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Sense of Connection and Learning in Traditional and Online Courses at a Rural-Serving Community College

Jayne M. S. Kiner

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SENSE OF CONNECTION AND LEARNING IN TRADITIONAL AND ONLINE
COURSES AT A RURAL-SERVING COMMUNITY COLLEGE

by

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Bachelor of Science in Education, University of North Dakota, 1974
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A Dissertation

Submitted to the Graduate Faculty

of the

University of North Dakota

in partial fulfillment of the requirements

for the degree of

Doctor of Philosophy

Grand Forks, North Dakota

May
2010

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This dissertation meets the standards for appearance, conforms to the style and format requirements of the Graduate School of the University of North Dakota, and is hereby approved.

Joseph D. Benoit

Dean of the Graduate School

April 29, 2010

Date

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Degree Doctor of Philosophy

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Date April 24, 2010

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ABSTRACT

The purpose of this study was to establish an overall measurement for student sense of classroom community in terms of the theoretical dimensions of emotional connection, and needs fulfillment (learning). Further intent was to determine the nature of differences, if they exist, between delivery method (traditional or online), teaching style cluster (containing formal authority style or facilitator style), course type, student's residence (on-campus, off-campus commuting, or off-campus not commuting), age, and student major on sense of classroom community in terms of emotional connection and learning.

Quantitative research methods were used with a causal-comparative design and survey instruments. Differences were determined using MANOVA and multivariate ANOVA. Overall sense of classroom community and connection were significantly higher in face-to-face than in online classes but no difference was detected on student sense of learning. The interaction between delivery method and teaching style on connection was significant but not significant for sense of learning. The interaction between delivery method and course type on sense of connection was statistically significant but not significant for sense of learning. No differences were found on combined dependent variables by student residence. Student sense of learning was higher for older students. Students majoring in Social or Behavioral sciences (SBS) experienced a greater sense of classroom community than Mathematics, Science or Technology

majors or undecided students. Students majoring in SBS experienced a greater sense of learning than Business or Applied science majors or undecided students.

The style, methods, and class management of an instructor set the tone for the classroom climate, whether real or virtual. No one teaching style was determined to be better than others in all situations. Teachers are advised to increase student sense of connection in the classroom and online by increasing social and teaching presence.

CHAPTER I
INTRODUCTION

Background of the Study

Sense of connection and learning are components of sense of community. It seems appropriate to examine the concept of community at colleges that proclaim community in their classification. Community Colleges in the United States serve almost one half of all undergraduate college students (American Association of Community Colleges, 2006) and primarily confer the associate's degree; the bachelor's degree accounts for less than 10% of all undergraduate degrees. The Carnegie Foundation for the Advancement of Teaching has produced multiple classifications for colleges offering primarily associate degrees. The category for public institutions is divided into rural-serving, suburban-serving, and urban-serving colleges. Colleges not located in a metropolitan area with populations over 500,000 people in the 2000 Census are classified as rural-serving. The rural-serving category is further grouped according to size, based on annual unduplicated enrollment: small colleges have enrollments of less than 2,500, medium colleges have enrollment between 2,500 and 5,700, and large colleges have enrollments greater than 5,700 (Carnegie Foundation for the Advancement of Learning, 2007a, 2007b). Suburban and urban-serving two-year colleges are further classified as single campus or multicampus districts; the mean enrollment of the suburban and urban campuses combined, for the school year 2000-2001, exceeded 7,500 students. Thus, schools in the rural-serving category are the smallest and most diverse in terms of

enrollment numbers (Hardy & Kastsinas, 2007). Originally located in most states to provide citizens with reasonable access to higher education, the small and medium-sized rural-serving community colleges are characterized by low population density and large geographic distances (Kastsinas & Moeck, 2002).

Since its inception, the two-year community college has acted as a conduit for people to receive a higher education who, otherwise, would not (Dougherty & Townsend, 2006; Kane & Rouse, 1999). Students who are not adequately prepared for college courses or cannot afford to attend full-time are able to attend the community college as a steppingstone to educational opportunity. Developmental courses offered at community colleges are instrumental in providing this opportunity (Dougherty & Townsend). Bailey (2009) reports that nearly one-quarter of students followed in a National Education Longitudinal Study sample completed a degree or certificate. Students who aspire to a bachelor's degree but lack basic skills to attend a four-year university face a surmountable barrier. Community colleges provide for this developmental challenge. Students experimenting with the notion of higher education also find a place at community colleges (Anderson, Alfonso, & Sun, 2006; Evelyn, 2004; Kane & Rouse, 1999). For these students, the community college represents a boundary that must be crossed before entry into a selective four-year institution (Brint & Karabel, 1989). Community colleges across the United States struggle with multiple and various missions (Cohen & Brawer, 2003; Evelyn, 2004; Kane & Rouse, 1999). Various missions change over time and with geography; emphasis also changes on one or another specific area (Dougherty & Townsend). Facilitating educational opportunity is accompanied by missions of workforce and economic development (occupational education), adult

education, and community services. The balance of multiple, and often conflicting missions, gives community colleges a unique niche in higher education. This unique role of the community college and a commitment to teaching and lifelong learning have led to innovative strategies as schools attempt to reach out and meet the need of expanding communities (Allen & Seaman, 2005, 2006, 2007; Fletcher, Tobias, & Wisner, 2007; Ives, 2006; Schiffman, Vignare, & Geith, 2007). Community colleges granting associate degrees have led other institutions in distanced education offerings, acknowledging that these are an integral part of their long-term strategy (Allen & Seaman, 2005). The number of public two-year institutions offering distance education courses increased from 62% in a 1997-1998 survey to 90% in a 2000-2001 survey (Wirt, Choy, Rooney, Provasnik, Sen, & Tobin, 2004). Indeed, by fall 2003, 18% of full time instructors and 6% of part time instructors at public two-year institutions were teaching distance courses (U.S. Department of Education, 2006a, 2006b). Between 2002 and 2007, two-year institutions had the highest growth rates and accounted for over one-half of all online enrollments (Allen & Seaman, 2007).

The student population attending community colleges is also remarkably diverse. Based on a 2006 report, the average student attending one of the nation's 987 public community colleges is 29 years old; 43% of those attending are 21 or younger, 42% are 22 to 39, and 16% are 40 or older (American Association of Community Colleges, 2006). Community college students are more likely to be female (59%). Part time students constitute 60% of the enrollment with 83% of those employed either full or part time (American Association of Community Colleges, 2006). Students attending community colleges vary also in their reason for attending. A student may be taking art, music, or

language courses merely for enrichment or hobby purposes. Some students attend in order to upgrade their skills for a job; some attend to gain an associate's degree and transfer to an institution offering bachelor's degrees (American Association of Community Colleges, 2006; Kuh, Kinzie, Buckley, Bridges, & Hayek, 2006). Whether students attend online or on-campus, community colleges are the best financial bargain in postsecondary educational opportunities for both the vocational and transfer to baccalaureate missions or in remedial programs for underprepared students (Dougherty & Townsend, 2006; Kane & Rouse, 1999). Most community college students live at home; fewer than 240 public community colleges even have on-campus housing (American Association of Community Colleges, 2006; Moeck, Hardy & Katsinas, 2007). The demographics of the student population attending rural-serving community colleges indicate that only a small percentage of students live close enough, have the time or inclination, to participate in extracurricular, community-building opportunities offered by the colleges. Hence, the diverse, non-residential population of a community college does not develop the same collegiate sense of community exhibited at many 4-year institutions (Cadieux, 2002; Ritschel, 1995). Lounsbury and DeNeui (1996) found that, among students attending 4-year colleges and universities, smaller (fewer than 2,000 to 9,999 students) schools had a higher mean collegiate personal sense of community than larger (10,000 to over 20,000 students) schools, but the most pervasive influence on collegiate personal sense of community was residence on-campus. Community college students coming from diverse backgrounds tend to develop a situation identity through participation in group activities. Those students living off-campus have little opportunity for group activities outside the classroom. Thus, for non-residential students attending

community colleges, the classroom is the community (Fassinger, 1997; Kuh, Cruce, Shoup, Kinzie & Gonyea, 2008; McKinney, McKinney, Franiuk, & Schweitzer, 2006; Ritschel, 1995; Tinto, 1997).

Historically, community was based on geography. Modern community psychology acknowledges that a community can exist independently from geography; the community is viewed as the activities that people do together, not how or where (Rovai, 2001, 2002b). A central construct of community psychology is the psychological sense of community as modeled by McMillan and Chavis (1986). McMillan and Chavis' definition and theory of sense of community is based on four dimensions. Group membership, also referred to as group spirit, is a feeling of belonging, including a sense of relationship with others in the community (McMillan & Chavis, 1986; McMillan, 1996; Peterson, Speer, & McMillan, 2008). The second dimension is influence or trust that a member matters to the community, and that the community matters to the members. The third dimension is shared emotional connection that develops from a history of interaction and contact between members of the community. The last dimension is reinforcement or needs fulfillment, a sense that the needs of the member will be met by the group (McMillan & Chavis, 1986; Peterson et al., 2008). The framework for the theory of sense of community is broad-ranging, applying not only to territorial communities but also to relational communities, such as those found in academe (McMillan & Chavis, 1986; Rovai, 2000). Indeed, this model has been developed further and applied as a conceptual framework to classroom communities (Dawson, 2006; Rovai, 2000), residence halls (Berger, 1997) and school communities (Lounsbury & DeNeui, 1996). Tinto used a similar basic framework in research on

student persistence in communities of learners (Tinto, 1997) and colleges as communities (Tinto, 1998).

A strong sense of community has been linked to numerous positive outcomes among learners. The availability of support from fellow members of a learning community results in an increased flow of information, cooperation, satisfaction, and commitment to group goals (Rovai, 2001). These positive attributes lead to increased academic success (Kuh et al., 2006) and persistence (Tinto, 1997, 1998). Community psychologists have defined sense of community; educators have clarifying principles of good practice that, according to the definition, lead to a sense of community. After reviewing 50 years of research on teaching and learning, Chickering and Gamson (1987) identified seven principles of good practice in higher education as guidelines for faculty members, undergraduates, and administrators. According to Chickering and Gamson,

[g]ood practice in undergraduate education:

1. encourages contact between students and faculty,
2. develops reciprocity and cooperation among students,
3. encourages active learning,
4. gives prompt feedback,
5. emphasizes time on task,
6. communicates high expectations, and
7. respects diverse talents and ways of learning (p. 1).

Group spirit and emotional connection require contact, communication, and cooperative interaction between members of a community; the seven principles for teaching emphasize contact between students and teachers, cooperation among students, and clear communication of feedback and expectations (McMillan, 1996). Members of a community trust that they have an influence on the community; they become more cohesive as they learn what to expect from each other. A teaching practice that demands

respect for diverse talents and ways of learning contributes to the feeling of trust (Chickering & Gamson, 1987). The fourth factor in the definition of sense of community depends on reinforcement as the group helps to fulfill the needs of its members, and as members discover ways they can benefit one another (McMillan). In the educational setting, the explicit need of students is learning. Those teaching practices that encourage active learning and the trading of ideas and intellectual resources between students and teachers, and among students, are instrumental in fulfilling this need (Rovai, 2000, 2001, 2002b).

Community colleges are concerned with factors that have an effect on academic achievement and student persistence. Both academic achievement and student persistence have been linked to student academic and social integration or involvement in the college (Pascarella & Terenzini, 2005; Tinto, 1997). Academic and social involvements are necessary for a classroom community to form. Or, one could say, that when students have a high sense of classroom community they are involved academically or socially in the community. Thus, for a college hoping to retain students and assure the academic performance of those students, a thorough understanding of the factors involved in sense of classroom community may be essential. Students who are able to integrate academically and socially into college life are more likely to complete a degree than students who are unable to fit in satisfactorily (Stovall in Bragg, 2001).

Researchers examining components of classroom community have suggested that the age of students, whether or not students live on campus, personality traits of students as evidenced by choice of major, or choice of delivery method (online courses or face-to-face courses), and course type have an influence on individual sense of classroom

community (Baker, 2004; Bye, Pushkar, & Conway, 2007; Cadieux, 2002; Kuh et al., 2006; Overbaugh & Lin, 2006; Tinto, 1997; Yang, Tsai, Kim, Cho, & Laffey, 2006). The influence these factors have on students' sense of classroom community may help to identify students with a low level of academic and social integration whose persistence is unlikely. Research into innovative practices (Tinto, 1998) has shown that efforts to enhance academic integration also promote student persistence (Kuh et al., 2008). Classroom practices, which encourage contact, cooperation, and active learning, presumably facilitate a sense of classroom community. Community colleges expound these practices at professional development workshops and seminars (Eddy, 2007; Links, 1990). Promoting good practices does not mean cookie cutter teaching. Teachers are as diverse as their students; they differ in how they apply their craft. Few teachers use expository lecture methods exclusively. An expository lecture can impart a great deal of information in a relatively short period of time; however, such a method invites students to be passive spectators (Davis, 1993; Laird & Cruce, 2009). Most of the classes that are termed lectures are characterized by interactive lecture, problem solving, demonstrations, proofs, stories, case studies, or very short lectures framing periods of discussion (Komarraju & Karau, 2008). All of these lesson strategies are aimed at shifting the focus to the student and inviting interaction. Best practices for online instruction also stipulate frequent communication, interaction between students and between the students and faculty, and prompt feedback from the instructor (Graham, Cagiltay, Lim, Craner, & Duffy, 2001). Online instructors do not use reading materials, assignments, course notes, and library self-study exclusively.

The style, methods, and class management of an instructor set the tone for the classroom climate, whether real or virtual. Grasha (1994) identified five teaching styles that were most commonly found in college classrooms. These styles are still pervasive in college classrooms today (Arbaugh, 2007; Grasha & Yangerber-Hicks, 2000; Hagel & Shaw, 2006; Komarraju & Karau, 2008; Liu, 2007). The styles identified were expert, formal authority, personal model, facilitator, and delegator. In usage, these styles form four clusters wherein teachers utilize one or another combination of styles (Grasha, 1994; Grasha & Yangerber-Hicks, 2000). Expert style is typified by an instructor that possesses knowledge and expertise that students need; as one would expect, experts are found in each cluster for college teaching. Formal authority is found in two clusters; this style could be referred to as traditional because methods used include lecture, teacher-centered questioning, and teacher-centered discussions (Grasha, 1996). Facilitator style is also found in two clusters; this style includes student-centered activities such as case studies, critical thinking discussions, and problem-based learning (Grasha). The facilitator emphasizes the personal nature of student-teacher interactions. Instructors who incorporate the style of facilitator are assumed to create a warm emotional climate for the class (Grasha, 1994) and consequently a higher sense of classroom community (Salazar, 2006). As a facilitator, the teacher is expected to organize the subject matter in a meaningful sequence and to determine what topics to cover (Grasha).

Online courses use an asynchronous learning network (ALN) allowing communication between participants even though they need not be engaged at the same time (Mayadas, 1997). Online instructors are capable of building and maintaining a sense of classroom community through ALN (Brower, 2003; Cadieux, 2002; Caverly &

MacDonald, 2002; Dawson, 2006; Dixson, Kuhlhorst, & Reiff, 2006; Gunawardena, Ortegano-Layne, Carabjal, Fechette, Linemann, & Jennings, 2006; Haythornthwaite, Kazmer, Robins, & Shoemaker, 2000; Overbaugh & Lin, 2006; Rovai, 2000, 2001, 2002c; Shea, 2006; Shea, Swan, Li, & Pickett, 2005). Teaching styles that are associated with community building (facilitator and delegator) are well suited to online instruction. Case studies, critical thinking discussions, guided readings, key statement discussions, group inquiry, learning pairs, and small group work teams are a few of the methods that facilitator/delegator instructors use (Grasha, 1996) that work well online and build a sense of community.

A community college course designed to be a transfer credit to a baccalaureate institution is expected to cover the topics listed in the catalog course description and syllabus. Receiving transfer institutions often request copies of course syllabi to aid in the determination of transfer credits. Primary teaching style clusters that incorporate facilitator and/or delegator styles necessarily require more time than clusters that incorporate formal authority style. Therefore, time constraints play a major role in teaching choices at a community college. Instructors with such time constraints would benefit by knowing how much time must be spent on community building to engender a sense of classroom community.

Statement of the Problem

Most community colleges agree in the message they put forth in mission statements. Common themes in mission statements are institutional commitment to providing a quality education and open access by the community (Ayers, 2002; Downey, Pusser & Turner, 2006; Perin, 2006). This commitment to both quality education and

open admission policies presents a challenge (Shannon & Smith, 2006). The problem addressed in this study is the apparent conflict between these two mission priorities. Is it possible an institution that admits just about anyone is capable of a quality education? What is a quality education?

