EXAMINING HARASIM'S ONLINE COLLABORATIVE LEARNING THEORY FOR

NURSING EDUCATION

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Henny Breen

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Dissertation Committee:

Lois Magnussen, Chairperson
Jan Shoultz
ReNel Davis
Estelle Codier
John Casken
Michael Menchaca

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DEDICATION

This work is dedicated to my husband, Murray Elliot Breen whose faithful daily practical and emotional support made this work possible.

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ABSTRACT

Online nursing education has been evolving at a rapid pace as it is recognized as offering the flexibility needed for practicing associate degree (ADN) and diploma prepared Registered Nurses to return to school to earn their BSN. At the same time, there is a paradigm shift in how nursing education is delivered. The focus has shifted from content to concepts and collaborative learning is emphasized (Billings & Halstead, 2009; Giddens et al., 2008). Collaborative learning is embedded in online education. There is a growing body of evidence that supports collaborative learning within many programs of study; however, few studies have been done in nursing. There is no accepted framework for judging what is best practice in assessing collaborative discourse (Oncu & Cakir, 2011).

This qualitative study using transcript analysis was undertaken to clarify the value of Online Collaborative Learning Theory as a way to assess the collaborative process within nursing education. The theory incorporated three phases: (1) idea generating; (2) idea generating; and (3) intellectual convergence. The transcripts of asynchronous discussions from a two-week module about disaster nursing using a virtual community were analyzed and formed the data for this study.

The findings of this study support the use of Online Collaborative Learning Theory as a framework for assessing online collaborative discourse. Individual or group outcomes were required for the students to move through all three phases of the theory. Group development or process indicators that are more in keeping with interpersonal skills and not part of the theory were only found in the small groups and it is recommended that they be evaluated separately from the collaborative process as described by the theory.

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CHAPTER 1. INTRODUCTION

Nursing is unique in that there are multiple educational pathways to preparing

nurses for entry-level practice as Registered Nurses. For the past forty years, nursing

students have been able to take the licensure exam after completing any of a number of

nursing educational programs, including a diploma in nursing, an associate's degree in

nursing, or a baccalaureate degree in nursing. More recently, the accelerated, second-

degree baccalaureate programs have become a popular route for those students who

have a degree in another field (Institute of Medicine, 2011).

Many nurses educated at the diploma and associate degree level are

contemplating or in the process of earning their baccalaureate degree through online

programs. All of these students engaged in learning programs must complete required

coursework within a curriculum specifically designed for them. This study addresses the

collaborative process, which is a critical principle of online course design, delivery, and

assessment (Palloff & Pratt, 2007, 2009).

This chapter provides the background for the study along with an introduction to

the collaborative process that is the key concept being studied. The meaning of

collaborative learning and the theoretical framework for the study are introduced and will

be more fully discussed in the literature review. Studying how students collaborate

online is important to nursing education for instruction and evaluation purposes. It also is

a beginning step to understanding how collaborative learning may be translated to

collaboration within nursing practice.

Background to the Study

The healthcare environment has changed dramatically over the past 100 years,

requiring different skills and competencies from nurses as well as impacting the supply

and demand for nursing services. These changes are related to many factors. For

example, according to the US Census Bureau, nationally the proportion of the population greater than 64 years is expected to increase from approximately 35 million in 2000 to an estimated 71 million in 2030. The number of persons over 79 years is expected to increase from 9.3 million in 2000 to 19.5 million in 2030. For racial minorities (i.e. black, American Indian/Alaska/Pacific Islander) the forecast is that there will be an increase from 11.3% to 16.5% and the Hispanic population over 64 years of age is expected to increase from 5.5% to 10.9% ("Public health and aging: Trends in aging --- United States and Worldwide," 2003).

Within the state of Hawaii, forecast data for the aging population over the next 15 years is even more dramatic as it will occur at a pace twice that of the rest of the country. The number of people over 59 years of age living in Hawaii will increase by 75% between 2000 and 2020. People aged 85 and older will increase by 121%. This means that by 2020, one out of every four people will be 60 years or older and one out of 35 people will be 85 years or older ("Department of Business Economic Development & Tourism. Vital Statistics and Health - 2005 State of Hawaiʻi Data Book," 2005). These changes will place increased demands on an already strained health care system.
As well as the increase in the aging population, there is a shift in the population from a white, Anglo-Saxon majority, to an increase in the representation of minorities. For example, 16.7% of population was Hispanic in 2011 and it is estimated that this group will be 30% of the nation's population by 2050 ("Hispanic Heritage Month: Sept.15-Oct.15," 2012). The complex factors associated with a multicultural workforce and patient population requires nurses to have preparation in cultural competency.

On another front, the impact of economics with the escalating cost of healthcare and the more complex technologies with the advances in scientific research have led to even more knowledge requirements (Institute of Medicine, 2011; Smith, 2009). More

recently, the 2010 Affordable Care Act is changing health care delivery in significant ways. Patient safety, quality care, patient-centered care, accessibility, and affordable care are priorities, which require a comprehensive rethinking of the nursing role (Institute of Medicine, 2011).

It is obvious that to meet the demands of today's healthcare environment, nurses need a broader knowledge base which goes beyond technological competence, to include abilities in leadership, health policy, system improvement, research and evidence-based practice, teamwork and collaboration (Institute of Medicine, 2011; Smith, 2009). This broader knowledge base requires nurses to be familiar with a range of diverse topics such as cost-benefit analysis, ethical decision making along with proficiency in creative decision-making, critical-thinking, and management in order to meet the needs of consumers and workers in health care today (Smith, 2009). In addition to this broad based knowledge, competency in specific content areas such as public health with a greater orientation to community-based primary care and an emphasis on health promotion and geriatrics are required (Institute of Medicine, 2011). The American Association of College of Nurses (2008) has responded to these identified needs in their baccalaureate essentials document that "serves to transform baccalaureate nursing education by providing the curricular elements and framework for building the baccalaureate nursing curriculum for the 21st century" (p.3).

There is also a growing body of evidence that a nursing workforce educated at the baccalaureate level results in better patient outcomes. Kendall-Gallagher, Aiken, Sloane, and Cimiotti (2011) in studying the impact of certification on patient outcomes, mortality and failure to rescue found that specialty certification was only associated with better patient outcomes when care was provided by nurses who had a baccalaureate degree. Nurses prepared at the baccalaureate level were also linked with lower mortality

and failure-to-rescue rates for hospitalized cancer patients undergoing surgery (Friese, Lake, Aiken, Silber, & Sochalski, 2008). Aiken, Clarke, Sloane, Lake, & Cheney (2008) also found for every 10% increase in proportion of baccalaureate prepared nurses there was a 4% decrease associated in the risk of death. A study done in Canada also found that hospitals with higher proportions of baccalaureate-prepared nurses had better outcomes. Tourangeau et al. (2007) studied 46,993 patients admitted to hospital with heart attacks, strokes, pneumonia and blood poisoning. They found that a 10% increase in the proportions of baccalaureate prepared nurses was associated with nine fewer deaths for every 1,000 discharged patients.

In 2008, 36.8% of nurses had a baccalaureate degree compared to 22.3% in 1980 (Health Resources and Services Administration [HRSA], 2010). This increase represents on average a two per cent increase per year. If this trend continues, about 60% of nurses will have their BSN by 2020.   However, there continues to be many more nurses graduating from associate degree programs than baccalaureate programs. In 2008, the majority of nurses entering the profession graduated from an associate degree in nursing program (60%), followed by a bachelor of science degree in nursing (36%). Three per cent of graduates came from diploma programs. This trend has been consistent since 2003 (National League for Nursing, 2010). Many nurses choose to start their nursing education in Associate Degree Programs and earn their baccalaureate degree through a Bachelor of Science in Nursing (RN to BSN) program.

In summary, the changes in the health care system require a Registered Nurse (RN) who can practice across multiple settings, within and beyond hospitals and who can function with more independence in clinical decision making, case management, provision of direct care, and supervision of others. The Institute of Medicine (IOM) recommends that the proportion of nurses with a baccalaureate degree in nursing (BSN)

reach 80 percent by 2020 as expectations of nurses increase and become increasingly complex in today's healthcare environment (Institute of Medicine, 2011).

Educational Response

Online education is recognized as offering the flexibility needed for practicing associate degree (ADN) and diploma prepared Registered Nurses to return to school to earn their BSN (Institute of Medicine, 2011). As a result, online learning in nursing education has been evolving at a rapid pace (Billings & Halstead, 2009).

At the same time, nurse leaders in education have been embarking on curriculum reform to better prepare nursing students for today's healthcare environment and meet their educational needs. This curriculum reform involves a paradigm shift from content to a concept driven curriculum. With this shift comes a change in teaching strategies in which active learning and critical thinking skills are fostered (Giddens et al., 2008). Faculty in a concept driven curriculum become facilitators of learning in which collaborative learning is emphasized, rather than deliverers of content in which students are passive learners (Billings & Halstead, 2009; Giddens et al., 2008). Collaborative learning advances active and reflective learning and encourages teamwork, which provides opportunities for students to become accountable for their own and others' work (Billings & Halstead, 2009). These are attributes required of practicing nurses, as nurses must be able to collaborate with other nurses and professionals.

Given that nursing is a practice discipline, it is important to initially define what collaborative skills in nursing practice are. According to the *American Nurses Association Scope and Standards of Practice*, "collaborative interprofessional team planning is based on recognition of each discipline's value and contributions, mutual trust, respect, open discussion, and shared decision making" (p. 4). It is defined as " a professional healthcare partnership grounded in reciprocal and respectful recognition

and acceptance of: each partner's unique expertise, power, and sphere of influence and responsibilities; the commonality of goals; the mutual safeguarding of the legitimate interest of each part; and the advantages of such a relationship" (American Nurses Association, 2010, p.64). Gardner (2005) makes the point that true collaboration is seldom practiced due its complexity and the level of skills required. Collaboration is conceptualized as both a dynamic process in which the group moves through different developmental stages and as an outcome in which there is a synthesis or merging of different perspectives in understanding complex problems and coming to a solution (Gardner, 2005).

There is a renewed emphasis on collaboration in all health care disciplines requiring educators to ensure collaboration is addressed in the curriculum. In the newly adopted document that defines the essentials of baccalaureate education for professional nursing practice, the American Association of Colleges of Nursing (2008) identified intra and interprofessional collaborative skills as critical to providing safe evidence based patient care. Collaborative skills are essential to nursing practice and their development begins during nursing education.

Collaborative Learning

The understanding of the effectiveness of collaborative learning evolved from constructivist learning theory and has become a valued approach to teaching (Harasim, 2012; Thompson & Ku, 2006; Vallance, Towndrow, & Wiz, 2009). Constructivism as a philosophy refers to the nature or epistemology of learning whereas constructivist-learning theory refers to how people learn. Constructivist learning theory suggests that learning is an active process in which learners make meaning of new information and construct new knowledge through experience and reflection upon that experience (Harasim, 2012). Benbunan-Fich & Arbaugh (2006) found that the absence of

knowledge construction often found in the more traditional behavioral approach to education in which didactic teaching methods such as lectures are used had a detrimental effect on student outcomes. Collaborative learning is an active process in which learners make meaning of new information and construct new knowledge with a group of knowledgeable peers rather than constructing new knowledge alone (Guilar & Loring, 2008; Jahng, Nielsen, & Chan, 2010).

Collaboration is frequently described as individuals learning and working together on a project to further their understanding beyond what they could have achieved on their own (Havard, Du, & Xu, 2008; Tseng, Ku, Wang & Sun, 2009; Vallance et al., 2009). Posey & Pintz (2006) found that collaborative assignments develop the ability to examine, assess, and synthesize multiple perspectives and Tsai (2010) made the point that students depend on and are accountable to each other while doing the work. Collaborative learning becomes online collaborative learning (OCL) when it takes place via the computer. For this proposal, OCL refers to asynchronous learning. Group work and discussion boards are often used in online nursing education and these teaching strategies can provide a structure that encourages collaborative learning.

To maximize the impact of the learning experience, it is important for faculty to be able to differentiate between cooperation and collaboration. A concept analysis was conducted in order to bring clarity to the concept of virtual collaboration. Collaboration and cooperation are often used interchangeably; however, there is some delineation beginning to be found in the literature (Breen, In Press). Some researchers (Tutty & Klein, 2008), placed collaboration and cooperation on either end of a continuum whereas others identified cooperative learning as a division of labor and collaboration as co-labor (Harasim, 2012). As a result of the concept analysis, virtual collaboration was defined as "an interdependent and democratic online group process grounded in constructivist

pedagogy in which students debate and reflect on shared knowledge, to construct new understanding of relevant information" (Breen, In Press).

Growth and Perception of Online Learning

In the Fall of 2012, there were 6.7 million students taking at least one online course, which represents thirty-two percent of all higher education students (Allen & Seaman, 2013). However, controversy continues about the effectiveness and quality of online education. Little has changed in the perception of faculty about online learning since 2002, when the Sloan Consortium first measured it. The Sloan Consortium (Sloan-C) is "an institutional and professional leadership organization dedicated to integrating online education into the mainstream of higher education" (http://sloanconsortium.org). Chief academic officers believe that one-third of their faculty accept the legitimacy of online education, which is lower than the rate reported in 2004. Their perception is that faculty believes that the learning outcomes for online education are inferior to those of face-to-face instruction. This lack of acceptance for institutions with fully online programs is not much higher at 38.4% (Allen & Seaman, 2013). In spite of the growing demand for online education by students, there has not been a corresponding acceptance by faculty about this modality of education. This is a serious problem that needs to be addressed by research. Nursing education, which is in the midst of reform, especially needs to study the effectiveness of online education given the growth in the use of this modality of teaching and learning.

Online learning is being used by many universities and continues to grow rapidly within nursing schools. There is a growing body of evidence that supports collaborative learning within many disciplines; however, few nursing studies were found. A literature review conducted by Sandars & Langlois (2006) of online collaborative learning for healthcare practicing professionals found that there tended to be a preference for

structured facilitated discussions in the online setting. Of the results that were positive, the positive reviews were related to timely response and interaction between members. Of the studies reviewed that did not have positive results, the findings were related to participants only wanting answers to questions and not engaging in discussion. Sandars and Langlois recommended that the healthcare context be recognized in advancing online collaborative learning. It would seem that collaboration is not easily achieved and needs to be guided and promoted in learning. Further study is needed within nursing education in order to implement best practices for promoting collaboration within the online learning environment.

Nature of the Study

This study examined the collaborative process used by RN-to-Bachelor (RN to BSN) students. Harasim's (2012) Online Collaborative Learning Theory was used as the framework in studying the collaborative process among students who were enrolled in an online program and were Registered Nurses who collaborated on the development of a nursing action plan. The study used one module in the final semester course for the RN to BSN students enrolled at a small northwest liberal arts college in the United States. The faculty of the RN to BSN program had completed their transition to a concept driven curriculum a semester prior to the start of the course under study.

The final semester consisted of one eight-credit Integrated Experiential Learning course. Within this course was a two-week module that provided a virtual clinical experience using *The Neighborhood*, a virtual community developed by Jean Giddens 2007). The students were required to collaborate as a class and in groups to develop a nursing action plan for members of a virtual community in which a disaster had taken place. The disaster case study was initially developed by a colleague, Melissa Jones, in consultation with Cheryle Levitt from the State University of New York. The case study

as originally developed required the development of individual nursing action plans by the students. The researcher modified the case study to include a group based final product. Bekele & Menchaca (2008) found in their constant comparative, qualitative analysis of twenty-nine (29) studies that "group and project-based learning approaches should be preferred" (p. 394).

