

ATHABASCA UNIVERSITY

THE PREVALENCE OF COHESIVE LEARNING COMMUNITIES IN
ONLINE HEALTH INFORMATION TECHNOLOGY PROGRAMS

by

CANDACE E. NEU

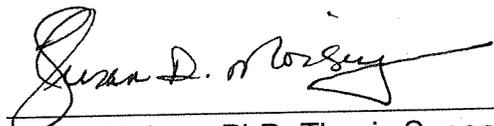
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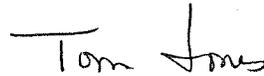
The undersigned certify that they have read and recommend to the Athabasca University Governing Council for acceptance a thesis THE PREVALENCE OF COHESIVE LEARNING COMMUNITIES IN ONLINE HEALTH INFORMATION TECHNOLOGY PROGRAMS submitted by CANDACE NEU in partial fulfillment of the requirements for the degree of MASTER OF DISTANCE EDUCATION.



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ABSTRACT

The demand for Health Information Management professionals is growing more rapidly than the supply. Existing educational programs cannot keep pace with the workforce needs of current and future healthcare. Expansion of educational delivery methods is required to increase access to appropriate training. Traditional face-to-face educational programs have enjoyed small enrollments and close working relationships between and among faculty and students. However, migration to an online environment does not foretell the sacrifice of these cohesive learning communities. Through the use of computer-mediated conferencing, collaboration and interaction are enhanced. This thesis examined the current learning environment in three online Health Information Technology programs. Ninety-two students from first year and second year classes were surveyed to determine the strength of their learning communities. Cohesive learning communities were reported and significant correlations were discovered between the strength of the learning communities and the students' experience with computer-mediated conferencing, their satisfaction with their courses and their programs. Hopefully, these results will serve as inspiration to potential online Health Information Technology educators to expand their offerings and open access to non-traditional learners who require or desire the flexibility that distance education can provide.

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CHAPTER I

INTRODUCTION

Problem Context

Health Information Management (HIM) has been growing and evolving since its early days in the 1920s. According to its most recent professional definition,

Health information management improves the quality of healthcare by insuring that the best information is available to make any healthcare decision. Health information management professionals manage healthcare data and information resources. The profession encompasses services in planning, collecting, aggregating, analyzing, and disseminating individual patient and aggregate clinical data. It serves the healthcare industry including: patient care organizations, payers, research and policy agencies, and other healthcare-related industries (AHIMA, 2001, insert before page 49).

Health Information Management education has been differentiated into 2-year associate degree programs in Health Information Technology (HIT) and 4-year baccalaureate programs in Health Information Administration (HIA). There are currently 180 accredited HIT programs in the United States and Puerto Rico. HIA programs number approximately one fourth of that (AHIMA, 2003a).

Traditionally, HIT and HIA programs have had relatively small enrollments, enabling small class sizes that in turn allow for close working relationships between and among students and instructors. Low student enrollments limit the number of faculty afforded to programs, and it is not unusual for an HIT program to have one

full-time program director/instructor and a handful of adjunct faculty members. Therefore, full-time educators may instruct the same group of individuals from their first to their last semester in various courses within the program. Other duties, including student advising and job placement, bring faculty and students into contact frequently and on a variety of levels.

Today's healthcare environment is rapidly changing and the need for quality health information is increasing. According to the U.S. Bureau of Labor Statistics, HIM professions constitute one of the fastest growing health occupations in this decade. Currently, approximately 6,000 new HIM professionals are needed each year to fill new positions and vacancies, while the colleges and universities are graduating only 2,000 (AHIMA, 2002, July 18). How can educational institutions meet the demands of the current and future workforce? One answer is through distance education and online technology. Expansion of programs delivered by distance education within the field is essential. Of the 180 associate degree HIT programs available today, less than a dozen boast online opportunities. Moreover, distance education enhances accessibility—it holds the key to instructional flexibility that is essential for today's working adults. Making education more available and accessible will increase enrollments and begin to ease the workforce shortage.

Purpose of the Study

Migrating to online delivery is a daunting task for health information technology (HIT) educators, especially in light of limited resources: financial, physical, and personnel. The increased time commitment alone for development of resources, conversion of teaching materials, and additional student interactions, is

disconcerting. Lack of online teacher training, underfunding, and the fear of the unknown add to this dilemma.

In addition, HIT educators in face-to-face settings enjoy the satisfaction of small class sizes, close working relations with local employers, and the fulfillment of assisting individuals along the learning continuum to ultimate employment and collegial status within the healthcare environment. The diverse backgrounds and experiences that students bring to the classroom contribute to rich learning communities where students and faculty alike benefit from their interactions. The result is a cohesive community of learners.

To what extent can these characteristics be replicated in an online environment? Experienced HIT educators may be reluctant to expend the effort necessary to overhaul their curricula due to the uncertainty of the outcome. Will the online environment be too impersonal compared to face-to-face delivery or can cohesive learning communities be fostered through mechanisms such as computer-mediated communication?

Learning needs alone are strong enough to attract adults to the online instructional environment, but they are not sufficient to retain students (Ashar & Skenes, 1993, as cited in Rovai, 2000b). Community building must be nurtured in online programs because it is the sense of community that compels persistence (Rovai, 2002b).

Indeed, close-knit learning communities can and do arise in online instructional venues—current technology allows for personal interaction without forfeiting the flexibility of the asynchronous environment. In order to explore whether

or not this phenomenon can arise in the Health Information Management realm, a study of existing online HIT programs will be undertaken. First-hand impressions from currently enrolled HIT students about the nature of their online learning communities will be sought and examined in light of contributing factors such as experience with computer-mediated conferencing, familiarity with other participants, and course and program satisfaction.

Research Questions

The independent variables to be considered include the students' level of: experience with computer-mediated conferencing (CMC), familiarity with other students in their course, satisfaction with their course and satisfaction with their program.

The dependent variable to be measured is the strength of classroom community. Stated in question format, the primary question is:

1. To what extent do online Health Information Technology programs that utilize computer-mediated conferencing as an integral component of their courses create cohesive learning communities?

The secondary questions are:

2. What is the relationship between community cohesion and the participants' level of experience with computer-mediated conferencing?
3. What is the relationship between community cohesion and the participants' level of familiarity with other participants?
4. What is the relationship between community cohesion and the participants' level of satisfaction with the course?

5. What is the relationship between community cohesion and the participants' level of satisfaction with the program?

Definitions of Terms

Community cohesion corresponds to the strength of the sense of community among its members, in this case, classroom community. It is represented by feelings of connectedness and learning. Members of the community trust and are interdependent upon one another. They share values and beliefs regarding the satisfaction of their common learning goals and expectations. Interactions among community members lead to knowledge construction (Rovai, 2002b).

Collaborative learning is an instructional method that allows students to work together in small groups toward a common goal. Students function at different levels, and help one another to be successful (Tu & Corry, 2002).

Computer-mediated conferencing (CMC) is an online communication format that creates threaded discussions among participants and permits asynchronous involvement. Messages persist as long as the conference moderator allows, usually through the end of the course. CMC may also be referred to as a discussion board. Computer-mediated conferencing is one form of computer-mediated communication – the others include e-mail, file transfer and chat.

A *learning community* is a group of people who assemble for an instructional purpose. They learn as much from one another as from the instructor and instructional materials (Rowntree, 1995, as cited in Wegerif, 1998). Members of a learning community are mutually interdependent; share a sense of belonging, connectedness, and trust; they exhibit spirit and interactivity. The community shares

values and goals and has common expectations. Members may also have overlapping histories with one another (Rovai, 2002a). In a learning community, the individual learns and the community as a whole also learns (Tu & Corry, 2002).

Sense of community refers to the community members' feelings of belonging to the group, caring for one another, and the belief that their needs will be met through their mutual group commitment (McMillan & Chavis, 1986).

Social presence represents the learner's ability to integrate into the learning community, both socially and affectively (Rourke, Anderson, Garrison & Archer, 2001). It also represents a mutual awareness of others (Cutler, 1995).

A threaded discussion is a series of messages that have been posted as replies to each other. By reading each message in the thread, one can follow the discussion and see how it evolved (Webopedia, 2003). Messages form a dynamic outline that writers can enter at any point, creating new topics or responding to previous ones. Each response is indented under the posting to which it refers.

Summary

The demand for Health Information Management professionals is growing more rapidly than the supply and requires the expansion of access to educational programs. Traditional face-to-face programs enjoy small enrollments and closeness between faculty and students. However, migration to an online environment does not foretell the sacrifice of these cohesive learning communities. On the contrary, the growing body of literature demonstrates how strong learning communities support successful and satisfying educational experiences. This thesis examines the current learning environment in three online Health Information Technology (HIT)

programs. Hopefully, the results will serve as inspiration to potential online HIT students and educators.

