actual and perceived learning success and overall satisfaction with their learning experience. These studies were found to generally fit within three broad conceptual categories: (a) *field dependence/independence,* (b) *locus of control,* and (c) *self-directed/self-regulated learning readiness.*

Field independence/dependence. The predominant tool for measuring field dependence/independence in educational and psychological research has been the Group Embedded Figures Test (GEFT) developed by Witkin et al. (1971). The GEFT scale is intended to identify field dependence/independence by measuring a subject's ability, relative to peers, to disembed a figure from a complex visual background. The rationale

behind the GEFT is that field independents with their reliance on more intrinsic cues are more autonomous in cognitive restructuring tasks and will be able to more effectively identify the concealed figure within the surrounding matrix, while field dependent individuals will become distracted by the complex background and unable to discriminate the hidden object (Witkin et al., 1971).

Studies exploring the effects of field dependence/independence on distance education students stretch back to a time when distance education was still, in large part, dependent on text-based materials exchanged via the postal service.

Thompson and Knox (1987) administered the GEFT to 102 undergraduate correspondence students at the University of Manitoba during the 1983-1984 academic year. They sought to determine if degree of field dependence/independence as measured by composite GEFT scores for their sample: (a) *differed significantly from that of normative groups* established by Witkin et al. (1971), (b) was *significantly related to distance education students' retention*, and (c) was *significantly related to distance education students' satisfaction* with their courses. Results confirmed that a higher percentage of students in the distance education sample were associated with the cognitive style of field independence than were the normative groups. This coincided with Moore's (1976) finding in a much smaller sample of only 14 participants, in which he found field-independence was predictive of participation in correspondence study. Contrary to Thompson and Knox (1987) expectations, neither learner persistence nor was satisfaction found to have a significant relationship with either cognitive style. The researchers concluded that field dependent learners may initially have been deterred from

pursuing distance education opportunities because of anxiety generated from fears of isolation from peers, and the resulting disconnection from the matrix of social interaction/support which validates their sense of learning success. However, once they had made the decision to pursue distance education, field dependent learners seemed able to accept and adapt to the changes in learning style and achieve the same level of success and satisfaction as did field independent learners. The researchers advised that well-marketed changes in the structure of distance courses to provide for greater interactivity may encourage more field dependent learners to participate in distance education, in the first place, while their ability to adapt to a more field independent style will allow them to persist and succeed (Thompson & Knox, 1987).

As distance education moved into the era of computer-mediated delivery, studies of the effects of field dependence/independence on distance learner success and satisfaction became more numerous.

Lyons-Lawrence (1994) studied the effect of field dependence/independence on learning achievement among 75 business students enrolled in four CMI sections of a Principles of Office Systems course offered in a community college learning lab. The Closure Flexibility Test (CFT) described earlier was administered to each student taking part in the study. Results of the CFT indicated that 55 % of the group was field independent and 45% was field dependent. A pre-test to gauge existing knowledge of the subject was administered as part of the first CMI module, and an identical post-test to measure mastery of course content was given to each student as the final component of the last CMI module. Difference in learning achievement based on cognitive style was

tested using an independent t-test between the mean posttest scores of the field-independent and field-dependent groups. Results of the t-test showed a significant difference between the means with the field independent learners scoring higher on the posttest. However, when the variables of previous GPA, pretest score and cognitive style were entered into a regression analysis of their effect on the dependent variable of posttest scores, whereas 63 % of the variance could be accounted for by a combination of GPA and pretest score, only 0.8 % of variability in posttest scores could be linked to cognitive style success (Lyon-Lawrence, 1994). This may indicate that, in this sample, the effect of cognitive style on academic performance, though statistically significant, is relatively weak in comparison to the effect of variables representing previous academic success.

Lin and Davidson-Shivers (1996) examined the effects of linking level of course structure and level of field dependence/independence with performance and satisfaction in a computer-based hypertext learning environment. A population of 139 undergraduates was placed in five treatment courses ranging from low to high levels of structure. All students were administered the GEFT scale at the onset of their course. Results indicated that students with higher GEFT scores (field independent) academically outperformed students with low GEFT scores (field dependent). Overall, field independent students had more positive attitudes toward their online learning experience than did their field dependent counterparts. Students high in field dependency were more satisfied with a less-structured learning environment, while field independent students preferred more structured instruction (Lin & Davidson-Shivers, 1996).

Luk (1998) studied two samples of online Bachelor of Health nursing students at the Hong Kong Polytechnic University; one sample of 51 out of 77 total students had just successfully completed their first year of study in the two-year online program, while the second sample of 113 of 159 total students had recently graduated from that program. The GEFT scale was administered to both groups and their academic averages were collected from university records. Results of Pearson Product correlations revealed significant positive relationships, in the case of both groups, between GEFT scores and academic averages, indicating that field-independent learners had performed at a significantly higher academic level than field-dependent learners. Independent t-tests also showed that the academic achievement of field-dependent and field-independent groups was significantly different (Luk, 1998).

To the contrary, Brenner (1997) failed to find any relationship between field independence and academic success in CMI. His sample of 154 community college students enrolled in any of 27 different courses were administered the GEFT scale within the first two weeks of their course. Successful students were classified as those who received a grade of C or better in their course. Unsuccessful students received a D, F, Incomplete, or dropped out of the course. Chi-square analysis revealed no significant difference between the successful and unsuccessful groups with respect to field dependence/independence classification (Brenner, 1997).

A mixed-methods study by Fitzgerald and Semrau (1998) lends some support to Brenner's results. Among 23 pre-service teachers enrolled in a hypermedia-based methods course in behavioral disorders, the researchers found that although field-

dependent and field-independent learners displayed different patterns of online usage, there were no significant differences in learning outcomes between the two cognitive styles. Interviews, observation, and analysis of online transcripts revealed that field-independent learners spent significantly more time viewing online videos of experts offering commentary on various topics relevant to behavioral disorders while field-dependent learners spent significantly more time in online problem-solving sessions with peers (Fitzgerald & Semrau, 1998).

Deture (2004) also failed to establish a significant relationship between field dependency/independency and academic performance among computer-mediated learners. The author administered the GEFT to each student in a sample of 72 community college computer-mediated learners enrolled in one of six different web-based courses. Findings indicated no significant difference in actual academic performance between the two groups (as measured by course GPA). However, in a corollary finding, a significant difference between the two groups did appear with respect to online technologies self-efficacy. Field independent learners scored consistently higher on an Online Technologies Self-Efficacy Scale than did field dependent learners. However, using a multiple regression analysis, the researcher found that both GEFT and OTSS scores were poor predictors of academic performance in this sample of computer-mediated learners (Deture, 2004). This is an interesting conclusion in that it supports previous research indicating that the field-independent individual will possess more self-efficacy and confidence in the technology-based learning environment, but it seems that,

at least in this sample, field-dependent learners were able to compensate for this handicap in other ways to achieve an equal level of academic success.

Ching (1996) speculated that possibly one aspect of the adaptability of many field-dependent learners to the distance learning environment was a shift in their cognitive styles as a result of extended experience with CMI. The GEFT scale was administered to 113 students who had just graduated from a fully online Bachelor of Health Science (BHS) program. For comparative purposes, the GEFT was also given to 76 students who were just entering their first semester of the BHS program. Independent t-tests confirmed that the graduate students possessed a significantly higher mean, skewed toward field independence, than did the incoming students. To circumvent doubts that could be raised due to differences in the initial makeup of the two populations, the GEFT was administered a third time to the same group of incoming students after they had completed a year of their online program. A paired sample t-test confirmed that there had been a significant increase in mean field independence as measured by the GEFT over the course of the two administrations (Ching, 1998).

Oh and Lim (2005) took a different approach in measuring the effect of field dependence/independence on computer-mediated learners. Their research focused on attitudes toward CMI, satisfaction with the CMI experience and how these affective components related to cognitive style. Their sample consisted of 104 students enrolled in various online courses at the University of Tennessee. The researchers administered both the GEFT and an attitude/satisfaction survey to their sample. Data analysis revealed no significant correlation between students' cognitive styles as manifested in field

dependence/independence and their attitudes toward or satisfaction with CMI (Oh & Lim, 2005).

Foell and Fritz (2005) also found no statistically significant relationship between computer-mediated learners' cognitive styles, based on field independency/dependency, and their attitudes and satisfaction with CMI. In a study of 27 undergraduate/graduate computer-mediated learners taking a course in technology education, the researchers administered the GEFT scale and the Semantic Differential Inventory (SDI) to measure positive and negative attitudes toward various aspects of the learning experience. Pearson Product correlations showed no significant relationships between scores on the two scales. The researchers qualified these findings by pointing out that the SDI results revealed that the students experienced strong levels of structure and teacher interaction/mediation during their course. Previous research (Witkin et al.,1977), had indicated that both of these variables work to the advantage of field-dependent students while not adversely affecting the learning experience of students possessing field-independent styles (Foell & Fitz, 2005).

Locus of control. The most common instrument used to assess the direction and degree to which locus of control is present in an individual is the Rotter Internal-External Locus of Control scale (RIELC), developed by J.B. Rotter in the 1960's and updated in 1975. Respondents to the RIELC choose from 29 pairs of statements indicating their perception of the world. Low scores indicate an internal locus of control, while high scores are associated with an external locus of control (Rotter, 1989).

Because the person with an internal locus of control is more apt to accept responsibility and exert actual control over his or her own actions (Rotter, 1989), it logically follows that internal locus of control could be a strong factor in both self-efficacy and self-directed learning. Both of these characteristics are considered to be essential components of CMI success (Kerka, 1996).

Dille and Mezack (1999) were concerned with determining predictors of the high attrition rates they were experiencing among students in community college telecourses. They hypothesized that locus of control might be used to flag those entering students who may not be best suited for a technology-mediated format. They conducted a study using a sample of 151 students in 4 telecourses covering different subject areas. They administered both the RIELC and Learning Style Inventory (LSI) scales, and a general demographic survey to each participant at a mandatory orientation session. The LSI was developed by Kolb using experiential learning theories based on the work of Dewey, Piaget and others (Kolb, 1984). It measures cognitive style preference on two bipolar dimensions: Concrete Experience (CE)/Abstract Conceptualization (AC), and Active Experimentation (AE)/ Reflective Observation (RO). Regression analysis revealed locus of control to be a significant predictor of attrition ($p = .0077$) as well as a significant predictor of letter grade at the .0289 level. Students who persisted also scored significantly lower on the Concrete Experience (CE) scale of the LSI. High scorers in CE relate to and express themselves more through other people and have a greater sense of attachment to others and sensitivity to the feelings of others. The authors concluded it is logical that low scoring students with respect to this learning style would suffer the loss

of interaction between peers and instructors which occurs in technology-mediated learning less than high scorers in this area. Low CE scores correlated strongly with low RIELC scores, providing a strong indication that, in this sample, students who were independently motivated and required little social reinforcement in the learning process, had a distinct advantage in the technology-mediated environment (Dille & Mezack, 1999).

Parker (1999) sought to determine the extent to which locus of control, gender, age, number of distance education courses previously completed, financial assistance, and number of hours employed could be used as predictors of attrition from CMI courses. Data categorizing students as either possessing internal or external locus of control were collected via administration of the RIELC scale. Results showed only locus of control and availability of financial aid to be significant correlates, with external locus of control, and lack of financial assistance strongly linked to attrition. Discriminant analysis revealed that together, the two significant variables predicted nearly 85% of attrition. Locus of control, alone, was used to predict dropout with 80% accuracy (Parker, 1999).

In a study of 51 computer-mediated learners in three sections of an online psychology course, Wang and Newlin (2000) likewise found a strong positive correlation between internal locus of control as measured by the RIELC scale and final course average.

Drennan and Kennedy (2005) used structural equation modeling to identify factors which significantly impact students' attitudes toward and satisfaction with online learning. The researchers developed their model based upon a sample of 248

undergraduate management students taking a web-based Introduction to Management course. Among other results, the researchers found a significant and strong set of direct path relationships between both locus of control (as measured by a modified Rotter scale) and perceived usefulness of Web-based instruction, and locus of control and overall course satisfaction. Unfortunately, data on several effective variables were collected at both the beginning and end of the online course; however, the Locus of Control Scale was administered only at the beginning of the course, the assumption being made that this factor would not change (Drennan & Kennedy, 2005).

Morris, Wu and Finnegan (2005) used predictive discriminant analysis (PDA) in a study designed to predict undergraduate students' dropout or completion of fully online general education courses in six affiliate institutions of the University System of Georgia. They collected demographic and academic readiness/experience data from their final sample of 211 computer-mediated learners. The RIELC scale was also administered to each participant. In addition to identifying high school GPA and math SAT scores as significant predictors, the researchers also found that the combined factors of locus of control and availability of financial aid were used to predict students' membership in either dropout or completer groups with 74.5% accuracy; both factors appeared to be strong positive indicators of retention (Morris, Wu & Finnegan, 2005).

Self-directed/self-regulated learning readiness. Several psychological scales and sub-scales have been developed which attempt to assess a learner's self-directed learning skills or their readiness to engage in this type of learning experience. Several of these

scales have been used in research applied to CMI or other types of technology-mediated learning. Each will be discussed, briefly, in conjunction with the associated study.

Gee (1990) administered the Canfield Learning Style Survey (CLSS) to two groups of graduate education majors taking a dual-format course in learning resources management at a state university. One group of nine students took the course on-campus in a studio classroom, while the second group of 17 students met in a remote classroom connected by a two-way television system. Both groups experienced the same course taught by the same instructor with identical content and assignments. The instructor was physically present only in the on-campus studio, but remote students could interact with both the instructor and their on-campus counterparts through the two-way audio-visual feed. The CLSS measures instructional preferences in three categories and 16 subscales. The category of most interest to this research consisted of 8 subscales measuring various facets of the participant's preferences for learning in dependent, peer/instructor mediated situations versus independent, self-directed learning settings. In addition to the CLSS, the course averages of all participants were collected and a satisfaction survey was administered at the end of the course. Results indicated that students enrolled in the on-campus section who scored higher in the social subscales of the CLSS tended to perform better academically and had a more positive attitude toward their course than those whose scores skewed toward the independent learning subscales. In contrast, students in the technology-mediated learning situation who scored higher on the independent learning subscales of the CLSS tended to outperform their more social-oriented peers, and had a more positive attitude about their learning experience (Gee, 1990). Although these

results tend to support other research reported in the literature, the small number of participants seriously limits the power and generalizability of this study.

Diaz and Cartnal (1999) compared the learning styles of students who were taking an identical content course in health education offered by a community college in both CMI and traditional classroom formats. The sample of computer-mediated learners consisted of 68 students in two online sections, while the traditional sample was composed of 40 students selected from four on-campus sections. The Grasha-Reichmann Student Learning Style Scales (GRSLSS) was administered to all students in both samples. The GRSLSS is designed to measure the degree to which a learner embodies 6 distinct, though overlapping, learning styles: (a) *independent learning,* (b) *dependent learning,* (c) *competitive learning,* (d) *collaborative learning,* (e) *learning avoidance, and* (f) *participant learning* (Hruska-Reichmann & Grasha, 1982). The study confirmed a significant difference ($p<.01$) between the CMI and traditional groups with regard to independent learning style. Computer-mediated learners posted higher scores than traditional learners in this area, and emphasized their independent nature by scoring significantly lower than their traditional counterparts on the GRSLSS scales for both collaborative and competitive learning environments (Diaz & Cartnal, 1999). One might speculate from these findings that, in the case of this sample, cognitive style preferences may have had some impact on the decision to pursue CMI and attempts to inject collaborative-cooperative elements into the distance program may not necessarily have been welcome.

Smith (2000) was concerned about the preparedness for flexible CMI of vocational-technical students enrolled in open learning courses offered through the Australian National Training Authority. The majority of these students were currently employed in technical, business, health, and community service occupations in entry to mid-level positions. The researcher also chose the Canfield Learning Style Survey administered to a sample of 1,252 of these learners to gather information on their learning style preferences. Results of the study indicated that, as a group, these learners significantly preferred dependent learning situations, characterized by instructor-led delivery, peer exchange, and externally structured control over the instructional sequence and presentation of materials. The study concluded that, given generally accepted theories of CMI compatibility, students at the vocational-technical level may, at least initially, have lacked the preferred cognitive style of independent, self-directed learning associated with success and satisfaction in that environment (Smith, 2000).

As part of a study of 145 science and engineering students who took an online course in general chemistry at a Florida university, Hargis (2001) tested for a significant relationship between course performance and students' scores on a scale for self-regulated learning and self-efficacy. The researcher administered the 81-item, seven-point Likert-type scale, Motivated Strategies for Learning Questionnaire (MSLQ) to each student at the beginning of the course.

> The MSLQ is a self-report instrument designed to assess college students' motivational orientation and their use of different learning strategies and is based on a general cognitive view of motivation and learning strategies. (p. 481)

Results of an ANCOVA performed on the data indicated no significant difference between end of course assessment scores and the self-regulated learning/self-efficacy scores. A major problem with this study in reliably measuring the impact of self-regulated learning/self efficacy is that the online course seemed to be set up merely as an adjunct to traditional classroom-based courses and primarily took place in on-campus computer labs. This environment did not present the level of transactional distance between classmates and institution which is present in most true distance instruction; the type of learning situation in which self-directed learning skills would have the greatest impact. However, in all fairness to the researcher, this component of the study was only one part of a much broader survey of variables which might affect the use of the Internet as a tool for teaching science content in higher education settings (Hargis, 2001).

In a study of learner autonomy among 40 CMI learners enrolled in an English as a Second Language course delivered by the ST Open University of Thailand, Vanijdee (2003) used a mixed-methods design to develop a 17-component model and a corresponding scale to measure learner autonomy. Through a combination of questionnaires, descriptive statistics, recorded statements from learners, and personal interviews, the CMI learners in the sample were categorized into two groups; 21 dynamic distance (CMI) language learners (DDLL), and 19 self-sufficient distance (CMI) language learners (SSDLL). The SSDLLs possessed at least enough autonomy to be self-sufficient and cope within the CMI environment, while the DDLLs displayed high levels of autonomy with which they were able to extend their study, using a wider range of learning resources (Vanjidee, 2003).

Bothma and Monteith (2004) administered two standardized questionnaires, the MSLQ (described earlier) and the Self-Regulated Learning Questionnaire (SRLQ) to measure 15 components of self-regulated learning in a sample of 143 CMI learners in South Africa. The researchers used descriptive statistics and multiple regression analysis to relate these variables to academic success as measured by grade point average. Of the 15 measured components, 12 showed a large effect size in the mean difference between the successful and non-successful groups, with the successful group posting higher scores for all variables except study hours per day. They found that the best subset of predictors of academic success included the three variables of organization, planning, and intrinsic goal orientation. While all variables measured by the two questionnaires predicted 76.39% of total variability in academic average, these three variables alone represented 48.56%. The researchers concluded that, in their sample, those CMI learners who applied more self-regulatory skills to the learning process were academically more successful than their cohorts who were less self-regulated (Bothma & Monteith, 2004).