There have been some studies done using *The Neighborhood.* These studies focused on student engagement, perceived benefits, learning styles, faculty work life, cultural awareness, and pattern of use. However, there are no studies looking at the collaborative process using a virtual community, although the intent is to encourage collaborative learning (J. Giddens, personal communication, Feb. 2, 2012).

Theoretical Framework

In choosing a theoretical framework for this study, it was important to understand the underlying pedagogy of online collaborative learning (OCL). The design of an online collaborative course is structured to provide opportunities for the students to construct or build knowledge as a group towards a common goal. This is in contrast to cooperative group learning in which many students engage. When students work cooperatively together they are not building knowledge. They are each working independently on a part of a project to contribute to the final product. When collaborating, they are working together so that the final product is better than any one person could do on their own (Harasim, 2012).

Harasim's (2012) Online Collaborative Learning Theory is the theoretical framework for this study. Online collaborative learning theory provides a framework for analyzing how groups converse online. Each of the three phases of the theory, idea generating, idea organizing and intellectual convergence has identifiable characteristics and indicators that the researcher can use in conducting a transcript analysis.

Purpose, Aims, and Research Questions

The general purpose of this study was to examine the collaborative process used by RN to BSN students in developing a nursing action plan following a disaster in a virtual community. Transcript analysis was chosen as the qualitative research methodology using Harasim's Online Collaborative Theory as the framework to guide the research process. Harasim derived three phase of collaborative learning from analysis of computer conference transcripts. She continued to work on her theory of online collaboration and to develop a research methodology that can be used by researchers (Belanger, 2006). This dissertation was designed to test the value of Online Collaborative Learning Theory as a credible analytical framework for research purposes. The specific aims of the study included:

1. Conducting a transcript analysis of asynchronous discussions between RN to BSN students working on a disaster case study using *The Neighborhood.*

2. Examining the usefulness of using Online Collaborative Leaning Theory as a framework for evaluating student's collaborative skills.

3. Examining the differences between large and small groups in collaborating online.

These aims resulted in the following research questions:

1. What is the empirical evidence of collaboration in an asynchronous online course in large and small groups using a case study of a disaster in a virtual community?

2. How does Online Collaborative Learning Theory provide a framework for evaluating collaboration between RN to BSN students?

Significance of the Study

Given the proliferation of online learning within nursing education, it is imperative that this modality of learning be closely examined to ensure that the outcomes for nursing education are met. Menchaca & Bekele (2008) in their study of success factors

of both learner and instructor recommended that "the quality and nature of online collaboration…..be further examined" (p. 249). Oncu and Cakir (2011) in their study of priorities and methodologies for online learning found that developing reliable and valid student assessment techniques for online learning environments was critical to measuring student achievement and engagement.

This study examined the value of Harasim's online collaborative learning theory as a way to assess the collaborative process. The field of online collaborative learning has focused on new designs for learning but few studies have been conducted to assess these new learning designs. There is no accepted framework for judging what is best practice in assessing collaborative discourse (Oncu & Cakir, 2011). Studies examining online collaborative learning designs are critical given the ongoing issues regarding the quality of online education. The results of this study led to recommendations for online instructors and evaluation. Future studies should be developed to examine the relationship of collaborative skills in the online environment to the skill of collaboration in nursing practice.

Definition of Terms

The following definitions provide context and meaning to the dissertation.

Virtual Collaboration. "An interdependent and democratic online group process grounded in constructivist pedagogy in which students debate and reflect on shared knowledge, to construct new understanding of relevant information" (Breen, In Press). Virtual collaboration is shortened to collaboration in this dissertation.

Inference. The process of making some decisions about what the data means or "the process of passing from true propositions, statements, or data to other propositions or statements whose truth is believed to be preserved in that process" (Krippendorff, 2013, p.384).

Inductive Inference. The process of making decisions begins from particular propositions or observations that are specific to general propositions that are likely, but not certain (Harasim, 2007).

Deductive Inference. The process of making decisions begins from a general proposition to a particular proposition and are logically conclusive (Krippendorff, 2013; Burns & Grove, 2011).

Abductive Inference. The process of making decisions begins with propositions in one domain related to propositions in another domain believed to be accurate on account of presumed empirical relationships between them (Krippendorff, 2013; Burns & Grove, 2011).

Content Analysis. "A research technique for making replicable and valid *Inferences* from *Texts*……..to the *Contexts* of their use (Krippendorff, 2013, p. 382). Content analysis compromises a range of qualitative methods of research such as discourse and transcript analysis. At this time in the evolution of content analysis of computer generated discussion board transcripts, there is no consistent distinction between the use of content, transcript, and discourse analysis. In this dissertation, these terms are used interchangeably.

Context. The place in which a body of *Text* has meaning (Krippendorff, 2013).

Texts. "Anything variable and textured that has meaning to somebody, including the analyst, and can be examined or read repeatedly" (Krippendorff, 2013, p. 388). In this study, texts refer to the asynchronous posted discussions.

Analytical construct. "An operationalization (formalization) of the content analyst's knowledge of how *Text* is used in the chosen *Context* (Krippendorff, 2013, p. 380).

Summary

Chapter one provided the background for the study by describing the forces driving the need for nurses to be prepared at the baccalaureate level. Four studies were discussed that demonstrated how patient outcomes were improved by having a greater percentage of nurses prepared at the baccalaureate level. The Institute of Medicine (IOM) recommends that the proportion of nurses with baccalaureate degrees (BSN) reach 80 percent by 2020 (Institute of Medicine, 2011). Many diploma and associate degree nurses recognize the need for further education and prefer the flexibility offered by online education.

Nurse leaders in education have responded to increasing complexity of health care by engaging in curriculum reform. Many schools of nursing are moving from the more content driven didactic delivery of education to a concept driven education in which collaborative relationships and learning are promoted (Institute of Medicine, 2011). Studying the collaborative process is the focus of this study. A qualitative study using transcript analysis of a module in the final course was the methodology. Harasim's (2012) online collaborative learning theory provided the conceptual framework for conducting the transcript analysis to address the research questions. Studying how students collaborate online is important to nursing education for the purpose of instructional design and evaluation. It is also a beginning step to understanding how collaborative learning may be translated to using collaboration within nursing practice.

CHAPTER 2. LITERATURE REVIEW

The purpose of a literature review is to provide a clear and balanced picture of current leading concepts, theories, and research relevant to the research topic (Bloomberg & Volpe, 2008). The literature review for this dissertation concentrates on the literature related to RN-to-Bachelor (RN to BSN) education, specifically online education and the concept of virtual collaboration and theories that are related to this study. Online RN to BSN education was chosen given the rapid rise of online learning in nursing education with the Institute of Medicine's recommendations regarding the need for more nurses to be educated a the baccalaureate level (Institute of Medicine, 2011; Billings & Halstead, 2009).

Virtual collaboration was chosen as the major concept for study for three major reasons. One, collaboration is emphasized in a concept driven curriculum, which is on the leading edge of curriculum reform for nursing education today. Second, "collaboration can be seen as the cornerstone of the educational experience" and "forms the foundation of a learning community online" (Palloff & Pratt, 2005, p. xi). Third, although collaboration is emphasized within online education, further study is needed on "the quality and nature of online collaboration" (Menchaca & Bekele, 2008, p.249). Clarity regarding online collaboration will enhance the ability of nursing faculty to evaluate learning outcomes in relation to collaboration, a research priority for online learning (Oncu & Cakir, 2011).

RN to BSN Education

Enrollment in RN to BSN programs has been increasing every year for the past nine years in response to the need for a more highly educated workforce. Many practice settings are now requiring the baccalaureate degree. From 2010 to 2011, enrollment increased by 15.8% (American Association of Colleges of Nursing, 2012). There are

646 RN to BSN programs available in the United States and 25 new programs currently being developed. More than 400 of these programs have some if not all courses offered online (American Association of Colleges of Nursing, 2012). There are hundreds of articulation agreements between Associate Degree, and diploma programs and four-year institutions across the country to help bridge the gap between the different levels of education.

Students who are registered nurses enrolled in a RN to BSN program come to school with many life commitments that can make time for study very difficult. Megginson (2008) in her qualitative phenomenological study found a common theme amongst returning students to be related to finding the right time and place in their life. Online programs are very popular because they provide the flexibility needed for working nurses to advance their education.

Registered nurses enroll in RN to BSN programs to enhance their knowledge and skills in order to function as key professionals within the health care delivery system. These students often come into the program with a great deal of expertise, which enhances their ability to understand the complexities of nursing practice (Kubsch, Hansen, & Huyser-Eatwell, 2008). RN to BSN programs build on diploma and associate degree programs with course work that facilitates professional development and a better understanding of the cultural, political, economic, and social issues that impact patients and health care delivery.

Thiele (2003) found that students taking an online research and informatics course in a RN to BSN program reported on the experience of being engaged in asynchronous learning. The study involved 64 students over two semesters. They reported that they became more independent as they became more reliant on themselves to figure out answers and took responsibility for their own learning, which

promoted looking at the course material in more depth and developing self-discipline.

They also reported becoming more open to another way of learning as they trusted their

own insights and judgment more in completing assignments. Active participation of the

instructor and other students enhanced their learning as they had the ability to compare

information from other sources as often different sources of information were found

(Thiele, 2003). RN to BSN programs foster a change in nurses' attitudes, perceptions,

and behaviors when teaching strategies emphasize relationships, shared decision-

making and collaboration in a concept-based, high-context learning environment

(Kubsch et al., 2008; Carlson-Sabelli, Giddens, Fogg, & Fiedler, 2011).

The Concept of Virtual Collaboration

A plethora of research was found regarding online education in a multitude of

different professional disciplines in a number of different countries using the concept of

collaboration. Terms such as collaborative learning, collaborative groups, and

collaborative tools were frequently used. However, the concept of collaboration was

rarely defined. Thus, a concept analysis using Rodgers' evolutionary concept analysis

process was conducted in order to clarify the concept of virtual collaboration prior to

using it in the proposed study (Breen, In Press). There was no consistent clear

differentiation between the concepts of collaboration, cooperation and teamwork found in

an analysis of the literature. A very recent example includes a publication in a nursing

journal that referred to collaboration as group work or teamwork (Adelman & Nogueras,

2013).

Collaboration in online education has been defined in very loose terms, such as

student discussions in online environments, to very narrow terms, such as requiring

students to work in synchronous online environments. Identification and analysis of the

attributes, antecedents and consequences of virtual collaboration using Rodger's

evolutionary concept analysis method facilitated the development of a theoretical definition that follows: Virtual collaboration is "an interdependent and democratic online group process grounded in constructivist pedagogy in which students debate and reflect on shared knowledge, to construct new understanding of relevant information" (Breen, In Press).

Attributes make it possible to identify situations that fall under the concept (Rodgers, 2000). The four attributes of sharing, conflict resolution, reflection, and co-construction of knowledge were consistently noted. Antecedents are those factors that must be present before the existence of a concept (Rodgers, 2000). Breen (In Press) identified four antecedents in the literature classified as constructivism, web based technology, group-based process with a shared purpose, and support. There may be some overlap between the antecedents and attributes. For example, group process is required in order for collaboration to occur but it is also an ongoing developing process as students are collaborating. The same holds true for support. Students require support to learn the technology prior to being able to collaborate but also require ongoing support throughout the collaborative process. In keeping with Rodgers concept analysis process, the consequences, defined as events that occur as a result of the concept were also identified. There were two main consequences identified in the literature. They were higher order thinking and learning to work with others (Breen, In Press).

Attributes. Several different phrases and words were used in discussing collaboration and many of these words reflected group and individual characteristic such as trust, respect, support, commitment and interdependence. Rarely was collaboration specifically defined. Instead a collaborative process was assumed to be part of online education with the use of terms such as collaborative learning and learning communities.

Palloff and Pratt (2005) refer to collaboration as the "heart and soul" of online education (p. 6). Most of the articles focused on the assessment and outcomes of collaborative learning.

   Sharing. Sharing on many different levels embodied the essence of the collaborative process within online education. Without sharing, collaboration would not be possible. Sharing in a learning community online was identified as early as 1998 at a webnet world conference (Hiltz, 1998). Sharing continues to be an enduring attribute of the collaborative process. It is described in many different ways such as elaboration of thoughts by Benbunan-Fich & Arbaugh (2006) and frequent and higher level communication with active participation by Caballe, Daradoumis, Xhafa, & Conesa (2010). Sharing is frequently described as needing to be supportive, respectful, inclusive and trusting in which social interaction and group cohesion is evident (Kiteley & Ormrod, 2009; Tseng et al., 2009). Further, sharing embodied a sense of belonging to a group or online community in which there was equality among the students resulting in an interdependence and democracy in the sharing process (Kiteley & Ormrod, 2009; Jahng et al., 2010; Thompson & Ku, 2010).

   Conflict resolution. Collaboration involves students working together and several authors referred to working through conflict as a requirement for the collaborative process to be successful. Misunderstanding is common in online communication due to the difficulty to process social and emotional cues. If students avoid working through conflict that arises from these misunderstandings, communication remains at a superficial level (Caballe et al., 2010; Jahng et al., 2010).

   Reflection. The nature of virtual collaboration promotes reflection as it provides the student with the unique opportunity to think about other student's postings while

creating their own. This results in deeper understanding of the material studied (Kim, Hong, Bonk, & Lim, 2011).

   Co-construction of knowledge. This attribute implies shared meaning or interpretation with multiple points of view being expressed as ideas are developed and synthesized (Harasim, 2012; Guilar & Loring, 2008). Co-construction of knowledge has been a defining attribute of collaboration in online education for many years and remains one to the present time. Yakimovicz and Murphy (1995) were "astonished at the rapidity with which the class coalesced as a single entity while individual students constructed knowledge through ongoing interaction and discussion" (p. 208). Harasim (2012) identified collaboration as key to building knowledge.

   Antecedents. The most commonly noted antecedent for collaboration in the online learning environment was a foundation in constructivism.

   ***Constructivism*.** Constructivist learning theory suggests that learning is an active process in which learners make meaning of new information and construct new knowledge within a social milieu rather than passively acquiring it (Guilar & Loring, 2008; Jahng et al., 2010). Collaborative learning has been influenced by constructivism and constructivist theory has been popularized under the term collaborative learning (Michinov & Michinov, 2008; Vallance et al., 2009). Computer supported collaborative learning is related to constructivism as online courses place emphasis on learners' construction of knowledge through interaction with each other (Zenios, 2011).

   ***Web based technology*.** A web-based platform that provides a space for students to interact with each other in groups is needed in order for collaboration to occur. Well-designed assignments using the technology are needed for students to effectively collaborate (Klein & Solem, 2008; Lee & Tsai, 2011b; Legg, Adelman, Mueller, & Levitt, 2009; Du, Zhang, Olinzock, & Adams, 2008; Fung, 2004).