The conventional means of judging outcomes of exclusive four-year universities in the United States are student persistence, completion of bachelor's degree, and post-program employment (Braxton, 2008; Chun, 2002). The conventional means of judging inclusive community colleges follow the same rationale: completion of an associate's degree or transfer to a four-year university (Bragg, 2001; Roksa, 2006). However, given the diversity of community college students and their diverse reasons for attending, these outcomes are unrealistic measures (Bragg; Dougherty & Hong, 2006). Common reasons for non-completion of an associate's degree, personal finances, hours of employment and family responsibilities, have nothing to do with academic inclusivity (Bragg). Vocational programs for licensed occupations, like nursing and electrician, require a completed associate's degree or certificate. Non-licensed occupations in the labor market most often do not require completion of a degree; thus leaving for employment that offers job-related training could be considered a successful outcome (Rosenfeld, 1999). Nettles and Millett (2000), citing Cohen (1985), noted that the growth trend in community colleges has brought about admission of large numbers of underprepared students for whom developmental classes are required (see also Bragg). Eddy (2007) reports working with underprepared students to be a top concern among those leading faculty development efforts in community colleges. Romano and Dellow (2009) estimate more than 40% of community college student populations require remedial work. Underprepared students

require special effort and teaching excellence to provide academic and social experiences that fully integrate them into the college experience (Nora, 2000). Under-represented students and minorities attend community colleges in a much greater ratio than attend exclusive four-year schools (Greene, Marti & McClenney, 2008; Nettles & Millett, 2000; O'Connor, 2009). Dowd, Cheslock, and Melguizo (2008) have illuminated the incongruity of measuring the academic benefit that exclusive schools bring to students who are the most academically able. Academically able students are likely capable of learning on their own (Dowd et al., 2008). Examination of the National Education Longitudinal Study dataset for students enrolled in the twelfth grade in 1992 determined no significant impact of institutional graduation rate on high achieving student degree completion from degree-granting two-year colleges (Goble, Rosenbaum, & Stephan, 2008). Community colleges have been criticized for enrolling too many minority students in terminal vocational programs (Brint & Karabel, 1989) and too few (Nora), yet it is not uncommon for graduates of vocational programs to achieve employment and later continue their education (Bragg). Criticism regarding low transfer rates of minorities continues in the face of evidence that students who do persist experience real economic benefits over their lifetimes (Bragg; Marcotte, Bailey, Borkoski & Kienzl, 2005; Morest, 2006). Analysis of an age-cohort study designed and conducted by the National Center for Educational Statistics clearly indicates that race, used as an indicator of minority status, bears no significance in bachelor's degree completion regardless of where a student enters higher education (Aldeman, 1999). Indeed, Aldeman reports the classic form of transfer from a 2-year to a 4-year institution is accompanied by a high probability (over 70%) of bachelor's degree completion. Community colleges present layers of

complexity stemming from their close representations of groups of society (Nora) and the diversity of student intent and expectations (Bragg).

Community colleges, whose open access mission is deeply embedded in their past and equally important to their future, require new thinking about student outcomes. To continue to be measured by the same yardstick as elitist institutions relegates them to a subordinate position, always struggling to demonstrate that their students are successful (p. 110).

As Nora predicted, community colleges focus heavily on quality of services and programs, while faculty have the responsibility for academic quality. Current deficiencies in knowledge are the result of limited evidence on outcomes that provide a deeper understanding of the advantages of attending a community college. Open access followed by a quality education that benefits student in ways that they most require could be considered complementary missions rather than opposing (Bragg). Community colleges, faculty, and students attending stand to benefit from an examination of factors contributing to quality education.

In addition to the problems community colleges face providing quality education to underprepared students, an ongoing debate emerges regarding the quality of online education. The argument about whether or not distance education is as good as face-to-face education has existed since the first correspondence courses were offered. This argument has reached frenzy in some quarters with both sides holding traditional face-to-face classes up as a “gold standard” (Bye, Pushkar, & Conway, 2007; Cadieux, 2002; Chen & Jones, 2007; Clark, 1994; Conger, 2005; McDonald, 2002; Merisotis & Phipps, 1999; Parisot, 1997; Rovai, 2002; Rovai & Jordan, 2004; Russell, 1999; Shearer, 2002). Traditionalists consider face-to-face exchange superior to any other system while online learning proponents aver that online learning is as good as face-to-face, if not better. The

fallacy behind these arguments is that both methods can provide a superior education and both methods can also provide an inferior education. Course design and the style, methods, and class management of an instructor combine to determine quality of classroom climate, whether face-to-face or online (Grasha, 1994; Ragan, 2000). "Good teaching is good teaching" (Ragan, p. 12) or in accordance with equivalency theory, equivalent learning experiences result in equivalent learning (Karatas & Simsek, 2009).

Purpose of the Study

The purpose of this study was to establish an overall measurement for student sense of classroom community in terms of the theoretical dimensions of emotional connection, and needs fulfillment (learning). Further intent was to determine the nature of differences, if they exist, between delivery method (traditional or online), teaching style cluster (containing formal authority style or facilitator style), course type, student's residence (on-campus, off-campus commuting, or off-campus not commuting), age, and student major on sense of classroom community in terms of emotional connection and learning.

Research Questions

The research questions for this study were as follows.

1. What degree of overall sense of classroom community, emotional connection, and sense of learning was reported by students completing the Classroom Community Scale (CCS) after participation in a one semester rural-serving community college course?

2. What differences exist between the delivery method on overall student sense of classroom community and the components of sense of classroom community (connection and learning) in a one semester rural-serving community college course?
3. What differences exist between the delivery method and instructor's teaching style on overall student sense of classroom community and the components of sense of classroom community (connection and learning) in a one semester rural-serving community college course?
4. What differences exist between delivery method and course type on overall student sense of classroom community and the components of sense of classroom community (connection and learning) in a one semester rural-serving community college course?
5. What differences exist between delivery method and student residence (those who reside on campus, those who commute to campus, and those who are distance-only) on overall sense of classroom community and the components of sense of classroom community (connection and learning) in a one semester rural-serving community college course?
6. How did age, or student's major course of study differ by student sense of classroom community and the components of sense of classroom community (connection and learning) in a one semester rural-serving community college course?

Assumptions

The basic assumptions of this study were as follows:

1. Students and instructors responded honestly to the questions on the questionnaires.
2. The surveys utilized are valid and reliable.
3. The study itself did not have an effect on the student sense of classroom community.
4. The study did not have an effect on the instructor's teaching style.
5. Study results can be generalized only to the target population.

Definition of Terms

For the purpose of this study, the following definitions were used;

Asynchronous learning network (ALN): a distance learning framework that allows students to access resources and interact, but they do not need to be engaged at the same time (Mayadas, 1997).

Computer mediated communications (CMC): the exchange of information between individuals by way of computer networks (Rovai, 2007).

Distance learning: an instructional and learning practice, using technology and involving students and teachers who are separated by time and space (Cejda, 2007).

Interaction: reciprocal events that require at least two persons and two actions.

Interactions occur when these persons and events mutually influence one another (Wagner, 1994).

Learning community: groups of people engaged in intellectual interaction for the purpose of learning (Cross, 1998).

Sense of community: a feeling that members have of belonging to a group; a feeling that members matter to one another and to the group, and a shared faith those members' needs will be met through their commitment to be together (McMillan & Chavis, 1986).

Student persistence: progressive re-enrollment in college (Pascarella & Terenzini, 2005).

Student success: defined as academic achievement, engagement in educationally purposeful activities, satisfaction, acquisition of desired knowledge, and persistence (Kuh et al., 2006).

Virtual classroom: a computer accessible, online learning environment.

Delimitations

This study was conducted with the following delimitations:

1. Student participants included only those enrolled at Bismarck State College in a semester long traditional or online course during Fall 2009.
2. All student participants were given the opportunity to participate or not.
3. The research was limited in access to students whose instructors agreed to participate.
4. The instruments used were self-report measures.

Organization of the Study

This chapter provided an overview of the study. Chapter II elucidates the theoretical framework and reviews literature related to the ideas and methodology of the research. Chapter III describes the participants, instruments, and methods used in the study. Demographics of participants and survey results are provided in Chapter IV.

CHAPTER II
LITERATURE REVIEW
Theoretical Framework

Formal Theories of Socialization

Studies designed to examine social integration in an educational setting stand upon formal theories of socialization. Social development theory establishes social interaction as central to a person's cognitive development. This theory, originating from the writings of Lev Vygotsky, maintains that all higher cognitive functions begin as relationships between individuals. From this view point, education is a collaborative, community-based construction (Saritas, 2008). Within this theory, Vygotsky explained that learners with equal levels of mental development to learn vary in learning outcome due to differing zones of proximal development. The zone of proximal development "is the distance between the actual development level as determined by independent problem solving and the level of potential development as determined through problem solving under adult guidance or in collaboration with more capable peers" (Vygotsky, 1978, p. 86). The relationship between a more knowledgeable other (teacher or student peer) and a learner is instrumental in the learner's development. The ability of the learner to grasp new concepts is enhanced above that which could be discovered on the learner's own. A more knowledgeable other assists the learner's development by providing scaffolding to new concepts (Fosnot, 1996; Vygotsky, 1978).

Social development theory overlaps other theories such as social learning theory (Bandura, 1986) and situated learning (Lave, 1988). Social learning theory also maintains the importance of social interaction in cognitive development and connects to behavioral and environmental influences. Social learning theory emphasizes positive learning experiences as one person learns from others in a socialization process. Education is a planned socialization that works best when it follows natural socialization processes. Focusing on observational learning, social learning theory stipulates component processes: 1) attention of the learner on what is modeled (by teacher or student peer), 2) retention involving coding, organization and rehearsal, 3) motor reproduction involving accurate feedback and 4) motivation that may be external (social) or a form of self reinforcement (Bandura). Social interaction and collaboration is a focus of situated learning theory, a general theory of knowledge acquisition. The basic assumption of this theory: learning is unintentional and situated within, and the result of authentic activity, social context, and culture (Lave & Wenger, 1990). Students situated on the periphery of a community of practice move toward the center of the community as they become more engaged in the context (Wenger, 2001). Learners at the center of the community are those who have become more knowledgeable. Through interaction and dialogue within the community, learners interpret, reflect, and form meaning. The active engagement of learners is required. Situated learning theory implies that, if knowledge is not transferable to a real life situation, the degree of simulation is the limiting factor in the learning environment (Stein, 1998). Theories of socialization apply to studies of community and social integration because they give insight into how people become part of a community and how important the community is for student success (Kezar, 2006). The framework

formed by the social cognitive perspective maintains individuals have basic psychological needs whose satisfaction affects perception; how these needs are met is influenced by social context (Osterman, 2000).

Self-Determination Theory

Self-determination theory (SDT) is an empirically based theory of motivation and development (Deci & Ryan, 2008). Ryan and Deci (2000) use SDT to examine how social contexts catalyze motivational differences. Three innate psychological needs are described as the basis for self-motivation: the need for competence, relatedness, and autonomy (Ryan & Deci). Competence is clarified as the experience of mastery over challenges in the physical and social worlds. Relatedness as a fundamental need refers to attachments and feelings of security and belonging. Autonomy is self-organization and regulation of one's own behavior (Deci & Ryan). The need for autonomy as described in SDT differs from autonomy defined in standard social science models since it is not related to independent, detached or selfish behavior but to a feeling of volition (Ryan & Deci). In a large best practices urban community college Schuetz (2008) found SDT to be a good conceptual fit to collected data. The mixed-methods study involving interviews followed by an examination of existing data from the Community College Survey of Student Engagement (CCSSE) found that students experiencing a sense of belonging, competency, and autonomy were motivated to be more engaged in learning (Schuetz).

Constructivist Theory

Constructivism, a psychological theory, is a broad framework for teaching and learning (Fosnot, 1996). Based on the work of Jean Piaget, Lev Vygotsky, Jerome Bruner and others, this theory asserts concept development and deep understanding is

constructed from active learner reorganization of knowledge (Fosnot). According to Bruner (1996) learning is an active process where learners construct knowledge based on what they already know. Information is transformed by the learner according to their current state of understanding. Instruction must be concerned with learners experience and the contexts of student motivation (Bruner). Constructivist theory guides active learning and student-centered pedagogy and is the basis of modern theories for the online classroom (Anderson, 2002; Arbaugh, 2007; Knowlton, 2000). Indeed, distance educators draw on and contribute to theory and practice of traditional education (Moore, 1997; Woo & Reeves, 2007). Using scales based on situated learning and constructivist learning theories, Taylor and Maor (2000) developed and tested two forms of a Constructivist Online Learning Environment Survey (COLLES). One form assessed student perceptions of their preferred online learning environment and one form assessed the student's (N = 10) perceptions of the actual online learning environment. Students surveyed were enrolled in a Masters level science and mathematics education unit. Preliminary results indicate that these future educators preferred a higher level of professional relevance than was attained. The class attained the preferred level of critical reflective thinking in association with online peer discussion and the preferred level of affective support from their tutors. The extent to which communicative interactivity occurred presented an anomaly wherein the achieved level was lower than the preferred level even though the students were frequently engaged in structured small group interactions. Interactivity among students was more monological than dialogical indicating that even in upper levels of higher education online discourses that involve a willingness to learn from peers

and a style of writing that solicits the ideas of others do not occur without guidance (Taylor & Maor).

Transactional Distance Theory. The initial premise of the theory of transactional distance (TDT) is that distance education is a pedagogical concept (Moore, 1997). Transactional distance is a psychological and communications space that, if not bridged, results in misunderstandings between instructors and learners such that effective, deliberate learning will not occur. Transactional distance is a continuous variable determined by two clusters of teaching procedures named dialogue and structure and a student characteristic, learner autonomy. Instructional dialogue covers only interactions that are positive in nature, purposeful, constructive, and valued by each participant. Program structure involves the elements of course design that express the flexibility or rigidity of the courses educational objectives. Processes that involve structure connect transactional distance to self-determination theory and build upon constructivist theory. Unstructured, individual, personal instructor-learner dialogue contributes to both relatedness and competence supporting the learner's motivation. The well-structured distanced education course arranges sufficient dialogue with instructors and peers to assist learners in construction of knowledge (Moore). Both clusters of variables (dialogue and structure) are qualitative in nature and are subject to numerous within cluster variables, all of which have not been defined. When a program is highly structured and dialogue is low, transactional distance is high. Learner autonomy, the third variable that determines transactional distance, is similar to that used in self-determination theory. Learner autonomy refers to self-directedness in the learning process. The initial empirical examination of transactional distance theory indicated that students with greater

autonomy were more comfortable with a greater transactional distance than those with less autonomy (Moore). After an ethnographic study of postgraduate students, Lally and Barrett (1999) concluded technological advances that facilitate dialogue between learners and between learners and tutors in a collaborative learning environment helped to build a community of learners and reduced transactional distance. Analysis of transcripts of class interaction focused on the importance of quality dialogue (Lally & Barrett). Chen (2001) found that learners skill level with the internet as well as the positive quality of interaction (dialogue) were key variables in reducing transactional distance between instructor and learner and among learners. TDT is regarded by some researchers (see Gokool-Ramdoo, 2008) as a global theory of distance education because it carries elements that are inherent in many other theories of distance education (see Amundsen, 1993; Garrison, 2000; Holmberg, 2007) and not the converse.

Community of Inquiry Model. The Community of Inquiry (CoI) is one of several conceptual models that have been developed to guide research into online learning (Alavi & Leidner, 2001; Arbaugh, 2007; Garrison, Anderson & Archer, 2000). CoI (Figure 1) assumes learning occurs within a community through the interaction of three elements: cognitive presence, social presence, and teaching presence (Garrison, 2007; Garrison et al., 2000; Garrison & Arbaugh, 2007). This model links to constructivist theory through the meaning of cognitive presence. Garrison et al. define cognitive presence as the extent to which the participants of a community of inquiry are able to construct meaning through sustained communication. Social presence is defined as the ability of the instructor and students in the community to project identifiable personal characteristics.