CHAPTER II

REVIEW OF RELATED LITERATURE

Introduction to the Literature

The literature is replete with examples of successful and satisfying online communities formed through interactions facilitated by computer-mediated communication. This chapter categorizes the body of knowledge into community, learning community, community cohesion, online interaction, computer-mediated conferencing (CMC), communication processes, computer/CMC skills, familiarity of students, and satisfaction with studies.

Community

The term, community, can refer to a geographical unit, such as a neighborhood or town, as well as, a relational or psychological feature, representing the quality of human relationships without a territorial connotation. However, both types of community often share similar characteristics, such as boundaries, emotional safety, a sense of belonging and identification, personal investment, and a common symbol system (McMillan & Chavis, 1986).

This relational concept of community can take on family characteristics, for instance, comparing group members reconnecting through interactions with their group to a family member coming back home. As group members accumulate history of spending time together and the anticipation of future times together, the community becomes more harmonious through members' tolerance and respect for one another (Conrad, 2002).

Brown (2001) developed a community-building paradigm as a result of her qualitative, grounded theory study of 21 distance learner graduate students. Through interviews and analysis of archived conferences, Brown demonstrated community building as a three-stage process. The first stage establishes friendships and comfort levels in communication. Stage two involves acceptance of participants, or conferment. This develops from the personal satisfaction students feel after contributing to long, threaded discussions on mutually important topics. The third stage is the camaraderie achieved among participants who have spent significant time together and/or experienced intense association through their personal communication with one another.

Learning Community

Learning needs alone are strong enough to attract adults to the online instructional environment, but learning needs alone are not sufficient to retain students in this environment (Ashar & Skenes, 1993, as cited in Rovai, 2002b). Community building must be nurtured in online programs because it is the sense of community that compels persistence (Rovai, 2002b). Cohesive learning communities, through collaboration, enable effective learning.

Paloff and Pratt (1999) contend that a key factor in determining whether or not a class will succeed depends upon the students' sense of community that results from mutually beneficial collaboration and communication. Individually, as well, students' success or failure in a course depends on their ability to fit into the group (Wegerif, 1998). Loyalty among group members is associated with the compelling purpose and the permanence of the community. "A successful cohort experience in

school sets the stage for positive group affiliations at future points of career and learning” (Wilson, 2001).

Tu and Corry (2002), using the term “eLearning community”, emphasize the importance of social interaction to develop familiarity, trust, and positive attitudes toward online learning. Community members of all experience levels often communicate more with each other during eLearning than in traditional face-to-face classrooms. Through collaborative learning, students are responsible for one another’s learning; therefore, the success of one student enhances the success of the others.

Developing a sense of community is integral to achieving intersubjectivity and knowledge construction. Intersubjectivity is “the shared understanding that helps us relate one situation to another” (Bober & Denen, 2001). Salmon (2000, as cited in Bober & Denen, 2001) categorizes five steps in online learning: access and motivation, online socialization, information exchange, knowledge construction, and development or synthesis. By considering the audience while expressing their opinions, group members develop shared meaning and mutual understanding. In this learner-centered environment, peers learn from one another by sharing anecdotes and examples and debating. Comments begin to synthesize earlier messages and new insight thus evolves. Ultimately, knowledge construction goes hand in hand with sense of community.

Collaborative discussions enable people to verbalize and share their understanding, often referred to as mental models. As models are articulated and

challenged by community members, they become further refined and lead to breakthrough thinking (CommuniSpace, 2001).

Learning communities elevate distance instruction above isolated correspondence models. The sense of community, with its inherent social support, promotes learning in an online environment (Haythornthwaite et al, 2000).

Community Cohesion

A sense of community is necessary for effective learning because interaction among learners is important to the learning process. In a study of 20 graduate students, enrolled in a five-week online course, using a collaborative learning model, Rovai, Cristol and Lucking found that a significant relationship existed between classroom community, the flow of information among online learners, and effective learning. The Sense of Classroom Community Index, based on the concept of psychological community, was used as a pre- and post-measure of community. The 40-item questionnaire was rated high for content and face validity and high for internal consistency (Rovai et al, 2001). The Index was later streamlined into the Classroom Community Scale (Rovai, 2002b), the 20-item survey upon which the study described in this thesis is based.

Rovai (2002a) defines four essential elements of classroom community development: spirit, trust, interaction, and the common expectation of learning. Spirit represents the friendship and cohesion that results from the enjoyment of time spent together. Trust indicates the ability of community members to rely on one another. Interaction takes the form of task-driven as well as socio-emotional communications. Learning embodies the common goal of a learning community

where learners feel that their educational needs are being met through their participation.

In a different study, interviews conducted over a one-year period with 17 computer-supported, distance, graduate students showed that bonds among community members strengthened over time due to students' shared experiences. As members of the learning community became more involved within their community, they tended to become more exclusive of outsiders (Haythornthwaite et al, 2000).

According to Paloff and Pratt (1999), "the need for connectedness [community] does not necessarily mean giving up autonomy or submitting to authority. Instead it should be a mutually empowering act" (p.35). In other words, both the group and its individual members benefit from their association; the whole is greater than the sum of its parts.

Online Interaction

Moore (1989) distinguished among three types of interaction: learner-content, learner-instructor, and learner-learner. Educators need to design instruction to maximize the effectiveness of each type of interaction, as appropriate for the teaching task, subject area, and learners' stage of development.

To these three, Hillman, Willis, and Gunawardena (1994) added a fourth type of interaction, learner-interface interaction, while acknowledging Moore's previously identified types of interactions in distance learning. They argued that competence in operating communication technologies effectively is required to enable the other

three interactions between learner and content, instructor and other learners. This learner-interface interaction is fundamental and cannot be taken for granted.

Bull and Kimball (2000) also refer to intra-individual interaction, one that evolves with contemplation and critical reflection. If fully developed, it improves all the other interactions.

The Internet has expanded the capabilities of social interaction due to its lack of constraints over time and place. Social interactions are strongly entwined with learning interactions supporting the learning goals of a group, and the strength of the social climate increases over time (Oren, Mioduser & Nachmias, 2002). Social interaction may occur during content-related discussion and/or in a separate social environment, designed for that purpose. Online course designers should create multiple virtual spaces to provide for the various needs that develop during the group's work.

Kanuka and Anderson (1998), following a three-week online corporate training seminar for 25 business managers, conducted an online survey, analyzed 252 conference transcripts, and administered a follow-up telephone survey to selected participants. They found that online interactions included considerable time spent in social discussion followed occasionally by social discord. This discord served as a vehicle for knowledge construction within the learning community. The process of learning was converted from a personal to a social activity as learners were exposed to challenges and confrontations to their own belief systems through interaction.

Fredericksen, Picket, Shea, Pelz, and Swan (2000) surveyed 1,406 students in asynchronous online university courses and found that students who reported the highest levels of perceived learning also reported the highest levels of interaction with the teacher, higher levels of interaction with classmates, and participated more in their online classes than in face-to-face classes. As Rovai (2002a) asserted, interaction and learning are essential elements of cohesive classroom communities.

Computer-Mediated Conferencing (CMC)

McDonald and Gibson (1998) found that learners using computer-mediated conferencing (CMC) could, indeed, form cohesive, functioning groups. Through qualitative content analysis of more than 2,200 conference messages of 19 graduate students in an online course, they concluded that computer-mediated interaction, as opposed to face-to-face, had no discernible effect on group development, which progressed through predictable phases. Using Schutz' 1983 model of group development (as cited in McDonald & Gibson, 1998), participants in computer conferences were identified to have similar interpersonal issues--inclusion, control, affection--at comparable stages and proportions, as face-to-face groups.

Asynchronicity in CMC allows for more reflexivity and creativity due to the lack of a requirement for an immediate response in communications. Without this immediacy, a student can take as much time as desired, without the pressure of instant reaction (Wegerif, 1998). This time for reflection allows participants to carefully craft responses that create and enhance an environment of support and understanding that is necessary for cohesive community building.

Another advantageous feature of CMC is that written responses tend to be more thoughtful. Participants take more time to think and polish what they say; speakers are not limited and can contribute as much as they want. Critical and higher order thinking skills are utilized as learners make a great effort to express themselves. There is a real audience, besides the instructor as in the face-to-face setting. In order to be understood, the writer must provide evidence by giving an illustration or constructing a supportive argument. Also, the writer often incorporates others' comments into his or her own perspective (Lapadat, 2002).

Two additional features of asynchronous CMC, sometimes called discussion boards, are threading and note persistence. Threading keeps track of the relationship between the messages, allowing the learner to follow the discussion, interject at any point, and skip over notes of low interest (Guzdial & Turns, 2000). Threaded discussions often utilize moderators whose function is, among other things, to keep the discussion on topic (Herring, 1999). Note persistence--the fact that CMC questions, answers and comments remain archived throughout the course--supports the asynchronicity of the medium; however, the discussions sometimes become so large, it is difficult to identify new notes (Guzdial & Turns, 2000). Also, learners may be apprehensive about what they commit to writing, due to its permanence (Conrad, 2002).