Group process with a shared purpose. Collaboration involves working with people in groups that have a shared purpose. There needs to be a social presence in order to build trust and willingness to share rather than hoard knowledge (Jahng et al., 2010; Smith, 2011). Group members need to be committed and take active responsibility for their own work and the outcome of the group's work (Oliveira, Tinoca, & Pereira, 2011).

Support. Several authors mentioned the need for support in order for students to learn to collaborate. Technical, social, task, and group support when first attempting to communicate online facilitates students learning to collaborate with each other (Caballe et al., 2010; Tseng et al., 2009). Faculty needs to take an active role in supporting students in learning to collaborate online. This support can take many different forms such as initially encouraging peer-to-peer interaction and making positive observations about student participation. A more advanced level of support is demonstrated by encouraging students to make connections between ideas among learners (Boettcher & Conrad, 2010). Inherent in providing support is the presence and responsiveness of the faculty member within the online learning environment.

Consequences. Collaboration leads to the development of higher order thinking, which was described in five significant ways: (1) problem solving and critical thinking skills (Tseng et al., 2009; Vallance et al., 2009); (2) resolving difficulties and decision making (Karakaya & Şenyapılı, 2008); (3) deeper understanding and creation of their own knowledge and group solutions to complex problems (Michinov & Michinov, 2008; Jahng et al., 2010; Tutty & Klein, 2008); (4) the ability for students to make adjustments in their own thinking after listening to others (Du et al., 2008; Guilar & Loring, 2008); and (5) learning to self reflect before responding (Kim et al., 2011).

A virtual collaborative process also resulted in students learning to work with others in meaningful ways, drawing on each other's strengths and weaknesses (Ciesielka, 2008). Students were more engaged in the group process. In doing so, they learned about themselves, gained appreciation of others, and had a more positive view of teamwork. They began to appreciate that accomplishment and task quality were a result of group effort rather than individual capabilities (Havard et al., 2008; Karakaya & Şenyapılı, 2008; Jahng et al., 2010).

Although collaboration and cooperation are often used interchangeably, there is a beginning delineation noted between them. Tutty and Klein (2008) differentiated collaboration from cooperation by placing these concepts on either end of a continuum. Learning strategies that were loosely structured were collaborative and those that were highly structured were cooperative. Harasim (2012) identified cooperative learning as division of labor in which individual group members contributed to the whole and collaborative learning as co-labor to produce a result based on discourse. It is in the sharing of information in a supportive environment in which they can work through any differences so that they can construct new knowledge and understanding that facilitates higher order learning and positive working relationships.

Constructivism

A foundation in constructivism was the most commonly noted antecedent for collaboration in the online learning environment (Breen, In Press). The term constructivism is "not a single unified concept" and "is derived from the work of several fields, including psychology, philosophy, anthropology, and education" (Legg, et al., 2009, p. 65). Constructivism can be understood by considering the two "main philosophical roots that underlie constructivism: ontology and epistemology" (Oxford, 1997, p. 37).

Ontology refers to issues concerning "the nature of being" with constructivism being most closely related to the ontological stance that reality exists in ideas and no conclusive claims can be made about reality (Oxford, 2007). Radical constructivism refers to the belief that there is no objective reality accessible to human knowing and that people construct their own understanding of reality (Oxford, 1997; von Glasersfeld, 1984, 2005). This is in contrast to the ongoing positivist belief of most scientists who see themselves as discovering "truths" in the pursuit of expanding knowledge (von Glasersfeld, 1984).

Epistemology refers to "the origin, foundation, limits, and validity of knowledge" (Oxford, 1997, p. 38). Windschitl (1999) theorized that constructivism "is premised on the belief that learners actively create, interpret and reorganize knowledge in individual ways" (p. 751). The epistemological assumptions underpinning constructivism hold that reality or truth cannot be revealed through instruction independent of human perception. Knowledge about the world is only obtained through the interaction with experience (Windschitl, 2002).

There are two major categories of constructivism related to education. Cognitive constructivism suggests that meaningful learning is rooted in personal experience (Brown, Collins, & Duguid, 1989) whereas social or cultural constructivism views knowledge as shaped by social and cultural influences (Vygotsky, 1978, 1997). The major theorist associated with cognitive constructivism is Piaget, and Vygotksy is the major theorist associated with social constructivism. Piaget was very interested in the theory of knowledge and how it developed in children. He had a biological approach and believed that all humans pass through the same stages of cognitive development around the same age. Children and adults make sense of new knowledge by applying it to what they already know and make modifications to their thinking as needed (Harasim, 2012).

Vygotsky believed reality was socially, culturally and historically constructed and emphasized that meaning and understanding grew out of social encounters. Social constructivist theory of cognitive development emphasizes the social context rather than the stages of development as Piaget's theory did. Biological development does not occur in isolation as social and cultural factors influence learning. These social interactions were the focus of Vygotsky's work, as he believed it was in these interactions, that higher individual cognitive development occurred. It was in analyzing Piaget's and other theorist's positions that led Vygotksy to a new approach in viewing the relationship between learning and development. The concept of the Zone of Proximal Development was created (Vygotsky, 1978,1997).

The Zone of Proximal Development (ZPD) posits that learning takes place when learners solve problems beyond their actual developmental level but within their potential development under the guidance of a more knowledgeable person. The ZPD takes into account "not only the cycles and maturation processes that have already been completed but also those processes that are currently in a state of formation, that are just beginning to mature and develop" (Vygotsky, 1978,1997 p. 33). "The actual developmental level characterizes mental development retrospectively, while the zone of proximal development characterizes mental development prospectively (Vygotsky, 1978,1997, p. 33).

Constructivist epistemology offers an alternative to traditional pedagogy for RN to BSN students as it considers previous learning done by the students as a foundation upon which to modify, build, and expand new knowledge. A constructivist approach promotes the growth of the RN to BSN student in becoming reflective practitioners with the ability to evaluate situations and engage in self-learning (Peters, 2000). A

constructivist approach to learning is applicable to online learning as it is the foundation of online collaborative learning.

Online Collaborative Learning

Given that the purpose of this study was to examine collaborative processes used by RN to BSN students, a review of the literature related to online collaborative learning was conducted. Collaborative learning is a pedagogical approach that has its roots in constructivism. The learner in the online setting is seen as an active participant in the construction of knowledge by applying concepts to problems and putting ideas into written words, which are elaborated upon through reactions and responses of others in the class. This type of learning is particularly relevant in preparing students to advance their practice. Although few research studies have been done in nursing regarding online education, there is a beginning body of literature promoting online collaborative learning within the health care field.

Posey & Pintz (2006) described three different online teaching strategies that they identified as being helpful to develop nursing students' collaborative problem-solving skills. Case-based facilitation discussion was defined as instructor guided online discussions that centered on a problem or case study. The role of the instructor was important in facilitating the group process. Cognitive flexibility hypermedia was described as enabling individuals to explore cases, themes and perspectives for the purpose of more fully comprehending complex problems in order to develop advanced levels of problem-solving. The authors defined computer-supported collaborative learning (CSCL) as small groups working through problems supported by the online environment with the students controlling the problem-solving processes.

In other studies of collaborative learning, one in an online Master of Science course in Primary Health Care (in which the learners consisted mostly of physicians) and

another in a nurse practitioner course, collaborative learning was at the "heart" of each study unit. Assignments requiring collaborative learning processes were integrated throughout the course requirements and reflected those skills required in practice such as problem solving and analyzing arguments from multiple perspectives. The authors of both studies reported that facilitated online discussions supported the students in developing the ability to actively solve problems and make clinical decisions through the sharing of their experiences, perspectives, and different approaches to problem solving and learning (Greenhalgh & Russell, 2006; Rounds & Rappaport, 2008).

The problem-based learning method was used in the nurse practitioner course to facilitate the learners being able to develop a differential diagnosis and understand evidence-based practice. Case studies and asynchronous discussions helped the nurse practitioner students build on previous knowledge and experience (Rounds & Rappaport, 2008). Greenhalgh & Russell (2006) were more interested in knowledge translation as they felt the knowledge and skills associated with evidence-based medicine could be addressed in a more traditional manner. They proposed that knowledge translation into practice requires tacit and explicit knowledge, which goes beyond sharing facts and skill development. The discourse involved in online learning makes things explicit and relies on a background of tacit or practical knowing (Stahl, 2004). A constructivist and collaborative approach, which is supported by online learning, can meet the needs of learners for knowledge translation (Greenhalgh & Russell, 2006).

In both these online courses, the students were at an advanced level and had experience in healthcare, which could have contributed to the effectiveness of online collaborative learning. A factor increasing student motivation was that these students were also working in the profession and the online format gave them the flexibility

needed to participate in course work. Online courses lend themselves to highly

motivated students being able to take responsibility for their own learning.

Sandars and Langlois (2006) conducted a literature review of online collaborative

learning for practicing professionals for the purpose of informing future development and

implementation of online learning. The technology reviewed included discussion boards,

email discussion groups and listservs which were considered to provide evidence

regarding the degree of collaborative learning experienced by group members. They

reviewed 16 studies and found that discussion boards were used most frequently and

there tended to be a preference for structured facilitated discussions. Six of the studies

reported that participants had a positive learning experience with the discussion boards,

which led to a change in practice and feeling more connected in their profession. These

positive results were noted to be a result of timely response and interaction between

members.

However, Sandars and Langlois (2006) found most of the studies reported

problems with implementing online learning related to lack of user acceptance,

confidence, or competence in the use of the technology. Some participants preferred

receiving answers to specific information requests rather than engaging in discussion.

Enthusiasm was often initially high followed by waning participation. Given the results of

their findings, the authors recommended that the context and needs of the learners be

taken into consideration when developing online learning strategies.

Twelve qualitative research studies that were published from 2006 to 2011 were

reviewed. These studies were chosen because they analyzed online asynchronous

group interaction using a qualitative case study and/or content analysis methodology. All

these studies focused their research on the process and/or outcome of collaborative

learning in order to gain a deeper understanding of learning in the online format. One

study's sample consisted of working graduate level nurse midwifery students (Lee &

Tsai, 2011a); another study's sample consisted of library and information students and

six studies represented undergraduate to doctoral level students representing working

educational practitioners. Four studies at the graduate level did not disclose if the

students were working professionals or not. Eight studies were conducted in the United

States and four studies were conducted in other countries; namely Australia (Ng, 2008),

Finland (Mäkitalo-Siegl, 2008), Portugal (Oliveira et al., 2011) and Canada (Namsook,

Nielsen, & Chan, 2010).

The twelve studies have been categorized by patterns of interaction or

knowledge construction that fostered collaborative learning depending on the purpose of

the study and the findings. Nine studies fell into the interaction patterns category and

the remaining three studies related to knowledge construction.

Interaction Patterns. Frey, Sass, and Alman (2006) found that open-ended

questions led to higher-level contributions to the discussion. However, an ongoing

number of responses did not necessarily contribute to higher levels of thinking.

Thompson and Ku (2006) reported that ineffective communication, conflict within the

groups, and a negative attitude towards group work presented as major challenges to

collaboration. In a later study, the researchers found a strong relationship between the

degree of collaboration and the quality of the group project. The more collaborative the

members were, the better the quality of the group project reflected by their grade

(Thompson & Ku, 2010). This is in contrast to the Frey, Sass and Alman study. The

different findings may be related to the different coding schemes used.

Frey and her co researchers (2006) pulled elements from different tools to

develop their own "Discussion Board Analysis Tool" which had four categories. The

categories were; (1) level of cognitive skill using Bloom's taxonomy; (2) student

questions to determine if more varied complex responses were prompted; (3) reflection

such as supporting, dissenting, personal experience and opinions; and (4) affirmation or

social comment. Thompson and Ku in both of their studies used a coding scheme

developed by Hathorm and Ingram in 2002. This coding scheme analyzed; (1)

participation by counting the number of postings, (2) interdependence with indicators

such as sharing of ideas, (3) synthesis in which the group attains new insights by

working together, and (4) independence which reflects that the group functions on its

own without relying on the instructor (Thompson & Ku, 2006, 2010).

Zhu (2006) found levels of interaction that ranged from low to high with no direct

relationship between the levels of cognitive engagement and types of interaction.

Cognitive engagement was defined as seeking, interpreting, analyzing, and summarizing

information and operationalized as attention to related reading and effort to analyze and

synthesize the readings in the discussion postings. Types of interaction were

categorized according to Bloom's cognitive domains of learning. This is consistent with

the findings by Frey, Sass and Alman (2006).

Three types of collaboration were identified the Ng (2008) study, which used a

social cultural, constructivist, and dialogical theory. They were classified as: (1) active

collaboration in which all members participated in researching a topic and reading each

other's postings; (2) team-leader centered collaboration in which suggestions were

accepted with brief discussion; (3) lack-of-coherence collaboration in which leadership

was lacking (Ng, 2008). Lack of facilitation or leadership also led to low-level interaction

patterns in another study conducted by Saritas (2008). Saritas used a conceptual

framework developed by Gunawardena in the late 1990's known as Interaction Analysis

Model. The model had five phases ranging from sharing and comparing of information

to agreement statements and application of newly constructed meaning. Most

messages fell into the first level, which the researcher concluded was related to a lack of course structure and lack of facilitation.

Lack of facilitation as a deterrent to collaboration is consistent with Oliveira's (2011) study, which found that better outcomes were achieved with instructor guidance. In this study, a social cultural discourse model with three dimensions, cognitive processing, social processing and language function was used for analysis. Four main patterns of interaction were found, which included negotiation, research, conception, and production. In keeping with Thompson and Ku's findings, this study demonstrated that the more collaboration, the better the outcome (Oliveira, et al., 2011).

A study, which included interviews as well as observation of discussion in synchronous and asynchronous classes, investigated the experiences of students for the purpose of finding strategies to assist students in completing online group work (Koh, Barbour, & Hill, 2010). They found two important issues related to course design and group work process that support the findings of the other studies that were concerned with patterns of interaction. Providing multiple communication methods, the overall plan, preparing for technology and building virtual teams were important in course design. Assistance with group formation, building a sense of connection, instructor involvement in group process and evaluation of group process were important to group work. Further social interaction had an important role as well as being able to work through group problems (Koh, Barbour, & Hill, 2010).

Knowledge Construction. All three studies in this category looked at the process of knowledge construction or shared understanding, which is one of the attributes of collaboration as found in the concept analysis conducted by the researcher. Mäkitalo-Siegl (2008) analyzed the written discourse of a group of three students who were working on research questions together and constructed a theoretical framework.

The tools and resources used were also taken into account. The group built knowledge through a cyclical process and the "learners' shared knowledge became the group's tacit knowledge, reused to build new understanding" (Mäkitalo-Siegl, 2008, p. 92). The study results were specific to the tasks being performed by the students. The process included working out the joint research questions, making individual perspectives visible, focusing joint attention, using resources in building the group's theoretical framework, referring shared history, collective remembering base on book knowledge, comparison between the final product and activities of the group. The analysis also found that the students accepted the resources of publications as authoritative while having little regard for their own ideas and thinking. Mäkitalo-Siegl (2008) concluded that mutual understanding needed to include evidence of misunderstanding between learners and a focus on the processes where these misunderstanding are resolved in order to make tacit knowledge explicit. This conclusion is part of the phases of knowledge construction found in the other two studies reviewed.