In the process of developing their own questionnaire for predicting online learning success, Bernard et al. (2004) found that self-direction and initiative were positive predictors of academic success, as measured by cumulative course grade in distance courses. Initial favorable attitude about the value of CMI learning was also a significant, though weaker predictor. Previous experience with computers and existing computer skills, and interaction with the instructor and other students were not found to be significant predictors of success in their sample of 167 undergraduate CMI learners (Bernard et al., 2004).

Hsu and Shiue (2005) conducted a study of 126 Taiwanese students divided evenly into groups of face-to-face and CMI learners taking the identical course in different delivery formats. The researchers administered the Self-Directed Learning Readiness Scale (SDLRS) to all students in the sample, and obtained the students' permission to collect both their current cumulative GPAs and their final course averages from university records. In a multiple regression analysis, the researchers evaluated the SDLRS score and prior GPA as predictors of the student's final course average in each delivery format. They found that self-directed learning skills and prior grade point average had strong predictive value (48%) on CMI learners' final course averages, while exerting no significant predictive value for face-to-face learners' final averages. In addition, they found that the interaction effect between self-directed learning scores and delivery method was statistically significant for CMI learners, but not for face-to-face learners. They conclude that students with strong educational backgrounds and a proclivity for self-directed learning may have a greater advantage in taking distance courses, while students with weak educational backgrounds and less self-direction may be better suited for the traditional classroom setting (Hsu & Shiue, 2005).

Sense of Classroom Community in CMI

Social interaction. Earlier studies which laid the groundwork for the concept of sense of classroom community emphasized the measurement and analysis of the types and quantity of information exchanged in the CMI experience. This more mechanistic perspective was heavily influenced by Moore (1989) who identified three distinct types of interaction within the paradigm: (a) *learner- instructor*, (b) *learner- learner*, and (c)

learner- content. Hillman, Willis and Gunawardena (1994) proposed a fourth distinct category of interaction within CMI; that of learner-interface interaction (Hillman, Willis & Gunawardena, 1994).

Jung et al. (2002) modified and extended Moore's (1989) framework to investigate the effects of different types of interaction on learning, satisfaction, participation, and attitudes towards online learning in a CMI environment. The researchers identified their own three key components of online interaction: (a) *academic interaction* (occurring between learners and online content, as well as task-oriented interaction between instructor and student); (b) *collaborative interaction* (occurring when groups of learners work collaboratively on a specific project, or share ideas and resources to solve a given problem); and (c) *social interaction* (occurring between learners and instructors and not specifically related to assigned academic tasks). The researchers used a sample of 124 undergraduate computer-mediated learners registered for the same CMI course at a South Korean university. The learners were divided into 3 online groups in which one of the three different interaction styles was emphasized. Attitudes toward computer-mediated instruction, both before and after the courses, were measured by two separate administrations of the Computer-Mediated Communication (CMC) survey. The researchers developed their own 15 item satisfaction questionnaire which was given to the students at the end of their course. Learning achievement was measured by the students' scores on five required course assignments while participation was determined by number of accesses and postings to online discussion boards. The researchers found that the social interaction group academically outperformed the other groups; the

collaborative interaction group expressed the highest level of satisfaction with their learning experience; both the collaborative and social interaction groups participated more actively in the discussion forums than did the academic interaction group; and all groups displayed positive attitude changes with respect to CMI (Jung et al., 2002).

In a study of 123 K-6 teachers in an interactive two-way audio-video professional development course, Fulford & Zhang (1993) provided additional evidence that the benefits of social interaction in CMI are more pronounced at the macro-level, measured as multiple layers of communication among all members of a class, than at the micro-level, measured only as individual contributions. This study examined participants' perceptions of types and levels of interaction and how these affected satisfaction with the CMI experience. The CMI course consisted of three sessions. At the close of each session participants completed a survey which referenced their perceptions of: (a) *personal interaction*- the level of their own personal engagement with other students and the instructor during the session; (b) *overall interaction*- each student's perception of the level of engagement of the class, as a whole with each other, and the instructor; and (c) *satisfaction*- the perceived value and quality of the instruction received during that session. Findings indicated that perception of personal interaction was a moderate predictor of satisfaction. However, the critical predictor of satisfaction was the perception of overall interaction. This suggests that computer-mediated learners may be more positively affected as the vicarious recipients of a vigorous group exchange, than simply by the level of their own contributions to that exchange (Fulford & Zhang, 1993).

In a later study, Lapointe & Gunawardena (2004) used Structural Equation Modeling (SEM) to examine the relationship between peer-interaction and learning outcomes in a sample of 228 community college and university computer-mediated learners enrolled in 30 online courses. The researchers used self-reports, standardized as Likert-type scales, to measure level of perceived peer interaction. The learning outcome construct was also developed from two separate self-report Likert scales; one measuring perceived levels of knowledge acquisition, understanding and mastery of content, and the other measuring the student's overall satisfaction with his/her CMI experience. Using the AMOS software for SEM, peer interaction was shown to have a strong direct effect (0.66) on both components of the learning outcomes construct (Lapointe & Gunawardena, 2004).

Rovai and Barnum (2003) concluded that active interaction within the course context was a significant predictor of the level of perceived learning as self-reported by students. In this study, active interaction was operationalized by the number of messages posted by students per week to online discussion forums. Results also revealed that passive interaction, indicated simply by the number of accesses to the course discussion forums each week, was not significant in predicting level of perceived learning (Rovai & Barnum, 2003).

The results of these studies in social interaction made it apparent to researchers that the social environment in CMI was more than the sum of it's individual interactive components; a more complex and holistic phenomenon than merely a collection of postings and chat threads, no matter how carefully categorized and analyzed. Shin

(2002) stressed that in order to understand the totality of what is going on in CMI one must realize that, in this learning paradigm, as in all forms of education, the process consists of more than just transmission and exchange of information, it is deeply dependent on relationships.

Social presence. The concept of *social presence* expands the perspective of social interaction in CMI to include relationships and other affective factors. Short, Williams, and Christie (1976) defined social presence as "the degree of salience of the other person in the interaction and the consequent salience of the interpersonal relationships…" (p.65).

Tu and McIsaac (2002) sought to identify specific components of online social presence and arrived at a definition of the phenomenon specific to the context of CMI. These researchers conducted a mixed-methods study of 51 online graduate students using a combination of online questionnaires, casual conversations, in-depth interviews, direct observation, and document analysis. From a combination of exploratory factor analysis and several qualitative analytic methods, the researchers extracted three constituent dimensions of social presence: (a) *social context*, (b) *online communication*, and (c) *interactivity*. *Social context* embodies such factors as task orientation, privacy, topics, recipients/social relationships, and social process. *Online communication* is primarily (but not exclusively) text-based and requires the user to possess such skills as typing, reading and writing. People who are insecure in one or more of these skills develop anxiety in the online learning environment. *Interactivity* is an expression of the verbal exchanges and activities which take place within the online cohort. It is strongly affected by the communication styles each learner employs. The degree of feedback occurring

among members of the cohort, and the immediacy of that feedback contribute to the perception of interactivity. In asynchronous online communication, feedback is delayed, which may result in a feeling of low interactivity and consequently may impact social presence. Results of the study suggest that social presence in the distance cohort positively influences the frequency of online interaction, but that mere frequency of online exchange does not necessarily indicate high social presence. The stated conclusion is that social presence in CMI is a subtle and complex phenomenon that goes far beyond mere quantity of postings (Tu & McIsaac, 2002); "it is the degree of feeling, perception, and reaction of being connected by CMC (computer-mediated communication) to another intellectual entity through a text-based encounter"(p. 140).

Gunawardena and Zittle (1997) and Shin (2002; 2003) defined social presence from a narrower social/relational group perspective. Gunawardena and Zittle (1997) equated social presence with a perception of "immediacy," i.e. the psychological distance that a communicator places between himself or herself, and the objects of communication. They surveyed 50 computer-mediated learners taking part in an inter-university virtual conference. They developed a 61 question Likert-style questionnaire to measure the presence and level of 8 areas of learner perception which had been identified by a literature review as affecting participant satisfaction with the CMI environment. The eight areas were: (a) *social presence* (as defined earlier), (b) *active participation*, (c) *initial attitude toward CMC*, (d) *barriers to participation* (defined as the presence of technical problems and the lack of access), (e) *self-confidence toward mastering CMC*, (f) *equal opportunity to participate in the learning experience*, (g) *adequate on-site*

training in the use of the CMC technologies, and (h) *participants' incoming technical skills and experience with CMC*. A subscale to gauge overall satisfaction with the CMC learning experience was also a part of the questionnaire. The results of multiple regression analyses on the data isolated three of the eight original variables as being significant predictors of overall satisfaction. Social presence, equal opportunity to participate, and incoming technical skills accounted for 68% of the explained variance in overall satisfaction. Social presence alone contributed approximately 60% of that variance (Gunawardena & Zittle, 1997). Shin (2003) expanded the concept of immediacy into a broader model of interaction which he termed *transactional presence* (TP). TP is defined as "the degree to which a [computer-mediated learner] senses the availability of and connectedness with, each party (in the educational process)" (p. 69). Shin developed a Likert-style survey instrument which measured three aspects of TP in the distance education process; (a) *student-student relationships*, (b) *student-teacher relationships*, and (c) *student-institution relationships*; the third category subsuming various student support services offered to the computer-mediated learner by the institution, as well as its success in inculcating a sense of connection as reflected in a strong level of institutional pride, loyalty, and affection amongst its computer-mediated learners (Shin, 2002). He developed a 'Transactional Presence Questionnaire' based on his model which was administered to 506 students studying through the Open University of Hong Kong, in a variety of academic majors. Using a series of multiple regression and correlation analyses he found that a computer-mediated learner's sense of TP with the educational institution itself, predicted: (a) *learning achievement as measured by both GPA and*

student's self-perception of learning; (b) *satisfaction with the educational experience* and; (c) *intent-to-persist in CMI*. TP with student peers significantly related to (a) *satisfaction* and (b) *intent to persist*, while instructor TP related significantly only to *student learning achievement* (Shin, 2003). In a later study, Shin & Chan (2004) identified a strong correlation between institutional TP and *student learning achievement*, *satisfaction with CMI*, and *intent-to-persist*.

Classroom community. In fusing previous research and theory into his comprehensive model, Rovai (2002a) developed a standardized scale to measure the degree to which "sense of classroom community" existed in a group of learners, with specific focus on CMI. The Classroom Community Scale (CCS) consists of 20 questions divided into two subscales. The two subscales measure two primary aspects of sense of classroom community: (a) *connectedness*, "the feelings of the community of students regarding their connectedness, cohesion, spirit, trust, and interdependence"(p.206); and (b) *learning*, "the feeling of community members regarding interaction with each other as they pursue the construction of understanding and the degree to which members share values and beliefs concerning the extent to which their educational goals and expectations are being satisfied" (p.206-207). Rovai (2004) also developed an expanded form of the CCS, the Classroom and School Community Inventory (CSCI), intended for use in traditional and CMI settings which, in addition to the classroom-centered social and learning community subscales, includes an additional subscale, reminiscent of the third stage of (Shin, 2002) transactional presence, to measure school or institutional sense of community. The latter is intended to gauge the learner's feelings of connectedness, pride,

and involvement with the school or institution sponsoring the class or learning experience (Rovai, 2004).

Rovai (2002b) conducted a study to determine what learning benefits, if any may be associated with sense of community in the CMI setting. In a study of 314 computer-mediated learners in 26 graduate education and leadership courses Rovai sought evidence of a link between sense of community as measured by the Classroom Community Scale (CCS), and the students' perception of their own learning. Perceived learning was based upon students' responses to a single-item scale which asked "On a scale of 0 to 9, how much did you learn in this class, with 0 meaning you learned nothing and 9 meaning you learned more than in any other class you've had." A significant positive relationship was found between results on the two scales, with students posting higher scores on the CCS also reporting higher levels of perceived learning (Rovai, 2002b).

Rovai and Lucking (2003) conducted a study to determine if sense of community differed significantly between a traditional face-to-face course and a remote section of that same course which was taught to an on-campus studio audience and at a distance to 24 remote classroom sites using synchronous one-way video and two-way audio. Both sections were taught by the same instructor and participants consisted of 120 undergraduates who agreed to take the CCS at both the beginning, and end of their course. The studio audience for the distance section consisted of 27 students who met together on-campus, while the remote sites consisted of varying numbers of learners with 20 as a maximum, and 9 sites having only 1 student each. The results of the study revealed not only a significantly lower overall sense of community for the remote section,

but an actual decrease (though not statistically significant) in sense of community between beginning and end-of-course administrations of the CCS among the remote learners. Traditional learners reported a significant increase in sense of community between the two CCS administrations. Interestingly, there were no significant differences in sense of community between the group of 27 students, who regularly met together in the on-campus studio with the instructor present, and the remote site learners with no physical instructor present and fewer or no student peers. The researchers suggested that this finding may infer subtle, unperceived, changes in the behavior and strategies of both instructor and students when technology-mediation is present (Rovai & Lucking, 2003).

Some research has pointed to gender and racial/cultural factors in the need for, and perception of, sense of community and social connectedness in the CMI.

Herring (1993) reported that female only CMI groups expressed greater satisfaction with the online group process and displayed more sophisticated group development and exchange than did either male only or mixed groups, and that female only groups spent more time in community maintenance activities, seeking prevention and reduction of tensions caused by disagreements. Barrett and Lilly (1999) found that female messages on online forums incorporate significantly higher interactive content by acknowledging the contributions made by other students, and incorporating information and ideas from previous messages in their replies. As a whole, females seem to engender a sense of community by listening and responding to the thoughts and opinions of others on a larger scale than that for men (Barrett & Lilly, 1999).

Both Savicki et al. (1996) and Wolfe (1999) uncovered evidence that community maintenance and the reduction of tension was a higher priority for female computer-mediated learners than for males, and sometimes manifests itself in a reluctance to express ideas or opinions which might undermine group cohesion. Studying gender differences in patterns of communication in the traditional learning, Belenky et al.(1986) concluded that the majority of men exhibited an independent voice, while the majority of women used a connected voice. Blum (1999) provided support for this thesis with respect to online communication differences between the genders.

Rovai (2001) used a prototype of the CCS to test for gender differences in sense of community in a cohort of 20 adult computer-mediated learners, evenly divided among the sexes, He found that, based on two administrations of the CSS prototype, females manifested a stronger sense of community at both the beginning and end of their courses than did their male counterparts. In accord with previously described studies, the female proclivity for higher levels of community was also reflected in the nature of female communication patterns in online forums and emails. Female communication tended more toward supportiveness and helpfulness without being assertive, while male communication reflected more of an impersonal, assertive tone (Rovai, 2001). Rovai (2002b), using the fully developed CSS instrument, supported his earlier findings by identifying a significant relationship between gender and scoring on the "Connectedness" subscale of the CSS. Women, in his sample of 316 computer-mediated learners, consistently posted higher scores than men with regard to their sense of connectedness with instructors and fellow students. Once more, Rovai and Baker (2005) found that

women participating in CMI scored significantly higher than men on the CSS subscale for "connectedness" to their cohort. In this study women also reported scores significantly higher than men on the "learning" subscale of the CSS, underscoring feelings that their learning experiences were more aligned to their educational values and goals, and also scored significantly higher on a single question scale of perceived learning.

Ethnic and cultural differences in the CMI have also been inferred from numerous studies, and several of these have direct links to issues relating to the social/community environment within the cohort.

Utilizing theoretical constructs based on Triandis' (1995) and Hofstede's (1997) concepts of cultural differences in individual versus collective social behavior, Anakwe, et al. (1999) developed a study to determine if these variants in cultural perspective would influence students' propensity towards CMI. In a culturally diverse sample of 424 undergraduate and graduate students in two northeastern business schools, the study revealed that an individual's cultural background did affect his or her overall attitude toward CMI. More specifically, it was determined that students from more individualist-grounded cultural backgrounds possessed motives and communication patterns more in accord with distance instruction, whereas students from more community-oriented cultures tended to view any form of technologically mediated instruction as undesirable (Anakwe et al., 1999).

Even within cultures essentially Western aligned or heavily influenced by Western philosophy, significant regional differences have been found in student attitudes

and levels of comfort with technology-based instruction. Van den Branden and Lambert (1999) found that students of Northern and Western European countries showed significantly higher levels of satisfaction with CMI than did peers in Southern, Central, and Eastern European countries, a reflection perhaps of the more contextual, collaborative, community-based nature of Mediterranean and East European societies.

Previous studies, not specifically focused toward CMI, have suggested that African American students possess a stronger need for being part of a community, and thus require learning experiences that are based, to a greater degree, in communal sharing of knowledge and experiences; a situation which is more likely to evolve within a group of their own racial peers (Flannery, 1995; Horvat & Lewis, 2003).

Rovai and Gallien (2005) sought to provide evidence of the existence of ethnically-based difference in sense of community expressly within CMI. In a comparative study between a mixed racial section of an online graduate course in education, and an African American-only section of the same course, African Americans in the mixed racial section posted significantly lower scores on both subsections of the CCS (social community and learning community) than did their counterparts in the African American-only section. They also posted significantly lower scores on actual course grade points and on a self-reported scale of perceived learning (Rovai & Gallien, 2005).

Rovai and Wighting (2005) provided additional evidence of a link between ethnicity and sense of community in the context of CMI, and, in the process, also proposed a link between need for community and overall feelings of social alienation.

They studied a mixed gender sample of 117 students enrolled in six online graduate-level educational research methods courses offered by a predominately white, inter-denominational Christian university. By ethnicity, the breakdown of the sample was 44 (37.6%) African American, 71 (60.7%) Caucasian and 2 (1.7%) Hispanic. The students were administered: (a) the *Dean Alienation Scale* (DAS) to examine feelings of social alienation in a general context, and (b) the *Classroom Community Scale* (CCS) to specifically gauge sense of community in the virtual classroom. The researchers found that overall, students who entered their CMI courses with strong feelings of social alienation tended to perceive a low sense of community in their cohort. It was also determined that a significant difference existed, on the basis of ethnicity (with strong effect size), in scores for both the social alienation and classroom community instruments. African-American students tended to post lower scores on both scales. The authors speculated that these findings tended to support allegations of a general perception of disconnectedness among African-Americans from the prevailing social order, and also supported findings that African-American learning styles have strong roots in holistic, collectivist, field-dependent cultures (Durodoye & Hildreth, 1995), and hence possess a greater need for community values in learning (Flannery,1995). Surprisingly, the fact that these distance courses were offered through a predominately white institution, and what effect this may have had on African American students' sense of alienation and community was not entertained (Rovai and Wighting, 2005).

Likewise, Sanchez and Gunawardena (1998) found that Hispanic/Latino learners, also products of a more collectivist culture, prefer activities within CMI courses that are collaborative and learning community-based rather than individual and/or competitive.

Summary and Significance to the Study

Review of related literature has revealed that one school of learning theory looks upon learning as primarily linked to cognitive processes inherent within the individual; that these cognitive processes constitute the individual's learning style, and that individuals, at any given point in time are predisposed to a particular learning style.