Community of Inquiry

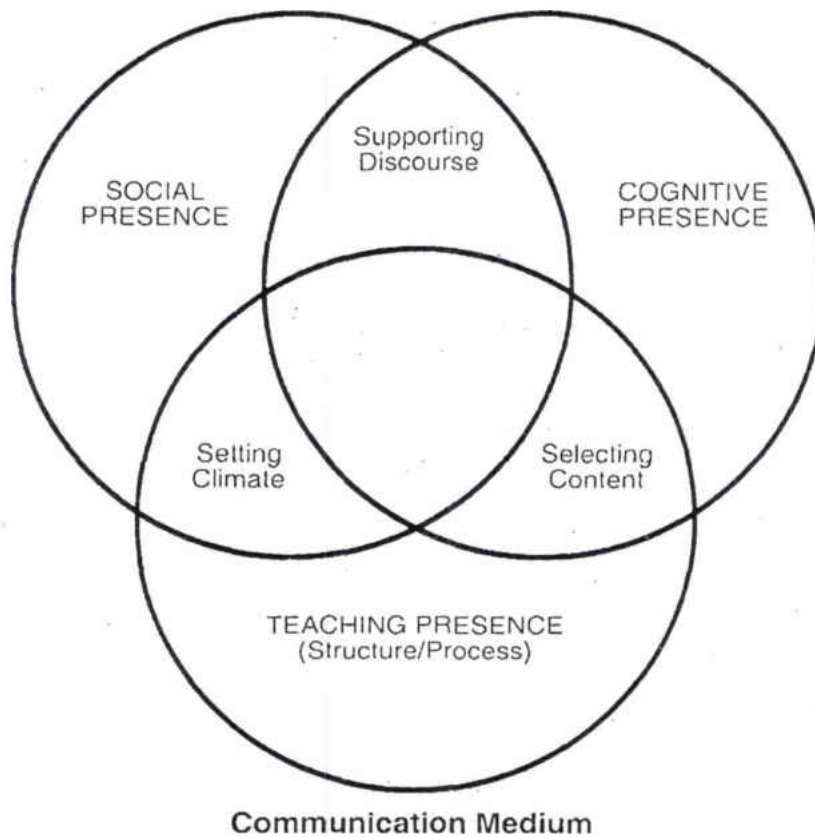


Figure 1. Elements of an Educational Experience (from Garrison, Anderson & Archer, 2000, p. 88).

In accordance with previous theories of socialization, social presence contributes to discourse, climate, and directly to the educational experience. Socio-emotional communication supports cognitive presence but does not contribute to the educational experience if artificially separated from it (Garrison & Arbaugh). Recent examination of the CoI suggests that social presence be considered a mediating variable between cognitive presence and teaching presence (Garrison, Anderson, & Archer, 2010). Further strengthening the link between this model and social development theory, teaching

presence represents the more knowledgeable other in the community. The instructor as the more knowledgeable other is responsible for the design of the educational experience and primary presentation of the course content; student peers may join the teaching presence by facilitating the learning of others (Garrison, 2007; Garrison, et al., 2000).

The significance of the element of teaching presence in the educational experience should be emphasized. Teaching presence has been found to directly impact student satisfaction, perceived learning, and sense of community (Garrison et al., 2010). The structure of the CoI model has been confirmed through empirical research and has been shown to be a coherent theory for online learning (Arbaugh, 2007; Arbaugh, Bangert, & Cleveland-Innes, 2010).

Equivalency Theory. Equivalency theory as summarized by Schlosser and Simonson (2006) states “the more equivalent the learning experiences of distant students are to that of local students, the more equivalent will be the outcomes of the learning experience (p. 25). The theory defines learning experience as anything that promotes student learning; the experience may be observed, felt, heard, or done. Because face-to-face and distance students have different learning environments, equivalency theory posits that they should not be given identical instructional experiences, rather experiences of equal value designed specifically for the environment (Schlosser & Simonson, 2009). The nature of discourse in an online environment may be collaborative but it is very different from face-to-face communication (Garrison, et al., 2000). Oral communication is able to provide multiple non-verbal cues from facial expression and vocal tone. Written communication allows time for reflection which may facilitate deep and meaningful learning (Garrison, et al.). If it is possible to determine the benefits of each form of

communication, equivalency is possible. Empirical support of equivalency theory has difficulty establishing equivalent learning experiences. In a tightly controlled experimental project at Gazi University, Ankara, Turkey, Karatas and Simsek (2009) examined the outcomes of academic achievement and student satisfaction in closely matched internet-based and face-to-face learning systems. Although both groups demonstrated significant levels of achievement and both groups indicated a similar level of satisfaction, achievement was significantly higher in face-to-face classes. Karatas and Simsek were not able to make conclusions regarding equivalency because 1) a time limit on the internet-based system did not allow students adequate time to write what they were thinking and 2) students in the internet-based group often did not have a culture of studying on a computer medium (group selection was not voluntary).

In seeming concordance with equivalency theory, Anderson (2008) has proposed an equivalency theorem:

Sufficient levels of deep and meaningful learning can be developed as long as one of the three forms of interaction (student–teacher; student-student; student-content) is at very high levels. The other two may be offered at minimal levels or even eliminated without degrading the educational experience (p. 66).

Anderson proposes this theorem in light of cost and time effectiveness when all three modes of interaction cannot be achieved at high levels. Although more than one mode of interaction is ideal, even one mode at high levels is as effective as less interactive learning sequences (Anderson, 2003).

Community

Theory of Sense of Community

Sense of community (SOC) is a major theory in community psychology and is broad-ranging among other disciplines (Hill, 1996). SOC is based on four dimensions:

needs fulfillment, group membership, influence, and shared emotional connection (Peterson, Speer, & McMillan, 2008). SOC has been applied to territorial communities and relational communities such as those found in academe (McMillan & Chavis, 1986; Rovai, 2000; Royal & Rossi, 1996). SOC has been empirically supported for the multidimensional model originally proposed by McMillan and Chavis (Peterson et al.). The study used interviews and an 8-item Brief Sense of Community Scale (BSCS) on 293 Midwestern neighborhood residents. Peterson et al. concluded that earlier attempts to collapse the four dimensions were flawed in terms of instrumentation and theoretical cohesion. The BSCS has since been modified and expanded for use in classroom settings (Rovai, 2002b).

· An integrative review conducted by Osterman (2000) examined sense of community in terms of feeling of belongingness in a group. One question explicit in the purpose of the review was “Why is this sense of belonging important in an educational setting?” (p. 324). Osterman found that students’ experience of acceptance by the school or classroom community influenced multiple dimensions of their perception and behavior. Acceptance and inclusion in a supportive community produced positive emotions and reduced stress in studies designed to measure these. Osterman summarized outcomes significant “in educational settings: 1) the development of basic psychological processes important to student success, 2) academic attitudes and motives, 3) social and personal attitudes, 4) engagement and participation, and 5) academic achievement” (p. 327) positively influenced feelings of relatedness or belonging to a community. Although Osterman did not cite direct evidence of the positive relationship between sense of community and academic achievement, there was substantial documentation of the

influence through a sense of belonging as it effects engagement. Further, teacher support had the most direct effect on student engagement: “how students feel about school and their coursework is in large measure determined by the quality of the relationship they have with their teachers in specific classes” (Osterman, p. 344).

Learning Community

Learning community is a generic term (Lenning & Ebbers, 1999) that essentially describes groups of people engaged in intellectual interaction for the purpose of learning (Cross, 1998). In the context of this study, student learning communities intentionally organized to support more effective learning are of primary concern. According to Lenning and Ebbers, there are four basic forms of student learning community: 1) curricular learning communities involving the same group of students taking two or more classes together, 2) classroom learning communities, 3) residential learning communities, and 4) student-type learning communities (students with similar academic interests). Student learning communities are based on the concept of collaborative learning which in turn is based on constructivist theory (Cross). Effective learning communities use active and collaborative learning activities and promote student engagement (Zhao & Kuh, 2004). The benefit of student learning communities has been theoretically and conceptually supported by Astin’s developmental theory of student involvement (Astin, 1984, 1993) and by Tinto’s student departure model (Tinto, 1998). Based on these models, learning communities should increase student development, achievement, and persistence by providing quality interaction with instructors and peers (Lenning & Ebbers, 1999). Research in cognitive science also supports the use of learning communities in effective education (Bransford, Brown, & Cocking, 1999). Community

norms that support intellectual camaraderie and positive attitudes toward learning enhance cognitive development and influence achievement. Bransford et al. specify effective learning is learner centered, knowledge centered, assessment centered, and community centered. In a landmark mixed-methods (survey triangulated with interview) study conducted at Seattle Central Community College, Tinto (1997) examined the connection between the formation of a learning community and student learning and persistence. This longitudinal study, involved surveys (n = 517) with students participating in a Coordinated Studies Program (CSP) and students enrolled in traditional curriculum. Only participants in the CSP were interviewed. The CSP allowed students to take multiple courses together where a sense of community was deliberately encouraged with group activities and collaborative learning projects. Students participating in the CSP experienced greater involvement in both academic and social activities and greater perceived intellectual gains than students in comparison traditional classrooms. Additionally, the learning community produced a more positive view of college and higher grade point averages than the traditional classroom. This study associated enhanced persistence with a factor score on involvement with other students which, Tinto concluded, would be unlikely to occur among nonresidential students at Seattle Community College without the formation of the learning community. Participation in complementary academic and social activities has been linked through empirical research to increased academic effort (Zhao & Kuh, 2004) and openness to diversity and challenge (Pascarella, Edison, Nora, Hagedorn, & Terenzini, 1996; Whitt, Edison, Pascarella, Terenzini, & Nora, 2001). Analysis of data gathered by the National Survey of Student Engagement (NSSE), an annual survey of first and fourth-year students, uniformly linked

any type of learning community with positive student outcomes in academic performance, engagement, attendance and overall satisfaction with the college experience (Zhao & Kuh). Zhao and Kuh found that college seniors who had participated in learning communities achieved higher grades than those who did not participate. Results indicated that both first-year and senior students having experience with learning communities were associated with higher levels of academic effort, greater academic integration and more interaction with faculty. The availability of support from fellow members of a learning community results in an increased flow of information, cooperation, satisfaction, and commitment to group goals (Rovai, 2001). These positive attributes lead to increased academic success (Kuh et al., 2006) and persistence (Tinto, 1997, 1998). Smith and Bath (2006) have provided strong empirical evidence for a relationship between learning communities and outcomes on generic skills (communication, teamwork, analytical and critical thinking). Their study analyzed data from a biennial university wide survey (n = 2,622) that included a learning community scale (LCS) for sense of belonging and perception that the community was committed to learning. Student self-appraisals indicated that high scores in the LCS were predictive of high discipline knowledge and skills as well as the ability to communicate effectively and solve problems. The LCS was also a predictor of self perceived development in ethical and social sensitivity. Smith and Bath concluded that the social, interactive and collaborative nature of a student's college experience accounted for the greatest variance in generic learning attributes. Lichtenstein (2005) determined that all administratively organized learning communities do not produce the same successful outcomes. Lichtenstein conducted a mixed-methods study (focus group triangulated with parts of the National Survey of Student Engagement) at a

large public commuter university where freshman learning communities (FLCs) were initiated in 2000. FLCs were determined to be positive, mixed or negative with regard to classroom environment and outcomes. FLCs with positive classroom environments were all that learning communities had previously been reported to be. Learning communities with positive classroom environments produced a strong sense of community and satisfaction with the course as well as students with higher persistence rates and grades than other groups. Negative environments in assigned freshman learning communities were not distinguishable from traditional non-learning community results. Negative environments were characterized by instructors that did not interact with each other or link their respective courses in any meaningful way. One or both of the instructors were perceived as uncaring, and unwilling, or unable to give students extra help. Negative environments seldom utilized group learning activities; group activities when used did not produce a sense of community. Lichtenstein concluded that “the role of the instructor was critical in encouraging classroom cooperation and creating a sense of community” (p. 353).

Classroom community

Robert Ritschel (1995), an administrator and part-time instructor for Three Rivers Community College, Missouri, declared that the “community” in “community college” is found in each individual classroom. Based on his literature review and experiences as a community college instructor, Ritschel concluded that it is the responsibility of the instructor to create a community of learners in each classroom and called on others to examine this concept in the best interests of students. Fassinger (1997) considered that classroom community should be examined from a sociological perspective. Sociologists

believe that groups have leaders, norms, and beliefs that may alter members' actions. Fassinger questioned whether the focus should be entirely on the teacher with regard to student participation in class as defined by student comments and questions. An empirical study involving surveys of forty-nine professors and their students ($n = 1,059$) identified seven variables that explained why students offered comments or raised questions in class. Three of the variables were student traits: confidence, interest in subject, and gender (*males participate more*). Four of the variables were class traits, and none of the professors' personal traits were significantly linked to class participation. Small class size, positive student-to-student interactions, contributing comments positively affecting one's grade, and positive emotional climate of the class, all promoted student participation. Students' sense of the class as a group (seeing themselves as part of a community) was the key to class participation. Fassinger recommended that instructors use student feedback on class behavior to help shape class climate and interaction norms and to encourage a community of learners within the classroom. Hirschy and Wilson (2002) produced a literature review to examine social factors that advance learning. They report that faculty-student and student-student interactions in classrooms are key factors. Classroom climate, the kind of learning environment, is central to these interactions and is influenced by teachers and students alike. Student peer interactions help form the environment; thus students share some responsibility for a positive or negative classroom. In a final recommendation for instructors, Hirschy and Wilson referenced Chickering and Gamson's Seven Principles for Good Practice in Undergraduate Education, stating that these sound principles along with an understanding of the social effects of the classroom environment would benefit student learning.

Research on learning communities at Seattle Central Community College led Tinto (1997) to conclude classroom communities are the heart of a commuter campus where teachers influence the nature of the community and how students become involved in learning. Arthur Chickering (2000) concurred, stating that “teaching in ways that build relationships and a sense of community among students is especially important for commuter students” (p. 23). Chickering also provided concrete advice to instructors with seven general activities that help create community within a classroom.

1. Designing course activities based on differences in learning style;
2. Combining group activities and individual projects;
3. Maximizing interactions during class meetings;
4. Using ongoing experiential contexts that are part of students’ daily lives;
5. Creating learning teams;
6. Encouraging interactions between classes; and
7. Providing explicit criteria for evaluation (p. 29).

The use of group work and activities has been shown to have a positive relationship with student’s sense of classroom community (Summers, Beretvas, Svinicki, & Gorin, 2005).

In a large southwestern university, Summers et al. utilized a pre-test post-test design to examine students perceptions in classes conducting group work and those that did not (N = 1,500). Instruments measured student self-perceived campus connection, sense of classroom community, and the effectiveness of group work (group work classes only).

Results indicated the use of group work methods in undergraduate classrooms was positively related to feelings of classroom community. Female students benefited more than males from group work and class size had no effect on sense of classroom community when group work methods were utilized. Summers and Svinicki (2007) investigated the relationship between students perception of classroom community and achievement motivation using a similar design at the same university. Students who

perceived their cooperative learning group as effective at working toward task goals also perceived a greater sense of classroom community and motivation.

Reliable measures of sense of classroom community can be used as an indicator of the teaching methods that improve learning in undergraduates (McKinney, McKinney, Franiuk, & Schweitzer, 2006). McKinney et al. measured sense of classroom community, student satisfaction and performance with surveys at the beginning and end of a semester. This study, conducted at a midsized Midwestern university, examined a class where the instructor deliberately utilized methods to increase student connection, participation, support, belonging and empowerment, and then compared results with a section using no intentional community building procedures. Sense of community increased significantly in the experimental class, and sense of learning was related. Academic performance measured with regular class exams was positively related to increased sense of classroom community. Students with the highest sense of community also showed the most improvement between the first and last classroom exams.