Both Zenios (2011) and Lee and Tsai (2011a) proposed analytical frameworks for researching the process of collaborative knowledge construction. They both employed a social-cultural theory of learning. However, Zenios used the concepts of epistemic activity and epistemic fluency whereas Lee & Tsai integrated the concepts of transition community and discourse to build their frameworks. Epistemic activity was defined as the "moves participants take within a discussion organized as part of a learning community that helps advance inquiry in reflective, indexical, and contextual ways" (Zenios, 2011, p. 266). Epistemic fluency refers to the participants being fully active in the collaborative process with others who are more advanced. Lee and Tsai used the concept of discourse community to clarify the relationship among members of a learning community. The concept of transition community was used to clarify the

relationship among a particular discipline's practices that shape the learning community (Lee & Tsai, 2011a).

Zenios built her analytical framework on Ohlsson's taxonomy of epistemic activities, which include describing, explaining, predicting, arguing, critiquing or evaluating, explicating, and defining (as cited in Zenios, 2011). These categories were used for first-level coding purposes. As a result of her analysis of online discussions, she proposed adding reasoning, negotiating, comparing, exploring, clarifying meaning and offering new perspectives as analytical categories to research collaborative knowledge created in context. In contrast to Mäkitalo-Siegl's (2008) study, the students in Zenios' study held regard for their ideas and thoughts based on previous experiences. The literature was integrated into the context of the shared experiences. Both of these studies used a research course for their research. However, Mäkitalo-Siegl's sample consisted of pre-service teachers whereas Zenios' sample consisted of working students in a doctoral program.

Lee and Tsai (2011a) adopted three major dimensions in their analysis of online asynchronous learning among graduate level midwifery nursing students. The dimensions were various forms of social negotiation in the discourse, references to various learning resources and coherence of resources used. They found ten patterns of collaborative knowledge exploration representing a continuum from the least to most challenging cognitively. These ten patterns are grouped into four major cognitive processes, which include elaboration (supporting discourse), challenging, correcting, and debating. Challenging and correcting were found to be at a similar cognitive level but were more cognitively demanding than elaborating which was the most frequently used process. Challenging involves disagreement with certain beliefs or values held by the discipline, whereas correcting involved disagreement with one's peers. Debating

according to Lee and Tsai could be viewed as a combination of the challenging and correcting patterns and were the most complex.

Consistent with the findings of Zenios' study, the students in Lee and Tsai's study had respect for the ideas and opinions based on shard experiences. Lee and Tsai's proposed framework also highlights the role of conflicting theory-practice relationships or conflicting readings, which became the source for negotiation. Students not only cited resources but also shared what they have seen in practice to debate an issue or opinion.

In summary, the twelve qualitative studies that were reviewed were divided into the main categories of studying patterns of interaction or knowledge construction. The following statements reflect the common findings in interactive patterns studies. Open-ended questions or comments were more successful than knowledge or comprehension questions in initiating higher cognitive level responses from the graduate level students. The responses were more thoughtful and reflected explanation, analysis, synthesis and evaluation levels according to Bloom's Taxonomy (Frey et al., 2006). Deeper levels of information processing were associated with elaborating on concepts and debating or negotiating meaning, which is more likely to lead to understanding. The students needed the instructor's help with group formation and process (Oliveira, et al., 2011; Ng, 2008; Saritas, 2008). Further, social interaction is important to conflict resolution (Koh, et cal., 2010).

The knowledge construction studies identified how groups build knowledge and two of the studies proposed an analytical framework to be used for research purposes. How the literature was used and integrated and compared to personal ideas, opinion, and experience was also examined. The research studies whose participants were working students in professional practice were found to have more respect for the

shared ideas and experiences expressed in the discussion than the study whose participants were not working.

Theoretical Frameworks

Several theories were explored for this literature review for the purpose of adopting a framework that could guide the study and be relevant in terms of RN to BSN online education. Three fully developed theories, one collaboration model, and two fairly new analytical frameworks were explored as having the potential to provide a framework for the study.

Given that the purpose of the study was to examine the collaborative process, stages of group development and the collaborative process were explored. There are several theories of group development. Tuckman's forming, storming, norming, performing, adjourning model which was initially developed in 1965 remains a seminal piece of work. Forming is the first stage in the model. The members are focused on getting to know one another, acceptance, and finding common ground. This stage is critical for the success of the group. Conflict is avoided at this stage but it is inevitable even if it remains under the surface. The group members then move into the storming phase in which issues of power and control are grappled with. This is an uncomfortable stage but if the members are able to work through their interpersonal issues, the norms of the group can evolve and the group can move into performing. When the work of the group is finished, they enter the adjourning phase. During this phase, the group reflects on what they have accomplished (Arnold & Boggs, 2011).

Moving through the stages is very challenging for the group members and requires a level of connection and trust between members that is caring and respectful which is consistent with the requirements of group members during the collaborative process (American Nurses Association, 2010; Gardner, 2005). Especially wrought with

difficulty is moving through the storming phase, which is the most uncomfortable phase of group development. It requires the ability to manage one's emotions and work through conflict and be able to compromise (American Nurses Association, 2010; Gardner, 2005). Beyond this, there needs to be a willingness to work collaboratively, which requires not only desire but also skill. Some essential competencies for collaboration in practice include knowing oneself, learning to value differences and manage diversity, conflict resolution skills and understanding conflict (Gardner, 2005) which are all part of group development and required to deepen understanding. It is through the collaborative process within a group that the synergy of meeting one's own and others' needs may be accomplished.

Stages of collaborative development have been developed by Bailey and Koney (2000) and described by Gajda in a number of publications regarding a tool (Strategic Alliance Formative Assessment Rubric) she developed to evaluate collaboration between organizations. The stages are similar to Tuckman's group development model but do not include the depth of psychological markers as described by Tuckman. The stages are: assemble, order, perform, and transform. The first stage, assemble, like Tuckman's forming stage occurs when potential partners discuss the potential of coming together to form an alliance. The value of coming together is discussed. The order stage is described as interpersonally intense as each member seeks to establish his or her role in the group, which is much like storming. Working norms are developed as leadership, communication channels, and how decision will be made are established. Energy in the norming stage is spent on carrying out the work, which is the task of Tuckman's norming stage. In the transform stage, group members evaluate the work and determine if any modifications need to be made in any area such as leadership, communication structures, and disband if the goals have been reached or if performance

has been tenuous with little hope for improvement. Thus, Gajda (2004, 2009) depicts

the stages of collaboration development as assemble and form; storm and order; norm

and perform and; transform and adjourn.

There are other models described by Gajda (2004) that place collaboration on a

continuum such as Peterson's three-point model, which is similar to Hogue's five-point

model. Hogue's model places collaboration at the far end of the continuum and is

identified as the most highly developed level of integration. Bailey and Koney extended

these models by adding coadunation as the highest level, which implies complete giving

up of autonomy of a least one partner in an effort to strengthen a surviving organization.

Thus the continuum has at the lowest level of integration, cooperation, which is

described as members maintaining their independence while sharing information. When

members coordinate they move along the continuum where independence is maintained

but align activities that support mutual goals. It is during collaboration that individuals

give up some independence to meet a shared goal. The highest level of integration,

coadunation implies a unified structure and combined cultures (Gajda, 2004).

Murphy (2004) developed a model that conceptualizes collaboration on a

continuum from social presence to production of an artifact. This model was developed

in order to develop a preliminary instrument with six processes that move from

interaction to collaboration. The six processes are: (1) social presence; (2) articulating

individual perspectives; (3) accommodating or reflecting the perspectives of others; (4)

co-constructing shared perspectives and meanings; (5) building shared goals and

purposes; and (6) producing shared artifacts. Students need to start with the earlier

processes in order to move to the higher ones. However, participation in the lower

levels does not mean that the higher ones will be reached.

Both Zenios and Lee and Tsai in more recent studies (2011) have proposed analytical frameworks for studying collaborative learning. They focused on knowledge construction. This focus would be related to one of the attributes of collaboration, which is co-construction of knowledge (Breen, In Press). Lee and Tsai found ten patterns of collaborative knowledge exploration representing the cognitive processes of elaboration, challenging, correcting, and debating. Zenios' found in her study a list of common tasks that facilitate knowledge construction. They include reasoning, negotiating, comparing, exploring, clarifying meaning, and offering new perspectives

The group development models are helpful in understanding that collaboration develops in predicable stages. One dissertation was found that used Tuckman's group development model in studying the relationship between trust and satisfaction in online teamwork. Tseng (2008) found that the development of virtual teams supported Tuckman's model. To date, no other studies were found that used any of the models as a framework for studying the collaborative process in online education. Although there is potential for these frameworks to be adapted and used to study online collaboration, their development came out of face-to-face group process or collaboration. The analytical frameworks seemed to be too narrow to be used in this study as they focused only one aspect of the concept of collaboration. Murphy's model was closely examined as a potential framework to use for the proposed study. However, Harasim's Online Collaborative Learning Theory was chosen as the processes of Murphy's model can be folded into Harasim's model. Further, Harasim's Online Collaborative Learning Theory was used as the theoretical framework in another study. In this particular study, the purpose was to investigate if labor organizations could adopt online collaborative learning to foster solidarity, promote learning, and be linked to union activities (Bélanger, 2008).

Harasim's Online Collaborative Learning Theory was developed in 2002. Online Collaborative Learning Theory was informed by the work of Roschelle who identified the three processes of collaboration as democratic participation, intellectual progress and gradual convergence and Bruffee who identified intellectual convergence through collaborative discourse as key (as cited in Harasim, 2000). Harasim's theory builds on constructivist theory and is a good fit with nursing's curriculum as collaborative discourse is seen as central to knowledge building. Online collaborative theory has three processes or phases, which describe a path from divergent to convergent thinking. These three phases include idea generating, idea organizing and intellectual convergence.

Idea generating. This phase refers to divergent thinking within a group. It may involve brainstorming, talking, or writing it out. Ideas are shared and information is generated. It is a democratic process as different perspectives are shared from group member's personal observations and experiences.

Idea organizing. As group members share different ideas, they begin to seek clarification. In comparing and contrasting the different ideas, they are organized according to their similarities to one another. It involves selecting the strongest ideas and weeding out the weaker ones. This phase is the beginning of group members acknowledging and recognizing different perspectives. They begin to identify how the different perspectives relate or not to one another and the topic. In this phase, there is a beginning movement towards convergence.

Intellectual convergence. Convergent thinking requires the ability to narrow down the options based on the information they have and analysis of that information so that the best ones are applied. During this phase, there is shared understanding as intellectual synthesis occurs. Group members in the discussion either agree to disagree

or co produce a product, which could be anything from a solution to a problem, a design, an assignment, theory, publication, or work of art.

Online collaborative learning theory provides a framework for analyzing how students collaborate online as it provides indicators of success. It addresses the collaborative process, reflects concept based RN to BSN education, describes how learning takes place in online collaborative discussions and includes all the antecedents and attributes of collaboration as discussed in the concept analysis. Online collaborative learning theory was developed for students working together in a web-based platform. In online collaborative theory and pedagogy, the faculty member plays a key role in engaging the learner in the process of collaboration and "in the language and activities associated with building the discipline" (Harasim, 2012, p. 94). This reflects the antecedent of support that is needed to be successful in learning to collaborate online. This theory is particularly applicable to nursing as the final outcome of the collaborative process may be decisions or strategies to influence practice (Harasim, 2012). The attributes of sharing, conflict resolution, reflection, and co-construction of knowledge are inherent in the three phases of theory.

Summary

In summary, this literature review provided a brief description of RN to BSN education and the social forces promoting the increasing need for online RN to BSN education. The concept of collaboration was analyzed using Rodgers' evolutionary concept analysis process. Constructivism and collaborative learning were examined by reviewing several qualitative studies. Finally a number of theoretical frameworks were discussed that led to the decision to choose Online Collaborative Learning Theory for the study. The three phases, idea generating, idea organizing, and intellectual

convergence were found to be particularly applicable to online learning and nursing practice.

CHAPTER 3. METHODOLOGY

This chapter reviews the general aim and purpose of the study, which led to the research questions. The research methods and design are described.

Problem Statement & Purpose

Very little research has been done on the actual process of collaboration. There have been a number of studies that examined the outcomes of online collaborative learning such as learner completion rates, learner satisfaction, differences between online and face-to-face learning, cognitive, social, and teaching presence, interactivity, and more recently learning outcomes (Oncu & Cakir, 2011; De Wever, Schellens, Valcke, & Van Keer, 2006; Dennen, 2008).

Enhancing learner engagement and collaboration have been identified as one of the priorities for research in online learning environments. In order to meet this goal, one area of study is investigating the patterns that enhance effective collaboration among online learners (Oncu & Cakir, 2011). This study investigated collaboration by identifying empirical evidence of collaboration in an online class in which nurses were working on a virtual case study through an asynchronous discussion board.

Online learning is growing rapidly within nursing schools. Although there is strong support for collaborative learning, collaboration in the online learning environment is not easily achieved. Few studies in nursing have been done to examine this process. Studying the collaborative process will enhance the ability of nursing faculty who teach online to design courses that promote collaborative learning.

The purpose of this qualitative study was to examine the collaborative process used by RN to BSN students. This study used Harasim's (2012) Online Collaborative Learning Theory as a framework to examine the collaborative process among Registered Nurses who were collaborating on the development of a nursing action plan.

Research Design

Initially, an instrument to measure the collaborative process using a quantitative research methodology was sought. There have been a number of studies done using different instruments in an effort to conduct a quantitative content analysis of online asynchronous discussion groups. These instruments differed in their theoretical orientation, level of detail and type of analytical categories used. As a result, there is a weak empirical base for the validity of the instruments developed to date due to a lack of coherence between the theoretical base and the operational translation of the theory in the instruments (De Wever et al., 2006; Dennen, 2008). A review of fifteen content analysis schemes to analyze transcripts of online asynchronous discussion groups found that standards had not yet been established in spite of this technique being frequently used (De Wever et al., 2006). Given this finding, a qualitative methodology was explored.

Qualitative research was found to be a better fit for the proposed study. The concept studied is rooted in constructivism as it was found to be the most commonly noted antecedent for the concept of collaboration in the online learning environment. As discussed in chapter 2, constructivism is most closely aligned with the ontological stance that reality exists in ideas and no conclusive claims can be made about reality (Oxford, 2007). This is consistent with the ontological stance of qualitative research, which holds that "reality, is not the fixed, single, agreed upon, or measurable phenomenon that it is assumed to be in positivist, quantitative research" (Merriam, 2002, p. 3). Both social constructivism and qualitative research share the epistemological assumption that individuals in social interactions with their world construct meaning (Merriam, 2002; Vygotsky, 1978, 1997).

The purpose of this study was to understand and identify the collaborative process used by the students. A noted strength of qualitative research is the ability to get at these processes by providing increased illumination of specific phenomenon due to in-depth and personal detail. Qualitative research is more concerned with the process by which events take place and is less concerned with outcomes (Maxwell, 2009). Further, qualitative methods are selected when the study uses text analysis to focus on a single concept or phenomenon (Creswell, 2009). Another strength of qualitative research is its ability to provide complex textual descriptions and a typically more flexible analysis given the iterative style of eliciting and categorizing the data (Mack, Woodsong, MacQueen, Guest, & Namey, 2005).