Other theorists point out that it is impossible to separate cognitive processes from the cultural, social, and environmental variables which have shaped their development.

The proposed study will essentially be aligned with those theorists who suggest that learning style is primarily a composite of cognitive processes inherent within the individual; processes which, at a given point in time, predispose that individual to a particular learning style. The validity of theories which propose cultural, biological, and social environmental factors in the development of learning styles are not rejected, but for the purposes of this research, causative or developmental factors are considered to be out of scope.

Previous research suggests that independent/individualistic and social/cooperative learning styles may be the sum of the related learning characteristics of field independence/dependence, external/internal locus of control, and self-directed/regulated versus group/contextual directed/regulated learning. Previous studies have also shown

these learning styles and their constituent characteristics to be identifiable and measurable variables.

Based on evidence from the literature the present study accepts the postulate that independent/individualistic learning style more strongly embodies the learning characteristics of *field independence*, *internal locus of control*, and *self-directed, self-regulated learning preference*. In contrast, the present researcher stipulates that a cooperatve/social learning style reflects the characteristics of *field dependence*, *external locus of control*, and a *group/contextual directed/regulated learning preference*.

The general assumption among CMI educators, and that accepted by the present researcher, is that technology mediation introduces an unavoidable layer of social isolation between the learner and his or her instructors or peers. The logical ramification of this premise is to accept that independent/individualistic learning style will provide the learner with an advantage in achieving learning goals and satisfaction while a social/cooperative learning style will present obstacles and challenges to learners in the CMI environment. The reviewed literature has supported the importance of sense of classroom community to many learners in the development of positive attitudes toward their CMI experience.

Some research has suggested that females may, in general, possess more of a need for social interactivity and sense of classroom community in learning than males and may, therefore, as a group, be less likely to have positive attitudes towards CMI.

Evidence exists within the literature to suggest a potential for social/cooperative centered learners, with successful experience in CMI, to adapt compensatory learning strategies to successfully compete and find satisfaction in this environment.

CHAPTER III

METHODS AND PROCEDURES

The purpose of this study was to determine if differences exist in sense of classroom community for CMI students in terms of learning style (defined as a preference for independent/individualistic or social/cooperative learning). Differences in sense of social community were investigated, as well as differences in sense of learning community. Differences in sense of social and learning community were also investigated in terms of gender, age group, ethnicity, and extent of previous successful CMI experience. In addition, this study attempted to identify any differences that existed in learning style preference with regard to gender and to previous successful CMI experience.

Although the primary focus of this study is quantitative, the author recognized that, as Brophy (2005) and Hickey (2003) have pointed out, numerous experiential and socio-cultural factors can influence the way in which a participant interprets and responds to a standardized survey. The result of the interaction of these factors may bring the face validity of a standardized survey instrument into question. For this reason, a qualitative component in the form of selected telephone interviews was added to this study to provide a point of triangulation with the survey instrument and to provide a more holistic view of the CMI students' perspectives on the differences in sense of classroom community in terms of learning style preference.

Participants and the Learning Environment

This study population consisted of students enrolled, during one semester, in CMI courses at a medium-sized community/technical college in the Appalachian foothills of North Carolina. This college was chosen because it offers a wide variety of web-based

CMI courses, each semester, to a relatively large group of students. It is also the researcher's primary employer, and his current position at the college made permission to survey the students and access to CMI administrative software relatively easy to obtain. The college generally offers from 85 to 95 distance courses per semester. Approximately 25% to 30% of these distance courses are taught in hybrid format, conducted primarily as online courses, but requiring scheduled, mandatory on-campus meeting dates. The remaining 70% to 75% of distance courses are 100% online with the exception of a required on-site orientation session at the beginning of each course. A wide variety of distance courses are taught by the College's Divisions of Business Technologies, Humanities and Social Sciences, Health Sciences, and Natural Sciences and Engineering. All CMI courses taught at the college carry full curriculum or Continuing Education Unit (CEU) credit, and all curriculum courses are transferable to one or more Associate degree programs. At the present time, the College offers only one fully online Associate degree program in the area of paralegal technology. The primary interface for CMI at the College is the BlackBoard software interface. A variety of resources including textbooks, study guides, World Wide Web resource materials, and resources developed by the course instructor for the virtual environment are used by CMI students during their courses. CMI students are also provided with remote access to full-text, citation, and short-reference databases through the College library, as well as access to library reference services through an email address dedicated specifically to CMI students (WPCC, 2005).

As the purpose of this study is focused on the analysis of students' perceptions and attitudes in the online learning environment, the researcher decided to remove students currently enrolled only in hybrid courses from this study. The researcher felt this decision would improve the validity, reliability, and generalizability of the study by removing students who had only taken courses which involved mandatory periodic classroom contact with peers and instructors and the mitigating social variables which might result from such contact. The removal of hybrid courses and students which dropped before the survey was administered left a study population of approximately 616 students enrolled in 49 courses.

Data Collection

Quantitative phase. All participants were asked to complete a survey which was compiled in HTML format using the 'SurveyGold 7.0' software suite to construct an online survey which was emailed to each participant.

SurveyGold is a complete software solution for building and administering surveys and analyzing their results. It provides tools for individual researchers to create and conduct surveys over the web or in printed questionnaire form. It allows researchers to automatically collect and compile web survey results returned via email or online form submission, and provides tools for the conversion of results into Excel, SPSS, HTML, Text, dBase or DIF formats for more in-depth analysis.

HTML surveys were emailed to participants as a URL link. The email itself (see Appendix A, Document 1) described the nature and purpose of the survey, identified the researcher, notified the student of his or her right not to participate, and outlined the steps

which were taken to ensure the student's privacy. All information and contact disclosure required by the Institutional Review Board of the University of North Carolina at Greensboro was included in the email and it was made clear to the student that submission of the survey constituted his or her permission to use the data submitted for research purposes. Because some students were enrolled in multiple CMI courses during the current semester, there was a chance that during the email distribution process, some might have received duplicate invitations to take part in the survey. Students were informed in the introductory email that, because the survey was meant to gather data about their overall CMI experience at the college, they should submit only one survey. To emphasize the importance of "one person, one survey," the students were warned that multiple submissions would disqualify them from receiving any prize awards. Prizes in the form of two $50.00 and ten $20.00 gift certificates to a local Best Buy outlet were offered as incentives to return the survey. The student was made aware in the introductory email that incentive prizes would be awarded based on a random drawing of the names of all students who submitted a survey, that notification of any incentive prizes won would be sent via email, that a list of winners names would be made available to anyone who personally contacted the researcher, and that incentive prize eligibility would become active only if there were greater than a 50% return on all surveys distributed.

The survey (see Appendix E, Document 1) consisted of 52 items. The first six items are demographic questions asking for the student's name, preferred email address, gender, ethnic group, age, and the number of CMI courses that he or she has successfully completed in the past two years. Ethnic groups were divided into (1) African-American,

(2) Asian-American, (3) Hispanic-American, (4) Native American, (5) Caucasian-American, (6) Foreign National, and (7) Other. Successful experience with CMI was divided into five groups: 0, 1, 2, 3 or 4+ CMI courses, successfully completed prior to the current semester. The remainder of the survey is a combination of items taken from two standardized instruments. Items 7 – 30 were subscales of the Learning Preference Scale for Students (LPSS) while items 31 – 50 comprised the Classroom Community Scale (CCS).

Qualitative phase. A question with an associated checkbox was provided on the email survey asking participants if they would be willing to participate in a brief follow-up phone interview to discuss, in greater depth, their feelings about their CMI experience. A sample of 20 students was selected from those who were willing to participate. Selection criteria consisted of 10 students who scored higher than the mean on the LPSS Independent/individualistic learning preference scale and lower than the mean on the LPSS Social/cooperative learning preference scale (HILS group) and 10 students who scored higher than the mean on the LPSS Social/cooperative learning preference scale and lower than the mean on the LPSS Independent/individualistic learning preference scale (HSLI group). Each person who actually participated in a phone interview was compensated for his/her participation with a $10.00 gift certificate. This certificate was in addition to any awarded in the aforementioned prize lottery. The telephone interviews were conducted following the cutoff date for the submission of email surveys. Willing participants were contacted by email in order to arrange for a convenient interview time and to request the number at which the participant wished to be called. Each interview

was recorded. All participants were made aware that the interview would be recorded and, prior to the interview, all information was provided to them concerning data security, confidentiality, right of participation, and all other information required by the Institutional Review Board of the University of North Carolina at Greensboro (See Appendix A, Document 2).

Instrumentation

The Classroom Community Scale (CCS). This instrument was developed by Rovai (2002a) to measure distance learners' sense of virtual community. It consists of 20 self-report questions that examine the student's perception of community in the classroom setting. Although developed primarily for distance education research, the scale is not exclusive to such, and has been used previously in both hybrid and traditional learning environments. Responses to each question on the CCS are made on a five-point Likert-type scale of: *strongly agree, agree, neutral, disagree,* and *strongly disagree*. Each student checks the response which best corresponds to his or her feelings with respect to each item. Scores are computed by adding points assigned to each of the 20 items with a minimum of 0 and a maximum of four points available for each item. Items are reverse-scored when appropriate to ensure that the least favorable choice is always assigned a value of 0, while the most favorable choice is assigned a value of four (Rovai, 2002a).

The CCS actually subsumes two subscales of 10 items each; one subscale (social community) measures the student's feelings of general social connectedness to instructors and peers, and the other subscale (learning community) measures the extent to which the

student feels that social interaction within the classroom community has allowed him or her to understand the course material better and to reach expected learning goals. The two subscales can either be scored individually for the identification of more specific differences between dependent variables and each of the two components of classroom community, or can be scored as a whole to provide a measure of overall sense of classroom community (Rovai, 2002a).

In an attempt to establish strong content validity, Rovai (2002a) developed the CCS and his definition of classroom community using the psychological concept of community as put forth by Bellah et al. (1985), McMillan and Chavis (1986), and other acknowledged authorities on the subject. A panel of three university professors of educational psychology also evaluated and verified the content validity of the full scale and both subscales. The first study using the CCS reported excellent internal reliability with a Cronbach's coefficient alpha of .93, and a split-half coefficient corrected by the Spearman-Brown prophecy formula of .91 (Rovai, 2002a). Subsequent studies have reported Cronbach alpha coefficients of .92 (Rovai, 2003), .88 (Rovai & Baker, 2005), .92 (Rovai & Gallien, 2005), and .89 (Rovai & Wighting, 2005).

The Learning Preference Scale for Students (LPSS). This instrument was developed by Owens and Straton (1980) and revised by Owens and Barnes (1992). Its use is intended to determine whether students have a preference for independent/individualistic (I/I) or social/cooperative (S/C) learning styles. This scale was chosen because, rather than trying to determine learning style based on abstract psychological and cognitive concepts such as field dependency, transactional distance,

and locus of control, it seeks to determine the students own preferences and attitudes with respect to the learning environment. The complete LPSS instrument consists of three separate subscales, designed to measure student preferences for independent, cooperative, and competitive learning (Owens & Straton, 1980).

During development and benchmarking of the LPSS, both factor analysis and subscale inter-correlations supported the relative independence of each subscale (Owens & Straton, 1980). The focus of the present study was on I/I versus S/C learning style preferences not competitive tendencies. From this perspective, competitive learning style preference was considered outside the focus of this research and this subscale was not administered to the study population. In addition to the previously delineated statistical inferences of independence, each subscale has undergone independent reliability testing (Owens & Barnes, 1992). For these reasons, it was doubtful that removing the competitive learning subscale would affect the validity or reliability of the data gathered with the remaining two subscales.

Each of the two LPSS subscales consists of a set of 12 statements. Each statement has four possible replies representing the varying reactions a person completing the scale might have toward each statement: "Completely true," or "Somewhat true," or "Somewhat false" or "Completely false." Numerical values of 4, 3, 2, and 1 were assigned to each of these responses (or, conversely, 1, 2, 3, and 4 for negatively stated items). Composite scores for each subscale were arrived at simply by adding up the total points assigned to each component item (Owens & Barnes, 1992).

Reliability of the LPSS was established through five major administrations: New South Wales Australia *(2 administrations, N = 1,814)*; Wales, UK *(N = 1,436)*; England, UK *(N = 2,127)*, and the United States *(N = 1,059)*. Reliability for the S/C and I/I learning preference subscales was determined using Cronbach alpha and ranged from .65 to .77 with an average of .714 for the S/C subscale, and from .68 to .72 with an average of .704 for the I/I subscale (Owens & Barnes, 1992).

Telephone interviews. These interviews consisted of open-ended questions to encourage the participant to freely expound on his or her feelings/perceptions about the variables which were measured in the previous email survey. This required a series of questions which directed the students toward the focus areas of the study, without restricting their responses to a narrow set of options. The following questions were developed, modified and/or expanded during the course of the study to provide additional areas of interest in order to enrich the study:

(1) What are the major reasons that prompted you to take online courses at WPCC?

(2) Being as specific as you can, describe the characteristics that you feel are the ideal learning experience for you.

(3) In what ways has your online course(s) at WPCC met the criteria of your ideal learning experience? In what ways has it failed to do so?

(4) In what ways and to what extent do you feel that you have developed personal relationships with your instructors and fellow classmates while taking online courses at WPCC?

(5) In what ways and to what extent have you, your instructors, and your classmates worked together to help you learn during your online courses at WPCC.

(6) In general, have you felt like you were part of a class during your online course(s) at WPCC, or have you felt more "on your own"? Briefly explain why you feel the way you do.

Although the author attempted to maintain an acceptable level of consistency in the content and format of the telephone interviews, differing levels of interaction with the participant were required to encourage students to speak openly and candidly.

Privacy and Security

Information from individual participants was viewed only by the researcher who had no teaching, supervisory, or personal relationships with any of the students surveyed. Names, email addresses, and birth dates were collected from individuals to ensure that duplicate submissions were filtered out, and for the distribution of incentive prizes. After all incentive prizes were distributed, all personal information was stripped from the survey data and replaced with an accession number having no link to the participant's personal identity. All individual responses and personal information remained strictly confidential. All raw data were retained in electronic format on CD-ROM in a locked room and in a locked drawer accessible only to the researcher. Any data gathered from this study which may be made available to third parties, or submitted for publication will be in summarized form with no personal information or any links to the identity of any

individual participant. Maintenance of the students' right to privacy was of paramount importance, at all times, throughout this study.

Data Analysis

Quantitative phase. All raw data collected by SurveyGold through the students' email submissions were uploaded to the Statistical Package for the Social Sciences (SPSS) for statistical analysis.

When all data were collected, item response reliability analyses were performed on each of the CCS and LPSS subscales and also on the combined CCS scale.

Using scores from the two subscales of the LPSS, participants were separated into four learning style preference groups: (1) those who scored above the mean on the I/I subscale and below the mean on the S/C subscale (Group HILS), (2) those who scored above the mean on the S/C subscale and below the mean on the I/I subscale (Group HSLI), (3) those who scored above the mean on both scales (Group HIHS), and (4) those who scored below the mean on both scales (Group LILS). Membership in one of these four learning style preference groups constituted the first independent variable in the study. Other independent variables were gender, age group, and experience with CMI. Dependent variables were scores on the social community subscale of the CCS and scores on the learning community subscale of the CCS. To provide answers to the research questions posed in Chapter One, the null hypothesis was tested against differences and correlations between independent and dependent variables. Expected results if the null hypothesis held true, were:

1. There is no significant mean difference in sense of social community between groups, in terms of learning style preference.
2. There is no significant mean difference in sense of learning community between groups, in terms of learning style preference.
3. There is no significant mean difference in sense of social community between groups, in terms of, gender, age, ethnicity, previous experience with CMI or any interaction of these factors.
4. There is no significant mean difference in sense of learning community between groups, in terms of, gender, age, ethnicity, previous experience with CMI or any interaction of these factors.
5. There is no significant correlation between age and learning style preference.
6. There is no significant mean difference in learning style preference between groups in terms of gender.
7. There is no significant mean difference in learning style preference between groups, in terms of previous successful experience with CMI.

Univariate ANOVAs were used to test hypotheses one and two, with learning style preference group as the independent variable in each test and CCS social community scores and learning community scores, respectively, as the dependent variables.

Two factorial ANOVAs were used to test hypotheses three and four with gender, age group, ethnicity and previous CMI experience groups comprising the four

independent factors, and CCS social community subscale scores and CCS learning community subscale scores, as the respective dependent factors.

Hypothesis five was investigated by performing a two-tailed Spearman rank-order correlation on the ungrouped ages of all participants and those participants' scores on both the independent/individualistic (I/I) and social/cooperative (S/C) learning preference subscales of the LPSS.

To address hypotheses six and seven, two MANOVAs were used to test differences between the independent variables of gender and previous online experience, respectively, and the dependent variables of scores on the LPSS independent and social/cooperative learning preference scales.

Qualitative phase. After all telephone interviews were transcribed, discourse analyses were performed on each transcript. The final presentation of the data utilized Boyatzis' (1998) recommendations for thematic analysis based on a system composed of three major components: (a) *categories of themes with possible sub-themes*; (b) *definitions of the themes and any sub-themes*; and (c) *indicators of those themes*, identified from student references to specific actions, consequences, behaviors, etc. associated with the themes. Emergent themes for each interviewed participant were compared to the results of the standardized survey which the same student submitted. Corollaries and/or discrepancies with standardized survey results, as well as additional contingencies which affected those results were discussed.

CHAPTER IV

ANALYSIS AND PRESENTATION OF DATA

The purpose of this study was to determine if differences exist in sense of classroom community for Computer-Mediated Instruction (CMI) students in terms of learning style (defined as a preference for independent/individualistic or social/cooperative learning). Differences in sense of social community were investigated, as well as differences in sense of learning community. Differences in sense of social and learning community were also investigated in terms of gender, age group, ethnicity, and extent of previous successful CMI experience. In addition, this study attempted to identify any differences that existed in learning style preference with regard to gender and to previous successful CMI experience.

Online Survey Return

The hybrid courses removed and the students, who dropped before the survey was administered, left a study population of approximately 616 students enrolled in 49 courses. Surveys were emailed to student email accounts for all students listed in the college administrative computing system as being enrolled in one or more fully online CMI courses. Of this initial population 379 surveys were returned, for an initial return rate of 61.5%. Unfortunately, 19 respondents indicated that they were currently taking only hybrid courses and, because of the criteria previously established for inclusion in the study, had to be removed. It is believed that the discrepancy between data on the administrative computing system and the 19 discarded surveys may have resulted from students dropping their fully online courses before the survey administration date and

before instructors submitted drop slips for those students to the registrar's office. The final survey count of 360 represented a 58.4% return rate.

Online Survey Reliability and Correlation

Cronbach alphas for the LPSS C/S and I/I subscales were .818 and .785, respectively, indicating that the subscales had acceptable internal consistency. Scale means were 35.69 (*SD* = 5.26) for the LPSS C/S subscale and 33.98 (*SD* = 5.09) for the LPSS I/I subscale.