Community in the Virtual Classroom

Early attempts at building community through computer mediated communications (CMC) were not always successful. Davis and Holt (1998) report a failure in developing a sense of community among participants in a computer based group in cyberspace using a listserv. The project, begun in 1995 between students and faculty at the University of Manchester, United Kingdom and the University of Georgia, U.S.A. was expected to be a first step toward ongoing international discourse on adult education. The ascribed purpose for the action research using the international listserv was to identify areas of common study and research interests for possible future

collaboration. The list of 47 participants included undergraduates, graduate students and faculty having varying degrees of comfort and familiarity with e-mail communications. After sharing biographical sketches, the participants were asked to contribute an autobiographical writing relating a critical incident they had experienced as an educator or student. The listserv manager expected that formal discussion would ensue. Few participants contributed and before any progress occurred on this assignment, the entire project was sabotaged by two participants who were well known and influential professional associates. One hinted in an e-mail to the entire listserv about misgivings in the way the listserv had been initiated and furthermore felt that action research was in some sense unethical. The second professional wrote about a sense of unease about sharing details of their career in e-mail. These interventions effectively shut down communication through the listserv and ended any possibility of developing a community of adult educators. In evaluating what went wrong and why, Davis and Holt identified three areas of concern. First, they had assumed that the participants all were technologically literate and comfortable with new uses of technology; this assumption was not substantiated. Second, they had assumed that participation in the listserv was voluntary. Students felt a sense of pressure from faculty to participate; consequently there was some resentment and resistance to active participation. Third, assumptions about the nature of communication and communities based on face-to-face verbal interactions were not transferable to CMC. Recruitment strategies for the community emphasized research goals, not the collaboration of people. Hence, e-mail participation degenerated to a form that closed down possibilities. The size of the group (47 participants) could have resulted in interaction in a face-to-face setting by being broken into subgroups. The listserv

manager was not able to maintain interaction within such a large group. A significant misassumption also occurred for the role of communication facilitator. The listserv manager (facilitator) had successfully used autobiographical sketches and critical incident reports in face-to-face classes. These methods were clearly not successful with this aspiring community. Davis and Holt wrote that “the possibility of the facilitation being intrusive and raising issues of personal safety, trust, confidentiality, and comfort cannot be underestimated” (p. 320). Davis and Holt concluded facilitating difficult and complex group interaction in cyberspace requires further experience and study. Tu (2000) conducted a literature review to examine both the inhibition and enhancement of communicative interaction with CMC. CMC tend to inhibit interaction when facilitation is based on face-to-face assumptions and inappropriate instructional design. Tu listed numerous specific reasons for the failure to communicate, including insufficient computer literacy, inadequate technology, fear for loss of privacy, impersonal, disjointed dialogue, and insufficient time allotted for members to reflect before initiating responses. The difficulties experienced by Davis and Holt were validated by reports of other groups that were hijacked by high status participant’s domination in e-mail discussions. Personal communication style that relies on non-verbal cues is ineffective in CMC, having a negative impact on interaction due to misunderstandings. Tu also recounted a negative impact from uninhibited behavior (writing) when a participant loses a sense of audience along with the constraints and inhibitions that an audience provides. CMC in an educational setting result in a heavy workload for both students and facilitators. Depending on the number of messages received, students may experience difficulty following discussion and skip messages or fail to read for meaning. Information overload

combined with time limits has an inhibitory effect on interaction. Tu's review included research reporting CMC enhanced interactions. CMC was found to reduce barriers and relax face-maintaining behavior allowing some participants to connect closely to others in their community. Anonymity, when it occurred, allowed shy, critical, and considerate people to communicate without fear of embarrassment or repercussions. E-mail enhanced communication between instructors and students by providing a means for students to reiterate questions or ask follow-up questions without fearing judgment from other students. Students who remain silent in face-to-face settings because of perceived low status, race, handicap, obesity, or gender (females more often silent) were found to participate in e-mail discussions. More teacher-student interaction and greater learner-learner interaction occurred in successful online courses as students assumed some of the teaching role and initiated conversations. The most often cited enhancement of interaction is access and availability. When internet access exists students are able to interact "anytime and anywhere" (Tu, 2000, p. 43; see also Durrington & Yu, 2004). Falvo and Solloway (2004) examined the social context of teaching and learning online in terms of how online learning tools deliver content and how relationships are developed. This descriptive qualitative study involved 15 graduate students in industrial technology. The course began with a face-to-face orientation including structured ice-breaking activities; later students were given information about the importance of community and asked to reflect on the challenge involved. Students maintained personal websites where they shared pictures and posted class project work. The instructor, with a heightened awareness of student needs and vulnerabilities, called students on the phone during the course. Emerging issues and themes described student frustration with

software, problems accessing the internet and positive feelings connected to quick responses from the instructor. The authors credited the success of the online community to initial face-to-face introductions, student web-sites, and instructor immediacy. They called for continued research supporting instructors in facilitation of community online. Rovai (2000) conducted a literature review that sought to discover how “learners in a virtual classroom build and sustain a sense of community” (p. 287). Prior research into the learning effectiveness of different media for distance education clarified that the medium was not often the determining factor; course design and pedagogy mattered most (Allen, Bourkis, Burrell, & Mabry, 2002; Russell, 1999). Rovai identified interrelated factors shown to influence the quality of interaction and thus the sense of community as well as course design and pedagogy in a virtual classroom. The related factors were student-instructor ratio, transactional distance, social presence and instructor immediacy, social equality, collaborative learning, group facilitation, and self-directed learning. Rovai (2002a) later modified this list, referring to collaborative learning as small group activity and clarifying the self-directed learning factor as requiring alignment between teaching style and learning stage (see Figure 2). Ideal student-instructor ratio dictates the community size and varies by content area. An ideal class size for building community is situational. Rovai suggested eight to ten students represent a minimum number for promoting interaction. Maximum class size for building and maintaining a community online appears to be between 20 and 30. Instructors with larger class sizes have difficulty maintaining low levels of transactional distance. Smith, Heindel, and Torres-Ayala (2008) found differences related to transactional distance between disciplines. Online tool

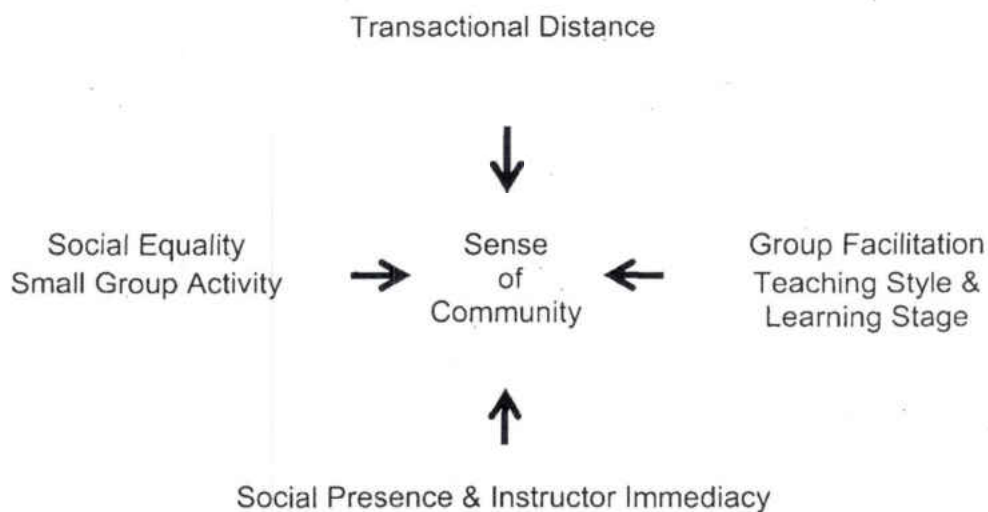


Figure 2. Factors that can influence sense of community in a virtual classroom (after Rovai, 2000)

usage was analyzed using courses as the unit of analysis during two semesters ($n = 107$, $n = 401$) at a large metropolitan university. Among the 63 disciplines examined, Mathematics and Natural sciences used testing tools more often than Social and Behavioral sciences or Humanities. Applied courses used document tools more than non-applied courses. Smith et al. concluded mathematics and science courses taught with a positivistic view of knowledge building maintain a higher degree of learner-instructor transactional distance. Citing Cutler, Rovai (2000) wrote that social presence in cyberspace is a reciprocal awareness of others creating a sense of interaction. Without this mutual sense of interaction, distance learners feel isolated; a sense that someone is reading their posts is essential. Instructor immediacy in terms of timely feedback or acknowledgement that work has been received calms student's anxiety and decreases the sense of isolation. Rovai's review confirmed Tu's conclusions on the benefit of social equality in CMC. Two different types of communication pattern based primarily on

gender have been identified in spite of the social anonymity CMC provide. One type of communication pattern is a threat to social equality and sense of community. Rovai describes these patterns of textual communications using terms introduced by Belenky, Clinchy, Goldberge, and Tarule (1986): the separate voice and the connected voice. The separate voice is autonomous and independent (usually, but not always, male), the connected voice is relational and interdependent (usually, but not always, female). The separate voice tends toward an abstract, arrogant or controlling nature that does not support community building; the connected voice may be empathetic or have a cooperative tone that supports community building. Group facilitation refers to the teacher's ability to facilitate group interaction and critical thinking. Interactions in an asynchronous learning network (ALN) are most effective when they are discursive. Students not accustomed to active attempts to understand other viewpoints or rewriting to better explain their own viewpoint require the guidance of a group facilitator. Rovai identified two types of functions for the group facilitator: 1) provide group tasks and 2) build and maintain the group (community). These functions ensure the shared construction of knowledge. The effect of the self-directed learner on sense of community is similar to Moore's (1997) description of the effect student autonomy has on transactional distance. Learner's who are not self-directed require more structure and less dialogue. Since dialogue is essential for maintaining a sense of community, the self-directed learner who seeks more dialogue and less structure has a positive effect on community maintenance (Rovai, 2000). Citing Grow (1991) Rovai explains a self-directed learning model in which learners change from dependence through stages of interest to becoming self-directed learners. Each stage of learning is best served by a

different teaching style; mismatches between teaching styles and learning stages adversely affect sense of community and learning. Research on the use of small group activities in ALNs echoes the findings of face-to-face classroom research. Well coordinated small group activities and other student-centered methods that are linked to assessment and student outcomes enhance sense of classroom community (Rovai, 2000, 2002a).

Learning Stages, Styles, and Interaction.

Knowlton (2000) wrote that, without exception, online courses must be student-centered if student learning is to occur. Student-centered methods require continuous collaboration and dialogue among students and with the instructor. Student postings are essential in ALNs since the instructor has no sense of the student's presence without them. Without student interaction and dialogue, the students have no clues to the social aspect of learning. Student-centered approaches are necessary online; self-direction and initiative are required of the online learner (Knowlton). A number of studies into distance education have supported the necessity of highly interactive learning environments (e.g. Arbaugh, 2001; Bannan-Ritland, 2002; Dawson, 2006; Dennen, Darabi & Smith, 2007; Garrison, 2000; Swan, Shea, Fredericksen, Pickett, & Pelz, 2000; Tu, 2000). Carr (2000) reported dropout rates were 10 to 20% higher from online courses than from face-to-face courses in the early days of ALNs. Many of the early failures in distance education were the result of students' sense of isolation or fear of isolation (Veseley, Bloom, & Sherlock, 2007). Mehlenbacher, Miller, Covington, and Larsen (2000) questioned the necessity of highly interactive online courses for all students, contending that student learning stage may be the best determinant for the amount of interaction required for online success.

Battalio (2007) conducted a small study with four summer sections of an online undergraduate technical communications course taught using different versions. Two sections were taught with an interactive version (31 students) and two sections with a self-directed version (28 students). At the end of the course students completed an opinion questionnaire to determine general satisfaction with the course and attitudes toward interaction. Results from all sections combined indicated overall satisfaction with the course (90%) while more than half of the respondents reported they prefer working on their own, rather than interacting with others. Most students in these classes reported that they preferred internet classes without student interaction (see also Easton, 2003). Battalio concluded that student-instructor interaction is the only necessary interaction required for students of all learning stages and suggested that future online courses be cataloged as interactive or self-directed versions so students may choose their preferred style. Aragon, Johnson, and Shaik (2002) designed a study to determine distinguishable differences in learning style between students enrolled in online and equivalent face-to-face courses and to what extent learning style differences influence success in these different learning environments. Two graduate level instructional design classes, each containing 19 students completed three different learning style instruments (Reichmann and Grasha's Student Learning Style Scale, Weinstein, Palmer, and Schulte's Learning and Study Strategies Inventory, and Kolb's Learning Style Inventory). Online students were found to be more reflective and preferred abstract conceptualization to a greater extent than face-to-face students. Face-to-face students scored higher on an active experimentation scale indicating their preference to learn by doing. This study found no differences in successful completion of the course regardless of learning style preference

(Aragon et al.). Nastanski and Slick (2008) also employed Kolb's Learning Style Inventory in an examination of learning style preference in relation to course grades and completion rates. The descriptive study of online undergraduate business students (n = 344) was conducted at a Southeastern university. Contrary to Aragon et al., the most prevalent learning preference in this group of online learners was for active experimentation and concrete experience. One-fifth of the respondents were determined to exhibit a preference for concrete experience and reflective observation as dominant learning abilities. This group earned a significantly lower grade point average than all other learning style groups. No difference was detected in completion rate based on learning style preference (Nastanski & Slick). DeTure (2005) sought to determine if student cognitive style could be a predictor of success in an online course. The Group Embedded Figures Test for field dependence/independence was administered to students (n = 73) in six general education courses at a Southeastern community college. DeTure found no relationship between cognitive style scores and student success in terms of course grade. Sahin (2008) looked for evidence of a relationship between student learning style and their sense of learning and satisfaction in online courses. Kolb's Learning Style Inventory and a learning environment survey were administered to students (n = 279) from five different online courses offered by a Midwestern state university. Sahin found learning styles to have a low predictive value on students' sense of learning and satisfaction in online courses. In an effort to identify factors related to student retention in online and face-to-face courses at two community colleges in Nevada, Doherty (2006) examined student demographics and learning style preferences. Students from 36 different courses (n = 426) completed a web-based version of Solomon and Felder's

Index of Learning Styles. No differences were found in the distribution of learning styles between students who successfully completed the courses and those who did not. Doherty did identify time management difficulty and procrastination to be the primary reasons for failing or dropping online courses. Course characteristics identified as contributing to lack of success were insufficient instructor immediacy and lack of communication with the instructor (Doherty). In an effort to identify predictors of persistence for online programs using a cohort model, Holder (2007) examined factors previously identified as characteristic of persistent online learners. The survey of associate's, bachelor's and master's level students ($n = 259$) enrolled in online programs at a Midwestern university also identified good time and study management skills as a characteristic of persistent online learners. In contrast to other studies of online learners, Holder found compliant learners to be more persistent. The cohort model used by the programs in this study was not a good match for students with high levels of learner autonomy. In accordance with research that identifies the importance of community, an emotionally supportive environment was identified as a major criterion influencing retention. Puzziferro (2008) examined relationships between student self-regulated learning strategies (motivation and strategies students use to reach their goals) and performance and satisfaction in online courses. Conducted at a Southeastern community college the survey research utilized Pintrich's *Motivated Strategies for Learning Questionnaire* on sampled students enrolled online in liberal arts courses ($n = 815$). Online student performance and satisfaction were positively related to the student's ability to monitor time and study environment, regulate effort, and manage resources for their own learning. In contrast, Aragon and Johnson (2008) did not detect differences in self-directed learning characteristics between students

successfully completing online courses and those who were not successful. Conducted at a Midwestern rural community college, this study collected demographic information, measures of academic readiness (reading, writing and mathematics placement scores), and the Bartlett-Kotrlík Inventory of Self-Learning. Male gender produced a low negative correlation and academic preparedness a low positive correlation to successful course completion. Bekele and Menchaca (2008) reviewed 29 studies conducted between 1995 and 2006 to clarify methodological and theoretical issues evident in internet-supported learning. Using qualitative methods of coding and matrix formation, Bekele and Menchaca did not discover a consistent use of theory or well defined variables. Methods review indicated group and project-based learning approaches with high levels of student interaction were preferred and linked to student achievement as measured by course grades. This review also established top-down support structures resulted in more positive effects on students than support by instructors alone.

Teaching Presence and Instructor Immediacy.

Swan, Shea, Fredericksen, Pickett, and Pelz (2000) surveyed online students of State University of New York (SUNY) learning network in order to assess perceptions about satisfaction, learning and interactivity. The survey conducted during the spring of 1999, involved approximately 3,800 students enrolled in 264 courses; surveys completed and analyzed numbered 1,406. Analysis of the surveys identified three factors contributing to high student satisfaction and perceived learning: consistency in course design, contact with course instructors, and communication through discussion. Swan et al. concluded that the results point to the importance of the development of knowledge building communities in online courses and the critical importance of instructor's

interactions with students in online environments. Shea, Swan, Li, and Pickett (2005) continued this line of inquiry within the SUNY learning network during summer 2004. Instruments were designed to assess the relationship between students' perceptions of teaching presence and sense of community. By 2004 the SUNY learning network included 32 colleges of which 21 were community colleges. Summer enrollment in the network numbered over 10,900 students; random samples of these online students were given the option of taking the survey when logging onto the network, 2,036 responded. Factor analysis of survey responses revealed a link between students' sense of community and their perception of components of teacher presence. Effective instructional design and directed facilitation by course instructors were important factors in perceived sense of community. The only demographic variable discovered to be a significant predictor during summer session was gender (females experienced a higher sense of community) (see also Shea, 2006). Shea, Li, and Pickett (2006) investigated linkages between teaching presence in both traditional and online classes and learner's sense of community. This study also employed the SUNY management system in a survey of classes that were completely online and those with a small online component (N = 1,067). The sample was notably broad in that it included community colleges, 4-year liberal arts colleges, technical colleges, and graduate university centers. Instruments were Rovai's classroom community scale and a teaching presence instrument based on Garrison's community of inquiry model. Consistent with many other comparison studies (Russell, 1999), no differences were detected in sense of classroom community between online and classroom-based groups. A relationship was revealed between student's sense of classroom community and components of teaching presence and the demographic of

student employment status. Total sense of classroom community was positively related to instructional design and organization and to directed facilitation. Students who were employed full-time experienced the lowest levels of classroom community. Baker (2004) discovered a strong positive correlation between instructor immediacy online and affective learning. Graduate students from multiple institutions (n = 145) completed three different instruments: a verbal immediacy scale, affective learning scale, and cognitive learning scale. A moderate positive correlation occurred between instructor immediacy and cognitive learning; yet it was clear in this study that the individual instructor plays an important role in the effectiveness of an online learning experience. Addressing concerns fellow educators had over the quality of distance learning experiences, Ouzts (2006) conducted a mixed-methods investigation (survey followed by interviews) at a Western land grant university. Based on models of instructional design, Ouzts used a strong sense of community as the standard of a quality learning experience. Rovai's classroom community scale was completed by students from 11 graduate classes and 37 undergraduate classes (n = 227). Proportionally more graduate students completed that survey than undergraduates. Student interviews were conducted with survey volunteers whose courses were determined to have a high or a low sense of community. Patterns emerging from classes with low sense of community combined poor teaching characteristics, low student to student connection, individual assignments, poor quality learning, and overall dissatisfaction. Patterns emerging from classes with high sense of community combined good teacher characteristics (Chickering & Gamson, 1987) strong student to student connection related to assignments, a change in personal perspective, quality learning, and overall satisfaction. Ouzts concluded many of the concerns over the

quality of online education are alleviated when the use of current computer technologies are combined with social constructivist learning activities that foster connection rather than student isolation (see also Ulmer, Watson, & Derby, 2007).