Herring (1999) postulates that the persistence of the text in CMC aids the learner's cognitive processing. The message remains on the screen, allowing the learner to read and reread, thus enabling conscious reflection of the message until it

has been fully processed. Sense making is also facilitated because individuals can plan their own pathways through the material (Lapadat, 2002).

CMC is influenced by many sources. Baym (1995) identifies five factors that influence the nature of computer-mediated asynchronous conferences.

1. External Context--CMC participants behave in accordance with the external environment (e.g., work, school) through which they access the CMC.
2. Temporal Structure--community development through computer-mediated communication also depends on its temporal structure, synchronous versus asynchronous, how often the group communicates, and the planned duration of the community.
3. System Infrastructure--features of the computer network that affect how CMC is used are its physical configuration, the system's adaptability, and its user friendliness.
4. Group Purpose--the purpose for which the group forms will also affect its communications (e.g., business groups may communicate in a more formal manner than a group formed to share information about a hobby).
5. Participant characteristics--the following participant characteristics will affect CMC outcomes: size of the group, familiarity of its participants, hierarchy of the relationships within the group, users' computer experience, and their gender.

Communication Processes

Conditions necessary for associating discussion activity with learning include the following: the discussion should be sustained, have broad participation, and focus on class topics. Note that these conditions are necessary, but not sufficient; they must be present, but they do not guarantee learning (Guzdial & Turns, 2000).

In CMC, students can choose to come forward and participate in the discussion or fade back and withdraw from the discussion. Without active participation, learners become invisible (Haythornthwaite et al, 2000). Therefore, CMC allows participants to selectively minimize or maximize the interpersonal effects they have on their community (Walther, 1996).

CMC communication can be impersonal, interpersonal, and hyperpersonal. Hyperpersonal communication is a form of interaction that exceeds face-to-face interpersonal communication (Walther, 1996). Aspects of the communication process and its participants become magnified due the lack of face-to-face reality checks. Four different but related elements of the communication process in CMC lead to hyperpersonal interactions. First, receivers of information are often operating with reduced context cues, due to their absence in a non-face-to-face environment. Whatever subtle cues are provided take on unusually great value, and participants may tend to over-attribute certain characteristics, real or not, intended or not, to others (Walther, 1996).

Second, senders of information can selectively represent themselves to make favorable impressions, using specific language construction. Third, the asynchronicity of interactions enables both more time on task and more time for

social interactions, thus enhancing attention to well-being and membership support. Finally, the visual restrictions of the media create a cycle of behavioral confirmation and magnification. Receivers perceive that their expectations of the sender's behavior are being met and then respond in kind, thus forming an intensification loop (Walther, 1996). Consequently, CMC can produce larger-than-life circumstances.

The lack of context cues inherent to the online environment can reduce negative feedback, such as ridicule, but it also can reduce positive feedback, so that participants may not be aware of their progress (Haythornthwaite et al, 2000).

Vrasidas & Mclsaac (1999) note, "An interesting aspect of online interaction is that it is solely constructed through language" (p. 34). In most instances, interaction occurs through written language. CMC users often invent context and social cues to express themselves affectively. Some methods include the use of emoticons and overt descriptions of their emotional behavior. In addition, community members may assume nicknames, use embellished signatures, or engage in varying degrees of self-disclosure (Baym, 1995).

Self-disclosure may be intensified in CMC. Sproul and Kiesler (1991, as cited in Rosson, 1999) found that greater social distance could decrease the social inhibition of communicators. Participants often revealed personal, and often intimate, details of their lives. As Oren et al. (2002) note, disclosure in an anonymous environment reduces the risks involved.

Cutler (1995) contends that disclosure is necessary to sustain interaction. Disclosure by one individual encourages reciprocal communication by others, resulting in the establishment of trust, support, and satisfaction among participants.

In addition, sharing personal beliefs serves to validate learners' viewpoints while exposing them to others' perspectives. Just the process of expressing one's viewpoints becomes a task of mutual understanding because it requires adaptation to the specific community (Steeple & Mayes, 1998, as cited in Bober & Dennen, 2001).

CMC is a naturally effective support for collaborative learning, perhaps even better than face-to-face discussion (Wegerif, 1998). Through the lack of context cues, biases such as gender, racial, or hierarchical status, can be mitigated. No one is put on the spot to respond quickly. All participants can formulate their responses to project their desired image. No opportunity for visual value judgments need be provided. "...The leveling effect of CMC is likely to enhance the learning of students who might be otherwise disadvantaged" (Ross, Crane & Robertson, 1994).

Groups usually set up standards for behavior that are related to the group's purpose (Baym, 1995). Often referred to as "netiquette," each community decides what is acceptable or not. An essential element in a cohesive learning community is the need for safety and trust; therefore, courtesy and respect are fostered.

Collaborative learning strategies enable students to become actively involved in the learning process. The mechanisms that directly affect cognitive processes include conflict or disagreement, internalization and self-explanation (Dillenbourg & Schneider, 1994, as cited in Hiltz, Coppola, Rotter, Turoff & Benbunan-Fich, 2000). When conflict occurs within the group, social factors force members to seek resolution. Internalization allows progressive building of knowledge as individuals integrate it. Self-explanation improves the knowledge of the explainer. In

collaborative learning, instruction is learner-centered, and knowledge is viewed as a social construct (Hiltz, 1998).

Computer and CMC Skills

Birnie and Horvath (2002) found that greater computer skills are associated with higher degrees of Internet contact frequency, socializing frequency, and socializing intimacy among CMC users. In a study of 115 undergraduates, where each student had identical access to computers and the Internet, participants were asked to rate their computer skills. To assess computer skills, participants indicated whether they were familiar with or had used different computer applications and whether or not they had accomplished specified computer-related tasks. Contact frequency was determined by participants listing their Internet social contacts and how often they communicated with these individuals. Socializing frequency referred to how often participants engaged in general Internet social communications. Participants rated their socializing intimacy by answering questions regarding self-disclosure. Greater computer skills were positively correlated with more Internet contact frequency, socializing frequency and socializing intimacy.

Fredericksen et al (2000) reported that the “lack of prior computer knowledge does not seem to be a barrier to online learning;” however, the learner’s level of satisfaction with the computer support provided, corresponded to their perceived level of learning. In other words, successful computer operation, regardless of prior experience, correlated to how much students felt they learned.

Students inexperienced with online communication prefer the asynchronicity of CMC because they can take their time to construct responses after reflection

(Vrasidas & Mclsaac, 1999). They found that experienced participants used emoticons more frequently to offset the lack of context cues.

Ross et al. (1994) found that, initially, computer-literate students were attracted to online courses, due as much to their interest in the technology as to their interest in the content of the courses, which were often computer-oriented topics. Because of the potential for students encountering access, software and hardware problems, it is imperative for programs to provide dedicated computer support. As online opportunities advance, the proportion of novice and near-novice computer users is likely to grow.

Familiarity

Familiarity with other participants tends to strengthen the learning community, and personal ties evolve over time (Oren et al, 2002). Course designers, instructors and CMC moderators should strive for maximum creation and enhancement of the social climate within learning communities.

Familiarity is reflected in Wegerif's study (1998) which found that individual success versus failure depended upon the extent to which students felt like insiders instead of outsiders. Initial course "getting to know you" exercises are beneficial for this purpose. Developing a sense of community is a necessary first step for collaborative learning (Wegerif, 1998).

Course designers should build in opportunities for students to become familiar with one another and facilitate early discovery of commonalities. Brown (2001) noted that students who find similarities—whether of circumstances, interests, location, academic background, commitment or motivation—interact on a regular

basis. Stronger community cohesion results over time through long-term association with one another (Brown, 2001).

Haythornthwaite et al (2000) noted the importance of familiarity among participants when they referred to the bonds with other students, “bonds that strengthen because of shared history.”

Satisfaction

The social presence created in an online community is a strong predictor of satisfaction in CMC. Social presence can be enhanced by the use of emoticons and other deliberate context cues that add affective information and indicate informality (Gunawardena & Zittle, 1997).

Tinto (1975, as cited in Rovai, 2002a) theorized that students would increase their level of satisfaction and course persistence if they felt involved with and developed relationships within the learning community.

Summary

A significant amount of research has been done on the importance and development of community in educational settings. Many theorists contend that cohesive learning communities are necessary for effective learning and knowledge construction in online settings. In addition, learning communities promote persistence and satisfaction. They are formed through familiarity of group members, spirit, trust, common goals, and supportive collaboration. Computer-mediated communication is an ideal medium to support online interaction. As Paloff and Pratt contend, “The learning community is the vehicle through which learning occurs online. Members depend on each other to achieve the learning outcomes for the

course.... Without the support and participation of the learning community, there is no online course” (1999, p.29).