Cronbach alphas for the CCS Social Community and Learning Community subscales were .88 and .81, respectively, indicating that both subscales had acceptable internal consistency. Scale means were 23.1 (*SD* = 6.49) for the CCS Social Community subscale and 27.75 (*SD* = 5.87) for the CCS Learning Community subscale. The means, standard deviations, and alphas are comparable to those obtained in previous studies.

The Pearson correlation between the independent/individualistic (I/I) and social/cooperative (S/C) learning preference subscales of the LPSS was negative, r (360) = -.64, $p < .01$. The Pearson correlation between the social and learning community subscales of the CCS was positive, r (360) = .56, $p < .01$.

Summary of Online Survey Data

Demographics. Appendix B, Table 1 presents a tabular summary of participant responses to the web survey. Demographically, the large majority of respondents were female (79.7%), Caucasian (84.4%), between the ages of 18 and 59, with an average age of 32. About two-thirds of the participants were enrolled in fully online CMI courses, while about a third was enrolled in both fully online and hybrid CMI courses. About

three-quarters of the participants had taken one or more fully online CMI courses in previous semesters, while about one-fourth had not taken any fully online CMI courses before the current semester.

Two decisions were made as to the structuring of age and ethnicity data which were gathered from the survey. As previous research surveyed, excepting Parker (1999), had all but ignored age as a variable in studying both learning style preference and classroom community, the following degree of latitude was taken in using these data for statistical testing:

As remote-site CMI is often associated with so-called non-traditional students, an age group variable was created from the raw age data collected by the survey. This variable divides the age data into two groups: the first, ages 18-25 (n = 107) are generally considered to be of "traditional" age for college undergraduates; while the second, ages 26-59 (n = 253) are generally considered to fall into the "non-traditional" undergraduate category. This two-group age variable was used in the MANOVA tests for hypotheses six and seven, while the raw individual age data were used for the Spearman correlation testing hypothesis five.

As expected, the survey population was overwhelmingly Caucasian (84.4%, n = 360). The largest minority groups were African-American with 21 respondents comprising only 5.83% of the total population and 19 Asian/Pacific Islander Americans representing 5.28% of the total population. In order to make better use of this ethnic data, it was decided that a compressed ethnic variable would be created which would consist of two groups: (1) Caucasian and (2) combined ethnic minority respondents.

It was anticipated that the greater numbers of respondents in this variable (n = 56, 15.6%) would add more power and validity to any statistical test incorporating it. Justification for this synthesis of ethnic minorities exists in the previously surveyed literature which most often found Caucasians, particularly of Western European descent to be generally more individualistic and oriented toward independent learning situations, whereas minorities from more socially oriented cultures (African-American, Hispanic, Asian, etc.) tend to embrace a more social/cooperative learning style and favor social learning situations.

Learning style. The study population fell into the four learning style preference groups as outlined in chapter three in the following manner: the High Independent (HILS) group (above the mean on the Learning Preference Scale for Students (LPSS) independent/individualistic learning preference subscale (I/I) and below the mean on the LPSS cooperative/social learning preference subscale (C/S)) comprised 35.8 % of the population (n = 129), while the High Social (HSLI) group (above the mean on the LPSS C/S and below the mean on the LPSS I/I represented 37.8 % of total respondents (n = 136), while the remainder of the population scored either above the mean on both the I/I and C/S subscales (14.4%, n = 52) and were placed in the High Independent/High Social (HIHS) group or scored below the mean on both subscales (11.9 %, n = 43) and comprised the Low Independent/Low Social (LILS) group.

Sense of community. Scores on each of the two subscales of the Classroom Community Scale (CCS) had a possible range from 0 to 40 points, with the higher number reflecting a more positive perception of either social or learning community. The

survey population posted mean scores of 23.10 on the CCS social community subscale and 27.75 on the CCS learning community subscale. Median scores were 23 for the social community and 28 for the learning community subscales. Overall sense of classroom community (combining both subscales) presented a mean of 50.85 and median of 51 out of a possible combined score of 80.

Statistical Analysis

The core of the quantitative method was constructed around the investigation of the seven research hypotheses. Statistical analyses for this study were completed using SPSS (Statistical Package for the Social Sciences, Ver. 14). Results of the statistical examination performed on each research hypothesis are outlined below.

Hypothesis one. There is no significant mean difference in sense of social community between groups, in terms of learning style preference.

This hypothesis was examined by conducting an analysis of variance (ANOVA) between subjects in the four learning style groups and their corresponding scores on the CSS social community subscale. The analysis (See Appendix C, Table 1a) indicated significant differences in sense of social community among learning style groups $F(3, 356) = 17.10$, $p < .05$, $\eta^2 = .17$. The highest mean scores on the CCS social community subscale were posted by the HIHS group (M = 25.77, SD = 7.05), followed closely by the HSLI group (M = 25.10, SD = 6.44) with the LILS (M = 21.26, SD = 5.31) and the HILS groups (M = 20.54, SD = 5.51) posting markedly lower scores. To assess pairwise differences between the four learning style groups for the main effect for sense of community, the Tukey HSD follow-up procedure ($p = .05$) was performed (See Appendix

C, Table 2b). The results indicated that sense of community scores for the HILS group differed significantly from both the HSLI and HIHS groups. Scores also differed significantly between the LILS group and both the HSLI and HIHS group, whereas no significant difference existed between the HILS and LILS groups or between the HSLI and HIHS groups. Due to the presence of significant differences between learning style preference groups, the null hypothesis was rejected.

Hypothesis two. There is no significant mean difference in sense of learning community between groups, in terms of learning style preference.

This hypothesis was examined by conducting an analysis of variance (ANOVA) between subjects in the four learning style groups and their corresponding scores on the CSS learning community subscale (See Appendix C, Table 2a). The analysis indicated significant differences in sense of learning community among learning style groups $F(3, 356) = 2.93$, $p < .05$, $\eta^2 = .02$. The highest mean scores on the CCS learning community subscale were posted by the HIHS group (M = 28.73, SD = 5.76), followed closely by the HSLI group (M = 28.49, SD = 6.07) with the HILS (M = 27.14, SD = 5.72) LILS (M = 26.05, SD = 5.32) groups posting lower scores. However, although the ANOVA indicated an overall significant difference between group scores, the more rigorous Tukey HSD follow-up procedure ($p = .05$) found no significant pairwise differences among groups (See Appendix C, Table 2b). Bonferroni and LSD procedures (See Appendix C, Table 2c) were also performed to further test for the existence of significant pairwise differences. Only the more liberal LSD procedure found significant differences at the $p = .05$ level between the LILS group and both the HIHS and HSLI

groups. No other significant differences between groups were revealed by either supplementary test. Due to the results of the post-hoc procedures and the low effect size presented in the ANOVA, the null hypothesis was not rejected.

Hypothesis three. There is no significant mean difference in sense of social community between groups, in terms of, gender, age, ethnicity, previous experience with CMI, or any interaction of these factors.

This hypothesis was examined by conducting a factorial ANOVA (See Appendix C, Table 3a) with CSS social community subscale scores as the dependent variable and gender, age group, ethnic group, and previous online course experience as independent variables. The analysis resulted in no significant main effects for gender $F(1, 325) = .799$, $p > .05$, $\eta^2 = .00$, age group $F(1, 325) = .84$, $p > .05$, $\eta^2 = .00$, ethnic group $F(1, 325) = .15$, $p > .05$, $\eta^2 = .00$, or previous online course experience $F(4, 325) = .95$, $p > .05$, $\eta^2 = .01$ (see Appendix C, Tables 3b-3e for complete descriptive statistics for variables). In addition, there were no significant interaction effects. The null hypothesis was not rejected for any variable tested.

Hypothesis four. There is no significant mean difference in sense of learning community between groups, in terms of, gender, age, ethnicity, previous experience with CMI, or any interaction of these factors.

This hypothesis was examined by conducting a factorial ANOVA (See Appendix C, Table 4a) with CSS learning community subscale scores as the dependent variable and gender, age group, ethnic group, and previous online course experience as independent variables. The analysis resulted in significant main effects for gender $F(1, 325) = 4.24$,

$p < .05$, $\eta^2 = .01$ and age group $F(1, 325) = 6.8$, $p < .05$, $\eta^2 = .02$. Females (M = 28.11, SD = 5.93) posted significantly higher scores on the CSS learning community subscale than males (M = 26.34, SD = 5.42). Subjects in the non-traditional student age group (26 +) (M = 28.40, SD = 5.96) also posted significantly higher scores than those in the traditional college student age group (18 – 25) (M = 26.21, SD = 5.35. No significant main effects for ethnic group $F(1, 325) = .70$, $p > .05$, $\eta^2 = .00$, or previous online course experience $F(4, 325) = .18$, $p > .05$, $\eta^2 = .00$ were indicated, nor were significant interactions identified (see Appendix C, Tables 4b-4e for complete descriptive statistics for variables). The null hypothesis stood for the variables of ethnicity and previous online course experience, but due to the presence of significant differences within gender and age groups the null hypothesis was rejected for these variables.

Hypothesis five. There is no significant correlation between learning style preference and age.

This hypothesis was examined by performing a two-tailed Spearman rank-order correlation (See Appendix C, Table 5) on the ungrouped ages of all participants and those participants' scores on both the Independent and Social/Cooperative subscales of the LPSS. There was no significant correlation in the data set between age and either Independent Learning subscale scores or Social/cooperative Learning subscale scores (Spearman $r_s =$ -.08 and -.03, respectively, n = 360). The null hypothesis was not rejected.

Hypothesis six. There is no significant mean difference in learning style preference between groups in terms of gender.

This hypothesis was examined by performing a multivariate analysis of variance (MANOVA) with LPSS social/cooperative learning preference and independent learning preference scores as dependent variables and previous online course experience as the independent variable. The multivariate main effect (See Appendix C, Table 6a) for previous online course experience on both sets of learning preference scores was not significant $F(8, 708) = 1.82$ $p > .05$, Wilks $\lambda = .96$, $\eta^2 = .02$. Accompanying univariate effects (See Appendix C, Table 6b) on social/cooperative LPSS scores $F(4, 355) = 1.24$, $p > .05$, $\eta^2 = .01$ and independent learning LPSS scores $F(4, 355) = 2.34$, $p > .05$, $\eta^2 = .03$ were also not significant (see Appendix C, Table 6c for complete descriptive statistics for all variables). The null hypothesis was not rejected.

Hypothesis seven. There is no significant mean difference in learning style preference between groups, in terms of previous successful experience with CMI.

This hypothesis was examined by performing a multivariate analysis of variance (MANOVA) with LPSS social/cooperative learning preference and independent learning preference scores as dependent variables and gender as the independent variable. The multivariate main effect (See Appendix C, Table 7a) for gender on both sets of learning preference scores was not significant $F(2, 357) = 1.75$, $p > .05$, Wilks $\lambda = .99$, $\eta^2 = .01$. Accompanying univariate effects (See Appendix C, Table 7b) on social/cooperative LPSS scores $F(1, 358) = 3.45$, $p > .05$, $\eta^2 = .01$ and independent learning LPSS scores $F(1, 358) = 1.04$, $p > .05$, $\eta^2 = .00$ were also not significant (see Appendix C, Table 7c for complete descriptive statistics for all variables). The null hypothesis was not rejected.

Telephone Interviews – Response and Demographics

All twenty participants who were contacted agreed to take part in the telephone interview portion of the study. This positive response was not unexpected as each participant had previously checked the response box on the online survey signifying their willingness to participate in the follow-up telephone survey. Since participants for this portion of the study were not selected randomly from the general population, but because they represented the two extremes of the independent-social learning style spectrum, it was not expected that the demographics of the telephone interview population should mirror those of the general population. However, there were strong parallels between the two groups. Surprisingly, the mean age of the telephone interview group was identical to the mean age of the parent online survey population (32). Males composed roughly 20% of the online survey population, but only 15% of the telephone interview group. Minority presence was the most skewed from the parent population with only one participant (5%) of the interview group being of non-Caucasian-American ethnicity, whereas about 15% of the online survey population listed themselves as members of minority groups. The average scores on the two CCS subscales for the telephone interview groups were: HILS group, 16.4 for social community and 27.2 for learning community and; HSLI group, 23.9 for social community and 27.9 for learning community.

Presentation of Telephone Interview Data

Each telephone interview took approximately 15 to 20 minutes to complete. Each taped interview was carefully reviewed by the researcher and pertinent themes extracted from each. After the extraction of themes from the individual interviews, similar

concepts, observations, statements, and reflections were condensed into four broad categories which appeared to fit logically with the data: (1) Reasons for Taking CMI Courses, (2) Observations and Assessments About the Preferred Learning Environment, and (3) Coping Strategies Used in the CMI Environment by Learning Style Group. Tables 1-3 in Appendix D summarize the converged themes for all 20 participants in each of the three categories.

Summary of Telephone Interview Data

Reasons for taking CMI courses. Table 4.1 lists all the reasons for taking online courses given by the participants. Many participants gave several reasons. Flexibility was by far the most consistent and critical reason given by a majority of students in each learning style group for triggering their initial interest in CMI. This flexibility was needed to accommodate family and work situations not amenable to set class times and/or travel to campus. An interesting finding arising from these interviews was the number of participants taking these courses because of personal disabilities and the more accessible nature of the CMI environment to certain special needs groups. Three of the 20 participants stated that they had opted for CMI because of physical, emotional, or learning disabilities which favored such CMI advantages as lack of travel, no need for oral communication, heavily text-based study, and limited contact with large groups of people. Three participants mentioned the primary economic benefits of transportation and child care savings, while three stated that they had begun taking online courses because the classes they wanted or needed were only offered online during that particular semester. Only three participants mentioned a preference for working independently as a

motive for initially taking CMI courses, but a majority of HILS participants observed that once they began studying in this format, they began to feel more comfortable with the independent nature of CMI than with the traditional classroom environment.

Preferred learning environment. This category contains statements made by participants indicating the learning environment which they most preferred and a converged summary of observations and assessments made by participants as to what characteristics of that environment they found most desirable. The questions posed to the participants during the interview did not specifically define the term learning environment, however all but one of the participants mentioned either one of the synonyms for either CMI or traditional classroom learning. One participant responded that she preferred a hands-on learning environment in which she could apprentice under an expert and perform the job along with them. The same participant followed up that statement by saying that, "for academic courses," she preferred CMI because it gave her the opportunity to take control of her own learning and do the research and preparation for the courses on her own. After this qualification she was placed in the list of participants who preferred CMI. In total, 14 out of 20 participants (70%) stated that they preferred CMI to the traditional classroom environment, four expressed a preference for the traditional classroom, and two participants insisted that their preference for one environment or the other depended on the course being taught. Categorized by learning style, all 10 participants in the HILS group favored CMI along with 4 members of the HSLI group. Four members of the HSLI group favored traditional classroom learning

with two HSLI participants expressing the aforementioned "depends on course" preference.

Unless otherwise noted, in order to be included as a theme in this category, the concept, opinion, or observation represented by the theme or sub-theme had to be expressed in some depth by multiple participants and mentioned or inferred by others to the extent that it appeared to be a common assumption for that learning environment.

CMI/Online environment. The most recurrent and powerful theme expressed by students about CMI, regardless of learning style preference, was an emphasis on the desirability of a very highly structured, pre-planned, nearly modular learning program. To the extent of a mantra, both HILS and HSLI participants extolled the virtues of well-organized, highly structured, and comprehensive syllabi that are available at the beginning of classes and which are followed religiously by instructors. Related sub-themes included flexible windows for turning in assignments and projects to replace rigid due dates and the availability of liberal supplementary course information available as online documents or web-based resources linked to the relevant topics via the Blackboard course management interface. According to a majority of the participants interviewed, the presence of this tightly structured course program provides CMI its greatest benefits. These benefits include the ability to either work ahead at a faster pace than is possible in a traditional classroom, or to linger for a while to obtain more in-depth knowledge in an area of particular interest. Of even greater importance to these participants, it provides a means of reconciling formal academic learning with the stresses and uncertainties generated by complicated life situations, erratic work

schedules, and extensive family obligations. The importance of the structure factor was underscored by several students who related how they had taken one or two CMI courses that were either taught by instructors who were new to CMI, adjunct and uncommitted to CMI, or generally unfamiliar with the Blackboard course management software. Without exception, the participants evaluated this small number of "bad" courses as lacking organization, structure and forethought in curriculum design. The participants lamented the tendencies of these instructors to post assignments, projects, and assessments "at the last minute;" to change the syllabus in mid-stream by adding or eliminating assignments that had been placed on the syllabus; by failing to provide adequate supplementary documentation online and supporting rigid due dates for assignments even though they were posted or assigned without "adequate" notice. It is clear from interviewing these CMI students that spontaneity and dynamic change are not factors in their ideal learning environment and not the reasons why they gravitate to CMI courses.

Along with structure, the theme most often developed in these interviews with reference to CMI was that of timely instructor feedback. Across the board, regardless of learning style preference, this theme was introduced by all 20 interviewed participants. Many of them elevated its importance to that of a survival factor, an unequivocal necessity for success in their courses. As with the structure factor, these participants were generally very satisfied with the extent and timeliness of instructor feedback in their CMI courses, but there were, once again, a small number of "bad" courses in which, according to one student, "the instructor disappeared a couple of weeks into the course."

As negative themes in this category, several participants of both learning style groups mentioned the occasional frustration of extended lag times waiting for instructor replies to questions by email or the availability of instructor contact by phone. As a sub-theme, two participants pointed out that difficult questions or problems may have required multiple emails stretching over a period of several days to be fully addressed, whereas a single face-to-face conversation may have produced a solution in a few minutes. Two participants who expressed a strong preference for CMI, nevertheless admitted some uncertainties which they had, as to whether they were learning the subject matter, in this format, as well as they would have in the traditional classroom.

Traditional classroom environment. Positive themes related to the traditional classroom came from both learning style groups. The two most persistent positive themes put forth were the benefits of face-to-face exchange with the instructor, which was mentioned frequently by both HSLI and HILS groups, and the catalyst of in-class discussion with other students, which was primarily an HSLI group theme. Sub-themes included the frustration of extended lag times waiting for instructor replies to questions by email or the availability of instructor contact by phone. Several participants pointed out that difficult questions or problems may require multiple emails stretching over a period of several days to fully address, whereas a single face-to-face conversation could arrive at a solution in a few minutes. Several HSLI group participants strongly emphasized how they were motivated to see issues from different perspectives and thereby more clearly and comprehensively understand a topic by the vehicle of classroom discussion. Two HSLI students mentioned the value of facial expressions, gestures, and

body language in better facilitating the communication of ideas, advantages which are not available with CMI asynchronous discussion forums or synchronous chat rooms.

Negative themes about the traditional classroom environment were expressed solely by HILS group participants and included alleged time wasting behaviors which resulted from too much socializing and irrelevant conversation in the traditional classroom which severely diminished class time devoted to actual learning. Two participants mentioned past experiences they had in traditional classrooms with fellow students who attempted to monopolize discussion in the classroom and essentially lock others out of the process. They pointed out their belief that this situation is less likely to occur in online forums where anyone can post their ideas at any time without having to wrest an opening from more aggressive classmates.