Small group inquiry-based learning activities with low levels of teaching presence demonstrated low levels of social presence and no convergence of ideas (de Bruyn, 2004). Content analysis of class and group discussions from two consecutive classes that incorporated both online and face-to-face components revealed no evidence of student use of rationale unless prompted by the instructor. De Bruyn concluded such learning activities require a commitment on the part of the instructor to monitor discussions closely and provide appropriate and timely responses. Dixson, Kuhlhorst, and Reiff (2006) coded and analyzed all communications from an online course in family communication (n = 27). Communications from the instructor were coded as: shows solidarity, agrees, gives suggestion, gives opinion, gives orientation, and asks for direction. No category of instructor communication was found to be more conducive to discussion outcomes than the others. Garrison and Cleveland-Innes (2005) conducted a study focusing on the nature of online interaction and depth of learning. Graduate students from four different online courses (n = 75) provided pre-data and post-data on their approaches to learning by way of a Study Process Questionnaire. The four courses differed in levels of instructor involvement, overall interaction, and reflective assignment requirements. Results indicated that the changes in how students approached study during the courses were strongly influenced by teaching presence. Course design and teaching approach that provided structure and leadership determined the quality of interaction and was responsible for students' deeper approach to learning. Chapman, Ramondt, and

Smiley (2005) took on the role of participant researchers, to examine over four years of discussion from the National College of School Leadership's (UK) online learning communities. Among the emergent themes came indications that community and deep learning develop together. Stein, Wanstreet, Calvin, Overtoom, and Wheaton (2005) questioned the role of course format as measured by student satisfaction with structure and interaction in overall satisfaction with perceived learning. Survey research involved both web-supported and web-delivered courses at three Midwestern universities. Two hundred one students in nine courses were offered the survey; 34 volunteers from six courses completed the survey. Results indicated the average learners in both delivery methods were satisfied with the course design, amount of interaction, and perceived learning. Structure and interaction together were equated with a low transactional distance in contrast to other studies (Saba, 2003) maintaining increased structure increases transactional distance. Stein et al. concluded that increased structure and learner-instructor interaction do not necessarily increase transactional distance if the structure and interaction meet learner needs. This conclusion supports Moore and Kearsly (1996) who wrote that success in distance teaching is determined by the ability of the instructor to provide the appropriate quantity and quality of instructor-learner interaction while allowing for the learners' autonomy (see also Kanuka, Collett & Caswell, 2002). Analysis of online discussions in business classes through Farmingdale State University, NY, revealed that without teacher involvement, responses in student discussion displayed a low level of cognitive involvement (Maurino, 2007). Instructors often asked high level questions to stimulate discussion but only those who maintained an immediate presence received quality responses. Maurino concluded that teacher presence as expert and

facilitator is necessary to bring students through the zone of proximal development. Online discussions require teaching presence for organization that leads to resolution (Stein et al., 2007).

Research into distance education in this decade has often focused on courses designed for graduate students (Rovai & Wighting, 2005). Masters level students were able to maintain a high level of cognitive engagement in online discussions (Richardson & Newby, 2006). A teacher accustomed to traditional classrooms facilitated the formation of an online learning community with high levels of interaction between teachers seeking a post graduate degree (Maor, 2003). Students enrolled for a doctoral degree in education developed and maintained classroom community using an ALN (Rovai, 2001). Students seeking an MBA emphasizing organizational behavior and human resources were able to carry on substantive discussions within their online learning community (Brower, 2003). Graduate students in distance education formed an online wisdom community that fostered social construction of knowledge and perspective transformation (Gunawardena, et al., 2006). Successful discourse among graduate students is not a rarity; they are known to possess higher levels of self-direction and motivation than most college freshmen. Liu, Magjuka, Bonk, and Lee (2007) warn that even among students in an online MBA program careful design of a psychologically safe, open and inviting environment is required. Additionally, students will only find community within a classroom if they want and seek it. Brownstein, Brownstein, and Gerlowski (2008) found no difference in outcome measured by a comparison of writing assignments between students enrolled in an online MBA course (26 students) and a face-to face (26 students) version. Brownstein et al. stated the online course was potentially

more time-consuming for both the instructor and the students than the face-to-face course. Immediate instructor feedback to students was partly credited for the online success. Brownstein et al. concluded that online students who do not take on a responsible, time-consuming role in discussion and community interaction are participating in what is essentially a directed self-study course. The complex interaction of student personality, time, engagement, and level of participation will affect individual sense of community (Liu et al., 2007). Vesely, Bloom, and Sherlock (2007) conducted a survey of graduate students and faculty at a regional comprehensive university to examine perceptions of factors important to community building online. A convenience sample of 14 faculty and 48 graduate students completed parallel surveys that asked open-ended questions and closed rank order questions. Open-ended responses were analyzed using exploratory content analysis. Two themes emerged from the content analysis: structured, collaborative activities encourage community building and opportunities for intentional, supportive, and ongoing interaction are critical to community building. Instructors and students agreed on the top four rank order factors for community building. Differences appear to be linked to interpretation of the factor. Students ranked instructor modeling first; written responses indicate instructor modeling was equated with teaching presence or instructor immediacy. Instructors ranked instructor modeling fourth; responses indicated that this was interpreted as something that must be embedded in the design of the course. Students ranked interaction and dialogue fourth, clearly interpreting this as student-student dialogue only. Instructors ranked interaction and dialogue first, interpreting this to mean overall discourse embedded in the instructional design by the instructor. Students and instructors both ranked student's

interest and priority for the class second and sufficient time for discussion and interaction as third. Vesely et al. concluded faculty must play a leadership role in community building as students consider teaching presence to be the key factor in online learning and community building.

Pate, Smaldino, Hayall, and Luetkehans (2009) were interested in how much nonacademic social discussion was necessary within an online classroom. Utilizing surveys, interviews, discussion forums, and reflection papers as data sources, Pate et al. examined the perceptions of graduate students ($n = 16$) in a blended (online and face-to-face) instructional technology class. Four discussion forums were available in this course: a required academic discussion, an optional student only discussion (instructor by invitation only), an optional frequently asked questions forum for students and instructor, and an optional academic forum for sharing resources among students. Students generally reflected the optional discussion sites were a good idea in theory but most frequented those sites where teaching presence and instructor immediacy was high. In accordance with other studies (Arbaugh, 2001; Stein et al., 2005; Wickersham & McGee, 2008), students indicating a high level of social interaction and instructor immediacy also indicated a high level of satisfaction. Pate et al. concluded that both academic and social interactions are necessary to develop a sense of community, but dialogue within an academic forum provides both types of interaction. Easton (2003) examined the changing roles of instructors in online distance learning at a large state University in the Southeastern United States. Using case study, Easton determined that designing a course with educationally engaging meaningful participation by students requires facilitative interaction on the part of the instructor. Online courses that are dehumanizing, mass-

produced products are failures; good online courses are interaction intensive for both the instructor and the students. Communication is the critical factor for effective learning and student support (Easton). Quality in distance education is increasingly defined by timely instructor feedback, effective communication and the establishment of a learning community (Ortiz-Rodriguez, Telg, Irani, Roberts, & Rhoades, 2005).

Summary

Theory and research combine to emphasize the importance of social integration in the educational setting. Learners who become part of a community interpret, reflect, and construct meaning in accordance with the norms and values of the group. Community supplies an innate psychological need for relationship and the security of belonging. Educational research examining factors involved in student success have evidence in common for a positive influence from social integration. Social integration into a learning or classroom community requires positive interaction or dialogue between members. Examination of the type and extent of interaction required to build a strong sense of community within a classroom has indicated repeatedly that positive learner-instructor interaction is primary. Teaching presence in the form of structure and process vary in effect upon the learner's sense of community, but teacher immediacy has repeatedly been shown to have a positive effect. Classroom community is possible in the virtual classroom of an asynchronous learning network. Dialogue between students is necessary just as in a face-to-face classroom, but it does not come easy. Distance students require an instructor to facilitate discussion in order for the communication to be educationally purposeful. Instructor immediacy is labor intensive in a virtual classroom since visual cues (a nod or a smile) are not possible. Prompt specific responses to student questions

and concerns as well as written acknowledgement of student contributions is vital in maintaining the learner's sense of connection to the group. It is not yet clear how much or how little learner-instructor interaction is essential since the answer is complicated by student learning stage, course type, the ability of the students and instructor to engage in dialogue, and technological support structures.

CHAPTER III

METHODS

Introduction

Quantitative research methods were used with a causal-comparative design and survey instruments to determine differences between delivery method (traditional or online), teaching style cluster (containing formal authority style or facilitator style), and course type (Business or Applied Science, Communications or Humanities, Mathematics, Science or Technology, Social or Behavioral Sciences) on sense of classroom community in terms of the theoretical dimensions of emotional connection and needs fulfillment (learning). Data collected were examined to determine if differences existed between student's residence (on-campus, off-campus commuting, or off-campus not commuting), age, and student major on sense of classroom community, emotional connection, and needs fulfillment.

Setting

This study was conducted at Bismarck State College (BSC) in Bismarck, North Dakota. BSC is a medium-size, rural-serving, two-year college with approximately 4,000 students. BSC is the fourth largest college in the North Dakota University System providing transfer courses, technical programs, online classes and programs, continuing education, and workforce training. Students may earn an associate in arts or an associate in science preparing them for transfer to a four-year institution offering a bachelor's degree. BSC provides over 35 technical programs leading to a program certificate,

program diploma, associate in applied science degree, or a bachelor of applied science degree (Bismarck State College, 2007a). Bismarck, located in central North Dakota, had a population of over 55,333 people in the last census; the population estimate in 2008 was 60,389 persons (U.S. Bureau of the Census, 2010). North Dakota is largely rural with a low estimated population density of 9.3 persons per square mile (U.S. Bureau of the Census, 2000).

Online courses use the eCollege web platform (eCollegesm). This delivery system is supplied as eCourse.NExT and offers live chat and threaded discussion (asynchronous) forums. Students may be assigned to groups within the classroom facilitating collaboration on group projects. Students have access to a .NExT student orientation tutorial as well as technical support.

Participants

Student Participants

Student participants were volunteers enrolled in the last three weeks of one-semester courses. Courses surveyed were from among 50 that are taught both online and on-campus (Table 1). BSC courses that have never been adapted for online presentation were not included in this study. One thousand fifty questionnaires were administered in traditional classrooms, and an equivalent number of online students were asked to complete the questionnaire. Classes surveyed were from multiple departments so it was possible that the same student would be given a questionnaire more than once. Students enrolled in multiple classes selected for the survey were instructed to answer for the particular class in question. Students were not identified in this study. The study was

Table 1. Bismarck State College Courses Offered Face-to-Face and Online, by Content Area and Title.

Content Area	Title
Business or Applied Science	Fundamentals of Accounting
	Elements of Accounting I
	Elements of Accounting II
	Introduction to Animal Sciences
	Fundamentals of Business
	Principles of Marketing
	Principles of Retailing
	Organizational Behavior
	Human Resources Management
	Business Mathematics
	Business English
	World Food Crops
	Introduction to Soil Science
	Animal Health
Communications or Humanities	United States to 1877
	United States since 1877
	Introduction to Philosophy
	Fundamentals of Public Speaking
	College Composition I
	College Composition II
	Introduction to Professional Writing
Math, Science, or Technology	Concepts of Biology
	Computer Software Applications - Word
	Microcomputer Database
	Microcomputer Spreadsheets
	Desktop Publishing
	Electronic Publishing
	Introduction to Computers
	Computer Science I

Table 1 continued.

Content Area	Title
	Fundamentals of Geographical Information Systems
	GPS Photo-geometry and Remote Sensing
	College Algebra
	Elementary Statistics
	Principles of Nutrition
Social or Behavioral Sciences	Introduction to Criminal Justice
	Introduction to Policing
	Criminal Law
	Principles of Microeconomics
	Principles of Macroeconomics
	Introduction to Human Services
	Concepts of Fitness and Wellness
	State and Local Government
	Relationships and Self-Esteem
	Introduction to Psychology
	Development of Social Welfare
	Introduction to Sociology
	Social Problems
	Family
	Criminology
	Juvenile Delinquency

approved by the Institutional Review Boards at Bismarck State College and the University of North Dakota.

Instructor Participants

Instructors teaching one semester courses previously adapted for online presentation were surveyed to determine their primary teaching styles. Included in the survey were instructors who taught only online, only face-to-face, both online and face-to-face, instructors teaching multiple sections and those teaching only one section.

Instructors were identified only by code numbers, course title, and delivery method (online or traditional). Classes surveyed were those taught concurrently by both delivery methods, but not necessarily by the same instructor. Fifty instructors were asked to participate. All participants had at least two years of college teaching experience.

Instruments

Student Instrument

A 20-item, self-report Classroom Community Scale (CCS) developed by Rovai (2002b) was administered to measure sense of classroom community. Rovai reported confidence in high content and construct validity for the instrument. The CCS overall and both the connection and learning measurements were determined to possess high internal consistencies. Reliability analysis using Cronbach's coefficient alpha (.93) and the split-half coefficient corrected by the Spearman-Brown prophecy formula (.91) were used as evidence of excellent reliability. The survey consisted of ten general items relating to sense of community. These ten items measured feelings of connection, cohesion, spirit, trust, and interdependence among community members (Rovai, 2002b). Item samples for these feelings were:

- 3) I feel connected to others in this course,
- 5) I do not feel a spirit of community,
- 11) I trust others in this course, and
- 15) I feel that members of this course depend on me.

An additional ten items related to classroom specific feelings of community; the belief that educational needs are being satisfied (learning). Item samples for these classroom specific feelings were:

4) I feel that I am encouraged to ask questions, and

12) I feel that this course results in only modest learning.

All items on the CCS were answered with a five-point Likert scale ranging from strongly disagree to strongly agree. CCS raw scores vary from a maximum of 80 to a minimum of zero. Higher CCS scores are interpreted as a stronger sense of classroom community.

Positively worded questions were 1, 2, 3, 6, 7, 11, 13, 15, 16, and 19. Weighted points for these items were strongly agree = 4, agree = 3, neutral = 2, disagree = 1, strongly disagree = 0. All other items were negatively worded and weighted points were strongly agree = 0, agree = 1, neutral = 2, disagree = 3, strongly disagree = 4. The sum of the weights of all 20 items resulted in the overall CCS score. CCS subscale raw scores vary from a maximum of 40 to a minimum of zero. The score for the Connection subscale was calculated by adding the weights of odd items. The Learning subscale was calculated by adding the weights of even items.

Instructor Instrument

A modified version of the original Grasha Teaching Styles Inventory (TSI) was used to sort teachers into style clusters (International Alliance of Teacher Scholars, 2006). The TSI is a 40-item self report instrument. The TSI includes eight items for each of the five teaching styles: expert, formal authority, personal model, facilitator, and delegator (Grasha, 1991, 1994, 2002). The instrument used in this study was modified from Grasha's original seven-point to a five-point Likert scale wherein answers ranged from strongly disagree to strongly agree. Sample items for expert teaching style were:

1) Facts, concepts, and principles are the most important things that students should acquire and

6) Sharing my knowledge and expertise with students is very important to me.

Sample items for formal authority teaching style were:

2) I set high standards for students in my class and

7) I give students negative feedback when their performance is unsatisfactory.

Sample items for personal model teaching style were:

3) What I say and do models appropriate ways for students to think about issues in the content and

8) Students are encouraged to emulate the example I provide.

Sample items for facilitator teaching style were:

4) My teaching goals and methods address a variety of student learning styles and

9) I spend time consulting with students on how to improve their work on individual and/or group projects.

Sample items for delegator teaching style were:

5) Students typically work on course projects alone with little supervision from me and

10) Activities in this class encourage students to develop their own ideas about content issues.

Scores for each teaching style were determined using the mean of the eight items. Mean scores on each style were ranked for the teaching style with the highest mean to the teaching style with the lowest mean. Based on the rank and classification, the instructor was assigned to one of four clusters. Clusters describe the teaching styles that are dominant for the instructors. Cluster 1 describes instructors whose primary styles are expert and formal authority. Cluster 2 describes those whose primary styles are personal

model, expert and formal authority. Cluster 3 instructors primarily use facilitator, personal model and expert styles. Cluster 4 instructors primarily use delegator, facilitator, and expert styles (Grasha, 1994, 1996, 2002).