CHAPTER III

METHODOLOGY

Introduction

This chapter includes a discussion of the study design, the selection of subjects, the survey development, the procedure followed to conduct the study, the data analysis, and the limitations and delimitations of the study.

Design

In order to measure the dependent variable, the level of community cohesion in online learning communities in Health Information Technology (HIT) programs, a quantitative correlational study was conducted of three online HIT programs. The selected programs delivered the didactic portion of their curricula completely online and used computer-mediated conferencing (CMC) as an integral component of their courses.

Two-thirds of the way into the fall 2003 semester, students from a freshman (Year 1) and a sophomore (Year 2) class in each program were surveyed to determine their opinions regarding the level of community cohesion generated in their courses. The Classroom Community Scale Instrument (Rovai, 2000b) was used to measure the students' perceived level of cohesion in their learning community. In addition, students were asked questions regarding their experience with CMC, their familiarity with other students in their classes, and their satisfaction with the course and their program.

Once data were received, results were compiled calculating the level of classroom community in each course. Correlations between this measure and the students' level of experience with CMC, their familiarity with other learners, and their level of satisfaction with the course and their program were also made.

Subjects

First and third semester online students in three online HIT programs were surveyed. In other words, a purposive sample consisting of students in six courses were surveyed, two courses from each of the three selected HIT programs.

The purpose of this selection was to compare beginning students, who may be new to computer-mediated conferencing (CMC) and unfamiliar with one another, to individuals who had been in the program for more than a year and had gained experience with CMC and familiarity with one another.

The total number of student participants, based on preliminary enrollment data provided by program directors, was estimated to be between 150 and 180 students.

Instrumentation

In order to address the questions of the study, the HIT Student Questionnaire, (Appendix F) was compiled. The questionnaire is based on the primary instrument for measurement of learning community cohesion—Alfred Rovai's Classroom Community Scale (CCS). This tool was developed for university students taking online classes in order to measure connectedness and learning as factors of classroom community. Connectedness corresponds to the cohesion, trust, spirit, and interdependence developed within the student community, and the learning

aspect encompasses the interactive construction of knowledge, value sharing and the satisfaction of educational goals and expectations (Rovai, 2000b).

Although Rovai's CCS was designed to assess classroom community in graduate student courses, a Flesch-Kincaid grade level score of 6.6 suggests it could be easily understood by first and second year college students (Rovai, 2000b).

The strength of the classroom community was determined overall, and for each program using the Classroom Community Scale (CCS). In the set of 20 questions, 10 are related to each factor, connectedness and learning, forming two subscales. Half of the questions are positively worded; half are negatively worded. Each question has a five-point Likert-type scale of possible responses: strongly agree, agree, neutral, disagree, strongly disagree, with the least favorable choice assigned a value of zero, and the most favorable choice assigned a value of four.

To calculate the connectedness subscale, the scores of the odd numbered items are added together (in Appendix F, odd numbers from 11 to 29), for a possible range of 40, from a minimum of zero to a maximum of 40. Likewise, the learning subscale corresponds to the total scores of the even numbered items (in Appendix F, even numbers from 12 to 30). Thus, the total CCS score could range from zero to 80; the higher scores reflecting stronger community cohesion (Rovai, 2002b).

The CCS went through rigorous testing throughout its design, as evidenced by the quote below.

Quantitative research methods were used to establish the extent of the validity and reliability of the Classroom Community Scale to measure classroom community among higher education students in online learning

environments. Factor analysis of the data was conducted using direct oblimin rotation in order to determine the dimensionality of the classroom community construct. Reliability analyses were conducted using both Cronbach's coefficient α and split-half methods in order to establish the internal consistency characteristics of the scale (Rovai, 2002b, p. 202).

Both the overall scale and its two subscales were deemed to possess high internal consistencies and the CCS was found to be a valid measure of classroom community (Rovai, 2002b).

The Classroom Community Scale was utilized to measure the dependent variable, Question 1: To what extent do online Health Information Technology programs that utilize computer-mediated conferencing as an integral component of their courses create cohesive learning communities?

To determine the independent variables in the study, extra questions were added.

Question 2: What is the relationship between the strength of the community and the participants' level of experience with computer-mediated conferencing? Because of confusion regarding the term, computer-mediated conferencing (CMC), in the initial Participant Selection Data tool, CMC was defined in the HIT Student Questionnaire (Appendix F). The following questions were added to assess the participant's level of experience with CMC:

- How many courses have you completed that used CMC?
- How many courses are you currently taking that use CMC?

- Approximately how often each week do you read postings in CMC for this course?
- Approximately how often each week do you post a question or comment to CMC for this course?

In order to address, Question 3: What is the relationship between the strength of the community and the participants' level of familiarity with other participants, the following questions were added.

- How many other students in this class did you know personally prior to beginning this course?
- How many students in this class have you work with previously prior to beginning this course?
- How many fellow students' names did you recognize from previous courses prior to beginning this course?

To address Question 4: What is the relationship between the strength of the community and the participants' level of satisfaction with the course, the following Likert-scale question was added to discover these opinions.

- How would you rate your level of satisfaction with this particular course?
(Highly satisfied) (Satisfied) (Neutral) (Dissatisfied) (Strongly Dissatisfied)

Likewise, to ascertain Question 5: What is the relationship between the strength of the community and the participants' level of satisfaction with the program, this final question was added.

- How would you rate your level of satisfaction with this HIT Program? (Highly satisfied) (Satisfied) (Neutral) (Dissatisfied) (Strongly Dissatisfied)

The survey was posted online using the survey software and services of Zoomerang, a division of Market Tools, a global market research provider (Zoomerang, 2003).

Procedure

The research proceeded according to the following plan. First, online Health Information Technology programs in the United States and Puerto Rico were identified with the help of the American Health Information Management Association website (AHIMA, 2003b). Eight programs were located.

Second, a letter explaining the project and a simple questionnaire to ascertain the selection criteria were e-mailed to each of the identified program directors (Appendices A and B). Selection criteria included program delivery completely online; utilization of computer-mediated conferencing in first and third semester courses; number of students; and program director's potential interest in participating further in the study.

Of the eight programs contacted, five responded to the e-mail. One immediate response came from a program director that stated that her program was not entirely online. Three other respondents showed confusion over the term, computer-mediated conferencing (CMC); they were familiar with other terminology. Therefore, clarification was sent to these programs. It was determined that in these programs, CMC was indeed an integral component of their courses. Another respondent stated that CMC was not used on a regular basis in her program.

The third step in the procedure called for the selection of study participants

from the respondents. As there were three suitable programs that met the criteria, these were selected, and no further attempt was made to reach the nonrespondents.

Fourth, following approval from the Athabasca University Research Ethics Board, a formal request for participation in the study was sent to the selected programs' directors (Appendix C). Attached to the program director's Request To Begin the Study, were samples of all the other correspondence and the survey intended to be used in the study, specifically, the Instructor Letter of Introduction, the Student Letter of Introduction and the Student Questionnaire (Appendices D, E, and F, respectively). Introduction letters described the study and explained the voluntary nature of participation, right to refuse, and confidentiality.

Fifth, once all approvals had been received, the project began. Instructors were contacted and asked to forward the introduction letters to their students approximately two-thirds into the fall semester, enough time for students to express informed opinions. In one instance, a program director requested that she be the one to contact the students, rather than involve the instructors. Student Letters of Introduction contained a web link to the online survey.

Sixth, surveys were conducted online and data were collected and compiled. Real time response rates were monitored and e-mail follow up was sent to instructors to encourage student nonrespondents. The study took place over a period of approximately one month. The Request to Begin Study was first e-mailed to the selected HIT Program Directors on November 13, 2003. The final student response was posted to the online survey on December 15, 2003. It was important

to reach students prior to the end of the fall semester, while they were still enrolled in the courses they were referencing.

Data Analysis

Response rates were calculated and due to the relatively low response rate, a wave analysis was done to determine response bias. Descriptive statistics were compiled for each variable among the programs and between the student levels. One-way analysis of variance tests and t-tests were performed to determine any significance between the differences. Finally, the strength of the classroom community was shown and correlations between the independent and dependent variables were computed.

Limitations and Delimitations

Surveys were sent to three online Health Information Technology (HIT) programs that used CMC in their courses. Within each program, both a first semester and a third semester class were surveyed, to differentiate between novice and experienced participants, as well as, strangers and acquaintances.

This purposive sample cannot be generalized to all HIT programs due to the non-random sampling method. Surveys were designed to report the opinions of participants; no validation with actual CMC transcripts was done.