And finally, qualitative research is usually chosen if a concept or phenomenon needs to be understood because little research has been conducted regarding this topic (Creswell, 2009). To date, no research studies looking at the collaborative process in online education were found in nursing. A Cumulative Index to Nursing and Allied Health Literature (CINAHL) database search yielded 15 articles when the search terms online education, collaboration, and nursing were used. These studies did not address the collaborative process in online education. Google Scholar and Academic Premier were also searched and no specific research studies examining the collaborative process were found.

Method. The qualitative research method used for this study was transcript analysis. Transcript analysis is a valuable methodology to study asynchronous online educational discourse (Garrison, Cleveland-Innes, Koole, & Kappelman, 2006). Transcript analysis is also known as content or discourse analysis and these terms are used interchangeably throughout this dissertation. Although content analysis is often referred to as potentially either quantitative or qualitative, this distinction is not

considered valid by most experts because all content analysis includes readings of texts. Reading of texts is a qualitative process even when certain characteristics of a text are converted to numbers (Krippendorff, 2013).

Content analysis is compromised of a range of qualitative methods of research including: (1) discourse analysis which tends to focus on how particular phenomena are represented; (2) rhetorical analysis which focuses on how messages are delivered and their effect; (3) ethnographic analysis which is used to understand the communication of meaning; and (4) conversation analysis which involves an analysis of the transcripts that are recorded. These qualitative methods result in inferences from different sources of verbal, pictorial, symbolic or communication data (Krippendorff, 2013). Given this description, this study used discourse analysis. However, few studies are making this type of distinction. At this time in the evolution of content analysis of computer generated discussion board transcripts, use of content, transcript, or discourse analysis to identify the methodology is used interchangeably. Content analysis has grown in nursing to such an extent that within the Cumulative Index to Nursing and Allied Health (CINAHL) database, a search using content analysis as the search term yielded 9,769 research articles for nursing compared to 4,629 using survey research and 3,697 using grounded theory.

Theoretical Framework. A theoretical framework is suggested as the best method of identifying empirical indicators that will form the basis of coding required to provide a standard for analysis (De Wever et al., 2006). Three sources were found that suggest methods of evaluating collaborative learning. In one article, the researchers focused on synchronous discussions and presented a set of indicators and software games that they identified as being useful in the evaluation of collaborative work including the collaborative processes used while engaging in the online activity. Five

system-based indicators were identified as demonstrating success of the collaborative learning process. They included: (1) use of strategies which allow the ability of the group members to generate, communicate, and consistently use a strategy to solve the problem; (2) intra-group cooperation; (3) reviewing success criteria which measure degree of involvement of each group member in reviewing boundaries, guidelines and roles during the group activity; (4) monitoring with the objective to measure the extent to which the group maintains the chosen strategies to solve the problem; and (5) the performance of the group which measured errors, time and number of messages sent (Collazos et al., 2007). There was a lack of clear methodology or theory identified to guide this method, as different theoretical orientations and instruments guided the development of these indicators. As a result these indicators were not considered suitable for this study.

Harasim's (2012) three phases of online collaboration were considered to be more suitable. Each phase has identified indicators and is described in more detail later in this dissertation. These indicators are based on a grounded theory-based content analysis study in which the online transcripts generated by students in online graduate courses were analyzed (Belanger, 2006).

Although these authors call for the use of theory as a basis for content analysis, the role of theory in qualitative research could be a potential area of concern. "Theory is defined as an integrated set of defined concepts and statements that present a view of a phenomenon" (Burns & Grove, 2011, p. 228). In qualitative studies with a theoretical lens, such as the proposed study, the theory occurs at the beginning of the study and may be modified or adjusted based on the findings (Creswell, 2009). When research is motivated by specific questions, such as the questions for this dissertation, the analyses

of the content is best done by reading the text for a purpose, which grounds content

analysis empirically (Krippendorff, 2013).

      Inferences. In addition to the inconsistency of labeling transcript analysis as

either a quantitative or qualitative methodology, there is also some discrepancy

regarding the inferential nature of content analysis. Elo & Kyngäs (2008) identify that

content analysis may be used in either an inductive or deductive way. The inductive

approach is recommended when there is not enough former knowledge about the

phenomenon or if the knowledge is fragmented and the categories are derived from the

data. The deductive approach is used when the structure of the analysis is

operationalized on the basis of previous knowledge and may involve testing categories,

concepts, or models. Garrison et al. (2006) define their transcript analysis research as

being an exploratory qualitative methodology that is not inductive theory building

research but deductive as they begin with a credible theoretical framework. However,

an important feature is that it does not rule out inductively derived insights that may be

gained through the transcript analysis.

      Krippendorff (2013) and Markus & Smith (2010) maintain that the inferential

nature of content analysis is abductive, not inductive or deductive. The abductive

inference approach does not establish certainty but is an approach to theoretical inquiry

that uses comparison as a method for devising theory. Its purpose is to develop ideas

about selected phenomena that can be further developed and tested. Abductive

inferences advance across logically distinct domains from particulars of one kind to

particulars of another kind. An abductive inference is presumed to be the most plausible

in a given context. In other words, the analytical construct explains the text messages in

a particular context.

Analytical Constructs. Analytical constructs operationalize what is known about the context. Abductive inferences require evidential support that may come from different sources such as assumptions, the known and theory. "The evidential support needs to be operationalized into a form applicable to the descriptions of the available texts and interpretable as answers to the research question" (Markus & Smith, 2010, p.237).

The Research Question

In content analysis, the research question(s) must be answered through inferences drawn from the text. The text is read for the purpose of answering the question(s), which grounds content analysis empirically. Given that the aim of the study was to examine the texts for evidence of collaboration using Online Collaborative Learning Theory, the following research questions were posed.

1. What is the empirical evidence of collaboration in an asynchronous online course in large and small groups using a case study of a disaster in a virtual community?

2. How does Online Collaborative Learning Theory provide a framework for evaluating collaboration between RN to BSN students?

Setting

The setting for the proposed study was a small northwest liberal arts college in the United States. The RN to BSN program is a fully online program offered through their School of Nursing and Adult Education Program.

Sample

Participants for the study are Registered Nurses enrolled in their final nursing course during the summer of 2012. Nineteen (19) students were enrolled in the course that was taught by the researcher. This sample was chosen for two main reasons related to the placement in the program. First, as these students were in the last class prior to completing all the nursing courses, the faculty member would have no potential

conflict or power over the students as the analysis of the transcripts were being conducted.

Second, these students had the benefit of developing their collaborative skills from their work in other courses. The RN to BSN program is carefully scaffolded to move the students towards meeting the program outcomes, which include communicating effectively and collaboratively in professional practice as well as providing effective nursing care that incorporates diverse values. Engaging in a collaborative process in which diverse values and opinions are encouraged and respectfully considered facilitated meeting these outcomes. In their first level courses, students are required to work in groups in which collaboration and cooperation were introduced as different concepts. The expectations regarding being able to move from cooperative to collaborative work became higher each semester. In their first level courses, they were just beginning to recognize the differences in their group work. During the second level courses, they were expected to engage in collaboration and the collaborative process reflects 30% of their final grade on a group activity.

In the final course, the collaborative process accounted for 50% of the grade for their group work and 25% of the grade for their class discussions, which highlights the importance not only of the outcome but also the process. Given that collaboration is not easily achieved as discussed in the introduction and literature review, it was decided that using transcripts of asynchronous discourse from students who have developed some skill in collaboration would provide an appropriate sample to address the research questions.

Informed Consent.

All nineteen students provided email consent to use their discussion postings during the last week of class until one week after it finished. See Appendix A for the

email that was sent to students and Appendix B for the notice that was posted in their

syllabus. This was done in consultation with both the University of Hawaii and the

participating university's Institutional Review Board (IRB). The email sent to the students

requested the student's email and phone number, at the suggestion of one of the

participating university's IRB members. However, the researcher did not contact the

students for additional information as was allowed for in the email consent. Formal

University of Hawaii and the participating university's IRB approval were secured.

Data Collection

The data used were student postings related to the virtual disaster case study.

See Appendices C and D for a description of the case study and instructions given to the

students. Given the data is from an online course, a written record is automatically

generated and ready for analysis. In addition Black Board Learn, which is the platform

used for the course, collects participation data such as the number of postings submitted

and read by the students.

Transcript Analysis

Transcript analysis refers to a system for making replicable and valid inferences

from texts to the contexts of their use. The inferences are guided by the analytical

constructs. Online collaborative learning theory describes three phases of discourse,

which the participants in the online class pass through. These phases as developed by

Harasim, provided the basis for the analytical constructs for the study. Figure 1 depicts

the movement from individuals sharing ideas to an intellectual synthesis, understanding,

or consensus. The outcome may be intellectual convergence or agreeing to disagree

(intellectual divergence). Both are valid outcomes.
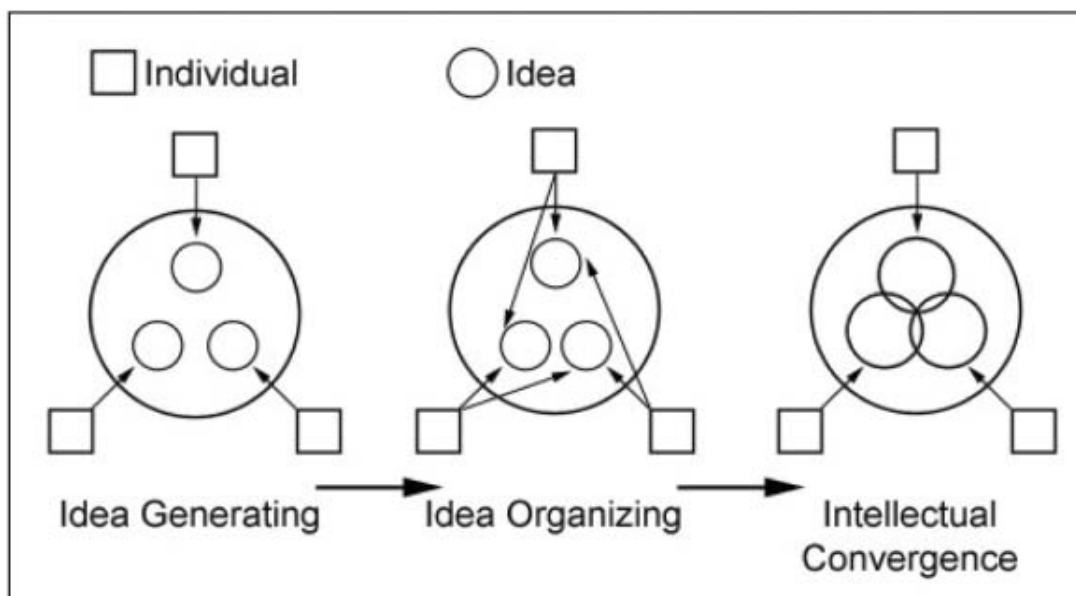
Figure 1. Online Collaborative Learning Phases (Harasim, 2007, p. 286)

Data Coding and Analysis

The unit of analysis can be at the sentence, paragraph, message, or thematic level (Garrison, 2006). The coder identifies text that corresponds to a particular category definition to selected thematic units. However, it is excessively labor intensive and difficult to maintain. This creates challenges in consistency of coding. Using the message as the unit of analysis is less time consuming. However, messages as units can present problems when they are too large or too small to adequately characterize (Anderson, Rourke, Garrison, & Archer, 2001; Garrison et al., 2006).

Anderson, et al. (2001) in their study using transcript analysis, used the message unit. However, they allowed for the possibility that a single message might display characteristics or indicators of more than one category. They identified that this procedure had the advantage of lessening the workload of the coders by pre-determining the number of coding decisions; more efficient implementation; and meaningful information by reporting the percentage of total posting that contained each

of the categories (Anderson et al., 2001). This method for determining the unit of analysis including coding a message as more than one category was used for this study as it is considered to be a valuable method given the chosen theoretical framework has defined indicators.

The units of analysis for this dissertation came from student posts in both the class discussions and small groups. The class or larger group discussions were placed in a *Blackboard* discussion forum that included a consultation thread and a nursing action plan thread. There were176 posts in the larger class discussion and an average of 70 posts for each of the four groups. Each student post was coded as one or more of the three phases of Online Collaborative Learning framework, with the understanding that inductively derived inferences may be added. The number of posts in these discussions allowed for a rich database, which was used for the analysis guided by the Online Collaborative Learning theory indicators. Appendix E presents how the data was analyzed using the theory.

The message text was coded to one or more of the three analytical constructs as defined by the theory. In addition the need for other constructs was left open in the event another category needed to be developed to highlight parts of the message that potentially did not fall within any of the analytical constructs. Using a theoretical framework situates the analysis. It does not exclude inductively derived insights gained through the transcript analysis (Rourke, Anderson, Garrison, & Archer, 2001).

A constant comparative analysis method was used in the analysis of the data. This involved taking one unit of analysis and comparing it to all other units of analysis to see what made it different or similar. Constant comparative data analysis as applied to the study is the process by which the researcher moves back and forth between the units of analysis in the transcript and the identified analytical constructs as defined by

the theoretical framework or inductively derived from the data. When examining new data, the researcher is questioning the meaning and how it fits, looking for similarities and differences.   Each new unit of analysis or meaning (posts by students) is analyzed. It is compared to all the other postings and coded with similar units of meaning. If there are no similar units of meaning, a new category will be formed (Maykut & Morehouse, 1994, 2005; Vander Putten & Nolen, 2008). To ensure accuracy of the intended meaning of the individual posts (unit of analysis), it was also considered in the context of the preceding posts. Appendix F provides an illustration of how the student posts were analyzed in context of the preceding posts.

This deductive and inductive process allows the researcher to achieve greater precision and consistency (Vander Putten & Nolen, 2008). Constant comparative analysis was initially developed for use in grounded theory methodology. It has evolved as a more widely accepted method of analysis in qualitative research (Maykut & Morehouse, 1994, 2005).

An excel database was created to support the coding process. The message texts (posts) were numbered and individually placed in a comment folder in a cell identified by a letter code representing a student name. In addition separate columns were created for the date and time of the post, the three phases of the theory, and comments. The comments field was used to capture the coder's notes about the posts and potential inductively derived inferences.

Reliability and Validity

The concepts of credibility, dependability and transferability describe various aspects of trustworthiness in qualitative research. However, concepts such as reliability and validity that come from quantitative tradition continue to prevail when issues of trustworthiness are described in qualitative content analysis, which can cause confusion

(Graneheim & Lundman, 2004). Long and Johnson suggest that validity and reliability have essentially the same meaning regardless of the research tradition (as cited in Graneheim and Lundman, 2004). Elo and Kyngäs (2008) suggest that although the elements of validity in content analysis are universal to any qualitative design, additional factors need to be taken into consideration when reporting the process of analysis and the results. The researcher must describe the analysis in as much detail as possible when reporting the results giving a clear description of the context, selection and characteristics of participants, data collection and process of analysis. Credibility of research findings also deals with how well the categories cover the date (Graneheim & Lundman, 2004). The terms reliability and validity are used in this dissertation.