Depends on the course. These two participants felt that the difficulty level of the course determined their choice of learning environment, with an inclination to take easier courses in CMI format and more difficult courses in the traditional classroom setting. Asked to expound on the meaning of "difficult," both participants provided math and certain science courses as examples of courses with higher levels of difficulty that they would prefer to take in the traditional classroom. They felt that the complexity and abstractness of some of the concepts covered in these types of courses demanded the actual presence of an instructor to broker understanding.

Coping strategies by learning style. This category of responses represents the core qualitative data to be used for triangulation with the quantitative results. According to their LPSS scores, each group should be at the extreme limits of their respective styles

and should present very different coping strategies in the CMI environment. This indeed was the case with these participants.

Table 2 in Appendix D is a converged summary of themes which relate to the coping strategies used by each learning style group as related to the researcher in the telephone interviews. In order to be included as a theme in this category, the coping strategy had to be expressed in some depth by multiple participants in their respective learning style group, and mentioned or inferred enough by others in that group, to the extent that it appeared to be a common strategy employed within the group. As the table clearly displays, the two learning style groups took very different approaches to learning in CMI, particularly as it involved the extent to which the communications technologies available were used for social interaction.

High Independent,Low Social (HILS) Learning Group. Themes originating from this group indicate a heavy reliance on course materials for reaching their learning goals and less on exchange of information with others. Their communication with instructors although significant at times, was primarily via email or the discussion boards as opposed to telephone or face-to-face meetings arranged in the instructor's office which tended to concentrate on the business of the course and rarely on social exchange. HILS learners seldom contacted other students for course support and even less so for any type of social exchange. Although these HILS learners did on rare occasions visit the instructor's office to find assistance with very difficult course problems, not a single member of this group ever mentioned purposefully arranging or attending a face-to-face group meeting with other students in their CMI courses. Many

members of the HILS group expressed dislike, even loathing, for online group projects in their CMI courses, giving such reasons as difficulty in contacting other group members, general discomfort in working on projects with others, inability to come to a consensus with others, and the unwillingness of others to "pull their load." The general feeling among members of this group was that they were taking their CMI courses to learn the material, and social interaction with other students was either unnecessary to achieve their learning objectives or was an actual impediment to doing so. This group used the discussion forums and took part in critiquing the projects and opinions of others in these forums to the extent required by the instructor for passing the course. However, although admitting to some educational value in reviewing other students' ideas and opinions, this group was not nearly so enthusiastic about discussion forum use as their HSLI group peers. These HILS participants tended to either feel like they were "on their own" in their CMI courses or measured their feelings about being part of a class based on content-based interaction with the instructor alone. Two participants of this group who expressed strong preference for CMI, nevertheless admitted some uncertainties which they had as to whether they were learning the subject matter, in this format, as well as they would in the traditional classroom.

High Social, Low Independent (HSLI) Learning Group. Themes expressed by this group indicated a proclivity to use the communications technologies available with the online courses to their full extent for both academic as well as for social interaction and to put forth additional effort to create opportunities for face-to-face interaction with both instructors and other students. Exchanging information and sharing

ideas was, for this group, a primary vehicle for learning, being placed on an equal, if not greater footing than course materials. This group would rather ask and get others involved in the solution of a problem than to spend large amounts of time trying to figure the answers out themselves. This group not only tended to contact the instructor more than their HILS peers for academic support, but also sought to build stronger social relationships through exchange of personal information with their instructors. An important theme expressed by the majority of HSLI group interviewees was "getting to know" the instructor "as a person," a primary goal never entertained by any of the participants in the HILS group. As a result, they not only used email, but also telephoned instructors on a regular basis and arranged periodic face-to-face meetings in instructor's offices or campus labs to present questions, address problems, assess their progress in the course, and also exchange social pleasantries and personal information. In even more contrast to their HILS peers, this group frequently emailed or phoned fellow CMI classmates for help with course assignments and most, on a regular basis, arranged meetings either on campus or elsewhere to discuss the course, work on assignments as a group, and exchange personal information and friendly banter. Unlike their HILS counterparts, this group welcomed online group projects in their CMI courses and opted for group work when given the opportunity. They did not seem to mind the logistics of coordinating group work and considered the difficulties of such more than outweighed by the benefits. The majority of this group consistently used the discussion forums for the exchange of ideas, suggestions, and specific course related information, far beyond the level required to merely pass the course. HSLI learners considered the discussion forum

to be critical to their learning success and they also frequently exchanged non-sensitive personal information with others via forum posts, a practice never mentioned by participants in the HILS group. HSLI learners also tended to opt in for the optional online synchronous chat sessions which were offered by some CMI courses at WPCC, whereas the HILS group either ignored them altogether or sat in on one session and never returned. HSLI group members generally felt like they were part of a class in their CMI courses, but based that evaluation on the interaction they had with both instructors and fellow classmates. HSLI learners perceived, "being on your own" in a course as a negative situation. There were two participants in the telephone interviews from the HSLI group whose themes were skewed from the norm outlined above. One of these participants was a foreign student who, although expressing a strong desire for social interaction in the classroom and placed squarely in the HSLI group based on her LPSS scores, stated unequivocally that she felt isolated in her courses and mentioned using very few of the coping strategies prevalent in her group. She stated that being deficient in English skills made her feel reticent to engage other students in online dialog, telephone conversation, or to participate in any group meetings. She also felt that she was sometimes too much of a bother to her instructors for trying to phrase her questions in a way they would understand what she needed to know and for having to ask them to clarify their answers and give her feedback on several occasions. Two HSLI participants who had stated strong preferences for the traditional classroom rather than CMI, also related using fewer of the coping strategies developed by other HSLI peers. These

participants were also unique in that they strongly emphasized the theme of being forced to change their way of learning in order to adapt to their online classes.

Validity

It is this researcher's opinion that, in general, the converged themes extracted from the telephone interview participants triangulate with the learning style groups into which the LPSS instrument placed them. The qualitative method therefore supports the validity of the quantitative method.

CHAPTER V

FINDINGS, CONCLUSIONS, AND RECOMMENDATIONS

The purpose of this study was to determine if differences exist in sense of classroom community for Computer-Mediated Instruction (CMI) students in terms of learning style (defined as a preference for independent/individualistic or social/cooperative learning). Differences in sense of social community were investigated, as well as differences in sense of learning community. Differences in sense of social and learning community were also investigated in terms of gender, age group, ethnicity, and extent of previous successful CMI experience. In addition, this study attempted to identify any differences that existed in learning style preference with regard to gender and to previous successful CMI experience.

This chapter presents an interpretation of the findings drawn from this research and a presentation of conclusions based upon these findings. The chapter concludes with recommendations for practice and future avenues of inquiry stemming from these findings and conclusions.

Findings

The ANOVA test of hypothesis one between subjects in the four learning style groups and their corresponding scores on the CSS social community subscale indicated that there was a highly significant difference in sense of social community among learning style groups within the CMI population being surveyed. Those participants who displayed either a high primary preference for social/cooperative learning (HSLI) or a high preference for social/cooperative as well as independent learning (HIHS) perceived a significantly higher level of social community in their CMI courses than did their peers who displayed either a high primary preference for independent learning 9(HILS) or low

preferences for both social/cooperative and independent learning (LILS). It seemed that an initial affinity for social learning shared a positive relationship with the perception of social community. This raised the question as to whether this relationship was based solely on perception, or if these groups were actively engaging in different learning behaviors which were consequently shaping their perceptions of the CMI environment. The results of the qualitative method suggested the latter.

The themes derived from the telephone interviews clearly depicted radically different adaptations to the CMI environment by representatives of the two extreme ranges of learning style preference. Highly independent (HILS) learners reported learning behaviors which deemphasized social contact: an attitude that absorbing and comprehending course content was the primary goal, that it displayed better mastery to learn things on their own, and that contact with teachers or peers was useful only to the extent that it filled in the gaps in understanding not provided by self-study. Social contact, beyond this utilitarian perspective was considered at best unnecessary and, at worst, a time-wasting obstacle. In line with this philosophy, HILS learners tended to use the communications technologies available within their CMI course management systems at modest levels. They preferred the less interactive communication of email to that of discussion forums and especially to that of the online chat. They arranged face-to-face meetings with the instructor only when they felt it absolutely necessary to get answers to a problem and rarely, if ever, initiated contact with other classmates, except when required to do so by course assignments. They opted out of group projects whenever possible, preferring to trust their own capabilities and commitment, rather than creating a

dependence on others. HILS learners generally had a "let's get finished and move on" approach to their courses.

Highly social (HSLI) learners, at the opposite pole, used social contact as one of their primary tools for learning course content. They were much more likely to involve the instructor and other peers in solving problems than to try digging the answers out on their own. To them, learning was a social experience which was strengthened by interaction, dialog, and consensus. These learners were much more likely to make heavy use of the communications technologies available in their CMI environment, including the more interactive ones such as discussion forums and the online chat. They were also far more likely to initiate contact by telephone, to arrange face-to-face meetings with the instructor and other classmates, and to seek out opportunities for group projects within the context of their course assignments. These learners also considered building social rapport to be a legitimate part of the overall learning experience which augmented rather than diminished learning community.

The combined results of the quantitative and qualitative methods of this study thereby suggested that not only was there a significant difference in the perception of social community in the CMI environment by learners possessing different learning preferences, but that their perception was a self-fulfilling phenomenon. These CMI learners perceived the social community which they themselves created by their own actions; actions which developed out of their personal learning preferences.

Although the ANOVA test of hypothesis two indicated significant overall differences among learning style groups with respect to sense of learning community,

only the most liberal of the three post-hoc tests (LSD) indicated a meaningful between group difference existed in the lower scores registered by the LILS group, those participants who scored low on both the independent and social learning preference subscales of the Learning Preference Scale for Students (LPSS). This lack of support from 2 of 3 post-hoc tests, and the low effect sizes caused the researcher to accept the null hypothesis which suggests that among the LILS and the other three groups (high independent (HILS), high social (HSLI), and the group that combined strong elements of both independent and social learning styles (HIHS)), although their preferred learning styles and concurrent strategies in adapting to CMI were radically different, their perception and satisfaction with the extent of learning that had taken place was approximately the same. These data attest to the effectiveness of learners in developing coping strategies specific to their personal learning style, by utilizing the technologies and opportunities available to them in CMI. Since the scope of this study did not include the interviewing of participants in the LILS group, we can only speculate on why they displayed a difference tagged as significant by the LSD test only. Scoring below the mean on both the independent and social/cooperative learning scales of the LPSS could perhaps indicate an overall lack of direction and motivation in this group of learners, a situation which could parallel the perception of a lack of learning in their courses.

Several previous studies by Herring, (1998), Savicki et al.(1996), Wolfe (1999), Barrett and Lilly (1999), Belenky et al. (1986), and Blum (1999) identified a preference by female members of CMI cohorts for social connectedness and group-based learning, which suggested that the perception of, and need for, social community were stronger in

females than males. However, the factorial ANOVA performed on data collected from the online survey revealed no statistical relationship between gender and scores on the social community subscale of the CCS. In addition, although all four of the twenty telephone interviewed participants who expressed a preference for traditional classroom learning (viewed by most previous researchers as embodying more social community than CMI) were female, and of the 13 remaining females in the group, 11 expressed a strong preference for CMI and two preferred CMI except for courses in certain subject areas.

The lack of a "gender gap" in the perception of social community in the current study, as opposed to that of previous studies, could reflect a growing competence and comfort among female learners in exploiting the communications technologies available through CMI and a growing sophistication, gained through experience, in manipulating the CMI environment to maximize social community. The divergence from these data and that reported in previous studies could also reflect an anomaly of the males who represented only 20% of the total sample population in the online survey and 15% of the telephone interviewees. However, previous studies have also reported similar gender skews in their CMI cohorts. An absence of gender disparity regarding a female proclivity for social learning in this particular population is also underscored by the analysis of data which tested hypothesis six. No significant relationship between gender and initial learning style preference, as measured by the two LPSS subscales, was apparent.

A significant gender difference was, however, indicated with respect to sense of learning community in the ANOVA test of hypothesis four. Within the study population, female CMI students felt that they were learning more in their courses than their male counterparts. Along with the lack of any difference in the perception of social community between the two sexes, this finding has some strong implications. Not only were the female students in these courses finding the means to successfully develop adequate social scaffolding to cope in a learning environment which earlier research had suggested may put them at a disadvantage, but they had mastered these coping strategies to the extent that they felt like they were learning more than their male classmates.

Although Parker (1995) found no significant impact of age in predicting the successful completion of CMI courses, the present study revealed that participants in the 18-25 age group perceived a significantly lower level of learning in their CMI courses than did those in the 26 + age group, as reflected in their scores on the LPSS learning community subscale. Although we cannot directly extrapolate actual learning success to self-perception of learning, Pace (1990) provided research supporting the validity of self-perceived learning based on its consistency with actual achievement testing over time and across academic majors. Corallo (1994), as well, concluded that self-perceived learning reports are valid indicators of results obtained through more direct means of assessment. However their perceptions may correlate with actual learning, it is evident that, in the present study population, non-traditional age college students felt that their learning needs were being met by CMI at a significantly higher level than did traditional age college students. However, results of the Spearman correlation which tested hypothesis

five would suggest that the difference did not lie with changing learning style preferences over time, as no significant relationship between age and learning style preference was indicated.

The lack of any significant differences between Caucasians and non-Caucasians in perception of both social and learning community in CMI, as tested in hypotheses three and four, also runs counter to previous assertions by Flannery (1995), Horvat and Lewis (2003), Durodoye and Hildreth (1995), and Sanchez and Gunawardena (1998). It is also at odds with the results of studies by Rovai and Gallien (2005), and Rovai and Wighting (2005) which employed exactly the same CCS instrument used in the present study. The researcher strongly feels that this dichotomy with previous research is a result of the very small percentage of non-Caucasians present in the overall population and the rural southern environment from which the study population was drawn. The researcher is still confident of the validity of previous research which involved populations containing much larger percentages of ethnic minorities in more diverse settings and which documented a greater proclivity for, need for, and awareness of, social interaction in the learning environment among ethnic minorities reared in more group-oriented cultures.

The results of the quantitative analysis also provided no support for the conclusions of Thompson and Knox (1987) and Ching (1996) which suggested that experience with CMI may skew a student's learning style toward a more independent/individualistic approach. The ANOVA test of hypothesis three showed no significant difference in sense of social community (as measured by the CCS) between

groups based on the number of CMI courses previously completed. Neither were there any significant differences between groups based on previous number of CMI course completed and their corresponding scores on the independent/individualistic (I/I) and social/cooperative (S/C) learning preference subscales of the LPSS., as revealed by the MANOVA test of hypothesis six. If the assumptions of Thompson & Knox, 1987 and Ching, 1996 assumptions were to hold true for the current study population, one might expect some sort of significant difference among CMI experience-based groups regarding perception of social community and most certainly some significant difference in expressed learning preference, neither of which is supported by the data from the online survey. However, during the telephone interviews, themes expressed by two of the HSLI group interviewees very strongly alleged that they had been forced to change their learning styles significantly in order to be successful in the CMI environment. They also expressed a continued preference for classroom over CMI learning and wished their current circumstances allowed them to study in a traditional classroom. These themes were supported by the coping strategies of the two participants who resembled those typical of the HILS group much more than those of the majority of HSLI group interviewees. A speculation is, that they may indicate an alternative coping strategy, employed by some social learners who are forced by life or logistical circumstances, to utilize CMI, but for some reason are unaware of, unable to, or unwilling to, shape their more social learning style to the exigencies of the CMI environment and instead, adopt the coping strategies of independent learners. These themes provide some support for a

change of learning style as a coping strategy, but not as a true change of learning style preference.

Supplemental Findings

Data collected in the qualitative method resulted in several interesting findings which were not addressed by the initial seven research questions nor by the hypotheses established to test them.

By far, the most frequently expressed theme in the telephone interviews was a strong preference by both independent and social/cooperative learners for a tightly structured curriculum in their CMI courses. This tightly structured curriculum was expected to be planned out well in advance with few, if any changes, in course content or requirements during the course of the semester. This is in accord with the findings of Stein (2004) who, in a survey of 201 online and hybrid students in three universities, found that:

> structure was the most important factor in online learner satisfaction and community formation….Structure includes things such as clearly defined objectives, assignments, and deadlines, and encouraging dialogue…All those components had to be present for us to have students say they were satisfied with how the course was conducted. (Stein, 2004, p.4)

Hand-in-hand with this tightly structured curriculum, students in the current study desired a high degree of flexibility in assignment due dates which embodied not only the right to take more time to complete a project, but also the ability to complete assignments early, suspend course work for a period of time, concentrate more time on areas of personal or professional interest, and/or move forward to complete the majority of course

work well before semester's end in order to facilitate greater course loads and rapid program completion. All of these themes manifested a critical need for the learning environment to accommodate the numerous employment and family demands of working-class students. These students, taking college courses, often at great personal sacrifice, look to higher education as their primary means of social mobility. It is not difficult to imagine how predictable order in a learning experience could be an inspiration and welcome emotional/intellectual refuge for students whose lives are otherwise characterized by chaotic socioeconomic situations and erratic work schedules.

The second most frequently espoused theme was the critical need for frequent and timely instructor feedback. Tu and McIsaac (2002) identified feedback as one of the critical factors in developing online social presence which Tu and McIsaac considered a predictor of student success and satisfaction in CMI. Of good news to the institution in which the current study was conducted, was that interviewees expressed a general level of satisfaction with instructor involvement and feedback, and with but few exceptions, these usually related to new CMI instructors inexperienced with the format or with the occasional substitute brought in to accommodate personal emergencies.

The final factor discerned by the qualitative method which was of particular interest to the researcher was the relatively high number of interview participants who stated that their primary reasons for taking CMI were the limitations arising from physical, emotional or learning disabilities. Three out of the 20 or 15% indicated that CMI was the format most amenable to providing access to learning, based on disability factors. The question arises as to whether this percentage holds up in the general

population. To this researcher's knowledge, there have been no formal scholarly inquiries into the subject of CMI as a coping strategy for the disabled although, logically, it would seem apparent that the format would have exceptional value to those limited by mobility and emotional factors.

Conclusion

Throughout the inception and growth of Computer-Mediated Instruction (CMI), educators have expressed the concern that the format tends to create feelings of isolation and, in some circumstances, alienation from the instructor, classmates, and the educational institution itself. It has been argued that social presence, social interaction, transactional presence, or sense of community - whatever the term of the year for human interaction may be - is absolutely indispensable to satisfaction and success in learning, and that CMI potentially deprives the student of that necessity. On the other hand, much research has been done and numerous standardized instruments have been developed to identify native learning style preferences in human beings which range from extremely independent, self-motivated, and self-directed learners to extremely dependent, peer motivated, and community directed learners, with many learners who combine various aspects of the two extreme poles, occupying a wide range of learning preferences in between. Despite strong evidence for these differences in learning style preference, the fear that CMI is depriving all learners of the birthright of social intercourse has continued to render its educational validity suspect and positioned it as the bastard child of traditional classroom learning.