Data Collection Procedures

Student Data

At least 50 different courses were offered in both face-to-face and online format at Bismarck State College during fall semester 2009 (Table 1). Classes offered by way of differing delivery methods may or may not have been taught by the same instructor. The CCS was administered during the last three weeks of classes. Students enrolled in participating online or face-to-face classes completed the survey on a voluntary basis. In face-to-face classes the survey instrument was presented during the class. Instructors, who had previously agreed to participate, assisted in administering the survey. Students in online courses were given access to the survey on SurveyMonkey.com and asked by the participating instructor to complete the survey in a timely manner. Orientation was similar for both delivery methods (see Appendices A and B).

Instructor Data

Instructors of the 50 different courses offered in both face-to-face and online format at Bismarck State College were asked to complete the Teaching Styles Inventory (TSI) online. These data were collected by the fourteenth week of classes. Instructors were reminded by e-mail or by telephone before the fourteenth week. After receipt of the completed survey was confirmed, the data were identified by code number, course title, and delivery method. Teacher names were not identified in this study.

Data Analysis

Data were analyzed using Statistical Package for the Social Sciences (SPSS), Version 16.0. Mean scores and standard deviations were calculated for quantitative variables. Multivariate analysis of variance (MANOVA) procedures were conducted to identify differences between delivery method, teaching style cluster, course type, student's residence, age, and student major on sense of classroom community in terms of the theoretical dimensions of emotional connection, and needs fulfillment (learning). When differences were found to be significant, univariate tests of individual dependent variables were conducted. When significant differences were identified in dependent variables on categorical variables with more than two levels Tukey's Honestly Significant Difference (HSD) test was used to assess pairwise differences post hoc.

Variables

There were six categorical and three quantitative variables in this study. The categorical variables were considered independent variables (IV):

IV 1: Delivery method (2 levels)

Level 1: face-to-face classes

Level 2: online classes

IV 2: Teaching style (4 levels)

Level 1: Cluster 1

Level 2: Cluster 2

Level 3: Cluster 3

Level 4: Cluster 4

IV 3: Course type (3 levels)

Level 1: Business or Applied sciences

Level 2: Communications or Humanities

Level 2: Math, Science or Technology sciences

Level 3: Social or Behavioral sciences

IV 4: Student Residence (3 levels)

Level 1: Reside on-campus

Level 2: Reside off-campus, commute to campus

Level 3: Reside off-campus, distance only courses

IV 5: Age (2 levels)

Level 1: 21 years or fewer

Level 2: 22 years or older

IV 6: Major course of study (5 levels)

Level 1: Business or Applied science

Level 2: Communications, Arts or Humanities

Level 3: Math, Science or Technology

Level 4: Social or Behavioral sciences

Level 5: Undecided

Three dependent variables (DV) were related affective variables measured on a Likert scale. Potential responses on the Likert scale ranged from zero to four.

DV 1: Sense of classroom community (SCC) or individual perception of sense of classroom community as measured by the Classroom Community Scale (CCS).

DV 2: Sense of connection or feelings of connection, cohesion, spirit, trust and interdependence.

DV 3: Sense of learning or the feeling that educational needs are being satisfied.

Research Questions

Six research questions guided the study of student sense of classroom community, connection and learning.

1. What degree of overall sense of classroom community, emotional connection, and sense of learning was reported by students completing the Classroom Community Scale (CCS) after participation in a one semester rural-serving community college course?
2. What differences exist between the delivery method on overall student sense of classroom community and the components of sense of classroom community (connection and learning) in a one semester rural-serving community college course?
3. What differences exist between the delivery method and instructor's teaching style on overall student sense of classroom community and the components of sense of classroom community (connection and learning) in a one semester rural-serving community college course?
4. What differences exist between delivery method and course type on overall student sense of classroom community and the components of sense of classroom community (connection and learning) in a one semester rural-serving community college course?

5. What differences exist between delivery method and student residence (those who reside on campus, those who commute to campus, and those who are distance-only) on overall sense of classroom community and the components of sense of classroom community (connection and learning) in a one semester rural-serving community college course?
6. How did age, or student's major course of study differ by student sense of classroom community and the components of sense of classroom community (connection and learning) in a one semester rural-serving community college course?

Summary

Chapter III described the methods used in this study of sense of classroom community. Bismarck State College and participants in the study were described. The research design and procedures were described along with the Classroom Community Scale and Teaching Style Inventory instruments. Study results are presented in Chapter IV.

CHAPTER IV

RESULTS

Introduction

The purpose of this study was to determine if differences existed between delivery method (traditional or online), teaching style cluster (containing formal authority style or facilitator style), course type, student's residence (on-campus, off-campus commuting, or off-campus not commuting), age, and student major on sense of classroom community in terms of the theoretical dimensions of emotional connection and needs fulfillment (learning).

Forty-nine instructors participated by completing the Teaching Style Survey on SurveyMonkey.com. One participating online instructor had no student surveys returned. Forty-eight instructors and 105 different courses (61 face-to-face and 44 online) were included in the analysis. Seventeen online courses returned no student surveys; nine online courses returned fewer than five responses. The response rate for the surveys offered online was not equal to the face-to-face surveys, resulting in an unbalanced design. SurveyMonkey.com responses were initially imported into a MS Excel format. Students enrolled in online courses returned 505 surveys, 21 of which were blank or incomplete. Surveys collected from face-to-face courses were entered into a MS Excel format. Of 1,051 surveys collected, 62 were blank or incomplete. Blank and incomplete surveys were removed as indicating the students' unwillingness to participate. Data were then imported into SPSS (v. 16.0) for pre-analysis screening (Mertler & Vannatta, 2005).

This chapter contains the following sections: pre-analysis data screening, descriptive statistics and results of multivariate analyses followed by univariate analyses when appropriate. For the purpose of this study, statistical significance was set at the .05 level.

Pre-Analysis Data Screening and Descriptive Statistics

Teaching Style Cluster

Teaching style means from eight survey items linked to each of five teaching styles were determined and ranked for the style with the highest mean to the style with the lowest mean. Based on the rank and classification, each instructor was assigned to one of four clusters. Forty-one classes (39%) were taught by instructors from cluster 1, 25 classes (24%) from cluster 2, 25 classes (24%) from cluster 3, and 14 classes (13%) from cluster 4. Results of crosstabulation (Table 2) reveal expert and formal authority styles to be most common in both face-to-face and online courses.

Table 2. Frequency of Primary Teaching Styles Employed for Classes Delivered Face-to-Face (n = 61) and Online (n = 44).

Primary Styles	Cluster	Delivery	
		Face-to-Face	online
Expert & Formal Authority	1	20	21
Personal Model, Expert & Formal Authority	2	14	11
Facilitator, Personal Model & Expert	3	19	6
Delegator, Facilitator & Expert	4	8	6

The sample contained no missing data since incomplete surveys were removed prior to importation to SPSS. Univariate outliers were identified using box plots of cases located near the median for each categorical variable and instructor code. Twenty-five

cases presented severe outliers more than three box lengths from the upper or lower edge of a box extending from the 25th to the 75th percentiles. Cases containing severe outliers under two or more categorical variables as well as instructor code were deleted. The remaining sample contained 1,447 complete cases, 973 from face-to-face delivery and 474 from online delivery. Table 3 provides frequency and percentages for each group. Multivariate outliers were examined using Mahalanobis distances as a dependent variable and delivery as the factor. No outliers exceeded the Mahalanobis distance.

Normality, Linearity, and Homoscedasticity

Univariate normality was examined for each dependent variable within each category. Histograms, descriptive statistics, and normal Q-Q plots indicated CCS, connection and learning to be fairly normal in distribution. A very slight negative skewness was evident in the distribution of most groups. A very slight positive skewness was evident for connection with online delivery and cluster 4. Univariate assumption of homogeneity of variance was examined using Levene's test for grouped data. Levene's test for equality of error variance was not significant for any group, providing no evidence for inequality. Multivariate normality and linearity were confirmed with a scatterplot matrix.

Instrument Reliability

Reliability for the full Classroom Community Scale (CCS) and the Connection and Learning subscales was analyzed for comparison with Rovai's findings. Rovai reports high confidence in both content and construct validity for this instrument. Internal

Table 3. Frequency and Percentages for Independent Variables (N = 1,447).

Variable	Level	Frequency	%
Delivery method	Face-to-Face	973	67
	Online	474	33
Teaching Style	Cluster 1	628	43
	Cluster 2	259	18
	Cluster 3	433	30
	Cluster 4	127	9
Course Type	Business or Applied Science	405	28
	Communications or Humanities	405	28
	Math, Science or Technology	268	19
	Social or Behavioral Sciences	369	25
Student Residence	On-campus	195	13
	Off-campus	995	69
	Distance courses only	257	18
Age	17 to 21	990	68
	22 or older	457	32
Major	Business or Applied Science	635	44
	Communications, Arts or Humanities	128	9
	Math, Science or Technology	254	18
	Social or Behavioral Sciences	177	12
	Undecided	253	18

consistency estimates of reliability calculated with Cronbach's coefficient alpha upon instrument development and validation procedures for the full CCS, Connection subscale and Learning subscale were .93, .92, and .87 respectively, indicating excellent to good

reliability (Rovai, 2002b). In this study, the reliability statistic determined with Cronbach's alpha for the CCS was .88, for Connection .86, and for Learning .79.

Research Question Analysis

Research Question One

What degree of overall sense of classroom community, emotional connection, and sense of learning was reported by students completing the CCS after participation in a one semester rural-serving community college course?

The scores for the CCS and subscales for the sample are listed in Table 4. Mean scores are slightly lower in this sample than means reported by Rovai (2002b) during development of the instrument in a survey of 375 online graduate students (CCS M = 56.62, Connection M = 26.45, and Learning M = 30.17). Response means for each item

Table 4. Descriptive Statistics for the CCS and Subscales of Connection and Learning by Total Participants (N = 1,447)

Variable	Range	Minimum	Maximum	M	SD
Classroom Community	50	27	77	53.64	8.9
Connection	32	8	40	24.41	5.4
Learning	28	12	40	29.23	4.8

varied from highs on the Learning subscale of 3.21, SD = .76 (for item 20, "I feel that this course does not promote a desire to learn") and 3.14, SD = .73 (for item 2, "I feel that I am encouraged to ask questions") to lows on the Connection subscale of 1.70, SD = .84 (for item 15, "I feel that members of the course depend on me") and 1.98, SD = .87 (for item 7, "I feel that this course is like a family"). Responses for each item range from zero to four; scores between two and three are moderately high and scores greater than three

are high. Means on the Learning subscale of 3.21 and 3.14 are in the lower portion of the high range. Item responses between two and one are moderately low and responses below one are low. Means on the Connection subscale of 1.70 and 1.98 are in the upper portion of the moderately low range.

Research Question Two

What differences exist between the delivery method on overall student sense of classroom community and the components of sense of classroom community (connection and learning) in a one semester rural-serving community college course?

One-Way MANOVA was conducted to answer this research question. Significant multivariate differences were found across combined dependent variables by delivery (Wilks' $\Lambda = .985$, $F(2, 1444) = 10.95$, $p < .001$, partial $\eta^2 = .015$). To avoid the possibility of an inflated error rate from multiple tests of significance, a Bonferroni adjustment was implemented (Mertler & Vannatta, 2005). The alpha level for each dependent variable was set at .016 so the set would not exceed the overall alpha level for the analysis ($\alpha = .05$). Subsequent univariate ANOVA revealed overall sense of classroom community to be significantly higher in face-to-face than in online classes (Table 5). Student sense of connection was also significantly higher in face-to-face than in online classes. The effect size calculation for these factors indicates only a minimal proportion of classroom community and connection variance was accounted for by delivery. No difference was detected for delivery method on student sense of learning.

Research Question Three

What differences exist between the delivery method and instructor's teaching style on overall student sense of classroom community and the components of sense of

Table 5. Means and ANOVA Results for the CCS, Connection, and Learning Subscales by Delivery Method.

Variable	Face-to-face (n=973)	Online (n=474)	<i>F</i> (1, 1445)	<i>p</i>	partial η^2
	M	M			
Classroom Community	54.1*	52.7*	7.6	.006	.005
Connection	24.8*	23.6*	17.7	<.001	.012
Learning	29.3	29.2	.163	.687	

classroom community (connection and learning) in a one semester rural-serving community college course?

Two-way MANOVA was conducted to answer this research question. Significant multivariate differences were found across combined dependent variables by teaching style cluster (Wilks' $\Lambda = .99$, $F(6, 2,876) = 2.465$, $p = .022$, partial $\eta^2 = .005$). Interaction between delivery method and teaching style cluster was significant (Wilks' $\Lambda = .99$, $F(6, 2,876) = 2.482$, $p = .021$, partial $\eta^2 = .005$). Subsequent univariate ANOVA on overall CCS by cluster number revealed sense of classroom community to be significantly higher in classes taught using cluster 3 styles than in classes using cluster 1 styles (mean difference = 2.03, $p = .001$). Sense of community was higher in classes taught using cluster 4 styles than either cluster 1 (mean difference = 4.25, $p < .001$) or cluster 2 (mean difference = 3.27, $SE = .95$, $p = .003$). Interaction between delivery method and teaching style cluster was not significant for classroom community (Table 6). Univariate ANOVA on the Connection subscale revealed no differences for cluster number. The interaction between delivery method and cluster number on connection was significant, $F(3, 1,239)$

Table 6. Means by Delivery Method and Teaching Style Cluster for Overall CCS, Connection Subscale, and Learning Subscale.

Variables	Cluster 1		Cluster 2		Cluster 3		Cluster 4	
	Face-face (n = 350)	Online (n = 278)	Face-face (n = 176)	Online (n = 83)	Face-face (n = 345)	Online (n = 88)	Face-face (n = 102)	Online (n = 25)
Classroom Community	52.3	52.7	54.1	52.2	54.8	53.4	57.1	52.3
Connection	23.6	23.6	25.2	23.4	25.3	23.9	26.7	22.6
Learning	28.7	29.1	28.9	28.9	29.5	29.5	31.2	30.9

Table 7. Effect Size (Hedge's *g*) for Differences Between Face-to-Face and Online Means with Teaching Style Cluster.

Variables	Cluster 1	Cluster 2	Cluster 3	Cluster 4
Classroom Community	0.04	0.22	0.16	0.63
Connection	0.00	0.37	0.26	0.76
Learning	0.08	0.01	0.00	0.31

= 4.73, $p = .003$, partial $\eta^2 = .01$. Hedge's g was used to calculate effect sizes (Table 7) on differences between delivery method for each teaching style cluster. A large effect size for cluster 4 on the connection subscale explains much of the interaction for delivery method and teaching style. Moderate effect sizes were calculated for cluster 2 and cluster 3 on connection. Figure 3 illustrates the differences between sense of connection in classes taught using cluster 4 and cluster 1 face-to-face and the drop in connection means when cluster 4, 3, or 2 are employed online. Delivery method does not appear to influence sense of connection in classes taught with cluster 1 styles. Interaction between delivery method and teaching style cluster was not significant for the Learning subscale.

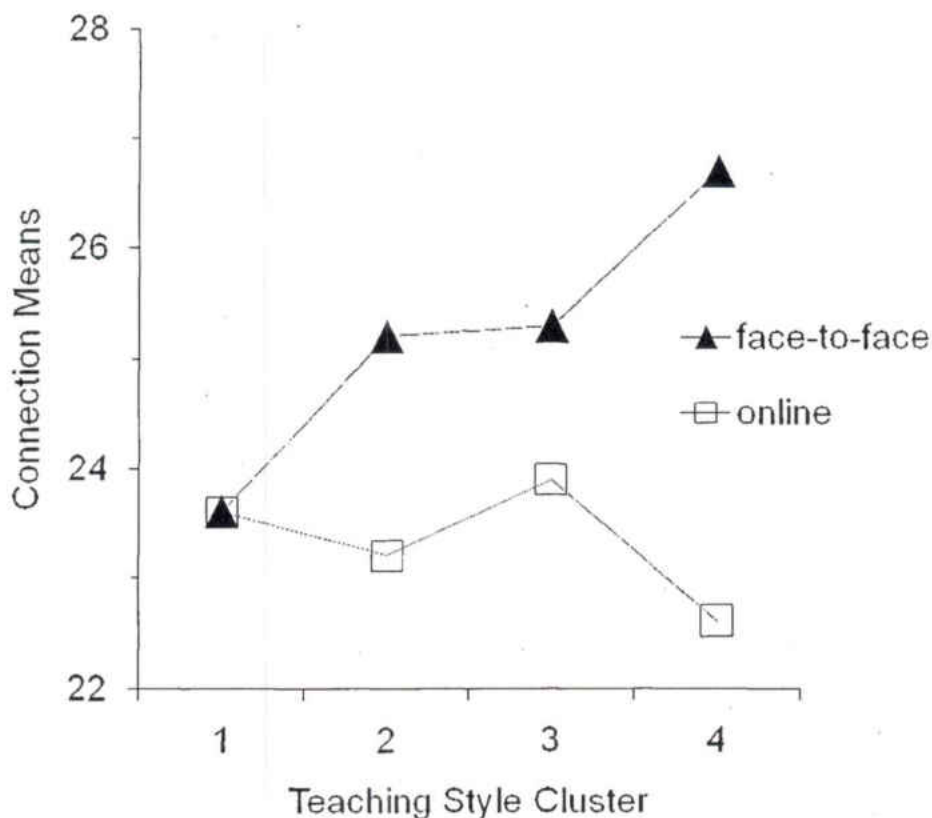


Figure 3. Teaching style cluster by delivery method interaction for sense of connection.