In order to maintain the anonymity of survey respondents, program directors and instructors forwarded e-mail correspondence to student participants. The researcher did not have direct contact with student participants and, therefore, did not know who respondents and potential respondents were. Consequently, due to

this anonymity, there was no way to prevent students from responding more than once.

A final limitation is the lack of normally distributed population. Females dominate the Health Information Management profession and this is reflected in educational programs as well. In Rovai's study (2002b), classroom community scores were relatively stable across ethnic groups and course content areas; however, there was a significant difference between the genders. Females demonstrated higher levels of community than males. Therefore, one may expect online HIT Program students to exhibit high levels of community.

CHAPTER IV

RESULTS AND DISCUSSION

Introduction

This chapter includes a reiteration of the purpose of the study, a guide to the variables, the research question each represented, the survey items supporting each variable, and how each variable was derived from those survey questions. A discussion of the survey participants, their selection, resulting participation and response rates, along with a wave analysis to determine response bias, is provided.

Descriptive statistics showing variable means, standard deviations, minimums and maximums overall and for each school and level of student are presented for each of the study variables. Significant differences, determined by one-way analysis of variance tests among the schools, and t-tests between the student levels are demonstrated. Finally, a discussion of the survey questions, including the strength of the community cohesion and correlations between variables is provided.

Purpose of the Study

In review, the purpose of the study was to explore the nature of the learning communities in three online Health Information Technologies programs in light of contributing factors such as students' experience with computer-mediated conferencing, familiarity with other students, and course and program satisfaction.

Table 1 shows a cross-reference of the variables, research questions and their corresponding survey items.

Table 1. Variables, Research Questions, and Item(s) on Survey

Variable Name	Research Question	Item(s) on Survey
Classroom Community	To what extent do online HIT programs that utilize computer-mediated conferencing as an integral component of their courses create cohesive learning communities?	Questions 11-30
Experience with CMC	What is the relationship between community cohesion and the participant's level of experience with computer-mediated conferencing?	Questions 2-5
Familiarity of Students	What is the relationship between community cohesion and the participant's level of familiarity with other participants?	Questions 6-8
Satisfaction with the Course	What is the relationship between community cohesion and the participant's level of satisfaction with the course?	Question 9
Satisfaction with the Program	What is the relationship between community cohesion and the participant's level of satisfaction with the program?	Question 10

Instrument

The dependent variable, Classroom Community, was determined exclusively using Rovai's Classroom Community Scale (2002b). Totals of the odd numbered Questions (11-29) comprised the Connectedness subscale score. Totals of the even numbered Questions (12-30) produced the Learning subscale score.

Together, the Connectedness and Learning subscale scores equated to Classroom Community. Each of these questions required the choice of a Likert scale response ranging from zero, the least desirable response to four, the most desirable response.

Half of the questions were negatively worded. (See Appendix F for Questions 11-30.)

The score for the independent variable, Experience with CMC, was determined by the sum of the answers to Questions 2-5. Each of these questions required an open ended numerical response.

- How many courses have you completed that used CMC?
- How many courses are you currently taking that use CMC?
- Approximately how often each week do you read postings in CMC for this course?
- Approximately how often each week do you post a question or comment to CMC for this course?

These questions attempted to elicit the depth and breadth of the participant's experience with computer-mediated conferencing. Despite survey instructions to express answers in Arabic numerals, some of the participants' responses were not quantifiable, such as "a lot," or "all of them." These types of responses were discarded, resulting in nine fewer responses in the Experience with CMC variable.

The independent variable, Familiarity of Students with one another, was determined directly from answers to Question 8, (How many fellow students' names did you recognize from previous courses prior to beginning this course?). Although Question 6 (How many students in this class did you know personally prior to beginning this course?) and Question 7 (How many students in this class have you worked with previously prior to beginning this course?) were also intended to factor into the Familiarity of Students variable, question 8 encompassed those individuals.

Therefore, only Question 8 was utilized in the final tabulation for that variable. As with the Experience with CMC variable, each of these questions required an open ended numerical response; however, all responses were useable.

The independent variable, Satisfaction with the Course, determined by Question 9 (How would you rate your level of satisfaction with this particular course?) was provided a Likert scale of responses, ranging from zero, strongly dissatisfied, to four, highly satisfied.

The independent variable, Satisfaction with the Program, was established by Question 10 (How would you rate your level of satisfaction with this HIT Program?). Likert scale responses, ranging from zero, strongly dissatisfied, to four, highly satisfied, were provided.

Subjects

First and third semester students in three online HIT programs were surveyed. In other words, a purposive sample consisting of students in six courses were surveyed, two courses from each of the three selected HIT programs. Online programs that used computer-mediated conferencing (CMC) as an integral part of their curriculum were chosen. The purpose of this selection was to compare beginning students, who may be new to CMC and unfamiliar with one another, to individuals who had been in the program for more than a year and had gained experience with CMC and familiarity with one another.

Table 2 shows potential participants, actual participants, and response rates by school, by student level, and total. The total number of potential participants was 305 students comprised of 206 first year and 99 second year students. Of those

who completed the survey, 54 (26.2%) were first year students and 38 (38.4%) were second year students. The overall response rate was 30.2% (92 respondents).

Table 2. Comparison of Respondents by School and Student Level

	School A	School B	School C	Total
Total Potential Participants	90	65	150	305
Actual Respondents	51	22	19	92
Response Rate	56.7%	33.8%	12.7%	30.2%
First Year Potential Participants	70	36	100	206
Actual Respondents	34	14	6	54
Response Rate	48.6%	38.9%	6%	26.2%
Second Year Potential Participants	20	29	50	99
Actual Respondents	17	8	13	38
Response Rate	85%	27.6%	26%	38.4%

Wave Analysis

Due to the low overall response rate, a wave analysis was done, in order to explore the possibility of response bias. Responses were grouped into each of the five weeks of the duration of the study by the week posted. Means for the five variables by week of response were compared with one another using one-way analysis of variance tests. Table 3 is a compilation of these results. None of the F ratios or the p values is significant for any of the study variables suggesting an absence of response bias.

Table 3. Analysis of Variance of Study Variables by Week of Response

Source	df	Sum of Squares	Mean Squares	F Ratio	Sig.
Classroom Community					
Between Groups	41	37.906	.925	.689	.889
Within Groups	49	65.764	1.342		
Total	90	103.670			
Experience with CMC					
Between Groups	28	34.658	1.238	1.038	.441
Within Groups	54	64.402	1.193		
Total	82	99.060			
Familiarity of Students					
Between Groups	9	15.336	1.704	1.562	.141
Within Groups	81	88.335	1.091		
Total	90	103.670			
Satisfaction with the Course					
Between Groups	4	7.901	1.975	1.774	.142
Within Groups	86	95.770	1.114		
Total	90	103.670			
Satisfaction with the Program					
Between Groups	4	5.148	1.287	1.123	.351
Within Groups	86	98.522	1.146		
Total	90	103.670			

Descriptive Statistics

Table 4 shows the composite descriptive statistics for all the study variables. In addition, each variable will be presented with comparisons among the schools and between the first and second year level students.

Table 4. Composite Descriptive Statistics of Study Variables

Variable	n	Possible Range	Survey Minimum	Survey Maximum	Mean	Std. Dev.
Classroom Community	92	0-80	28	79	57.96	12.36
Experience with CMC	83	0-?	2	35	14.94	7.60
Familiarity of Students	92	0-?	0	10	2.08	2.84
Satisfaction – Course	92	0-4	0	4	3.50	.76
Satisfaction – Program	92	0-4	0	4	3.54	.69

Classroom Community

Table 5 shows the Classroom Community variable compared among the schools and between the first and second year level students. A one-way analysis of variance showed there was a significant difference among the schools for this variable ($F = 7.946, p < .001$). An independent t-test of Classroom Community showed no significant difference between the first and second year level students overall ($t = 1.454, p < .05$). Neither were there significant differences between the levels within each school.

Table 5. Comparison of Classroom Community by School and Student Level

	School A	School B	School C	Total
Total Means	62.18	53.91	51.32	57.96
Standard Deviation	9.20	13.49	14.43	12.36
Actual Minimum	32	29	28	28
Actual Maximum	77	79	76	79
n	51	22	19	92
First Year Level Means	62.03	55.42	54.83	59.52
Standard Deviation	9.78	12.35	11.34	10.96
Actual Minimum	32	30	41	30
Actual Maximum	77	72	74	77
n	34	14	6	54
Second Year Level Means	62.47	51.25	49.69	55.74
Standard Deviation	8.18	15.8	15.8	13.97
Actual Minimum	41	29	28	28
Actual Maximum	75	79	76	79
n	17	8	13	38

Experience with CMC

Table 6 shows the Experience with CMC variable compared among the schools and between the first and second year level students. A one-way analysis of variance showed there was a significant difference among the schools for this variable ($F = 11.299, p < .0001$). An independent t-test of Experience with CMC

showed no significant difference between the first and second year level students overall ($t = -1.054, p < .05$). There was a significant difference at School B ($t = -2.747, p < .05$) between the first and second year students.