The primary focus of the quantitative method of this study was to determine, within the limitations of a very specific population, the learning style of each participant and how that learning style preference predicted the perceptions of: (1) being part of a social unit, i.e., the classroom; and/or (2) being part of a community of learning which facilitated the participants' desired learning goals. The Learning Preference Survey for Students (LPSS) was selected to identify learning preference (based on either independent/individualistic or social/cooperative) while the Classroom Community Scale (CCS) was selected to measure perception of social and learning community. To augment the quantitative method, the primary focus of the qualitative method was also two-fold: (1) to underwrite the validity of the quantitative method by determining if the stated coping strategies used by telephone interviewees were consistent with the two extremes of independent/individualistic and social/cooperative learning preference; and (2) to determine how those coping strategies differed and to what extent they indicated a significant divergence in adaptation to CMI.

Results of the quantitative method indicated that, in the present study's sample of 360 CMI learners, those with a preference for independent learning perceived a significantly lower level of social community than those who either prefer social learning or combined strong elements of both social and independent learning in their learning styles. The implication is, therefore, that, in this CMI sample, initial learning style preference predicted perception of social community. However, the quantitative method left unclear as to whether this difference in perception of social community was simply a matter of perception or whether it was a result of different behaviors arising from

learning style preference. The qualitative method provided some powerful answers to these questions. Themes extracted from the 20 telephone interviews (ten highly independent learners and ten highly social learners) clearly demonstrated almost polar opposite differences in CMI coping strategies based on learning style preference. In this telephone interviewed population, highly independent learners reported coping behaviors which de-emphasized social contact, whereas highly social learners used social contact as one of their primary tools for learning course content. Both learning style extremes either used or chose not to use technologies and social options which were available to them through their CMI courses to build social community. Of even greater interest to this researcher were the data gathered by the quantitative method which displayed no significant difference in perception of learning community among learning style preference groups. Qualitative themes also reinforced satisfaction with the learning taking place and overall satisfaction with CMI by the sample population. All of the independent learners and a majority of the social learners who were interviewed, expressed a preference for CMI over the traditional classroom setting, because of the many advantages it offered in accommodating their personal lives, while still providing a satisfying learning experience.

These results call into question the view of some educators, sympathetic to the social/transactional and allied schools of thought, that CMI courses should be required to embed numerous assignments which mandate social interaction in the cohorts, and to minimize feelings of isolation which may put at risk the retention of those who prefer a social learning style. This research suggests that, given the options and the opportunities

to engage in social interaction in their CMI courses, social learners will, in most cases, take the initiative in developing social community. They do not need to be forced to do so by mandatory assignments. Even the small percentage of social learners interviewed, who adapted to the CMI environment by changing their coping strategies to those of a more independent learner, still expressed the perception that learning was taking place and that the benefits of CMI, given their current life situation, outweighed the disadvantages. On the other hand, several independent learners in this study, expressed strong aversion to forced attempts by the instructor to cultivate social community, such as mandatory group projects and live chat sessions, which they perceived as not only a waste of time, but as defeating the purpose of CMI by eroding its flexibility. Perhaps CMI educators should ask themselves if it makes sense to alienate the independent learners in order to enforce a social learning environment which social learners, given the proper technological tools and course options, are quite capable of creating themselves. Perhaps the key to a successful CMI experience for all learning styles lies in tools and options and not in mandates. As Sanchez and Gunawardena (1998) counsel:

> In general, when trying to accommodate a variety of learning styles in the instructional design, it is always best to design alternative activities to reach the same objective and give the students the option of selecting from these alternative activities those which best meet their preferred learning style (Sanchez and Gunawardena, 1998, p. 59).

Other significant findings in this study bring it into conflict with several previous research efforts. It has generally been accepted from previous scholarly inquiry that a significant difference exists in the need for, and perception of, social

interaction/community in CMI based on gender, with females preferring more social interaction than males, displaying greater susceptibility to technological isolation, and overall, demonstrating less satisfaction and success with CMI. This study found no indication of gender differences in either perception of social community in CMI or a female proclivity for a social learning preference. Compounding the divergence from previous studies, these data also showed females to have a significantly higher level of learning community (they feel they are learning more in the CMI environment) than their male counterparts. These disparities with past research may be explained, in part, by increasing technological savvy among women who must learn to use computerized devices in their everyday lives, embodying a technological sophistication which, in the early and mid-1990s, would have been the sole provenance of male computer geeks. Another explanation could be a difference in the type of female learner who is currently opting for CMI, as opposed to those matriculating the format in its nascence. A greater awareness of what the format is, and the demands and limitations it entails, may result in females being more amenable to the format choosing these classes. The lack of a "gender gap" in this population may also be influenced by the increasing societal prioritization of education and learning by women, as a means of social/economic advancement and the corresponding decline of such attitudes among men. This researcher personally believes that the closing gender gap with technological-based learning may also reflect the often superior flexibility of women in rapidly adapting to changes in their social environment as a response to obstacles which men, in general, have not so frequently had to overcome.

Whatever the cause, this research may be a small indicator that research into gender and CMI may need to be revisited.

Although characteristics of maturity, commitment, responsibility, and career focus may all contribute to non-traditional-age students' perception of a more successful CMI learning experience than traditional age college students, in this study, this research design does not allow for us to assign causative factors. However, results of the quantitative method do suggest that the phenomenon discovered is not a product of changing learning style preference over time.

Qualitative data collected from the telephone interviews suggests that CMI students, in the present research sample, strongly preferred a high level of structure in their course design; structure which incorporates challenging assignments, but does not change from the syllabus presented at the beginning of the class. Participants also expressed a need for a reasonable range of flexibility in assignment due dates to accommodate dynamic life and work contingencies. These learners seemed more satisfied if they were able to progress ahead in their courses, at their own pace, to the extent of being able to finish classes early, to take breaks in mid-course to accommodate life demands, to spend longer periods of time on subject areas of particular interest, and, when taking multiple courses, to have the freedom to juggle the amount of time they spend on each course throughout the semester.

Recommendations for Practice

Traditional-age, college students in this study displayed a lower perception of learning goals having been satisfied than non-traditional-age college students. If

replicated in future research, such a perception, especially if mirrored in actual academic performance, could call into question whether the use of CMI as a dorm room alternative to the classroom for on-campus students, as practiced by many colleges and universities, constitutes the best use of this learning option. It could also have strong bearing on the marketing of CMI by colleges and universities and predicate the need for age-specific orientation programs.

Further results of this study suggest that a major strategy which might be employed by CMI designers and instructors to elevate student satisfaction is to increase the amount of structure within their courses, carefully mapping out all requirements, assignments, and activities in the course syllabus and following that syllabus conscientiously throughout the semester. This tight course structure should be paired with a reasonable flexibility in the assignment due dates. The goal should be to maximize the potential of CMI to accommodate erratic life circumstances by not tying the student down to specific time periods while still maintaining challenging content and rigorous assignments.

Too often colleges and universities implement CMI remote learning programs without carefully considering the full benefits of the paradigm. Often, they develop CMI programs which offer no more benefit to the non-traditional student than a simple change of venue. They limit the enormous flexibility of CMI by requiring a large amount of mandatory online chat at designated times, mandatory group projects which often require students to meet at specific locations and times to plan and distribute workloads, rigid assignment due dates, required on-campus meetings with instructors, and compulsory on-

campus class meetings and test dates. It is not difficult to understand students who would question the advantage of having to deal with a higher level of technology in their learning experience, while receiving few, if any of the benefits, of flexibility and accommodation inherent in that technology. Often the excuses given for these "pseudo-traditional" implementations of CMI are rooted in tenacious adherence to the various social learning theories and presumptions which have been discussed in this paper. This thinking insists that if CMI is to be used, it must, in its own bastardized way, embed the social interactive elements of the traditional classroom. The value of the current research may be in reminding CMI educators of two very important realities of learning which have been long-accepted in the traditional classrooms which they strive so dutifully to emulate: (1) human beings do not all learn in the same way and favoring those who prefer one learning style may well alienate others, and (2) human beings are remarkably adaptable to new life situations, learning or otherwise, when given the options, tools, and basic resources to shape that situation to meet their needs. This researcher suggests that it may be time to consider building new theories and practices in computer-mediated instruction that are not burdened by presumptions arising from comparison with the traditional classroom, but are derived from fresh and rigorous research within CMI alone and with CMI students as the sole focus. This new approach will involve shedding the inferiority complex that has burdened CMI by measuring itself in terms of traditional classroom standards and maxims. It will involve recognition that CMI is fundamentally different and valid in its own right, and, although it will probably never be the best learning solution for all people, it can be a very good and possibly even superior solution

for some people. Such an approach will, this researcher believes, allow CMI to unapologetically embrace the benefits of flexibility within structure. The diversity of technological tools and assignment options should fully utilize the creation of learning choices to accommodate different learning styles. Maximizing the potential of asynchronous learning could release the non-traditional student from rigid timetables and mandates which impede rather than motivate learning in a world already too rife with demands. As previously stated, this research suggests that the key to a successful CMI experience for all learning styles lies in tools and options, rather than mandates.

Recommendations for Future Research

It would be helpful to replicate this research at the current site, in the future, or at another institution providing CMI, to see if the relationship between learning style preference and sense of community continues to hold up, especially as it concerns the significant differences in perception of social community compared with the lack of significant differences in learning community. The stated scope of the current research limited the qualitative method to interviews of participants scoring at the extreme ends of the LPSS scale in the hope of more clearly delineating CMI coping strategies arising from learning style preference. The researcher believes this strategy was successful in both validating and explaining the results obtained in the quantitative method. However, additional information including qualitative data gathered from the two learning style preference groups (HIHS and LILS), which shared or lacked the characteristics of both extremes, would be an interesting addition to future research. This researcher recommends that the qualitative method be expanded in any future study to encompass

interviews of members of the HIHS and LILS groups. It would be valuable to ascertain whether the coping strategies of the HIHS participants combine aspects of coping strategies employed by the two extremes in a more or less balanced formula, or whether their strategies tend to skew toward either one extreme or the other. In the case of the LILS group, it would be interesting to attempt to confirm or deny the speculation put forth by this researcher that scoring below the mean on both LPSS subscales could denote problems with motivation and/or self-confidence which resulted in this group being the only one to display a significant difference in perception of learning community.

The researcher would also like to see this study repeated within a more ethnically diverse population as he believes the small percentage of minorities in the current sample did not provide sufficient numbers from which to draw valid inferences. The author suspects that even with the growing integration of minorities into technocratic society through computer-based entertainment and information sharing devices, in more diverse urban settings with large, distinct ethnic communities, significant differences in learning style preference and perception of social community would be detected.

With regard to the discrepancy in perceived learning between traditional and non-traditional age college students identified in this study, the researcher advises that future research in this area expand its scope to identify causative factors underlying any differences in learning perception (or actual learning) which may exist between the two age groups within the CMI environment.

Some significant divergences among female learners regarding learning style preference and perception of social community brought the current study into conflict

with the findings of several previous studies of a seminal nature. The finding that female learners displayed a significantly higher sense of learning community than males (hence greater satisfaction with the success of their learning environment in meeting self-prescribed learning goals) seriously undermines previous arguments about female disadvantage in CMI. There seems to have been something of a lapse in scholarly inquiry with regard to gender factors in CMI over the past few years and, in its modest way, perhaps the results of this study have signaled the need for further investigation into what changes may have taken place in female CMI learners as women have come into their own in technological savvy, socio/economic independence, and educational attainment.

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APPENDIX A

Consent Forms

Document 1
Email Introduction and Consent Form for the Online Survey

Greetings Western Piedmont Community College Online Student!

At the bottom of this email you will find a link to an electronic survey which is part of a research project being conducted under the supervision of the Department of Curriculum and Instruction of the School of Education at the University of North Carolina at Greensboro. This research will form the core of a doctoral dissertation project. The purpose of the survey and the project is to gather information about how you, as a student, prefer to learn and how you feel about your online learning experience at WPCC. Information gathered in this survey may assist educators and administrators involved in online learning in creating more satisfying and successful learning experiences for students like you.

As an incentive for your participation, all WPCC online students who return a fully-completed survey will be eligible for a random drawing to award (2) $50.00 and (10) $20.00 gift certificates to any Best Buy outlet. However, prizes will only be awarded if we are able to achieve, at least, a 50% return rate from our survey, so please take just a few minutes to complete the survey and qualify both yourself and other WPCC online students for a chance at one of the prizes.

Take note that we are interested in your overall online learning experience here at WPCC, so although you may receive multiple mailings of this survey, because you were registered for more than one online course this semester, please only fill out and submit ***one*** survey. Delete any additional survey solicitations you may receive. ***More than one submission of a survey by a student will make that student ineligible for the prize drawing.*** Five days after the official closing date of Nov. 16th all participants will be emailed to confirm whether or not the 50% return rate was achieved. If the qualifying return rate is achieved, ten days after the close of the survey, winning entries will be selected by a random drawing and all winners will be notified within one week of the drawing. Winners may either drop by the Learning Resources Center at WPCC to pick up their gift certificates or send the principal researcher a mailing address and the certificate will be promptly mailed. Three weeks after the closing date of the survey, a list of prize winners can be obtained by emailing dsmith@wpcc.edu.

Please note that this survey is entirely voluntary. Although the administration of Western Piedmont Community College has given its permission to conduct this research, responsibility for the content of the survey, the compilation of data gathered from the survey, the security and publication of data gathered from this survey, and the selection and disbursal of any prize awards lies with the principal researcher, not the College.

Personal information gathered from this survey (name and email address) is gathered solely for the purpose of ensuring unique submissions and for the award of prizes. After all prizes are awarded, personal information will be stripped from every survey submission and replaced with a unique accession number, at which time all student personal information will be deleted from the research data. All information gathered from this research will be stored in electronic format on CD-ROMS stored in a locked drawer, in a locked office for the duration of the project. After a 3-year holding period, all CD-ROMS, containing the raw data collected from this survey, will be shredded.

No personal information will, at any time, be viewed by any member of the WPCC faculty or administration other than the principle researcher, Dan Smith who, although employed by WPCC, has no direct teaching or administrative relationship with any student involved in this survey. Any data gathered from this research, which is submitted for possible publication, will be in summarized format with absolutely no student personal information included. At all times during this research project, your rights to personal privacy will be strictly enforced, so please do not hesitate to take part in the survey and answer the questions as honestly as you can.

Please click on the link below when you are ready to begin the survey; if you are unable to click on the link, simply "cut and paste" the link into the address window of your browser. ***Please note that if you are using a dial-up connection, you must be connected to the Internet to access the survey.***

If you choose to not participate and not take part in the prize lottery, simply close and delete this email. If you choose to participate in the survey, please be sure to answer all the questions, because ***incomplete surveys are not eligible for prize awards***. Unfortunately, the rules of the research board governing this project will not allow the participation of subjects under the age of 18, so please do not submit a survey if you are under the age of 18. The entire survey should take only about 15 minutes of your time. When you have completed the survey, simply press the 'Submit your responses' button at the bottom of the survey form to submit your responses. By clicking the 'Submit your responses' button, you are giving your consent to use the information you have submitted in our research project, subject to the privacy restrictions outlined earlier in this statement.

Again, thanks so much for your kind consideration, have a great day and good luck in the prize drawing!

Survey Link: https://www.wpccsurvey.info/welcome.html

Should you have any questions about this survey, please call Dan Smith at (828) 438-6152. Should you have any questions about your rights as a participant in this study, please call Eric Allen at (336) 256-1482.

Document 2
Telephone Interview Consent

Thank you for agreeing to take part in the telephone interview portion of this study. As with the survey portion of the study, you are under no obligation to participate and may withdraw your consent at this time or at any point during the interview. As stated in the email accompanying the survey, if you complete the telephone interview and agree to have the data collected become a part of this study, you will be compensated for your time by receiving a $10.00 gift certificate to your local Best Buy outlet.

With regards to security, all of your responses gathered during this interview will remain strictly confidential. This conversation will be recorded in electronic file form and will be retained in electronic format on CD-ROM in a locked room and in a locked safebox at Western Piedmont Community College, accessible only to myself, the researcher. Text transcripts will be compiled from the audio files and these will also be stored on CD-ROM under the same level of security. After you have received your gift certificate, all your personal information will be stripped from both the electronic survey and the telephone interview transcripts and replaced with a unique accession number, which will be untraceable to you. Any data gathered from this study which may be made available to third parties, or submitted for publication will be in summarized form with no personal information or any links to the identity of any individual participant. Maintenance of your right to privacy is of paramount importance to me and will be observed, at all times, throughout the study. All raw data collected from this study will be destroyed by shredding within 3 years of the studies completion. In the future, if you

should have any questions about this survey, please call myself, Dan Smith at (828) 438-6152. Should you have any questions about your rights as a participant in this study, please call Eric Allen at the UNC-Greensboro Office of Research Compliance at (336) 256-1482. Also, keep in mind that the research board which governs this research does not allow us to interview any subjects under the age of 18 so, if you are under the age of 18 please let me know now and I will not proceed with the interview. This having been stated, do you have any questions I could answer before we begin the interview? Okay, if there are no further questions, let's begin:

APPENDIX B

Online Survey Response Tables

(with Response Totals and Percentages)

Table 1

Tabular depiction of the responses to each survey question.

Section - Demographics

1. Gender

Female	287	79.7%
Male	73	20.3%

2. Ethnicity

Caucasian-American	304	84.4%
African-American	21	5.8%
Asian/Pacific Islander-American	19	5.3%
Hispanic-American	8	2.2%
Other	4	1.1%
Foreign National	2	0.6%
Native American	2	0.6%

3. Age

18 (16 responses tallied)	31 (13 responses tallied)	44 (6 responses tallied)
19 (21 responses tallied)	32 (13 responses tallied)	45 (8 responses tallied)
20 (11 responses tallied)	33 (11 responses tallied)	46 (6 responses tallied)
21 (16 responses tallied)	34 (10 responses tallied)	47 (10 responses tallied)
22 (13 responses tallied)	35 (15 responses tallied)	48 (7 responses tallied)
23 (5 responses tallied)	36 (12 responses tallied)	49 (4 responses tallied)
24 (11 responses tallied)	37 (7 responses tallied)	50 (8 responses tallied)
25 (14 responses tallied)	38 (10 responses tallied)	51 (2 responses tallied)
26 (16 responses tallied)	39 (6 responses tallied)	52 (1 response tallied)
27 (16 responses tallied)	40 (10 responses tallied)	53 (2 responses tallied)
28 (17 responses tallied)	41 (6 responses tallied)	55 (2 responses tallied)
29 (11 responses tallied)	42 (2 responses tallied)	57 (3 responses tallied)
30 (12 responses tallied)	43 (5 responses tallied)	59 (2 responses tallied)

4. Current Course Format

67.8%	244	Fully Online - (Note: If you only attended an on-campus orientation for your course, the course should still be considered fully online. Fully online courses have WPCC section numbers of 41-49.)
0%	0	Hybrid - (Note: If you are taking courses which have both a large online component and some on-campus class meetings, you are taking a Hybrid course. Hybrid courses have WPCC section numbers of 31-39.)
32.2%	116	I am taking both Fully Online and Hybrid courses this semester.