Reliability. Reliability in content analysis refers to its stability, accuracy, and replicability. It is an attribute of the data, on which a researcher can rely in answering their research question (Krippendorff, 2013). Stability refers to the tendency for the coder or data-making instrument, such as coding instructions, to re-code the same data in the same way consistently. Krippendorff identified that stability is not sufficient in content analysis, as consistent biases, prejudices, or misunderstanding of coding instructions would not be noticeable. Accuracy refers to the extent that the coding instructions produces data that is accurate according to a given standard, which is the theoretical model in this study (Krippendorff, 2013). Replicability measures the extent to which the coding instructions can be relied upon to generate the same data from the same set of phenomena in other circumstances, using different and independently working coders.

In this study, the researcher checked the coding at two intervals with three weeks separating them. There should be about 80% code-recode reliability according to Miles and Huberman (1994). A colleague was asked to code 25% of the data from the

consultation discussion forum and 25% of the data from the group discussion forums. Initially, no more than 70% inter-coder reliability was expected using the number of agreements divided by total number of agreements plus disagreements to calculate reliability (Miles & Huberman, 1994). Areas of disagreement were discussed until consensus was reached with a goal to attain 85 – 90% agreement.

Validity. Validity in content analysis refers to the extent the inference about the context of the analyzed texts withstand the test of independently obtained validating evidence (Krippendorff, 2013). A sound theoretical framework is crucial in addressing validity issues. If coding is to have reliability and validity, the categories must be meaningful with relatively clear indicators and manageable message units. The challenge lies in having coding schemes that are not too simple so that insights are limited or too complex that they cannot be consistently interpreted (Garrison et al., 2006). Harasim's Online Collaborative Theory was chosen as the framework for coding, as it seemed to fit this requirement.

"Reliability and validity issues have their source in the theoretical frameworks, models and coding schemes designed to guide the analysis of transcripts" (Garrison et al., 2006, p. 2). The Online Collaborative Learning Theory guided the analysis of the transcripts. The theory was helpful in managing large amounts of data. Harasim has been focusing on online education since the late 1980's and her theoretical framework is supported by Roschelle (1996) and Bruffee's (1999) work on collaborative learning (as cited in Harasim, 2007). Harasim's three phases of collaboration came from a grounded theory study she conducted. Grounded theory research is an inductive technique in which theory is derived from the data (Burns & Grove, 2011

Ethical Considerations

Informed consent had been obtained by email as directed by the Institutional Review Board of the university where the students were enrolled. Using student numbers in the coding program and substituting names for any quoted postings protects anonymity. One area of concern may be related to the participants having been students of the researcher. This concern was somewhat alleviated by the fact that at the time of the analysis the researcher was no longer their faculty member as the students had completed the final nursing course for the RN to BSN program.

Summary

Chapter three reviewed the aims, purpose and research questions for this dissertation to provide context for the chosen methodology and design. The reasons for a qualitative methodology using transcript analysis to answer the research questions were discussed. This was followed by a discussion of transcript analysis and its application to this study along with a description of the setting and sample. The specifics of coding were described along with issues related to validity and reliability. A discussion of the ethical consideration concluded the chapter.

CHAPTER 4. FINDINGS AND ANALYSIS

Chapter four presents the results of this study, including a description of the sample, data collection and analysis with the findings highlighted.   A transcript analysis was conducted of a two- week module in the final online course of an RN to BSN program in order to study the collaborative process. This course was chosen because all the antecedents as discussed in the literature review were present. The students were familiar with constructivist pedagogy in a web-based platform. The RN to BSN program is carefully scaffolded from one level to the next and within each course to provide the preparation and support they need to work collaboratively with each other. The students work collaboratively in large and small groups from their first level course to this final course. The expectation in this final course is that they know how to collaborate in an asynchronous learning environment. Given these reasons, it was felt this would make an ideal setting to answer the following research questions:

1. What is the empirical evidence regarding collaboration in an asynchronous online course in large and small groups using a case study of a disaster in a virtual community?

2. How does Online Collaborative Learning Theory provide a framework for evaluating collaboration between RN to BSN students?

The Students

There were 19 students enrolled in the course and many of the students had worked together in previous classes. Although demographic information was not formally obtained, it was noted from the student introductions that over half of the students were married and had children. There was one male student and 18 female students. All students were working as Registered Nurses in a variety of settings including acute care, clinics and home care. Their work experience ranged from one to thirty years. The most

recent graduate from an associate degree program had worked for one year prior to this course offering.

The Online Module

The disaster case study took place in a virtual community during the fifth and sixth weeks of a nine-week course. The virtual community is based on *The Neighborhood* developed by Jean Giddens (2010). This web-based community involves eleven households and several community agencies such as schools, health clinics, and a hospital. There are a total of 40 characters of different cultural groups, ages, health status, and socioeconomic spectrums whose stories unfold over several seasons and episodes.

The students were introduced to the virtual community in the first four weeks of the course. They had engaged in a discussion regarding six members of the community from three different households that were featured in the disaster case study. The focus of this preparatory discussion was to explore the risks and strengths each possessed related to their health and wellbeing. The following is a brief description of the virtual community members that were the focus of the assignment.

- Jimmy and Cecilia Bley who are a married Native American couple in their 70's. They have eight grown, supportive children and a number of grandchildren. Jimmy has chronic obstructive pulmonary disease (COPD), which he does not acknowledge is progressing, and Cecilia has osteoarthritis which is beginning to affect her activity level.

- Yvonne and Randall Johnson are an African American family. Yvonne is a single mother with a degree in marketing. She was working towards a promotion when she lost her job due to undiagnosed health issues that impacted her attendance and performance. She was eventually diagnosed with systemic lupus erythematosus

(SLE) and lupus nephritis. Randall is Yvonne's 15-year old son who has difficulty

understanding the severity of his mother's condition and has periods of acting out.

- Mark and Tyler Martin are members of a large multi generational family. Mark is a
27-year old single father to two-year old Tyler. Mark has been living with his parents
to help him get out debt due to indiscriminant spending. After moving in with his
parents, he was involved in a motor vehicle accident that left him a paraplegic. He
spent time in a rehabilitation setting and did not cope well. Mark does not get along
with his sister Tracie who has been quite involved in Tyler's care. This multi
generational household is dealing with a number of mental health issues including
addiction, schizophrenia, and homelessness.

On day one of week five in the course, an announcement was posted in the

course, which stated that an earthquake had struck the community. During the first

week of the learning module, the students were assigned to consult with each other

regarding the role of a community/public health nurse in the virtual community

immediately following the earthquake. In addition, they were to each develop a nursing

action plan for the two members of the virtual community to whom they were assigned.

During the second week of the learning module, they were assigned to small groups. In

their groups they were to collaborate on the work they did during the first week and to

develop one nursing action plan as a group.

The Transcripts

The transcripts that were studied represented five different forums related to the

disaster case study. One of the forums involved all nineteen students and was

comprised of two discussion threads. The instructor set up the forum with two discussion

threads with the subject lines consultation area for one thread and nursing action plan

for the other thread. The instructor started the consultation area discussion with the

instruction to consult with at least one other nurse who was caring for a different family member than the first student. Some ideas for consultation were offered such as care based on their knowledge of the families in the virtual community and sharing of resources. In the nursing action plan thread, the students were instructed to post their individual care plans and encouraged to provide feedback to each other. Explicit instructions can found in Appendix D.

Although each student was assigned to develop a nursing action plan for two members of an assigned family, they were to discuss all three families in this forum. The students had one week to engage in these two discussions. The purpose of the consultation thread was for students to share resources and ideas with their peers, whereas the nursing action plan discussion thread was a place for each student to post their nursing action plan for their assigned family. This forum did not require a group outcome. They were given the option of providing feedback to each other on their individual action plans.

The other four forums involved groups of four to five students each, in which a group outcome was required. Each group was assigned to two family members in the virtual community; the same family they were assigned for their individual care plan. Given that the focus of the disaster case study involved three families, two of the four groups were assigned to same family. The purpose of the smaller group forums was to provide an opportunity for the students to discuss their different nursing action plans and to bring together their different ideas to develop one nursing action plan for their assigned family.

Online Collaborative Learning Theory (OCL)

The OCL theory was used to analyze the posts. This involved coding the posts in order to discover indicators of the three phases of the theory, leaving open the possibility

of finding other inductively derived indicators that might not fall within one of the three phases. Appendix E outlines the indicators for each phase of the theory. In summary, Harasim (2012) identified phase 1 as *idea generating*, which refers to divergent thinking within a group. Ideas are shared and information is generated. It is a democratic process as different perspectives are shared from group member's personal observations and experiences. As the group members share different ideas, they begin to seek clarification, which moves them into phase two, identified as *idea organizing.* Idea organizing involves comparing and contrasting the different ideas, and organizing them according to their similarities to one another. It involves selecting the strongest ideas and weeding out the weaker ones. This phase is the beginning of group members acknowledging and recognizing different perspectives. They begin to identify how the different perspectives may or may not relate to each other and the topic. In this phase, there is a beginning movement towards the third phase known as *intellectual convergence*. Convergent thinking requires the ability to narrow down the options based on the information they have and analysis of that information so that the best ones are applied. During this phase, there is shared understanding as intellectual synthesis occurs. Group members in the discussion either agree to disagree or co produce a product.

Data Management

The excel database proved to be a user-friendly method of organizing the data and enhanced the ability to review the data using a constant comparative method. As discussed in Chapter Three, the message texts (posts) were placed in a comment folder in each cell identified by a letter code representing a student name. The following table illustrates how the data was organized in excel.

Table 1

Example of Data Management for Analysis

	Posts	Date	Idea Generating	Idea Organizing	Intellectual Convergence	Comments
1	A	7/24/12 12:20 PM	1			
2	F	7/24/12 4:40 PM	1			
3	B	7/25/12 9:23 AM	1	1		
4	D	7/25/12 10:29 AM		1		
5	B	7/25/12 1:16 PM	1	1		
6	C	7/25/12 2:21 PM	1	1		
7	E	7/25/12 2:32 PM		1		

The first post is an initial response followed by posts two to nine that are the

replies to post number one. This is in keeping with the data analysis plan as outlined in

Chapter Three and illustrated in Appendix F. The researcher could easily move the

cursor over the cell with the letter in it, to read the text that was placed in a comment

going back and forth between the different comments to compare and contrast. In

addition, the columns could be easily sorted to gain the needed quantitative indicators.

Coding

The researcher coded the data constantly contrasting the posts against each

other and in context of the initial post. The posts were coded a second time after a

three-week interval. There was 88% agreement between the initial coding and the

recoding three weeks later. This was over the 80% code-recode reliability that should be

reached according to Miles and Huberman (1994). A colleague coded 25% of the data

after the theory was explained to her. The data provided were transcripts that included

entire threads so that the same constant comparative method in context of the initial post

could be maintained. Miles and Huberman (1994) identify that initially no more than 70% inter-coder reliability is expected with a goal to attain 85 – 90% agreement through discussing areas of disagreement. There was initially 78% inter-coder reliability. Areas of disagreement were discussed and consensus was reached on every post.

The process used to discuss the posts that were initially in disagreement included reading the post together and contrasting it to other posts and in context of the initial post in a thread. Many of the posts in disagreement involved phase one and phase two indicators. It required looking back to identify if new information was generated making it phase one. When the information was linked to a previous post, it was identified as phase two. It was not uncommon for these posts to be both.

Following this process the posts that were in disagreement when rechecked after a three-week interval were reviewed. Several of these posts were also the same ones that were in disagreement with those checked by the colleague coder. Given they had already been discussed and consensus reached, they were coded as decided during the meeting. The remaining posts were reviewed and coded using the same process of comparing and contrasting to other posts until a decision was made. Both processes of coding and recoding and using another coder were invaluable in building confidence in the data analysis. After all the changes were made based on recoding, 15% of the coded posts were changed.

The following is the analysis of all five forums. Minimal spelling and grammatical changes were made in quoted student transcripts for the purpose of reading ease. These changes did not change the meaning of the text.

Class Forum: Consultation & Nursing Action Plan

The instructor set up the consultation and nursing action plan forum with two discussion threads with the subject lines consultation area for one thread and nursing

action plan for the other thread. Table 2 presents the report from *Blackboard*, which documents the number of posts in each thread.

Table 2

Number of Posts in the Class Forum

Date	Thread	Author	Status	Unread Posts	Total Posts
7/25/12 8:57 AM	Nursing Action Plan	Henny Breen	Published	0	66
6/12/12 2:45 PM	Consultation Area	Henny Breen	Published	0	110

The instructor started the consultation area discussion with the instruction to consult with at least one other nurse who was caring for a different family member. Some ideas for consultation were offered such as care based on their knowledge of the families in the virtual community and sharing of resources. In the nursing action plan thread, the students were instructed to post their individual care plans and encouraged to provide feedback to each other. Explicit instructions can be found in Appendix D.

Consultation thread. The initial response for the consultation thread started on day two of the week and there were four posts that occurred after the week ended. There were at total of 110 posts in this thread. Two student posts were eliminated as one was addressed to the instructor seeking clarification and the other was a final post four days after the discussion closed commenting on the great team effort. The six posts by the instructor were also eliminated, as the focus of the study was on the process of collaboration by the students. Further, the instructor had a very limited role due to how the discussion evolved between the students. There was little need for instructor input. This left 102 posts to be coded. This level of activity reflected the phase one indicator that the participants were engaged and contributed.

Idea generating and idea organizing were often seen in the same message. The students provided new ideas and were engaged and contributing (idea generating) and frequently made reference to the previous message building on what the student posted (idea organizing). They frequently made reference to one or more students in their posts or addressed the whole class as "team". Harasim (2012) noted that it is the nature and quality of the posts that are the key indicators and these indicators can be customized according to the assignment. Given the nature of this thread, indicators of idea generating included presenting new evidence based on personal experience, the virtual community information and information from the literature students found or was part of the assigned reading. Citations from the literature and examples to illustrate their points reflected personal understanding. Idea organizing included indicators in which the students shared ideas by adding information to build on the role-play, linking similar ideas, and statements of agreement. Movement to intellectual convergence was noted when students provided an update bringing together the information that had been shared and plans for action that would be needed to provide care. No inductive inferences evolved from the consultation discussion. Figure 2 shows the percentage of messages in each of the three phases. Table 3 presents the same information in numeric forum.
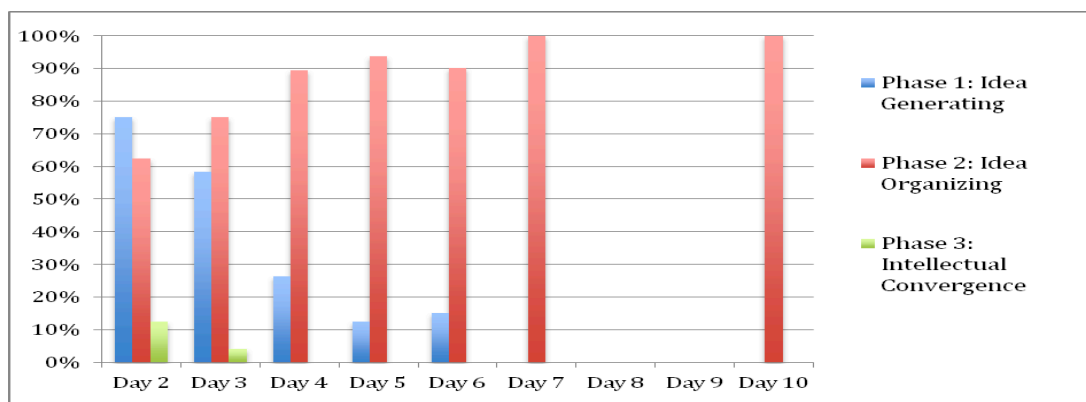

Figure 2. Consultation Thread: Percentage of Posts in OCL Phases

Table 3.