Research Question Four

What differences exist between delivery method and course type on overall student sense of classroom community and the components of sense of classroom community (connection and learning) in a one semester rural-serving community college course?

Two-way MANOVA was conducted to answer research question four. Significant multivariate differences were found across combined dependent variables by course type (Wilks' $\Lambda = .98$, $F(6, 2,876) = 4.10$, $p < .001$, partial $\eta^2 = .008$). Interaction between delivery method and course type was significant (Wilks' $\Lambda = .99$, $F(6, 2,876) = 3.06$, $p = .006$, partial $\eta^2 = .006$). Subsequent univariate ANOVA on overall CCS revealed no differences by course type or significant interaction between delivery method and course type (Table 8). Univariate ANOVA on the Connection subscale revealed no differences for course type alone. The interaction between delivery method and course type on connection was significant, $F(3, 1,439) = 4.58$, $p = .003$, partial $\eta^2 = .009$. Effect sizes (Table 9) were calculated using Hedge's g on mean differences between delivery method for each course type. Effect sizes were minimal for course type on delivery for all types except Business or Applied sciences (BAS) which resulted in a moderate effect size. Figure 4 illustrates the drop in sense of connection when BAS, Communications or Humanities (CAH) and Social or Behavioral science (SBS) classes were conducted online. Univariate ANOVA on the Learning subscale identified no interaction between delivery method and course type. Significant differences were evident on student sense of learning for course type, $F(3, 1,439) = 5.41$, $p = .001$, partial $\eta^2 = .011$. Post hoc

Table 8. Means by Delivery Method and Course Type for Overall CCS, Connection Subscale, and Learning Subscale. BAS = Business or Applied science, CAH = Communications or Humanities, MST = Mathematics, Science or Technology, and SBS = Social or Behavioral science

Variables	BAS		CAH		MST		SBS	
	Face-face (n = 244)	Online (n = 161)	Face-face (n = 274)	Online (n = 131)	Face-face (n = 186)	Online (n = 82)	Face-face (n = 269)	Online (n = 100)
Classroom Community	54.8	52.3	53.3	51.7	52.4	54.0	55.4	53.7
Connection	25.8	23.2	24.7	23.4	23.4	24.1	25.1	24.0
Learning	29.1	29.1	28.6	28.4	29.0	30.	30.3	29.7

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Table 9. Effect Size (Hedge's *g*) for Differences between Face-to-Face and Online Means with Course Type.

Variables	BAS	CAH	MST	SBS
Classroom Community	0.29	0.18	0.19	0.20
Connection	0.48	0.25	0.13	0.21
Learning	0.00	0.06	0.20	0.13

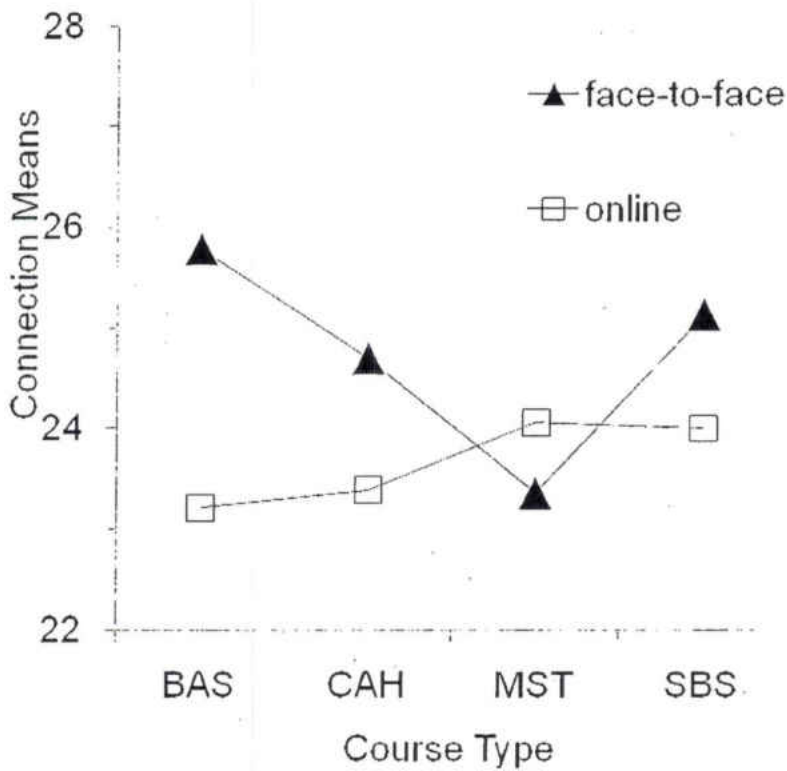


Figure 4. Course type by delivery method for sense of connection.

comparison showed sense of learning to be higher in SBS courses than in BAS (mean difference = 1.04, $p = .014$) or CAH courses (mean difference = 1.26, $p < .001$)

Research Question Five

What differences exist between delivery method and student residence (those who reside on campus, those who commute to campus, and those who are distance-only) on overall sense of classroom community and the components of sense of classroom community (connection and learning) in a one semester rural-serving community college course?

Two-way MANOVA was conducted to answer research question five. No differences were found on combined dependent variables by student residence. No interactions were evident.

Research Question Six

Did age or student's major course of study differ by student sense of classroom community and the components of sense of classroom community (connection and learning) in a one semester rural-serving community college course?

Three-way MANOVA was conducted to answer this question. No significant interaction between student age and major or three-way interaction between student age, major and delivery method occurred. Differences were significant for student age on the combined dependent variables (Wilks' $A = .98$, $F(2, 1,426) = 18.45$, $p < .001$, partial $\eta^2 = .025$). Differences were detected for student major on the combined dependent variables (Wilks' $A = .99$, $F(2, 1,426) = 2.20$, $p = .025$, partial $\eta^2 = .006$). Subsequent univariate ANOVA revealed no differences in age category for overall sense of classroom community or the Connection subscale. Student sense of learning was higher for the group 22 years and older than in the 21 years and under group (Table 10). Figure 5 illustrates a greater sense of learning among older students regardless of delivery method.

Table 10. Means and ANOVA Results for Age Groups 21 and Under Versus Over 22 Years ($\alpha = .016$).

Variable	≤ 21 (n = 990)	> 22 (n = 457)	F (1, 1443)	p	partial η^2
Classroom Community	53.5	53.9	4.5	.035	.003
Connection	24.7	23.8	2.0	.154	.001
Learning	28.8*	30.2*	30.4	<.001	.021

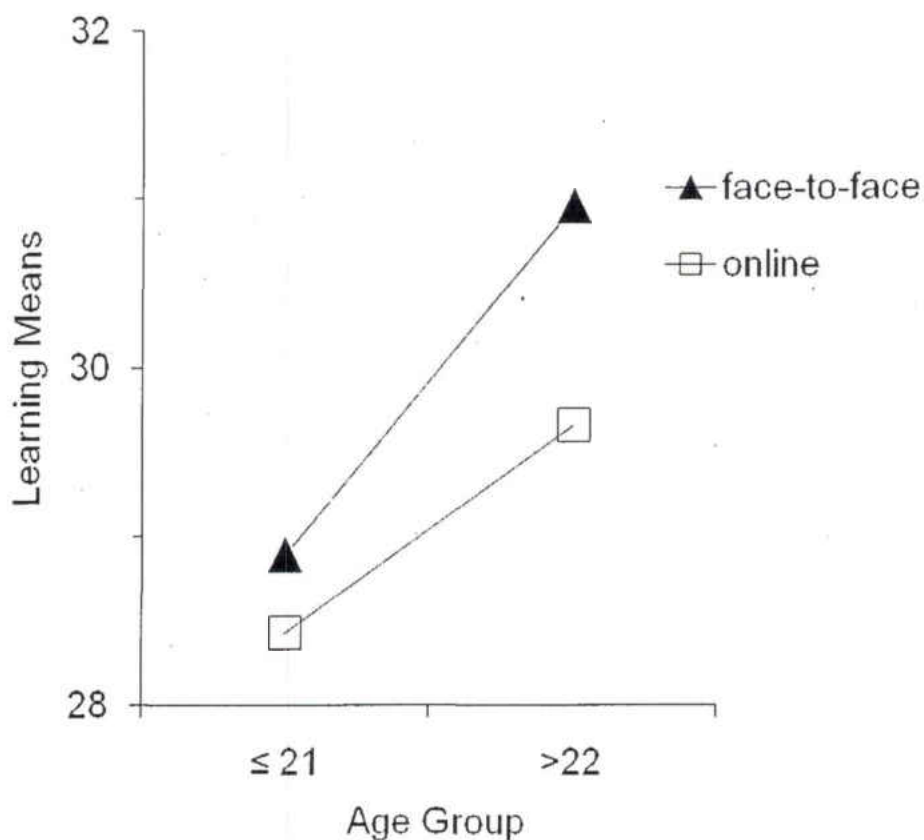


Figure 5. Age category by delivery method for sense of learning.

Univariate ANOVA for student major indicated differences in overall sense of classroom community, $F(4, 1,437) = 3.5, p = .007, \text{partial } \eta^2 = .010$ (Table 11). Post hoc tests revealed students majoring in Social or Behavioral sciences (BAS) experienced a greater sense of classroom community than Mathematics, Science or Technology (MST) majors (mean difference = 2.95, $p = .006$) or undecided (UND) students (mean difference = 3.01, $p = .005$). No differences were detected for the connection subscale. Student major resulted in differences on the learning subscale ($F(4, 1,437) = 5.71, p < .001, \text{partial } \eta^2 = .016$). Students majoring in Social or Behavioral sciences (SBS) experienced a greater sense of learning than BAS majors (mean difference = 1.57, $p = .001$), MST

majors (mean difference = 1.95, $p < .001$) or undecided students (mean difference = 1.93, $p < .001$). Figure 6 illustrates an increased sense of classroom community among students majoring in SBS regardless of delivery method.

Table 11. Means for the CCS, Connection and Learning Subscales by Student Major Course of Study.

Variable	Student Majors				
	BAS (n = 635)	CAH (n = 128)	MST (n = 254)	SBS (n = 177)	UND (n = 253)
Classroom Community	53.6	54.1	52.8	55.7	52.8
Connection	24.5	24.2	24.1	25.1	24.0
Learning	29.1	29.9	28.7	30.7	28.7

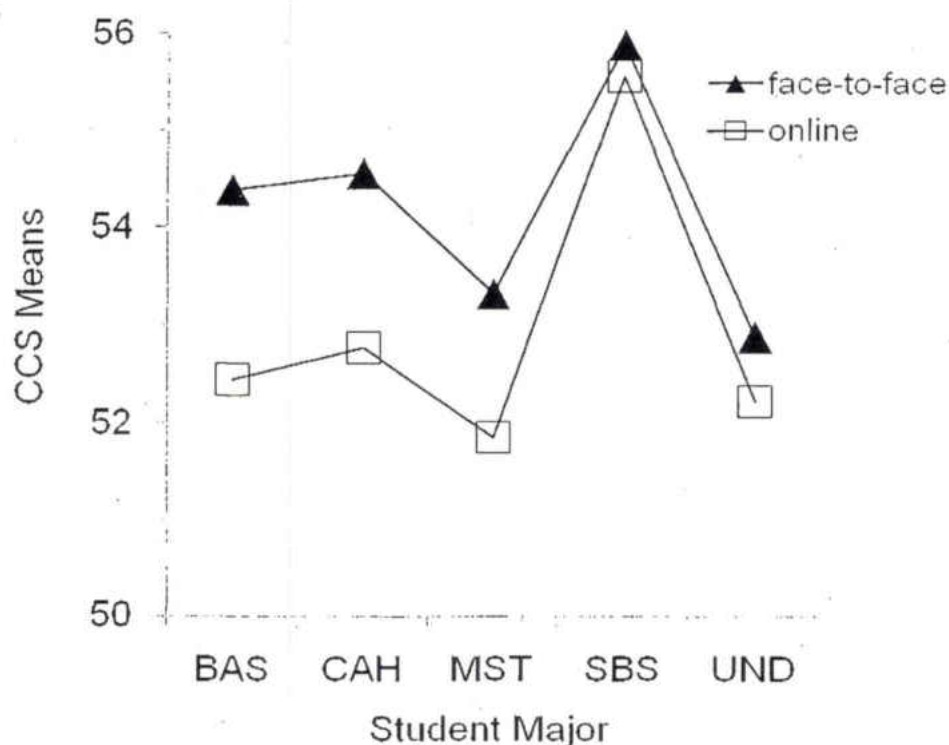


Figure 6. Student major course of study by delivery method for overall sense of classroom community.

Summary

This study investigated differences between delivery method, teaching style cluster, course type, student residence, and student major on sense of classroom community, connection, and learning. Chapter IV included the results of multivariate and univariate analyses. Sense of classroom community and connection were higher in face-to-face than online classes. Sense of learning did not differ between face-to-face and online classes. Significant interactions occurred between teaching style and delivery method on the Connection subscale. Interactions were also discovered between course type and delivery method on the Connection subscale. Differences occurred between age groups and students with different majors regardless of delivery method. Chapter V will interpret and discuss the results.

CHAPTER V

DISCUSSION

Introduction

Quantitative research methods were used with a causal-comparative design and survey instruments to determine differences between delivery method, teaching style cluster, and course type on sense of classroom community in terms of the theoretical dimensions of emotional connection and needs fulfillment. Research questions also addressed differences between student's type of residence, age category, and college major on sense of classroom community, emotional connection, and needs fulfillment. This chapter includes a summary of the major conclusions for each research question with discussion and implications of the findings. Chapter V concludes with suggestions for further research.

Summary, Discussion, and Implications

Six research questions guided the study of student sense of classroom community, connection, and learning.

Research Question One

What degree of overall sense of classroom community, emotional connection, and sense of learning was reported by students after participation in a one semester rural-serving community college course?

Research question one was exploratory in nature. The answer to this question in numerical form in the results section could be interpreted as a cautiously positive result for a two-year college. Research using the same instrument (CCS) may be examined to aid in the interpretation of the results. Means for this study were slightly lower than those found among graduate students by Rovai in 2002. Ouzts (2006) also employed the CCS to examine online classroom community in 11 lower level undergraduate courses, 26 upper level courses, and 11 graduate level courses. Ouzts' results were slightly higher than the current study for the overall sense of classroom community and both the Connection and Learning subscales. Shea, Li and Pickett (2006) surveyed online students using the State University of New York (SUNY) learning network with the CCS. Mean scores from the SUNY study were lower for overall CCS ($M = 50.55$), the Connection subscale ($M = 22.45$), and the Learning subscale ($M = 28.08$) than those of the current study. An early form of Rovai's CCS (Rovai, Cristol & Lucking, 2001), referred to as the Sense of Classroom Community Index (SCCI) was used at an urban community college (Cadieux, 2002). The Learning subscale on the SCCI is practically identical to that of the CCS. Cadieux reports the mean sense of learning $M = 27.13$ for a face-to-face group ($n = 248$) and $M = 25.69$ for an online group ($n = 73$). In either case, means for the current study are higher. These casual comparisons to other studies situate the current results within the ranges of previous studies. The first two years of college are often occupied with general education courses and degree requirements that are not elective. Maintaining positive attitudes and encouraging cooperation and community are particularly difficult with reluctant or unmotivated students. To maintain and to improve student sense of

connection and learning, instructors should be encouraged to develop instructional plans that deliberately foster community (see also Liu, Magjuka, Bonk, & Lee, 2007).

Research Question Two

What differences exist between the delivery method on overall student sense of classroom community and the components of sense of classroom community (connection and learning) in a one semester rural-serving community college course?