Table 6. Comparison of Experience with CMC by School and Student Level

	School A	School B	School C	Total
Total Means	18.04	10.76	11.00	14.94
Standard Deviation	7.39	5.57	6.17	7.60
Actual Minimum	3	4	2	2
Actual Maximum	35	21	26	35
n	47	17	19	83
First Year Level Means	16.93	8.45	10.83	14.17
Standard Deviation	7.41	4.59	7.83	7.76
Actual Minimum	3	4	4	3
Actual Maximum	33	18	26	33
n	30	11	6	47
Second Year Level Means	20.00	15.00	11.08	15.94
Standard Deviation	7.14	4.90	5.62	7.38
Actual Minimum	13	11	2	2
Actual Maximum	35	21	21	35
n	17	6	13	36

Familiarity of Students

Table 7 shows the Familiarity of Students variable compared among the schools and between the first and second year level students. A one-way analysis

of variance showed there was no significant difference among the schools for this variable ($F = 2.794, p < .05$). An independent t-test of Familiarity of Students showed a significant difference between the first and second year level students overall ($t = -3.491, p < .001$). There were also significant differences at School A ($t = -3.298, p < .01$) and School B ($t = -3.811, p < .01$) between the first and second year levels within those schools.

Table 7. Comparison of Familiarity of Students by School and Student Level

	School A	School B	School C	Total
Total Means	2.69	1.45	1.16	2.08
Standard Deviation	3.09	2.74	1.80	2.84
Actual Minimum	0	0	0	0
Actual Maximum	10	10	5	10
n	51	22	19	92
First Year Level Means	1.76	0.14	0.67	1.22
Standard Deviation	2.74	0.36	1.63	2.34
Actual Minimum	0	0	0	0
Actual Maximum	10	1	4	10
n	34	14	6	54
Second Year Level Means	4.53	3.75	1.38	3.29
Standard Deviation	2.98	3.58	1.89	3.07
Actual Minimum	0	0	0	0
Actual Maximum	10	10	5	10
n	17	8	13	38

Satisfaction with the Course

Table 8 shows the Satisfaction with the Course variable compared among the schools and between the first and second year level students. A one-way analysis of variance showed there was no significant difference among the schools for this variable ($F = 1.225, p < .05$). An independent t-test of Satisfaction with the Course showed no difference between the first and second year level students; the means were identical.

Table 8. Satisfaction with the Course by School and Student Level

	School A	School B	School C	Total
Total Means	3.61	3.41	3.32	3.50
Standard Deviation	0.75	0.73	0.82	0.76
Actual Minimum	0	1	1	0
Actual Maximum	4	4	4	4
n	51	22	19	92
First Year Level Means	3.50	3.50	3.50	3.50
Standard Deviation	0.83	0.52	0.55	0.72
Actual Minimum	0	3	3	0
Actual Maximum	4	4	4	4
n	34	14	6	54
Second Year Level Means	3.82	3.25	3.23	3.50
Standard Deviation	0.53	1.04	0.93	0.83
Actual Minimum	2	1	1	1
Actual Maximum	4	4	4	4
n	17	8	13	38

In addition, there were no significant differences between the levels at each of the schools.

Satisfaction with the Program

Table 9 shows the Satisfaction with the Program variable compared among the schools and between the first and second year level students. A one-way analysis of variance showed there was no significant difference among the schools

Table 9. Satisfaction with the Program by School and Student Level

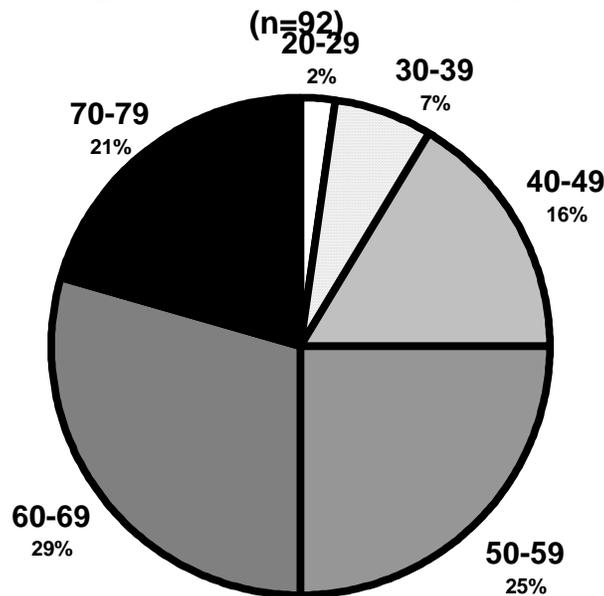
	School A	School B	School C	Total
Total Means	3.63	3.36	3.53	3.54
Standard Deviation	0.69	0.79	0.69	0.69
Actual Minimum	0	1	3	0
Actual Maximum	4	4	4	4
n	51	22	19	92
First Year Level Means	3.56	3.57	3.33	3.54
Standard Deviation	0.13	0.51	0.52	0.69
Actual Minimum	0	3	3	0
Actual Maximum	4	4	4	4
n	34	14	6	54
Second Year Level Means	3.76	3.00	3.62	3.55
Standard Deviation	0.44	1.07	0.51	0.69
Actual Minimum	3	1	3	1
Actual Maximum	4	4	4	4
n	17	8	13	38

for this variable ($F = 1.148, p < .05$). An independent t-test of Satisfaction with the program showed no significant difference between the first and second year level students ($t = -0.107, p < .05$). Likewise, there were no significant differences between the levels at each of the schools.

Strength of the Classroom Community

The Classroom Community Scale is made up of the two subscales, Connectedness ($M=25.93, SD=6.90$) and Learning ($M=32.02, SD=6.63$). The primary question of the study is, to what extent can online HIT programs create cohesive learning communities. In other words, what is the strength of the Classroom Community? Tables 4 and 5 showed that of the 92 participants, Classroom Community scores ranged from a low of 28 to a high of 79, with a mean score of 57.96 ($SD = 12.36$). Eighty-four of the responses (91.3%) were at or above the midpoint of 40. Sixty-nine of the responses (75%) were 50 and above.

Figure 1. Percentage of Classroom Community Scores by Range



Forty-six (50%) were 60 and above, and 19 of the responses (20.6%) were 70 and above. Figure 1 shows the percentage of responses within each range of ten scores. As Figure 1 shows, three fourths of the total responses were 50 and above; exactly half were 60 and above. A score of 60 equates to a respondent agreeing with each of the positively worded questions and likewise disagreeing with every negatively worded questions. Clearly, Classroom Community was strong in this study indicating cohesive learning communities.

In a larger study of 314 graduate students representing 26 online, semester-long classes, the Classroom Community Scale, administered during the final three weeks of a semester, yielded a mean score of 57.42 (SD=12.53) for Classroom Community (Rovai, 2002c). These results are strikingly similar to the results produced by the HIT programs in this thesis.

Mention should be made of the level of satisfaction students had with both their courses and their programs at all three schools. With very few exceptions, students consistently rated their level of satisfaction with their respective courses, as well as their programs, as satisfied and highly satisfied (M = 3.50 and M = 3.54 out of a possible 4, respectively).

Relationships Between Variables

Table 10 shows the correlations between the dependent variable, Classroom Community, and the independent variables: Experience with CMC, Familiarity of Students, Satisfaction with the Course and Satisfaction with the Program. The correlation matrix shows a low significant Pearson's product-moment correlation between Classroom Community and Experience with CMC ($r = .384, p < .01$).

Moderate correlations were recognized between Classroom Community and Satisfaction with the Course ($r = .568, p < .01$) and Classroom Community and Satisfaction with the Program ($r = .454, p < .01$). Of note, there was no correlation demonstrated between Classroom Community and the Familiarity of Students with one another ($r = .069$).

Table 10. Correlations Between Study Variables, All Schools, All Levels

	n	1	2	3	4	5
1 Classroom Community	92	--	.384**	.069	.568**	.454**
2 Experience with CMC	83		--	.360**	.199	.306**
3 Familiarity of Students	92			--	.073	.136
4 Satisfaction with Course	92				--	.714**
5 Satisfaction with Program	92					--

** $p < .01$

In addition, there were other significant correlations overall. Specifically, low correlations were shown between Experience with CMC and Familiarity of Students ($r = .360, p < .01$) and Experience with CMC and Satisfaction with the Program ($r = .306, p < .01$). However, Satisfaction with the Course and Satisfaction with the Program exhibited a strong correlation ($r = .714, p < .01$). Once again, no correlations were demonstrated between Familiarity of Students and Satisfaction with the Course or Satisfaction with the Program ($r = .073$ and $.136$, respectively).