Percentage Distribution of OCL Phases in the Consultation Discussion

Day	Posts	Posts with Phase 1 Indicators	Posts with Phase 2 Indicators	Posts with Phase 3 Indicators
Day 2	8 posts	75%	63%	13%
Day 3	24 posts	58%	75%	4%
Day 4	19 posts	26%	89%	0%
Day 5	16 posts	13%	94%	0%
Day 6	20 posts	15%	90%	0%
Day 7	12 posts	0%	100%	0%
Day 10	3 posts	0%	100%	0%

Seventeen of the nineteen students were fully engaged in the discussion having met the requirements. However there were varying degrees of involvement. Two students did not participate. The remaining students posted a total of 102 messages ranging from one post to 22 posts each. The second highest number of posts by one student was 19 followed by 10 posts by another student. Two students posted once and the remaining students posted two to three times each. The consultation thread took on a life of its own as the first student started the discussion as a role-play with the following post. It is quoted in entirely given the influence it had on the discussion.

Greetings Team Members,

Today, we have witnessed a devastating earthquake in our neighborhood. Our families and community are in turmoil and anxious. It is our duty to help alleviate some of that stress and help those in need to find the help they need both physically and emotionally. This will be a big job and we will need to work as a team to make this as smooth as possible.

The family I am assigned to is the Johnson family, Yvonne and Randall. Yvonne and my immediate concern is the location of Randall. He was last thought to be at the high school, which is now closed down. We have not heard from him as of yet. I plan to contact the local police department and a friend of mine that is involved in community disaster preparedness to see if there is communications being relayed. My friend is a ham radio operator and his equipment is operational at this time. In the meantime, it will be important to get Yvonne to a safe place where she can reunite with family (Mother and Sister) and also get her medication that is helping to keep her RA in remission. I plan to find a safe route and mode of travel to get Yvonne to safety and offer her some comfort as we wait for word on Randall.

Any and all information you can share would be greatly appreciated. It will be to our benefit to keep in contact via cell phones, ham radio, landlines and/or satellite phones. Also, please be aware to keep a record of each community member that we assist with information about their immediate needs and also a running MAR so as to be sure medications are given and taken properly. Looking forward to working with everyone and to the plans we will create using critical thinking and planning skills.

[Student Name]

No one questioned the format of a role-play and engaged immediately in the discussion. The students began to identify their clients and added information based on the information provided in *The Neighborhood*, their personal experience with disasters and disaster planning, their research from assigned readings and their own literature search. They also elaborated on the case making up interesting scenarios as they progressed in the role-play. The students placed themselves as community health

nurses in the virtual community experiencing the disaster. Throughout this forum they provided their assessment of their client needs, what the priority issues were for their clients and the community, the available resources, method of communication, means of transportation and their location and what they were doing to help. One student even identified herself as a team leader of a triage center.

Phase 1. Thirty posts (29%), were coded as phase one in the consultation thread based on the following indicators: (1) the participants were engaged and contributed; (2) divergent thinking with new ideas generated; (3) democratic participation; (4) personal understanding (5) providing examples to illustrate their points; and (6) use of "I" or "my". Twenty-five of these thirty posts occurred in the first three days of the discussion.

The students on a number of occasions would express a need and another student would step in with some ideas. For example, one student offered that there was a pharmacy near by that may have the needed medications. Help was offered and appreciated frequently with instructions on what they might do to help the members of the virtual community. Seventeen (57%) of the posts were coded as both phase 1 and phase 2 because new ideas that were generated (phase 1) were linked to ideas that were previously presented (phase 2). This left 13 posts (13% of the total posts) being coded as only having indicators from phase 1.

An example of divergent thinking that was not linked to another member's contribution is "What are our lab capabilities? Are we able to run any labs on Yvonne to assess renal status? And what can I do to help? I feel kind of lost at the moment?" Another example was a lengthy post by a student who provided information comparing Hurricane Katrina to the Japanese tsunami in terms of looting and cautioned the team to be aware of this, expressing safety concerns.

Initially, there was great concern expressed because they were unable to locate Mark's son Tyler and Yvonne's son Randall. As the discussion progressed, the students added new information about the members of the virtual community and their needs building on what had already been expressed. For example, the following quote added information about Yvonne in response to a concern expressed about her ability to cope. "… As for Yvonne, we have seen that she is resilient in coping but this stress could cause some serious problems in her, especially if she is so concerned with not knowing where her son is…"

An example of a transcript with the phase one indicator of new ideas being generated with examples to illustrate their points is:

Hi [student name]

I am also working with the Martin Family and am concerned about Tyler's status. I think if we could check the Disaster Preparedness Plan at the Community Hospital and determine what area they have designated for shelter for our Community. There may be a venue designated close to town that has wheelchair access, H20, food and medical personnel from the hospital.

I will continue to investigate our possibilities.

Thank you and we can continue to work together to help with Tyler's status.

[Student name]

Phase 2*.* Idea organizing is coded by characteristics such as idea linking, identifying associations between ideas, ideas becoming clarified and grouped into various positions, and movement from individual comments to collaboration. Early forms of convergence can be noted as the students contribute to sharing ideas. Eighty-eight posts (86%) were coded as having indicators from this phase. Seventeen (19%) of these posts were also coded with the first phase. This left 71 posts (70% of the total

posts) being coded as only having indicators from phase 2. They took place on all seven days that students participated in the discussion.

The following post demonstrates idea linking as it is in reference to an earlier post about Mark who is a paraplegic and the nurse with him needs help to transport him to triage, which was also discussed in an earlier post.

> I have arrived on scene and am ready to assist with evacuation of Mark. There is a local with a truck that is willing to get us as close to triage 1 as possible. Let me know when you are ready [student name].

The phase two indicators of agreement and early forms of convergence and movement from individual comments to collaboration are noted in the following post.

> Tyler's whereabouts are definitely a priority [agreement with previous posts] considering the mental well being of Mark as well as Randall for Yvonne. Both of these individuals are under a lot of stress prior to the earthquake and that has substantially increased with this event. In an article written by Margaret Cole Marshall there are 5 lessons learned from Hurricane Katrina and Rita…

Information is provided from the article reflecting personal understanding (phase 1 indictor).

Several themes or topics came up in the discussion that students built on using their imagination, the literature and the data from *The Neighborhood.* Some of the topics included:

1. Communication with comments about who had cell phones, cell phone batteries dying, having access to ham radios, loss of Internet access, and asking others to contact the hospital.

2. Missing persons were designated as a priority because of the need to alleviate the stress experienced by family members. This was agreed upon.

3. Resources such as the role of the Red Cross, FEMA, and the Coast Guard were researched and discussed.

4. Triage and transportation – a student looked up information and provided information about START (simple triage and rapid transport). There was a discussion about how to transport Mark and they agreed he needed transport by helicopter because of his declining condition.

5. Treatment – issues related to supplies, oxygen for Jimmy Bley, electricity, generators, lessons learned from other disasters and whether people needed a safe shelter (they set up the high school to be the safe shelter); triage (assisted living center was set up for this) or hospitalization (discussion about what the hospital could do and which patients they could accept).

6. Loss – some members of the community died including one of the volunteer nurse's family members. She was Jewish and there was a discussion about Jewish cultural practices when there is a death. There was also a discussion about debriefing, supporting each other and their clients and self care.

Many of these posts were coded as idea organizing as they build on each other and there was some grouping of information, which demonstrated early forms of convergence. There was also a significant increase in the number of references to others by participant name, which is one of the quantitative indicators of idea organizing. In phase one, 40% of the posts referenced others by name compared to 60% in phase two.

Phase 3. Intellectual convergence is characterized by synthesis of ideas and co-construction of knowledge based on shared understanding. Two of the 102 posts were coded as intellectual convergence with one of these posts also being coded as phase one. Intellectual convergence and co-construction of knowledge was noted when several

issues were synthesized rather than grouped or summarized in the following post. "Team Briefing: We have been very busy these past few hours and I feel it is time for a brief update. Here is what we have so far…". This post also facilitated shared understanding of what progress had been made.

The following post was also coded as intellectual convergence as it reflected shared understanding and ideas for action (phase 3) along with the new idea of the safe shelter (phase 1).

To all Healthcare Disaster Team Members,

There seems to be a general consensus that community members are searching for missing family members. The Neighborhood High school has been designated as a safe shelter. If you are looking for missing family members, please refer all community members to this location. There is a Healthcare Disaster Team Member that will be logging who has arrived at this location. Healthcare Disaster Team Members are also assisting with food/water (limited supply--awaiting further aid).

[Student name], RN / Healthcare Disaster Team Member

Nursing action plan thread. There were a total of 62 posts in this thread. Two posts were eliminated, as they were not related to the discussion. This left 60 posts for coding that included 19 nursing action plans and 41 posts in response to the nursing action plans. The nursing action plans that took into account their shared research from the consultation thread, the information that was made up, and the information from *The Neighborhood*; were coded as phase three because these substantial posts synthesized the information. For example, the following excerpt from a nursing action plan synthesized information from *The Neighborhood* and the consultation thread. (In the

consultation thread, the students had added that Mark's father and stepmother did not survive the earthquake and that his son Tyler was missing.)

As a public health nurse in "The Neighborhood" I have been assigned to respond to the Martin household following a magnitude 6.8 earthquake that has struck. Mark Martin is a 27-year old paraplegic following an MVA a few months ago, his son Tyler is two and a half years old and living with Mark's stepsister Tracie and her boyfriend; Tracie is Tyler's primary caregiver. Mark has just recently begun to perform some ADL's with minimal assistance, and continues to cope with his new physical status. Mark lived with his father and stepmother in the South area of town. Neither of them has survived. Mark appears extremely anxious and upset regarding the unknown status of Tyler. Tracie, her boyfriend, and Tyler live on the other side of town. The two family members I will focus on are Mark and Tyler.

Of the 19 action plans, four were not coded as phase three because they did not take into consideration the new information provided in the consultation thread. They relied only on the information from *The Neighborhood*.

Of the 41 posts, 12 posts (20%) were coded as phase one, 24 posts (40%) were coded as phase two and 37 posts (62%) were coded as phase 3. There was significant overlap between the phases. Ten posts were coded as both phase two and phase three. Figure 3 shows the percentage of messages in each of the three phases. Table 4 presents the same information in numeric forum.
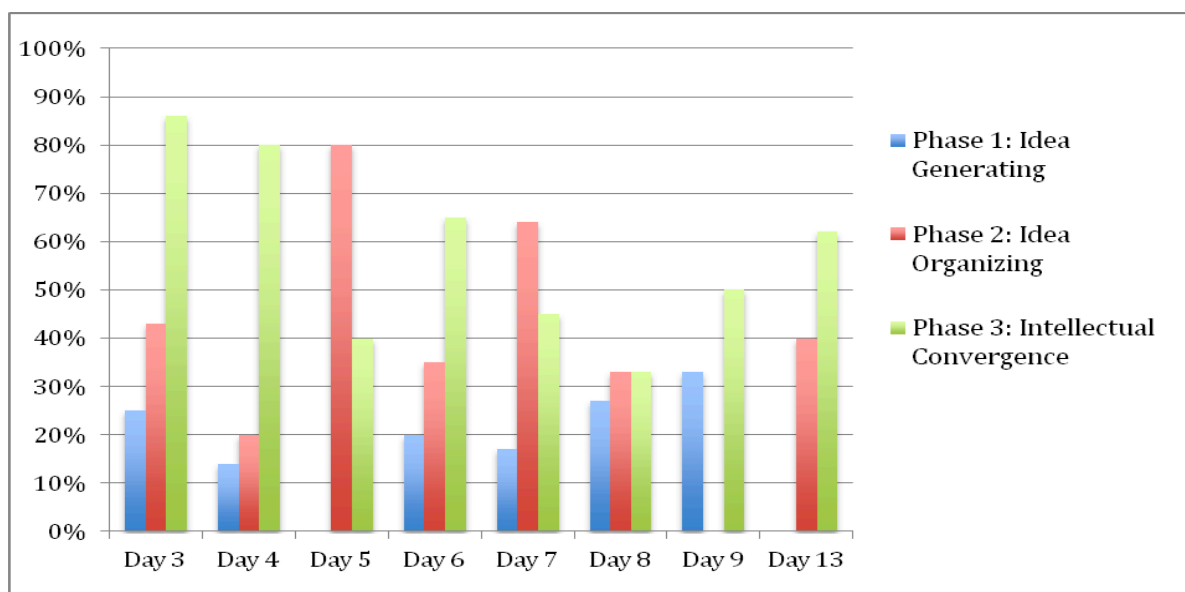
Figure 3. Nursing Action Plan Thread: Percentage of Posts in the OCL Phases

Table 4

Percentage Distribution of OCL Phases in the Nursing Action Plan Thread

Day	Posts	Posts with Phase 1 Indicators	Posts with Phase 2 Indicators	Posts with Phase 3 Indicators
Day 3	4 posts	25%	43%	86%
Day 4	7 posts	14%	20%	80%
Day 5	5 posts	0%	80%	40%
Day 6	5 posts	20%	35%	65%
Day 7	23 posts	17%	64%	45%
Day 8	11 posts	27%	33%	33%
Day 9	3 posts	33%	0%	50%
Day 13	2 posts	50%	40%	62%

Fourteen of the nineteen students engaged in discussion about the nursing action plans with twelve of the students posting two to five times each and one student posted seven times and another ten times. The discussion about the nursing action plans demonstrated shared understanding (phase 3) with posts like, "[Student name], I agree with your priorities. Jimmy will definitely be in more acute need of medical services, however I liked your inclusion of Cecilia's needs of transportation due to her decreased mobility in the rubble."

As stated earlier, there was significant overlap between phase two and three. For example, the following three posts illustrated shared understanding and added information:

- [Student name], You did a great job of outlining the care plan, starting with the details of the devastating earthquake. I appreciate how you focused on finding Randall; this piece will likely help decrease Yvonne's blood pressure on it's own, and allow her to focus on recovering and planning what will be a long to rebuilding, especially considering the multitude of setbacks she faced as a single parent before this event

- [Student name] I really like that you addressed the physical needs first as this will imperative to survival; ABC (airway, breathing, circulation) followed by SWFS (shelter, water, food, sanitation). Nice job. I also think that the psychosocial aspect needs to take place simultaneously so as to ease Mark's mind and allow him to focus on his own emergency situation. In an actual disaster, many different activities are happening at once assuming there is staff and help available. However, when we are limited on resources, we must triage and focus on the preservation of life. Your care plan has that focus. Well done. Thanks for sharing.

- [Student name], Thank you for your care plan for the Bley family. It looks like

  we will need to be aware of the cultural issues also with the elder Bley. It

  looks like after we do the initial ABC's (airway, breathing, circulation), we will

  need to address the SWFS (shelter, water, food and sanitation). I also think it

  will be necessary to teach this couple as a unit, as often times Jimmy does

  not hear well and Cecilia can be helpful here. Well-done, nice post.