5. Previous Online Courses

4 or more	161	44.7%
None	88	24.4%
1	42	11.7%
2	39	10.8%
3	30	8.3%

6. Number of Previous Hybrid Courses.

None	213	59.3%
1	68	18.9%
2	29	8.1%
4 or more	29	8.1%
3	20	5.6%

Section - LPSS-1

7. Working in a group leads to a poor result.

Somewhat false	167	46.4%
Completely false	108	30.0%
Somewhat true	77	21.4%
Completely true	8	2.2%

8. An instructor can help most by working with students in groups.

Somewhat true	167	46.4%
Somewhat false	140	38.9%
Completely false	30	8.3%
Completely true	23	6.4%

9. I prefer to work by myself so I can go as fast as I like.

Somewhat true	176	48.9%
Completely true	134	37.2%
Somewhat false	40	11.1%
Completely false	10	2.8%

10. It is helpful to put together everyone's ideas when making a decision.

Somewhat true	206	57.2%
Completely true	102	28.3%
Somewhat false	44	12.2%
Completely false	8	2.2%

11. When a group or class needs something important done, I can help most by working it out on my own.

Somewhat true	148	41.1%
Somewhat false	136	37.8%
Completely true	48	13.3%
Completely false	28	7.8%

12. I do not like working by myself.

Somewhat false	147	40.8%
Completely false	137	38.1%
Somewhat true	66	18.3%
Completely true	10	2.8%

13. Working in a group scares me.

Completely false	166	46.1%
Somewhat false	128	35.6%
Somewhat true	57	15.8%
Completely true	9	2.5%

14. In a group discussion, we never get on to important things.

Somewhat false	161	44.7%
Somewhat true	96	26.7%
Completely false	91	25.3%
Completely true	12	3.3%

15. I like to work in a group in my classes.

Somewhat true	185	51.4%
Somewhat false	104	28.9%
Completely true	39	10.8%
Completely false	32	8.9%

16. I like to be able to use the ideas of other people as well as my own.

Somewhat true	227	63.1%
Completely true	85	23.6%
Somewhat false	45	12.5%
Completely false	3	0.8%

17. If I work by myself most of the time, I become lonely and unhappy.

Completely false	224	62.2%
Somewhat false	100	27.8%
Somewhat true	27	7.5%
Completely true	9	2.5%

18. We get the work done faster if we all work together.

Somewhat true	184	51.1%
Somewhat false	80	22.2%
Completely true	72	20.0%
Completely false	24	6.7%

Section - LPSS-2

19. I do better work by myself.

Somewhat true	229	63.6%
Completely true	72	20.0%
Somewhat false	54	15.0%
Completely false	5	1.4%

20. I like to help other people do well in a group.

Somewhat true	205	56.9%
Completely true	130	36.1%
Somewhat false	22	6.1%
Completely false	3	0.8%

21. If I work by myself now, I will manage better later.

Somewhat true	187	51.9%
Somewhat false	107	29.7%
Completely true	53	14.7%
Completely false	13	3.6%

22. I work poorly when I know I have to do it all by myself.

Completely false	197	54.7%
Somewhat false	136	37.8%
Somewhat true	23	6.4%
Completely true	4	1.1%

23. I like my work best if I do it myself without anyone's help.

Somewhat false	141	39.2%
Somewhat true	134	37.2%
Completely true	50	13.9%
Completely false	35	9.7%

24. Other students don't need to know what I do in my classes.

Somewhat true	143	39.7%
Somewhat false	123	34.2%
Completely true	53	14.7%
Completely false	41	11.4%

25. Working in a group now helps me to work with other people later.

Somewhat true	194	53.9%
Completely true	109	30.3%
Somewhat false	44	12.2%
Completely false	13	3.6%

26. The instructor can help most by choosing work that is right for each student.

Somewhat true	172	47.8%
Somewhat false	111	30.8%
Completely true	55	15.3%
Completely false	22	6.1%

27. I like to keep my ideas to myself.

Somewhat false	202	56.1%
Completely false	83	23.1%
Somewhat true	64	17.8%
Completely true	11	3.1%

28. Other students in my classes like to help me learn.

Somewhat true	189	52.5%
Somewhat false	96	26.7%
Completely true	40	11.1%
Completely false	35	9.7%

29. I like to work on my own without paying attention to other people.

Somewhat false	133	36.9%
Somewhat true	129	35.8%
Completely false	59	16.4%
Completely true	39	10.8%

30. I do not like working with other people.

Completely false	165	45.8%
Somewhat false	126	35.0%
Somewhat true	55	15.3%
Completely true	14	3.9%

Section - CCS-1

31. I feel that students in my courses care about each other.

Neutral	151	41.9%
Agree	120	33.3%
Strongly agree	45	12.5%
Disagree	36	10.0%
Strongly Disagree	8	2.2%

32. I feel that I am encouraged to ask questions.

Agree	189	52.5%
Strongly agree	91	25.3%
Neutral	61	16.9%
Disagree	12	3.3%
Strongly Disagree	7	1.9%

33. I feel connected to others in my courses.

Neutral	126	35.0%
Agree	111	30.8%
Disagree	61	16.9%
Strongly agree	42	11.7%
Strongly Disagree	20	5.6%

34. I feel that it is hard to get help when I have a question.

Disagree	166	46.1%
Strongly Disagree	77	21.4%
Neutral	61	16.9%
Agree	38	10.6%
Strongly agree	18	5.0%

35. I do not feel a spirit of community.

Neutral	137	38.1%
Disagree	122	33.9%
Strongly Disagree	43	11.9%
Agree	41	11.4%
Strongly agree	17	4.7%

36. I feel that I receive timely feedback.

Agree	185	51.4%
Strongly agree	95	26.4%
Neutral	46	12.8%
Disagree	23	6.4%
Strongly Disagree	11	3.1%

37. I feel a sense of family with others in my courses.

Neutral	150	41.7%
Disagree	81	22.5%
Agree	65	18.1%
Strongly agree	35	9.7%
Strongly Disagree	29	8.1%

38. I feel uneasy exposing gaps in my understanding.

Disagree	129	35.8%
Neutral	98	27.2%
Agree	66	18.3%
Strongly Disagree	58	16.1%
Strongly agree	9	2.5%

39. I feel isolated in my courses.

Disagree	172	47.8%
Strongly Disagree	90	25.0%
Neutral	73	20.3%
Agree	18	5.0%
Strongly agree	7	1.9%

40. I feel reluctant to express myself openly.

Disagree	150	41.7%
Strongly Disagree	82	22.8%
Neutral	81	22.5%
Agree	33	9.2%
Strongly agree	14	3.9%

Section - CCS-2

41. I trust others in my courses.

Neutral	166	46.1%
Agree	139	38.6%
Strongly agree	26	7.2%
Disagree	25	6.9%
Strongly Disagree	4	1.1%

42. I feel that my courses result only in modest learning.

Disagree	146	40.6%
Neutral	89	24.7%
Agree	60	16.7%
Strongly Disagree	47	13.1%
Strongly agree	18	5.0%

43. I feel that I can rely on others in my courses.

Agree	132	36.7%
Neutral	131	36.4%
Disagree	56	15.6%
Strongly agree	28	7.8%
Strongly Disagree	13	3.6%

44. I feel that other students do not help me learn.

Disagree	161	44.7%
Neutral	108	30.0%
Agree	46	12.8%
Strongly Disagree	30	8.3%
Strongly agree	15	4.2%

45. I feel that members of my courses depend on me.

Neutral	147	40.8%
Disagree	113	31.4%
Agree	51	14.2%
Strongly Disagree	40	11.1%
Strongly agree	9	2.5%

46. I feel that I am given ample opportunities to learn.

Agree	195	54.2%
Strongly agree	92	25.6%
Neutral	65	18.1%
Disagree	5	1.4%
Strongly Disagree	3	0.8%

47. I feel uncertain about others in my courses.

Neutral	187	51.9%
Disagree	90	25.0%
Agree	52	14.4%
Strongly Disagree	23	6.4%
Strongly agree	8	2.2%

48. I feel that my educational needs are not being met.

Disagree	161	44.7%
Strongly Disagree	130	36.1%
Neutral	47	13.1%
Agree	16	4.4%
Strongly agree	6	1.7%

49. I feel confident that others will support me.

Agree	144	40.0%
Neutral	136	37.8%
Strongly agree	50	13.9%
Disagree	24	6.7%
Strongly Disagree	6	1.7%

50. I feel that my courses do not promote a desire to learn.

Disagree	161	44.7%
Strongly Disagree	135	37.5%
Neutral	45	12.5%
Agree	12	3.3%
Strongly agree	7	1.9%

Section - Telephone Interview

51. I would be willing to participate in a brief telephone survey.

Yes	196	54.4%
No	164	45.6%

APPENDIX C

Quantitative Data Analyses
(Descriptive, ANOVA, MANOVA, and Correlation Tables)

Hypothesis One

Table 1a
ANOVA with Learning Style Group as Independent and CCS Sense of Social Community Subscale Scores as Dependent Variable

Tests of Between-Subjects Effects

Dependent Variable: **Social Community Subscale**

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	Observed Power(a)
Corrected Model	1902.01(b)	3	634.00	17.10	.00	.13	1.00
Intercept	149092.96	1	149092.96	4020.63	.00	.92	1.00
LrnStyleGrp	**1902.01**	**3**	**634.00**	**17.10**	**.00**	**.13**	**1.00**
Error	13201.19	356	37.08				
Total	207249.00	360					
Corrected Total	15103.20	359					

a Computed using alpha = .05
b R Squared = .13 (Adjusted R Squared = .12)

Table 1b

Tukey HSD Follow-up Procedure for ANOVA Between Learning Style Group and CCS Social Community Subscale Scores

Multiple Comparisons

Dependent Variable: **Social Community SubScale**

Tukey HSD

(I) LrnStyleGrp	(J) LrnStyleGrp	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
HILS	**HIHS**	**-5.23(*)**	**1.00**	**.00**	**-7.81**	**-2.65**
	HSLI	**-4.55(*)**	**.75**	**.00**	**-6.49**	**-2.62**
	LILS	-.71	1.07	.91	-3.48	2.06
HIHS	**HILS**	**5.23(*)**	**1.00**	**.00**	**2.65**	**7.81**
	HSLI	.67	.99	.91	-1.89	3.24
	LILS	**4.51(*)**	**1.26**	**.00**	**1.27**	**7.75**
HSLI	**HILS**	**4.55(*)**	**.75**	**.00**	**2.62**	**6.49**
	HIHS	-.67	.99	.91	-3.24	1.89
	LILS	**3.84(*)**	**1.10**	**.00**	**1.09**	**6.59**
LILS	HILS	.71	1.07	.91	-2.07	3.48
	HIHS	**-4.51(*)**	**1.26**	**.00**	**-7.75**	**-1.27**
	HSLI	**-3.84(*)**	**1.07**	**.00**	**-6.59**	**-1.09**

Based on observed means.

- The mean difference is significant at the .05 level.

Hypothesis Two

Table 2a
ANOVA with Learning Style Group as Independent and CCS Sense of Learning Community Subscale Scores as Dependent Variable

Tests of Between-Subjects Effects

Dependent Variable: **Learning Community Subscale**

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	Observed Power(a)
Corrected Model	297.88(b)	3	99.29	2.93	.03	.02	.70
Intercept	211667.65	1	211667.65	6251.54	.00	.95	1.00
LrnStyleGrp	**297.88**	**3**	**99.29**	**2.93**	**.03**	**.02**	**.70**
Error	12053.62	356	33.86				
Total	289574.00	360					
Corrected Total	12351.50	359					

a Computed using alpha = .05
b R Squared = .02 (Adjusted R Squared = .02)

Table 2b

Tukey HSD Follow-up Procedure for ANOVA Between Learning Style Group and CCS Learning Community Subscale Scores

Multiple Comparisons

Dependent Variable: **Learning Community SubScale**

Tukey HSD

(I) LrnStyleGrp	(J) LrnStyleGrp	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
HILS	HIHS	-1.59	.96	.34	-4.06	.88
	HSLI	-1.35	.72	.23	-3.20	.49
	LILS	1.09	1.03	.71	-1.55	3.74
HIHS	HILS	1.59	.96	.34	-.88	4.06
	HSLI	.24	.95	.99	-2.21	2.69
	LILS	2.68	1.20	.12	-.41	5.78
HSLI	HILS	1.35	.72	.23	-.49	3.20
	HIHS	-.24	.95	.99	-2.69	2.21
	LILS	2.45	1.02	.08	-.18	5.07
LILS	HILS	-1.09	1.03	.71	-3.74	1.55
	HIHS	-2.68	1.20	.12	-5.78	.41
	HSLI	-2.45	1.02	.08	-5.07	.18

Based on observed means.

Table 2c

LSD and Bonferroni Follow-up Procedures for ANOVA Between Learning Style Group and CCS Learning Community Subscale Scores

Multiple Comparisons

Dependent Variable: **Learning Community SubScale**

	(I) LrnStyleGrp	(J) LrnStyleGrp	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
LSD	HILS	HIHS	-1.59	.96	.10	-3.47	.29
		HSLI	-1.35	.72	.06	-2.76	.05
		LILS	1.09	1.03	.30	-.92	3.11
	HIHS	HILS	1.59	.96	.10	-.29	3.47
		HSLI	.24	.95	.80	-1.63	2.10
		LILS	2.68(*)	1.20	.03	.33	5.04
	HSLI	HILS	1.35	.72	.06	-.05	2.76
		HIHS	-.24	.95	.80	-2.10	1.63
		LILS	2.45(*)	1.02	.02	.44	4.45
	LILS	HILS	-1.09	1.03	.29	-3.11	.92
		HIHS	-2.68(*)	1.20	.03	-5.04	-.33
		HSLI	-2.45(*)	1.09	.02	-4.45	-.44
Bonferroni	HILS	HIHS	-1.59	.96	.58	-4.13	.95
		HSLI	-1.35	.72	.36	-3.25	.54
		LILS	1.09	1.03	1.00	-1.63	3.81
	HIHS	HILS	1.59	.96	.58	-.95	4.13
		HSLI	.24	.95	1.00	-2.29	2.76
		LILS	2.68	1.20	.16	-.50	5.87
	HSLI	HILS	1.35	.72	.36	-.54	3.25
		HIHS	-.24	.95	1.00	-2.76	2.28
		LILS	2.45	1.02	.10	-.26	5.15
	LILS	HILS	-1.09	1.03	1.00	-3.81	1.63
		HIHS	-2.68	1.20	.16	-5.87	.50
		HSLI	-2.45	1.02	.10	-5.15	.26

Based on observed means.

* The mean difference is significant at the .05 level.

Hypothesis Three

Table 3a

Factorial ANOVA with CCS Sense of Social Community Subscale Scores as Dependent Variable and Gender, Ethnic Group (Caucasian or Minority), Age Group (18-25 or 26+) and Previous Online Course Experience as Independent Variables

Tests of Between-Subjects Effects

Dependent Variable: **Social Community Subscale**

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	Observed Power(a)
Corrected Model	1637.12(b)	34	48.15	1.16	.25	.11	.95
Intercept	45197.06	1	45197.06	1090.82	.00	.77	1.00
Gender	33.12	1	33.12	.80	.37	.00	.15
POnline	156.76	4	39.19	.95	.44	.01	.30
Ethnic	6.10	1	6.10	.15	.70	.00	.07
AgeGroup	34.98	1	34.98	.84	.36	.00	.15
Gender * POnline	103.53	4	25.88	.63	.65	.01	.20
Gender *Ethnic	25.21	1	25.21	.61	.44	.00	.12
POnline * Ethnic	30.18	4	7.55	.18	.95	.00	.09
Gender * POnline * Ethnic	123.98	4	31.00	.75	.56	.01	.24
Gender * AgeGroup	91.59	1	91.59	2.21	.14	.01	.32
POnline * AgeGroup	89.03	4	22.26	.54	.71	.01	.18
Gender * POnline * AgeGroup	141.09	3	47.03	1.14	.34	.01	.31
Ethnic * AgeGroup	.73	1	.73	.02	.89	.00	.05
Gender *Ethnic * AgeGroup	1.04	1	1.04	.03	.87	.00	.05
POnline * Ethnic * AgeGroup	173.53	4	43.38	1.05	.38	.01	.33
Gender * POnline * Ethnic * AgeGroup	.00	0	.	.	.	.00	.
Error	13466.08	325	41.43				
Total	207249.00	360					
Corrected Total	15103.20	359					

a Computed using alpha = .05

b R Squared = .11 (Adjusted R Squared = .02)

Tables 3b – 3e
Basic Descriptive Statistics for Independent Variables used in Table 3a.

Table 3b
Social Community Subscale

Gender	N	Mean	Std. Deviation	Std. Error
Female	287	23.39	6.37	.38
Male	73	21.97	6.86	.80
Total	360	23.10	6.49	.34

Table 3c
Social Community Subscale

Previous Online Courses	N	Mean	Std. Deviation	Std. Error
None	88	21.59	6.42	.69
1	42	23.86	7.68	1.19
2	39	23.18	7.21	1.16
3	30	24.40	6.75	1.23
4 or more	161	23.47	5.86	.46
Total	360	23.10	6.49	.34

Table 3d
Social Community Subscale

Ethnicity	N	Mean	Std. Deviation	Std. Error
Caucasian American	304	23.01	6.50	.37
All minorities	56	23.63	6.46	.86
Total	360	23.10	6.49	.34

Table 3e
Social Community Subscale

Age Group	N	Mean	Std. Deviation	Std. Error
18-25	107	22.94	6.53	.63
26+	253	23.17	6.48	.41
Total	360	23.10	6.49	.34

Hypothesis Four

Table 4a

Factorial ANOVA with CCS Sense of Learning Community Subscale Scores as Dependent Variable and Gender, Ethnic Group (Caucasian or Minority), Age Group (18-25 or 26+) and Previous Online Course Experience as Independent Variables

Tests of Between-Subjects Effects

Dependent Variable: **Learning Community SubScale**

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	Observed Power(a)
Corrected Model	1676.68(b)	34	49.31	1.50	.04	.14	.99
Intercept	57122.43	1	57122.43	1739.12	.00	.84	1.00
Gender	**139.12**	**1**	**139.11**	**4.24**	**.04**	**.01**	**.54**
POnline	23.04	4	5.76	.18	.95	.00	.09
Ethnic	23.03	1	23.03	.70	.40	.00	.13
AgeGroup	**224.22**	**1**	**224.22**	**6.83**	**.01**	**.02**	**.74**
Gender * POnline	37.92	4	9.48	.29	.89	.00	.11
Gender * Ethnic	51.11	1	51.11	1.56	.21	.01	.24
POnline * Ethnic	56.32	4	14.08	.43	.79	.01	.15
Gender * POnline * Ethnic	12.75	4	3.19	.10	.98	.00	.07
Gender * AgeGroup	24.94	1	24.94	.76	.38	.00	.14
POnline * AgeGroup	183.14	4	45.79	1.39	.24	.02	.43
Gender * POnline * AgeGroup	12.85	3	4.28	.13	.94	.00	.07
Ethnic * AgeGroup	23.61	1	23.61	.72	.40	.00	.14
Gender * Ethnic * AgeGroup	7.96	1	7.96	.24	.62	.00	.08
POnline * Ethnic * AgeGroup	130.98	4	32.75	1.0	.41	.01	.32
Gender * POnline * Ethnic * AgeGroup	.00	0	.	.	.	.00	.
Error	10674.82	325	32.85				
Total	289574.00	360					
Corrected Total	12351.50	359					

a Computed using alpha = .05

b R Squared = .14 (Adjusted R Squared = .05)

Tables 4b – 4e
Basic Descriptive Statistics for Independent Variables used in Table 4a.