Sense of classroom community and connection were higher in face-to-face than in online classes. Traditional face-to-face courses are assumed to foster some sense of community because participants are able to hear and see each other and interact within the same time frame. In order for online classrooms to foster a sense of community and connection considerable time and effort must be expended. Numerous researchers have explained the fragmented and time consuming nature of online interaction necessary for the development of sense of community (Brownstein, Brownstein, & Gerlowski, 2008; Hislop & Ellis, 2004). Further, skill is required in organizing and facilitating collaborative learning online. Bismarck State College faculty policy defines the college's recommendations and requirements in Best Practices for Online Classes (Bismarck State College, 2007b). An explicit requirement is clarified "faculty member provides a forum for building of a learning community" (p. 1). The policy further elaborates examples of structures that are available through eCollege, BSC's current distance learning platform. Examples include student-student and student-instructor interaction using threaded discussion, chat, and e-mail. Given online faculty are expected to employ practices supporting sense of community and face-to-face classes are assumed to provide

opportunity for community building, a difference was not expected in the participating students' sense of classroom community. The results of this study are similar to those of Cadieux (2002) at an urban community college. Cadieux suggests that students perceive community as something that requires face-to-face contact and expectations of community enhance feelings of community. Online students are not enrolled to make contacts but to obtain academic credit in a convenient forum (Harrington & Loffredo, 2010). Online students may actively be avoiding class connections and interact with others only when required for a grade. Online students often have very busy personal and professional lives and are overcommitted so that time spent interacting with others in the online classroom is considered a waste of time. Furthermore, online instructors may not be convinced of the value of creating an online learning community (Liu et al., 2007). Shea et al. (2006) also employed Rovai's CCS and, consistent with many other comparison studies, they found no differences in classroom community between fully online and web-enhanced courses. In the same study, Shea et al. identified a direct relationship between high levels of student perceived teaching presence and sense of learning community. Teaching presence itself increased as skill at discourse facilitation increased.

No evidence for differences was discovered for sense of learning between face-to-face and online classes in this study. These results are also similar to those of Cadieux (2002) at an urban community college. Brownstein et al. (2008) found no differences in learning outcomes between online and face-to-face classes citing dialogue and conferencing sufficient measures for equalization of the experiences. Thus, discourse or

dialogue in online classes examined in the current study are sufficient for establishing a sense of learning equivalent to face-to-face courses but perhaps not sufficient to establish an equivalent sense of community. In a study investigating the perceptions of education leadership master's level students in online, blended, and face-to-face courses, Ritter, Polnick, Fink and Oescher (2010) also found that students experiencing some face-to-face contact perceived the highest sense of community and connection. Ritter et al., employing Rovai's CCS, found differences in overall sense of community and connection but no differences in student perception of learning by delivery method. Ritter et al. attributed the common sense of learning to the critical thinking and task management skills of graduate students (Artino & Stephens, 2009). Since sense of learning also did not differ by delivery method in the current study with first and second year students from many different disciplines, evidence mounts in favor of equivalent learning experience between online and face-to face classes. Given that a strong sense of community has been linked to numerous positive outcomes among learners (Rovai, 2001) beyond a sense of learning, teaching pedagogies that make the best use of community, whatever delivery method is chosen, should be developed (see also Conger, 2005; Ritter et al., 2010).

Research Question Three

What differences exist between the delivery method and instructor's teaching style on overall student sense of classroom community and the components of sense of classroom community (connection and learning) in a one semester rural-serving community college course?

Statistically significant interactions with minimal effect size occurred between teaching style and delivery method on the Connection subscale. The teaching styles identified by the Grasha Teaching Styles Inventory are associated with particular teaching methods (Grasha, 1994). Instructors using primary style cluster 1 and cluster 2 generally utilize teacher-centered methods. Cluster 3 and 4 instructors typically utilize student-centered methods (Grasha, 2002). Instruction under cluster 4 primary styles puts most of the responsibility for learning on the student. It is common for cluster 4 instructors to provide complex tasks that encourage student initiative and collaboration. Student sense of connection did not differ with the use of cluster 1 styles face-to-face or online, nor could it be considered high. Cluster 4 styles were the most effective in achieving a sense of connection in the classroom for face-to-face classes but resulted in the lowest level of connection for any cluster when presented online. The nature of cluster 4 methods may provide the best explanation of these results. Assigning complex tasks and encouraging students to complete the task either alone or in a group is a method that works best for self-directed learners if teaching presence is low (Puzziferro, 2008). Online students not yet ready to take on complex work may feel they have been set adrift in cyberspace. In a face-to-face classroom, the instructor is able to see the signs of a lost student (body language or facial expression) and, hopefully be able to provide enough guidance to direct the student on task. If online students do not communicate their problems to the instructor, the instructors may not be aware of a student's plight until too late. Cluster 3 instructors whose primary style emphasizes facilitation have the most success at encouraging a sense of connection online. Cluster 3 instructors are presumably

skilled and practiced at the form of facilitation that is necessary to maintain online connections. Still, the drop in sense of connection for all clusters except one that is already low for online courses indicates a need for more teaching presence and social presence in online classes. In a phenomenological study of successful online teachers, Bailey and Card (2009) identified effective pedagogical practices for teaching online. Professors who were recipients of a state Board of Regent's E-Learning Award agreed that fostering online relationships with students was important. Engaging frequently and communicating clearly and carefully were also identified as important practices. These professors confirmed in practice the role of social and teaching presence in facilitating online learning.

Research Question Four

What differences exist between delivery method and course type on overall student sense of classroom community and the components of sense of classroom community (connection and learning) in a one semester rural-serving community college course?

Interactions were evident between course type and delivery method on the Connection subscale. Courses in Business or Applied Sciences (BAS) meeting face-to-face showed a higher level of connection than other disciplines but that sense dropped dramatically when these courses were presented online. Both Communications or Humanities (CAH) courses and Social or Behavioral science (SBS) courses evidenced a lesser degree of connection when presented online. Students taking Mathematics, Science or Technology (MST) courses face-to-face experienced a sense of connection comparable

to other course types online none of which could be considered adequate. Smith, Heindel, and Torres-Ayala (2008) examined disciplinary differences between online courses at a large metropolitan university. Smith et al. found significant differences in course design and tool usage by discipline and discovered applied disciplines to generally have a shorter transactional distance and greater emphasis on communication than pure disciplines. In the current study, BAS courses taken online do not appear to be utilizing communication tools sufficiently to maintain the sense of connection achieved in face-to-face classes. Arbaugh, Bangert, and Cleveland-Innes (2010) examined subject matter effects for fully online and blended graduate and undergraduate courses. That study at a mid-sized Western university uncovered significant differences in students' perception of social and cognitive presence based on course type. Students enrolled in Allied Health and Technical courses perceived all three dimensions of the Community of Inquiry model to be higher than students enrolled in Nursing, Engineering, Business, and Social sciences. Students enrolled in Allied Health and Technical courses perceived higher levels of both social presence and cognitive presence than Mathematics or Science students. Quantitative courses in general achieved lower levels of cognitive presence (Arbaugh et al., 2010).

Lower levels on sense of connection online for BAS, CAH and SBS course types are most likely explained in the same manner as the general drop in sense of connection over all courses. The overall low and anomalous results from MST courses requires further examination. An explanation for low sense of connection in face-to-face MST courses may lie in the cumulative nature of information that must be covered as

prerequisites for continued study. The community college is committed to preparing students for transfer to four year institutions; teachers are committed to fulfilling the dictates of the course description completely. Given the time constraints in a one semester course, an instructor may value every minute of class time as an opportunity for dissemination of knowledge. These instructors are not convinced on the value of committing class time to community building activity. Additionally, face-to-face courses in technology (computer and computer application courses) are typically held in a computer lab with each student seated at a computer and rows of computers between the students and teacher. Such courses are task driven and student interaction is minimal unless group projects are assigned. In this study, student sense of connection in MST courses was slightly higher online than face-to-face. Archival research by Hornik, Sanders, Li, Moskal, and Dziuban (2008) may offer an explanation for this result. Hornik et al. found that courses with high paradigm development (Biology, Computer Science) were a good match for online delivery. Disciplines with broad agreement on definitions, accepted methods, and key concepts that are often represented by formula more easily communicate course content online. Disciplines with low paradigm development (Business, Social and Behavioral sciences, Humanities) have a less fixed and cumulative view of the path for knowledge development (Arbaugh et al., 2010). Hornik et al. found online students in high paradigm courses to be generally more satisfied with the classes and surer of the content.

Research Question Five

What differences exist between delivery method and student residence (those who reside on campus, those who commute to campus, and those who are distance-only) on overall sense of classroom community and the components of sense of classroom community (connection and learning) in a one semester rural-serving community college course?

No differences were found for overall sense of classroom community, sense of connection, or sense of learning with regard to student residence. Classroom practices that encourage community building should be effective irrespective of student residence. Students residing on campus may indeed experience a higher collegiate psychological sense of community (Lounsbury & DeNeui, 1996) but that sense does not appear to influence sense of classroom community.

Research Question Six

Did age category or student's major course of study differ by student sense of classroom community and the components of sense of classroom community (connection and learning) in a one semester rural-serving community college course?

No differences were discovered between students under 22 years and those older for overall sense of classroom community or sense of connection. These results are consistent with those of Cadieux (2002) in an urban community college where sense of classroom community based on age of students was not found to differ for students enrolled in face-to-face or online classes. Community building practices are designed to engage students regardless of age. Donaldson and Grahm (1999) wrote that relationships

within classrooms have the most powerful influence on adult students in terms of social engagement and traditional-aged students rely more on involvement in peer-related campus activities outside of the classroom. This difference is not evident in community college when neither older than average or traditional-aged students have time to participate in campus activities outside the classroom.

Students 22 years and older experienced a greater sense of learning than students 21 years or younger. Kasworm (2005) studying adult student identity in community college intergenerational contexts using a cross-comparative inductive analysis found that older students may believe their age to be a negative factor influencing their ability to keep up with younger students. Consequently, Kasworm found that older students often redefine themselves to assure a better future, employing more study and time management strategies that typically enhance learning. Older students recognize that engagement is essential to the learning process (Kasworm). Tesone, Severt, and Carpenter (2008) identify a phenomenon that may begin to explain the lower sense of learning in students 21 and under. After defining a learning loop as a two-way sequence of knowledge construction, experience, and reflection, Tesone et al. posit that traditionally aged students tend to require a double circuit of the learning loop to adequately construct knowledge. Older students with more life experience typically require one circuit. This implies the traditionally aged students must spend more time in reflection and effort in experience to satisfy the same sense of learning achieved by older students.

Students majoring in SBS experience a greater sense of classroom community than those majoring in MST or who were undecided. Student sense of learning also differed by major course of study with students majoring in SBS greater than BAS, MST or undecided students. These differences may be explained by personality traits that are commonly linked to career (or college major) choices (Feldman, Smart, & Ethington, 2008). Lounsbury and DeNeui (1996) found differences in collegiate psychological sense of community based on personality traits. Students who were identified as extroverts were discovered to possess a higher collegiate psychological sense of community and to differ by type of major from students who were not extroverts (Lounsbury & DeNeui). Smart, Feldman, and Ethington (2006) examined the use of Holland's theory of career choice to look for alternative patterns of student success within major fields. Holland's theory is a person-environment fit theory with psychological and sociological dimensions. The theory assumes the choice of a vocation is an expression of personality. Holland classifies six basic personality types labeled Realistic, Investigative, Artistic, Social, Enterprising, and Conventional. Each personality type is related to an environment that is characterized by the people who are dominant. Each type values social interaction and sense of connection to others differently. The Social personality values social interactions in terms of service; Enterprising, Realistic and Conventional personalities look for social status and power. Students whose choice of major involves a high paradigm discipline have been shown to be representative of an Investigative personality type. "Investigative people *perceive themselves* as cautious, critical, complex, curious, independent, precise, rational, and scholarly, and *value* the development or

acquisition of knowledge” (Feldman et al., p. 340). Investigative personalities seek or create environments that emphasize analytical activities and pay little attention to persuasive or social activities. In applying Holland’s theory to higher education, Feldman et al. have shown that a proper fit (congruence) of student personality with the environment is related to educational success. It follows from this premise that a low sense of connection among MST majors (either online or face-to-face) need not be interpreted as a negative result. This study observed the highest sense of connection among students majoring in SBS indicating congruence with the educational environment that may be expected to result in high levels of educational success. These results also provide data supporting a suggestion made by Arbaugh et al. (2010) that the CoI model in its current form does not align well with the cumulative nature of high paradigm disciplines.

Conclusion

This study of sense of classroom community, connection, and learning contributes to the body of knowledge on rural community colleges. The classroom environment, whether online or face-to-face, is primarily in the control of the classroom teacher. If as Tinto (1997) said, classrooms are the heart of the community college, then the teacher is the medulla oblongata; the cardiac control center determines both the rate and intensity of the heartbeat. Media, whether a white board or a computer screen are tools for teaching. The teacher is essential for any kind of discussion to be educationally purposeful and norms set by the teacher curtail uninhibited speech or writing that may adversely affect sense of community in the classroom. No one teaching style has been shown to be better

than others in all situations. Low practical significance indicated by minimal effect sizes for factors examined in this study lead to the conclusion that the practically important factor in establishing and maintaining a high sense of community is not among these factors. The complex nature of educational interaction makes identifying practically important elements difficult. Examination of the Community of Inquiry (CoI) model (Garrison, Anderson, & Archer, 2000) points to the level of social presence with instructor immediacy as being the vital factor needed for a better understanding of sense of classroom community. Social presence and instructor immediacy are under the direct personal control of the classroom teacher. Thus, teaching behavior in terms of the frequency and quality of teacher-student interaction may be the key to classroom community. It is positive teaching behavior that has the most immediate affect on students in the classroom.

Implications for Practice

Since no one teaching style has been shown to be better than others in all situations, recommendations for improvement differ by style and delivery. Teachers who are primarily delegators have found success in face-to-face situations but, in teaching first and second year undergraduates online, would be advised to increase both social and teaching presence in order to increase student sense of connection in the classroom. Personal model and facilitator teaching styles might also benefit from increased teaching presence when employed online. Expert with formal authority cluster, the most often employed style in this study, is not particularly effective in establishing a sense of connection either face-to-face or online. Instructors using formal authority style appear

from this study to be most in need of increasing student sense of connection by incorporating some technique utilized by facilitators. This recommendation, however, is given with caution for Mathematics, Science, and Technology since it is not clear what level of connection is necessary in high paradigm subjects. The focus in all recommendations for increasing classroom community is the classroom teacher. Teachers are not replaceable by computers, teachers are not replaceable by course designers; teachers are not replaceable in community colleges. The practical implications are thus: 1) full institutional support for teachers seeking to improve their craft and 2) teachers should be seeking to improve their craft.

Recommendations for Future Research

Further similar research at other rural community colleges or suburban and urban community colleges of a similar size would be beneficial in clarifying characteristics that are unique to rural serving institutions. Future research is needed to identify student preferences for online learning methods associated with different learning theories or associated with student major (or personality type). It would also be of interest to discover how discipline differences factor into the design of courses that increase the average level of community for both face-to-face and online delivery methods. A determination of the level of community and connection necessary for student success in different disciplines would be extremely useful for teachers seeking to improve their craft.

APPENDIX A

STUDENT ORIENTATION – FACE-TO-FACE

This class is being asked to participate in a survey for dissertation research by Jayne Kiner, a graduate student at the University of North Dakota. Bismarck State College has approved this research which will examine students' sense of classroom community in online and face-to-face courses. Your participation in the survey is very important for the study. You may also be providing information that will aid teachers designing future courses.

This survey is strictly voluntary and will not affect your grade in any way. Your response will be confidential, only the researcher will see the results. The survey has only 20 questions so you should be able to finish in about ten minutes. Thank you for taking part in this survey.

Instructions for completing the survey:

1. When you receive the survey please write the course subject and instructor in the blanks provided.
2. Please fill out the information at the top of the survey. If you are undecided about your major field of study mark undecided.
3. Place an "X" between the parentheses that best applies to you for each of the 20 questions.
4. Please raise your hand if you have any questions.

APPENDIX B

RECOMMENDED STUDENT ORIENTATION – ONLINE

This class is being asked to participate in a survey for dissertation research by Jayne Kiner, a graduate student at the University of North Dakota. Bismarck State College has approved this research which will examine students' sense of classroom community in online and face-to-face courses. Your participation in the survey is very important for the study. You may also be providing information that will aid teachers designing future courses.

This survey is strictly voluntary and will not affect your grade in any way. (Some instructors encouraged participation by offering points for proof of survey entry.) Your response will be confidential, only the researcher will see the results. The survey has only 20 questions so you should be able to finish in about ten minutes. Thank you for taking part in this survey.

Follow this link to take the survey:

http://www.surveymonkey.com/s.aspx?sm=wZyqF_2fEQ0Nw6rcyfy8fOtQ_3d_3d

Classroom Community Scale

Exit this survey

1. Course and student information

Before completing the survey please give the following information. When you have completed this section click 'next'. You will not advance to the survey until this section is complete.

***1. Subject and course (example: BIOL 111)**

2. Instructor:

***3. Residence:**

- Reside on-campus
- Reside off-campus, commute to campus
- Reside off-campus, distance only courses

***4. Year in school:**

- Freshman
- Sophomore

***5. Age:**

***6. Major:**

- Communications, arts, humanities
- Social and behavioral science
- Math, science, technology
- Business or Applied science
- Undecided

NEXT

Survey Powered by:
SurveyMonkey.com
"Surveys Made Simple."

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