Individually, School A showed a low significant correlation between Classroom Community and Satisfaction with the Program ($r = .359, p < .01$). A

moderate correlation was discovered between Classroom Community and Satisfaction with the Course ($r = .448, p < .01$) and a strong correlation emerged between Satisfaction with the Course and Satisfaction with the Program ($r = .792, p < .01$).

School B showed moderately significant correlations between Classroom Community and Satisfaction with the Course ($r = .692, p < .01$), Classroom Community and Satisfaction with the Program ($r = .589, p < .01$), and a strong correlation between Satisfaction with the Course and Satisfaction with the Program ($r = .799, p < .01$).

School C, likewise, showed moderately significant correlations between Classroom Community and Satisfaction with the Course ($r = .634, p < .01$), and Classroom Community and Satisfaction with the Program ($r = .509, p < .05$). However, a strong correlation was discovered between Experience with CMC and Satisfaction with the Program ($r = .719, p < .01$).

Summary

Ninety-two of a potential 305 students surveyed in three online Health Information Technology programs participated in the online survey for an overall response rate of 30.2%. A wave analysis of responses did not detect any response bias. Of the respondents, 54 (58.6%) were first year students, and 38 (41.3%) were second year students. Between these levels, there was a significant difference in the Familiarity of Students with one another, as to be expected. Second year students have already taken other courses with some of the same individuals.

Significant differences between the three programs regarding Classroom Community and Experience with CMC were evident. Overall, Classroom Community was deemed strong, both directly and in comparison to similar studies.

Overall, there were significant correlations between Classroom Community and Experience with CMC, Satisfaction with the Course and Satisfaction with the Program. Familiarity of Students was not significantly correlated to either Classroom Community or Satisfaction with the Course or Program, overall or at any of the schools.

CHAPTER V

CONCLUSIONS AND RECOMMENDATIONS

Introduction

As reported, the results indicate cohesive learning communities can and do exist in online Health Information Technology programs. In addition, a strong sense of classroom community is significantly correlated with the students' level of experience with computer-mediated conferencing, their satisfaction with the course in which they were enrolled, and their satisfaction with their particular HIT programs.

However, correlation does not infer causation. One cannot conclude that because strong classroom community exists, that students are satisfied with their courses and programs. Neither is the converse true, that because students are satisfied with their courses and programs, that there must be strong classroom community.

Implications

The outcome of this study should be encouraging to both educators and potential students who are contemplating distance learning in an online environment. Those individuals concerned with the impersonality of the medium, can rest assured that human interaction is not only possible but also probable. Close bonds develop in an online environment where meaningful interaction and collaboration are fostered.

Those educators who value cohesive learning communities will seek out and employ those pedagogical methods that result in this effect. Likewise, students who

wish to connect with fellow learners, tutors and instructors, will utilize computer-mediated conferencing to fulfill this need. Students should seek out programs that employ this technology as an integral component of course delivery.

Instructors in face-to-face environments, wishing to enhance student satisfaction, may also want to evaluate the Classroom Community in their courses, and find ways to increase student interaction and collaboration.

Literature Revisited

As multiple studies have shown, cohesive learning communities are possible in online educational environments. This study supports those findings.

The literature advances the notion that increased interaction and collaboration among students produces stronger community. This study did demonstrate a significant correlation between Experience with CMC and Classroom Community. Greater experience with computer-mediated conferencing (CMC) reflected more courses taken in the past and/or currently taking using CMC, and more frequent online interactions.

As one would expect, students in the second year classes were significantly more familiar with other students than their first year counterparts. However, contrary to literature on the subject, there was no correlation between the extent of their familiarity and the strength of their classroom community. In addition, there was no correlation between the students' familiarity with one another and their satisfaction with courses and programs. Apparently, students with little knowledge of one another initially were able to form sufficient bonds to meet their learning and social needs.

The study results confirm the literature reports that strong learning communities correspond to higher levels of satisfaction among students. This was supported by both student satisfaction with their courses and the satisfaction with their programs.

Limitations and Generalizability

Rovai's Classroom Community Scale (2002b) utilized as part of the survey instrument was designed for adult graduate students. In this application, it was used to assess adult community college students. However, neither the nature of the questions, nor the readability of the instrument was beyond the community college level.

The Health Information Management field predominantly attracts females, and females tend to score higher on the Classroom Community Scale than male students (Rovai, 2002b and 2002c). Therefore, one might expect students in HIT programs to demonstrate strong Classroom Community measures.

The HIT Student Questionnaire was delivered to students via e-mail as an Internet web link. Students were encouraged by their instructors and/or program directors to participate. The ultimate response rate of 30.2% is low. Although the convenience of online surveying is unsurpassed, not having a captive audience, as in a face-to-face classroom setting, may result in diminished participation. Also, since the survey was completely anonymous, there was no way to determine who had responded and who hadn't. Therefore, participation reminders by instructors and program directors could not be targeted specifically to non-respondents.

Only online programs where computer-mediated conferencing was integral to the course delivery were included in the study. Perhaps other types of distance education delivery and means of student interaction would result in different findings.

Due to the purposive sampling method, as opposed to random, the small number of participants, and the limited number of schools selected, the results of this study are not generalizable to other circumstances. These outcomes reflect this particular set of individuals only, and results cannot be inferred to a larger population.

Suggestions for Future Research

In this study, three online Health Information Technology programs were selected with a total of 92 student respondents. Perhaps a larger sample of programs with more participants would yield different and more representative results. A study eliciting educators' opinions and satisfaction with online delivery is also necessary. A comparison of Classroom Community in online versus face-to-face programs would reveal if the two environments were substantially different.

Isolating school and/or student characteristics as well as course instructional methods to see if there are correlations to Classroom Community might yield useful information for improvement of outcomes. Qualitative studies would prove particularly useful in this regard to help discover which methods were successful in building Classroom Community. Also, comparing persistence rates to Classroom Community measures might prove to be beneficial.

Summary

The Health Information Management field is facing critical shortages in trained professionals. Lack of program accessibility is a major impediment to current and future workforce training. Alternative educational delivery methods are key to the viability of the profession. Educators and students must embrace the prospects of online delivery and recognize its merits beyond convenience and flexibility.

As shown in this study, online learning in Health Information Technology, with the use of computer-mediated conferencing, can create cohesive learning communities that correspond to high levels of satisfaction in individual courses and programs. Whether it is entry-level instruction or retraining of the existing workforce, distance education holds many advantages over traditional face-to-face instruction. In order to meet the growing needs of an evolving healthcare environment, delivery of training will also need to evolve.

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APPENDIX A

INITIAL E-MAIL CONTACT

Dear Colleague:

My name is Candace Neu, RHIA, CCS, Program Coordinator of the HIT Program at St. Charles Community College in Missouri. I am currently preparing to do research for my thesis toward a Master in Distance Education at Athabasca University in Alberta, Canada, and would like to request your assistance. For my thesis topic, "The Prevalence of Cohesive Learning Communities in Online HIT Programs," I plan to gather survey data from program faculty and students of selected online HIT programs.

More specifically, I would like to administer a survey to a class of first year students, a class of second year students, and the instructors of each of those classes, about three fourths of the way through the fall term 2003. I will be trying to establish that online HIT programs, using computer-mediated conferencing (CMC), do develop strong learning communities, and to correlate the strength of the community to the participant's level of 1) experience with CMC, 2) familiarity with the other participants, and 3) satisfaction with the course and the program. I'm hoping to offer the surveys online for easy response, and completion should not take longer than fifteen minutes.

At this stage, I am trying to select the participants for the study. If you feel you and your students would be willing to consider participating, please complete the attached questionnaire (written in Word 2000) and e-mail it back to me by **August 1, 2003**.

Thank you for your consideration.

Candy Neu

Candace E. Neu, RHIA, CCS
Program Coordinator, Health Information Technology

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Participant Selection
Data

APPENDIX B

PARTICIPANT SELECTION DATA

The Prevalence of Cohesive Learning Communities in
Online Health Information Technology Programs

Participant Selection Data

Please supply data next to each item.

Program Demographics	
Item	Data
Your name	
Your title	
Program name	
College or Sponsoring Institution	
City & state	
How long has your program existed online?	

Please supply data next to each item.

Class Size	
Item	Data
Does your institution operate on semesters or quarters?	
Number of students enrolled for first year classes fall semester/first fall quarter 2003	

Number of students enrolled for second year classes fall semester/first fall quarter 2003	
Number of anticipated graduates spring/summer 2004	

Check the main method(s) of human interaction used in your program. Choose all that apply.