Table 4b
Learning Community Subscale

Age Group	N	Mean	Std. Deviation	Std. Error
18-25	107	26.21	5.35	.52
26+	253	28.40	5.96	.38
Total	360	27.75	5.87	.31

Table 4c
Learning Community Subscale

Gender	N	Mean	Std. Deviation	Std. Error
Female	287	28.11	5.93	.35
Male	73	26.34	5.42	.63
Total	360	27.75	5.87	.31

Table 4d
Learning Community Subscale

Previous Online Courses	N	Mean	Std. Deviation	Std. Error
None	88	26.90	6.11	.65
1	42	26.38	6.84	1.06
2	39	26.95	5.26	.84
3	30	27.90	5.68	1.04
4 or more	161	28.74	5.52	.44
Total	360	27.75	5.87	.31

Table 4e
Learning Community Subscale

Ethnicity	N	Mean	Std. Deviation	Std. Error
Caucasian American	304	27.91	5.93	.34
All minorities	56	26.91	5.51	.74
Total	360	27.75	5.87	.31

Hypothesis Five

Table 5
Spearman Rank-order Correlation for Age and Scores on the LPSS Social/cooperative Learning Subscale and for Age and Scores on the LPSS Independent Learning Subscale

Correlations

			Age	SCLrnSubScale	IndLrnSubScale
Spearman's rho	Age	Correlation Coefficient	1.00	-.08	-.03
		Sig. (2-tailed)		.12	.54
		N	360	360	360
	SCLrnSubScale	Correlation Coefficient	-.08	1.00	-.61
		Sig. (2-tailed)	.12	.	.00
		N	360	360	360
	IndLrnSubScale	Correlation Coefficient	-.03	-.61	1.00
		Sig. (2-tailed)	.54	.00	.
		N	360	360	360

Hypothesis Six

Table 6a

Multivariate ANOVA with LPSS Social/cooperative Learning Preference and Independent Learning Preference Scores as Dependent Variables and Previous Online Course Experience as the Independent Variable

Multivariate Tests(d)

Effect		Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared	Observed Power (a)
Intercept	Pillai's Trace	.99	31718.50(b)	2.00	354.00	.00	.99	1.00
	Wilks' Lambda	.01	31718.50(b)	2.00	354.00	.00	.99	1.00
	Hotelling's Trace	179.20	31718.50(b)	2.00	354.00	.00	.99	1.00
	Roy's Largest Root	179.20	31718.50(b)	2.00	354.00	.00	.99	1.00
POnline	Pillai's Trace	.04	1.83	8.00	710.00	.07	.02	.78
	Wilks' Lambda	.96	1.82(b)	8.00	708.00	.07	.02	.78
	Hotelling's Trace	.04	1.82	8.00	706.00	.07	.02	.78
	Roy's Largest Root	.03	2.55(c)	4.00	355.00	.04	.03	.72

a Computed using alpha = .05
b Exact statistic
c The statistic is an upper bound on F that yields a lower bound on the significance level.
d Design: Intercept+POnline

Table 6b

Univariate Analyses Accompanying Multivariate ANOVA with LPSS Social/cooperative Learning Preference and Independent Learning Preference Scores as Dependent Variables and Previous Online Course Experience as the Independent Variable

Tests of Between-Subjects Effects

Source	Dependent Variable	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	Observed Power(a)
Corrected Model	SCLrn SubScale	137.18(b)	4	34.30	1.24	.29	.01	.39
	IndLrn SubScale	238.45(c)	4	59.61	2.34	.06	.03	.68
Intercept	SCLrn SubScale	322555.99	1	322555.99	11701.17	.00	.97	1.00
	IndLrn SubScale	280195.05	1	280195.05	10996.70	.00	.97	1.00
POnline	SCLrn SubScale	137.18	4	34.30	1.24	.29	.01	.39
	IndLrn SubScale	238.45	4	59.61	2.34	.06	.03	.68
Error	SCLrn SubScale	9785.98	355	27.57				
	IndLrn SubScale	9045.37	355	25.48				
Total	SCLrn SubScale	468454.00	360					
	IndLrn SubScale	424900.00	360					
Corrected Total	SCLrn SubScale	9923.16	359					
	IndLrn SubScale	9283.82	359					

a Computed using alpha = .05
b R Squared = .01 (Adjusted R Squared = .00)
c R Squared = .03 (Adjusted R Squared = .02)

Table 6c
Means and Standard Deviations for Variables in Tables 6a and 6b

Descriptive Statistics

	Previous Online Courses	Mean	Std. Deviation	N
SCLrnSubScale	None	35.05	4.96	88
	1	36.79	5.77	42
	2	35.62	5.35	39
	3	36.93	4.46	30
	4 or more	35.54	5.37	161
	Total	35.69	5.26	360
IndLrnSubScale	None	33.78	5.52	88
	1	33.33	4.27	42
	2	34.23	5.04	39
	3	31.73	4.05	30
	4 or more	34.61	5.13	161
	Total	33.98	5.09	360

Hypothesis Seven

Table 7a

Multivariate ANOVA with LPSS Social/cooperative Learning Preference and Independent Learning Preference Scores as Dependent Variables and Gender as the Independent Variable

Multivariate Tests(c)

Effect		Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared	Observed Power(a)
Intercept	Pillai's Trace	.99	29340.95(b)	2.00	357.00	.00	.99	1.00
	Wilks' Lambda	.01	29340.95(b)	2.00	357.00	.00	.99	1.00
	Hotelling's Trace	164.38	29340.95(b)	2.00	357.00	.00	.99	1.00
	Roy's Largest Root	164.38	29340.95(b)	2.00	357.00	.00	.99	1.00
Gender	Pillai's Trace	.01	1.75(b)	2.00	357.00	.18	.01	.37
	Wilks' Lambda	.99	1.75(b)	2.00	357.00	.18	.01	.37
	Hotelling's Trace	.01	1.75(b)	2.00	357.00	.18	.01	.37
	Roy's Largest Root	.01	1.75(b)	2.00	357.00	.18	.01	.37

a Computed using alpha = .05
b Exact statistic
c Design: Intercept+Gender

Table 7b

Univariate Analyses Accompanying Multivariate ANOVA with LPSS Social/cooperative Learning Preference and Independent Learning Preference Scores as Dependent Variables and Gender as the Independent Variable

Tests of Between-Subjects Effects

Source	Dependent Variable	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	Observed Power(a)
Corrected Model	SCLrn SubScale	94.83(b)	1	94.83	3.45	.06	.01	.46
	IndLrn SubScale	26.98(c)	1	26.98	1.04	.31	.00	.18
Intercept	SCLrn SubScale	290231.80	1	290231.80	10571.79	.00	.97	1.00
	IndLrn SubScale	271962.98	1	271962.98	10517.92	.00	.97	1.00
Gender	SCLrn SubScale	94.83	1	94.83	3.45	.06	.01	.46
	IndLrn SubScale	26.98	1	26.98	1.04	.31	.00	.18
Error	SCLrn SubScale	9828.33	358	27.45				
	IndLrn SubScale	9256.85	358	25.86				
Total	SCLrn SubScale	468454.00	360					
	IndLrn SubScale	424900.00	360					
Corrected Total	SCLrn SubScale	9923.16	359					
	IndLrn SubScale	9283.82	359					

a Computed using alpha = .05

b R Squared = .01 (Adjusted R Squared = .01)

Table 7c
Means and Standard Deviations for Variables in Tables 7a and 7b.

Descriptive Statistics

	Gender	Mean	Std. Deviation	N
SCLrn SubScale	Female	35.95	5.27	287
	Male	34.67	5.12	73
	Total	35.69	5.26	360
IndLrn SubScale	Female	33.84	5.10	287
	Male	34.52	5.03	73
	Total	33.98	5.09	360

APPENDIX D

Qualitative Data Analyses
(Redundant Themes and Sub-themes)

Table 1
Reasons for Taking CMI Courses

Flexibility	Personal Disabilities	Economic Concerns	Course Availability	Learning Style
Family Demands: • Child care • Care for ill or disabled family member Work Demands: • Erratic or unconventional work schedules	Physical Emotional Learning	Transportation time and costs Child care costs	Courses were not offered in traditional format for the current semester	Prefer the option of working more independently

Table 2
Observations and Assessments of Preferred Learning Environment

Online/CMI Learning (14 of 20)	Traditional Classroom (4 of 10)	Depends on course (2 of 20)
Tightly structured course activities and syllabuses provided • Assignments, tests, and projects laid out well ahead of time with flexible due dates ○ Predicates the ability to move ahead at one's own pace in the course instead of at the pace of others in a classroom ○ Accommodates an erratic work/life schedule ○ Relieves stress of inflexible deadline ○ Allows the option to concentrate on areas of greatest interest ○ Allows completion of a course earlier in the semester ○ Allows one to take more courses successfully in one semester Lack of structure leads to unsatisfactory CMI experience Frequent and timely instructor feedback increases satisfaction and confidence CMI puts the responsibility for getting the work done on the student Requires thinking and working independently Prefer rich media formats for CMI instruction: ○ Preference for textbooks which include interactive learning CDs or websites; ○ Preference for instructor's video lectures rather than use of discussion boards and posting of course guides; ○ Preference for multiple links to supporting websites with graphic or A/V materials. Anxiety about incomplete learning experience versus traditional classroom	Instructor available, in person, to help with problems and questions: • No online lag time in instructor feedback; waiting on email or telephone response is frustrating. Prefer benefits from the presence of classroom setting: • Better focus in the classroom environment; • Opportunity to received new ideas and clarity from the questions and opinions of others during discussions. Time wasted on irrelevant conversations in traditional classrooms: • Discussions sometimes dominated by few individuals; • Online communication is easier for less assertive or shy people.	Preference depends on course difficulty level • Courses such as more advanced math and science courses perceived as difficult and better suited to traditional format. • = primary theme ○ = secondary theme

Table 3
Coping Strategies in the CMI Environment by Learning Style Group

HILS Learners:	HSLI Learners:
Prefer working problems independently using course materials. Contacting instructor: • Occasional contact by phone or email in an instructional context; • Rare contact by phone or email in a social context.. Contacting other students: • Rare contact by phone or email in an instructional context; • Rare contact by phone or email in a social context. Visiting campus: • Occasional visits to meet instructors in an instructional contact; • Rare visits to campus or other face-to-face meetings with other students in an instructional or social context. Use discussion forums to the extent required by the course but rarely include social information. Perception that social interaction with other students is not important to success in the CMI class. Negative feelings about group projects. Perception of being "on their own" or part of a class based primarily on interaction with instructor. Seldom make use of optional online chat. Realize that there are other avenues available within the CMI courses to interact with classmates, but choose not to take them. Prefer reading personal web pages as the primary means of learning something about other students. Accept the value of other students' opinions and suggestions, but primarily in the narrow context of evaluating specific source assignments or projects.	Prefer using other people as learning resources Contacting instructor: • Frequent contact by phone or email in an instructional context during which social exchange often occurs; Contacting other students and visiting campus: • Frequent visits to campus or other face-to-face meeting with other students in learning context during which social exchange often occurs. Consistent and extensive use of discussion forums for the exchange of ideas, suggestions, and specific information related to course content; frequently include social information. Perception that social interaction with other students is very important to success in the CMI class, actively seeking out such contact by providing mentoring to other CMI students. Positive feelings toward group projects in the CMI environment: • Do not mind the logistics of setting up group exchanges in possibly complicated learning situation. Perception of being part of the class in the CMI courses based on interaction with both the instructor and fellow classmates; perceive "being on your own" as a negative. Consistently use optional online chat opportunities when available. Generally utilize all avenues available within their CMI courses to interact with classmates. Consistently solicit other students' opinions and suggestions with regard to specific course assignments and projects, as well as some social and personal matters.

APPENDIX E

Online Survey Instrument

Document 1

Learning Preference and Sense of Community Survey for Online Learners

Instructions

Answer questions as they relate to you. For most answers, check the boxes most applicable to you or fill in the blanks. Please note that this survey will not save partial data, so you must fill it out all in one setting. If you close the survey form before submitting it, you must start over when you reopen the survey. Submission of this survey, makes you eligible for prize drawings and constitutes your permission to use your data in our research project.

Please provide the following (*required)

First Name*	
Last Name*	
go.wpcc Email:*	

Please give us a little information about yourself.

What is your gender?

- ☐ Female
- ☐ Male

What is your ethnic background?

- ☐ African-American
- ☐ Asian/Pacific Islander-American
- ☐ Caucasian-American
- ☐ Hispanic-American
- ☐ Native American
- ☐ Foreign National
- ☐ Other

What is your age?

☐

What is the format(s) of the online course(s) you are taking this semester at WPCC?

- ☐ Fully Online - (Note: If you only attended an on-campus orientation for your course, the course should still be considered fully online. Fully online courses have WPCC section numbers of 41-49.)
- ☐ Hybrid - (Note: If you are taking courses which have both a large online component and some on-campus class meetings, you are taking a Hybrid course. Hybrid courses have WPCC section numbers of 31-39.)
- ☐ I am taking both Fully Online and Hybrid courses this semester.

Not counting courses you are taking this semester, how many totally Internet-based courses have you previously completed, through WPCC or another community college, in the past 3 years?

- ☐ None
- ☐ 1
- ☐ 2
- ☐ 3
- ☐ 4 or more

Not counting courses you are taking this semester, how many Hybrid courses have you previously completed, through WPCC or another community college, in the past 3 years?

- ☐ None
- ☐ 1
- ☐ 2
- ☐ 3
- ☐ 4 or more

Please answer the following questions about how you prefer to learn. There are no right or wrong answers. Please respond to all items.	Completely true	Somewhat true	Somewhat false	Completely false
I do better work by myself.	☐	☐	☐	☐
I like to help other people do well in a group.	☐	☐	☐	☐
If I work by myself now, I will manage better later.	☐	☐	☐	☐
I work poorly when I know I have to do it all by myself.	☐	☐	☐	☐
I like my work best if I do it myself without anyone's help.	☐	☐	☐	☐
Other students don't need to know what I do in my classes.	☐	☐	☐	☐
Working in a group now helps me to work with other people later.	☐	☐	☐	☐
The instructor can help most by choosing work that is right for each student.	☐	☐	☐	☐
I like to keep my ideas to myself.	☐	☐	☐	☐
Other students in my classes like to help me learn.	☐	☐	☐	☐
I like to work on my own without paying attention to other people.	☐	☐	☐	☐
I do not like working with other people.	☐	☐	☐	☐

Please answer the following questions about how you prefer to learn. There are no right or wrong answers. Please respond to all items.	Completely true	Somewhat true	Somewhat false	Completely false
Working in a group leads to a poor result.	☐	☐	☐	☐
An instructor can help most by working with students in groups.	☐	☐	☐	☐
I prefer to work by myself so I can go as fast as I like.	☐	☐	☐	☐
It is helpful to put together everyone's ideas when making a decision.	☐	☐	☐	☐
When a group or class needs something important done, I can help most by working it out on my own.	☐	☐	☐	☐
I do not like working by myself.	☐	☐	☐	☐
Working in a group scares me.	☐	☐	☐	☐
In a group discussion, we never get on to important things.	☐	☐	☐	☐
I like to work in a group in my classes.	☐	☐	☐	☐
I like to be able to use the ideas of other people as well as my own.	☐	☐	☐	☐
If I work by myself most of the time, I become lonely and unhappy.	☐	☐	☐	☐
We get the work done faster if we all work together.	☐	☐	☐	☐

Read each of the following statements carefully and choose the answer to each statement that comes closest to indicating how you feel about your online courses at WPCC. If you are also taking traditional classroom courses at WPCC, or hybrid courses in which you meet both on-campus regularly and online, please do not consider these courses in your answers; only answer with respect to your fully online course(s). There are no right or wrong answers. Please respond to all items.

	Strongly agree	Agree	Neutral	Disagree	Strongly Disagree
I feel that students in my courses care about each other.	☐	☐	☐	☐	☐
I feel that I am encouraged to ask questions.	☐	☐	☐	☐	☐
I feel connected to others in my courses.	☐	☐	☐	☐	☐
I feel that it is hard to get help when I have a question.	☐	☐	☐	☐	☐
I do not feel a spirit of community.	☐	☐	☐	☐	☐
I feel that I receive timely feedback.	☐	☐	☐	☐	☐
I feel a sense of family with others in my courses.	☐	☐	☐	☐	☐
I feel uneasy exposing gaps in my understanding.	☐	☐	☐	☐	☐
I feel isolated in my courses.	☐	☐	☐	☐	☐
I feel reluctant to express myself openly.	☐	☐	☐	☐	☐

Read each of the following statements carefully and choose the answer to each statement that comes closest to indicating how you feel about your online courses at WPCC. If you are also taking traditional classroom courses at WPCC, or hybrid courses in which you meet both on-campus regularly and online, please do not consider these courses in your answers; only answer with respect to your fully online course(s). There are no right or wrong answers. Please respond to all items.

	Strongly agree	Agree	Neutral	Disagree	Strongly Disagree
I trust others in my courses.	☐	☐	☐	☐	☐
I feel that my courses result only in modest learning.	☐	☐	☐	☐	☐
I feel that I can rely on others in my courses.	☐	☐	☐	☐	☐
I feel that other students do not help me learn.	☐	☐	☐	☐	☐
I feel that members of my courses depend on me.	☐	☐	☐	☐	☐
I feel that I am given ample opportunities to learn.	☐	☐	☐	☐	☐
I feel uncertain about others in my courses.	☐	☐	☐	☐	☐
I feel that my educational needs are not being met.	☐	☐	☐	☐	☐
I feel confident that others will support me.	☐	☐	☐	☐	☐
I feel that my courses do not promote a desire to learn.	☐	☐	☐	☐	☐

Would you be willing to participate in a brief, follow-up telephone survey to tell us a little more about your learning preferences and how you feel about your online learning experience at WPCC? A $10.00 gift certificate will be given to each person selected to participate in telephone interviews. This award is in addition to any certificate that might be won in the main prize drawing.

I would be willing to participate in a brief telephone survey.

- ☐ Yes
- ☐ No

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