Course Interaction	
<input type="checkbox"/> Bulletin Board	<input type="checkbox"/> Fax
<input type="checkbox"/> Chat	<input type="checkbox"/> Other (Specify)
<input type="checkbox"/> Computer-Mediated-Conferencing (CMC)	
<input type="checkbox"/> E-mail	

If you selected computer-mediated-conferencing (CMC) above, please answer the following.

CMC Questions		
	Mandatory	Supplementary
<p>Is CMC used in all HIT classes? (If not, list classes in which CMC is used?)</p> <p>Check if CMC is mandatory or supplementary to the course.</p>		
<p>Mandatory = CMC is integral to the course structure (participation figures in to the class grade). Supplementary = CMC is used as a supplement to the course structure (participation is voluntary).</p>		

Thank you for your initial participation. I will be in touch within the next few weeks.

Thanks,

Candace Neu

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APPENDIX C REQUEST TO BEGIN STUDY

Dear (Program Director's Name):

Thank you for responding to my request for your participation in my research towards the Master of Distance Education at Athabasca University. My next step is to identify the courses, instructors and students and send out the surveys.

Here are my plans to proceed with the research. After you have identified the courses and their instructors, I will contact the instructors by e-mail (see attached Instructor Letter of Introduction) and ask that they forward a letter of introduction to each of their students (see attached Student Letter of Introduction and Student Questionnaire). Following receipt of their responses, analysis will begin. I hope to complete the research by April 2004.

Please note: the individual student responses will be kept strictly confidential and will not be shared with you, your instructors or the students. Only my thesis supervisor and I will see individual responses; results of the entire study will be published, however. In addition, your program will not be named or otherwise identified in the published research. If you are interested, I will send you your school's composite data. Otherwise, all information will be held confidential, except when legislation or a professional code of conduct requires that it be reported. This plan has been approved by the Athabasca University Research Ethics Board of the degree granting institution. If specific approval from your institutional research board is required, please let me know immediately and I will work to obtain such approval.

If you are still willing to proceed, please answer the following questions. You can just click reply to this e-mail and type in your responses.

I would like to survey two different classes. These should be courses that typically enroll only HIT program students. I would like a first semester and a third semester class, (for example, referring to the curriculum posted on your website, (Specific first year course) and (Specific second year course).

Below, please identify the specific courses that you prefer and their instructors with e-mail addresses.

Course #1:

Number of students currently enrolled:

Instructor's name:

Instructor's e-mail address:

Course #2:

Number of students currently enrolled:

Instructor's name:

Instructor's e-mail address:

Thank you again, for your participation. Please respond by (date).

Candy Neu

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Appendix D -
Attached Instructor
Letter of
Introduction

Appendix E -
Attached Student
Letter of
Introduction

Appendix F -
Attached Student
Questionnaire

APPENDIX D

INSTRUCTOR LETTER OF INTRODUCTION

Dear (Instructor's Name)

My name is Candace Neu, RHIA, CCS. I am a Health Information Management professional and HIT Program Coordinator who is enrolled in a Master of Distance Education Program at Athabasca University in Alberta, Canada, and am currently working on the thesis component of my degree.

You are being sent this e-mail as part of my research project in online HIT programs. You have been selected because of your involvement in this type of program. (Name), your Program Director, has provided your name as a possible participant.

I would very much appreciate your help by forwarding the attached letter with an embedded link to a questionnaire, via e-mail, to each of the students in (Course). By completing the questionnaire, students are assisting the advancement of research in Health Information Technology offered in an online setting. It should take less than fifteen minutes of their time. Their participation is entirely voluntary. Furthermore, their individual responses will be kept strictly confidential and will not be shared with you or any administrators of your program. Only my research supervisor and I will see individual responses; results of the entire study will be published, however. Otherwise, all information will be held confidential, except when legislation or a professional code of conduct requires that it be reported.

Thank you, in advance, for your cooperation with this study. Please reply to this e-mail and let me know the **number** of students in (Course), and forward the student letters of introduction via e-mail by (date).

Gratefully,

Candace Neu

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Appendix E -
Attached Student
Letter of
Introduction

APPENDIX E

STUDENT LETTER OF INTRODUCTION

Dear HIT Program Student:

My name is Candace Neu, RHIA, CCS. I am a Health Information Management professional and HIT Program Coordinator who is enrolled in a Master of Distance Education Program at Athabasca University in Alberta, Canada. I am currently working on the thesis component of my degree.

You are being sent this message as part of my research project in online HIT programs. You have been selected because of your enrollment in this type of program, specifically, as a student in (Course). (Name), your Instructor, has forwarded this letter to you as a possible participant.

I would very much appreciate your help by completing the questionnaire linked to this communication. It should take less than fifteen minutes of your time. Your participation is entirely voluntary. Your participation, or lack thereof, will in no way affect your course grade. Furthermore, your individual responses will be kept strictly confidential and stored in a password-protected computer file. They will not be shared with your instructors or with any administrators of your program. Only my thesis supervisor and I will see individual responses; results of the entire study will be published, however, and the composite scores of your class may be shared with your program director. Otherwise, all information will be held confidential, except when legislation or a professional code of conduct requires that it be reported.

By completing the questionnaire, you are assisting the advancement of research in Health Information Technology offered in an online setting. If you are willing to participate, click here [URL](#)

Thank you, in advance, for your participation in this study. Please complete the questionnaire by (date).

Candy Neu

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APPENDIX F
STUDENT QUESTIONNAIRE

HIT Student Questionnaire

1. Course Number _____

Please answer the next five questions using the following definition of computer mediated conferencing (CMC). Computer mediated conferencing (CMC) represents a written online discussion among fellow students and their teacher that allows the ability to post and respond to specific questions and comments at any time. Express your answers in Arabic numerals (0, 1, 2, 3, etc.).

2. How many courses have you completed that used CMC? _____

3. How many courses are you currently taking that use CMC? _____

4. Approximately how often each week do you read postings in CMC for this course? _____

5. Approximately how often each week do you post a question or comment to CMC for this course? _____

For questions 6-8, fellow students may be listed in more than one category. Express your answers in Arabic numerals (0, 1, 2, 3, etc.).

6. How many other students in this class did you know personally prior to beginning this course? _____

7. How many students in this class have you worked with previously prior to beginning this course? _____

8. How many fellow students' names did you recognize from previous courses prior to beginning this course? _____

9. How would you rate your level of satisfaction with this particular course?
(Highly satisfied) (Satisfied) (Neutral) (Dissatisfied) (Strongly Dissatisfied)

10. How would you rate your level of satisfaction with this HIT Program? (Highly satisfied) (Satisfied) (Neutral) (Dissatisfied) (Strongly Dissatisfied)

Classroom Community Scale (CCS)

Directions: Below, you will see a series of statements concerning a specific course you are presently taking. Read each statement carefully and select the statement that comes closest to indicate how you feel about the course. There are no correct or incorrect responses. If you neither agree nor disagree with a statement or are uncertain, select the neutral (N) area. Do not spend too much time on any one statement, but give the response that seems to describe how you feel. Please respond to all items.

(SA) = Strongly Agree, (A) = Agree, (N) = Neutral,

(D) = Disagree, and (SD) = Strongly Disagree

11. I feel that students in this course care about each other. (SA) (A) (N) (D) (SD)
12. I feel that I am encouraged to ask questions. (SA) (A) (N) (D) (SD)
13. I feel connected to others in this course. (SA) (A) (N) (D) (SD)
14. I feel that it is hard to get help when I have a question. (SA) (A) (N) (D) (SD)
15. I do not feel a spirit of community. (SA) (A) (N) (D) (SD)
16. I feel that I receive timely feedback. (SA) (A) (N) (D) (SD)
17. I feel that this course is like a family. (SA) (A) (N) (D) (SD)
18. I feel uneasy exposing gaps in my understanding. (SA) (A) (N) (D) (SD)
19. I feel isolated in this course. (SA) (A) (N) (D) (SD)
20. I feel reluctant to speak openly. (SA) (A) (N) (D) (SD)
21. I trust others in this course. (SA) (A) (N) (D) (SD)

22. I feel that this course results in only modest learning. (SA) (A) (N) (D) (SD)

23. I feel that I can rely on others in this course. (SA) (A) (N) (D) (SD)

24. I feel that other students do not help me learn. (SA) (A) (N) (D) (SD)

25. I feel that members of this course depend on me. (SA) (A) (N) (D) (SD)

26. I feel that I am given ample opportunities to learn. (SA) (A) (N) (D) (SD)

27. I feel uncertain about others in this course. (SA) (A) (N) (D) (SD)

28. I feel that my educational needs are not being met. (SA) (A) (N) (D) (SD)

29. I feel confident that others will support me. (SA) (A) (N) (D) (SD)

30. I feel that this course does not promote a desire to learn. (SA) (A) (N) (D) (SD)

Thank you for your participation.

[submit]