This last post also uses "we" which is a qualitative indicator of intellectual convergence.

Although the majority of the posts were coded as phase two and phase three,

there were seven posts that were coded only as phase one. The following example

presents new ideas or divergent thinking.

1. [Student name] Yvonne should also be assessed for signs of infection. She

   may have a decreased immune response because of the medications she

   has been taking to suppress her Lupus symptoms. Although a nurse might

   not see signs of infection during the initial 24-hour period, it could

   be something one would take into consideration as a part of the ongoing

   assessment for Yvonne.

Summary of the consultation and nursing action plan forum. Collaboration as

explained by Online Collaborative Theory was evident in this forum. No inductive

inferences were developed suggesting that the Online Collaborative Learning Theory

does provide a framework for evaluating collaboration. The three phases are not a

circular process, but as evidenced in this class, can be one of continual movement

advancing based on a feedback spiral. For example, the phase of idea organizing may

move directly to intellectual convergence or it may trigger further idea generating

(Harasim, 2012). This particular forum consisted of two discussions, which overlapped

in time in that they occurred during the same week, but one discussion (nursing action

plan thread) built on the work of the consultation thread. As a result the majority of phase 3 indicators were in the nursing action plan thread.

Small Group Forums

There were four small group forums. Each group had a private discussion forum to work in and the ability to use file exchange. File exchange is a feature in *Blackboard* that permits students to exchange files. One group used it to share the individual nursing action plans they developed and other groups used it to share drafts of the final care plan they would be submitting for grading. Each file exchange was counted as a discussion post. When file exchange was used to post a copy of an individual nursing care plan, it was coded as phase one as it was considered an individual point of view that was brought to the group to consider. Drafts of their final plan were coded as intellectual convergence as it was a synthesis of their work.

In coding the group discussions, it was noted that several of the posts did not have any of the indicators that are foundational to Harasim's Online Collaborative Learning Theory. The three phases of the Online Collaborative Learning Theory relate to the process of collaborative learning and building knowledge through discourse (Harasim, 2012). The posts that were not coded as one of the three phases were coded as group process. Group process was narrowly defined to include posts that discuss how to set up the group, directions, availability, expressions of support and social comments such as "thank you" and "good job". The following is an analysis of the findings for each of the four groups.

Group 1. Group one had five participants with a total of 80 posts of which three were in the file exchange. All 80 posts were coded with 36% coded as group process and the remaining posts were coded as one or more of the three phases of the online collaborative theory. Twenty-three per cent of the 80 posts were coded as phase one,

43% as phase two and 10% as phase three. All group members contributed to the
discussion with an average of 15 posts each and a range of eight to twenty-eight posts.
However, the student with 28 posts included ten starter threads. Every day included
group process indicators.

The group members organized their forum with eleven different discussion
threads to separate specific issues related to their final nursing action plan. Examples of
subject headings for these threads include community resources, references,
prioritization of physical and psychological needs, short and long term goals and
assessment data. Their initial thread addressed process issues with the subject line
"How do we want to proceed?" indicating a team effort from the very beginning.
Figure 4 shows the percentage of messages in each of the three phases of the Online
Collaborative Learning Theory without the group process indicators. The group process
indicators are included in figure 5. Table 5 presents the same information in numeric
forum.
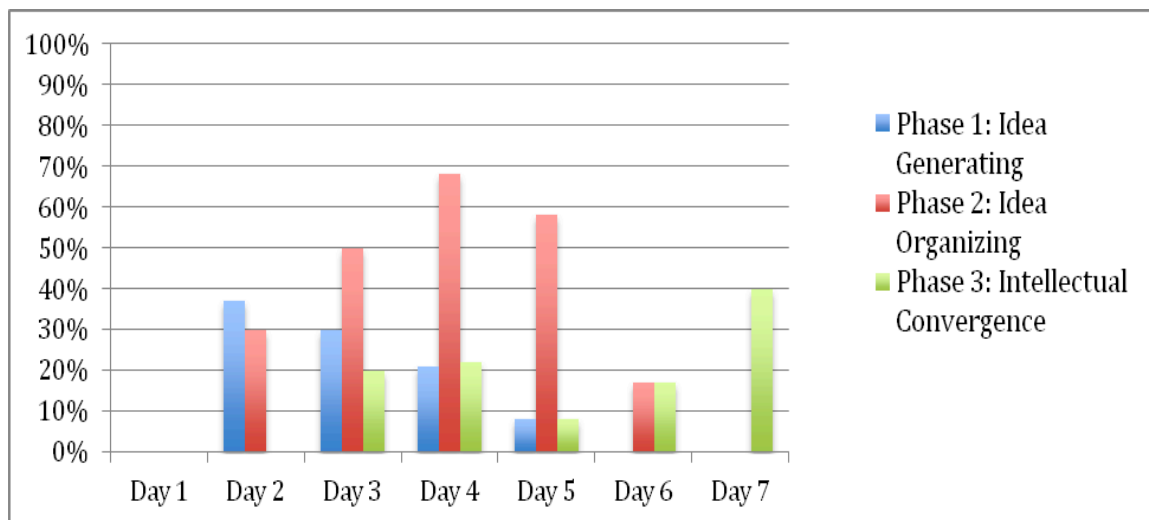
Figure 4. Group 1 Forum: Percentage of Posts in the OCL Phases
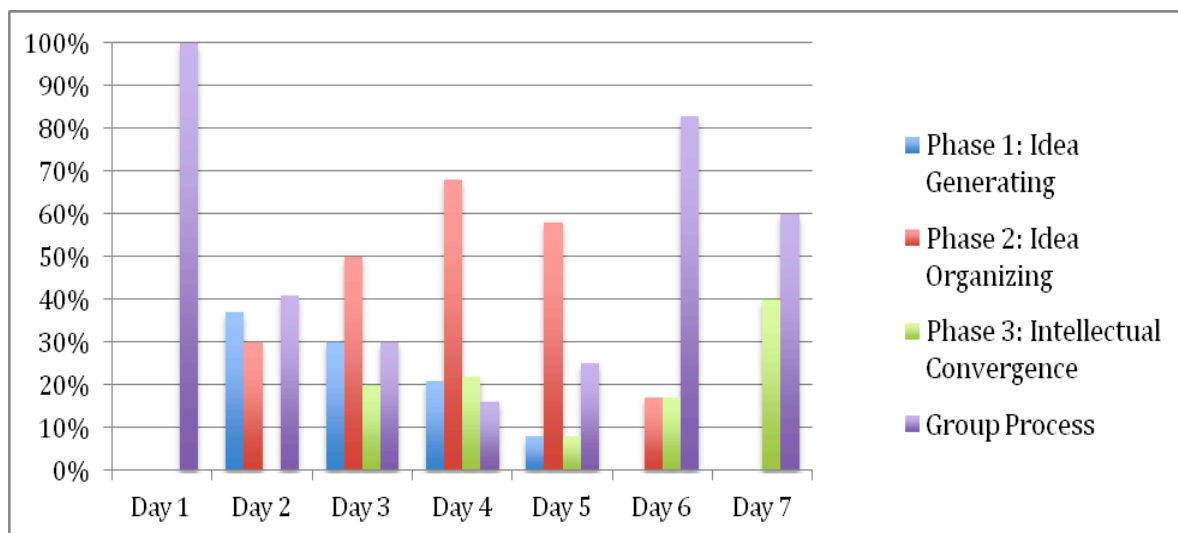
Figure 5 Group1 Forum - Percentage of Posts in the OCL Phases & Group Process

Table 5

Percentage Distribution of OCL Phases and Group Process in Group 1

Day	Posts	Posts with Phase 1 Indicators	Posts with Phase 2 Indicators	Posts with Phase 3 Indicators	Group Process Indicators
Day 1	1 post	0%	0%	0%	100%
Day 2	27 posts	37%	30%	0%	41%
Day 3	10 posts	30%	50%	20%	30%
Day 4	19 posts	21%	68%	22%	16%
Day 5	12 posts	8%	58%	8%	25%
Day 6	6 posts	0%	17%	17%	83%
Day 7	5 posts	0%	0%	40%	60%

Very few posts had indicators in more than one phase.   Only five posts had indicators in both phases one and two. For example, the following post elaborated on a listing of community resources such as the local hospital and fire department by another student:

Community resources:

It has been noted that the hospital and the 911 network are still functioning. Fire and police personnel may be limited, but would be a resource in this situation. In addition, there may be clinics, another school, or church sanctuaries that may be available for housing and caring for survivors. National Guard members and Red Cross volunteers would eventually arrive, but probably not during the initial 24-hour period of time

One post coded as phase 3 given the shared understanding and working toward closure also had the social indicator of expressing appreciation for the work done. "The revised draft is great, thanks for all of your hard work assembling this, [student name]…"

Group process. The posts with group process indicators were present every day but were most prevalent at the beginning and end of the week. In the beginning of the week, they were making decisions about how to work together and their availability. For example:

- Hi group, I'm not sure how to proceed with our group care plan. Should we set up an area for each of the numbered items such as assessment, care needs, prioritization, goals and community resources? It appears we each need to have rationale for our prioritization of the needs of the Bleys (I believe that is what Henny meant by #4). I will be able to participate almost every day. My daughter's wedding is on Saturday, so I will be checking in and post

at odd hours this week. I don't think I will able to do the final post for the group on Sunday. Sorry. Can anyone else take the lead on that? Thank you.

- [Student name], That sounds good to me (areas for assessment, care needs, ...). I too will check in frequently but will be out of town on Sunday too (with no internet access)--Sorry. We could submit Saturday if done early, most of the research is done; it's just a matter of combining all of our work. I will see if I can start working on organizing everyone's posts that are in the discussion board and I will check back later.

At the end of the week many of the group process posts were social in nature with expressions of appreciation for each member's contribution and saying thank you.

Phase 1. Phase one indicators steadily declined from 31% on day two to 8% by day five with no phase one indicators on days six and seven. Phase one indicators included posts that referred to the work they did on their individual care plan, as they were individual points of view that were brought to this forum. For example, one student began her post with:

Ideas from my action plan: This couple is vulnerable because of their age. Therefore, this couple needs to get to triage quickly. Cecelia is very concerned about her family and their locations. After this couple is seen at triage and if Jimmy's confusion is resolved, there might be a possibility of releasing them to family members if they are located.

Phase 2. Phase two posts were consistently present from day two to day six, with a peak on day four. There was movement from individual comments to collaboration with several agreement and disagreement statements as illustrated by the following post.

Again, I agree [student name]. Although, I agree that they are part of a

vulnerable population due to their age, they do have resources in their family,

and although they are most likely slow, they are mobile and they have each

other. Those are definitely strengths. Some of their weaknesses are Jimmy's

COPD, if he is really having a hard time breathing, it's going to be hard to move

him.

Phase 3. Phase three posts were consistently present from day two to the end of

the week and peaked on the last day. Intellectual convergence was noted with the

following shared understanding regarding the vulnerabilities and strengths of the Bleys:

I agree with [student name] assessment that the Bleys are vulnerable due to their

age and Jimmy's chronic respiratory condition. According to Aldrich and Benson

(2008), "About 80% of older adults have at least one chronic condition that

makes them more vulnerable than healthy people during a disaster. These

chronic conditions - combined with the physiological, sensory, and cognitive

changes experienced as part of aging - result in frail older adults having special

needs during emergencies" (p.1). Without adequate medications, food, and

water, the health conditions can deteriorate rapidly. As [another student name]

has indicated, the Bley's strong family ties are strength and rejoining them will

decrease their vulnerability.

The following example concluded with a synthesis of several posts, which is an indicator

of phase three. "I was thinking of using a combination of our initial openings and then

follow with the family details. Here is what I got from our posts…"

Collaboration as explained by Online Collaborative Learning Theory was evident

among the members of group one. The majority of the group members contributed to

each discussion thread. They produced one final product that reflected all their work; as

one student commented "I can see bits of everyone's contribution in it!" The flow or movement of this group discussion followed the pattern suggested by the theory moving from phase one to phase two and then phase 3.

    Group 2. Group two had four participants with a total of 56 posts of which two were in the file exchange. All group members contributed to the discussion with two students posting16 and 19 posts each and two students posting 9 and 10 posts each. One of the group members did not participate in the consultation thread and was initially confused by some of the information but soon caught up, as she was very active in the group discussion.

    The group members organized their forum with seven different discussion threads including hello there team, assessment, planning, intervention, evaluation, final group post and nursing action plan, please review. The group members started working on their group nursing action plan on day one as they structured how they would work together reflecting phase one of the theory and group process.

- Hi [student name] and Group, Thank you for getting the week started! Great ideas! So, as a group if we create a thread for assessment, planning, intervention, and evaluation - have everyone give input on each and then we can collaborate on each portion and create a final care plan! My understanding is that we are to just focus on Mark and Tyler? Should we bring Antony into the care plan? Also, I think we should designate a group leader to bring it all together and post a final care plan. Let me know what you think! Thank you

- Hi All, Just touching base. I like the idea of separating the different components of the care plan for organizing the discussions. I'm not sure about bringing Antony into the fold, although I'm okay with it. Tyler's

whereabouts confuses me. I thought he was living with Tracy? My thought is that he would be with her when the EQ occurred. I can understand that Mark would be concerned because he is uncertain of Tyler's status. Thank you all for getting us started.

Figure 6 shows the percentage of messages in each of the three phases of the Online Collaborative Learning Theory without the group process indicators. The group process indicators are included figure 7. Table 6 presents the same information in numeric forum.
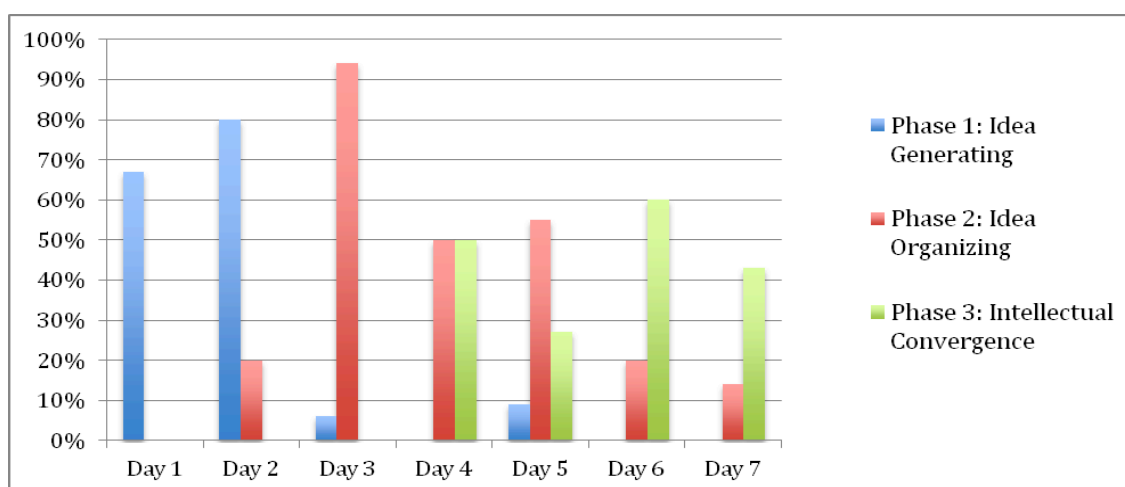

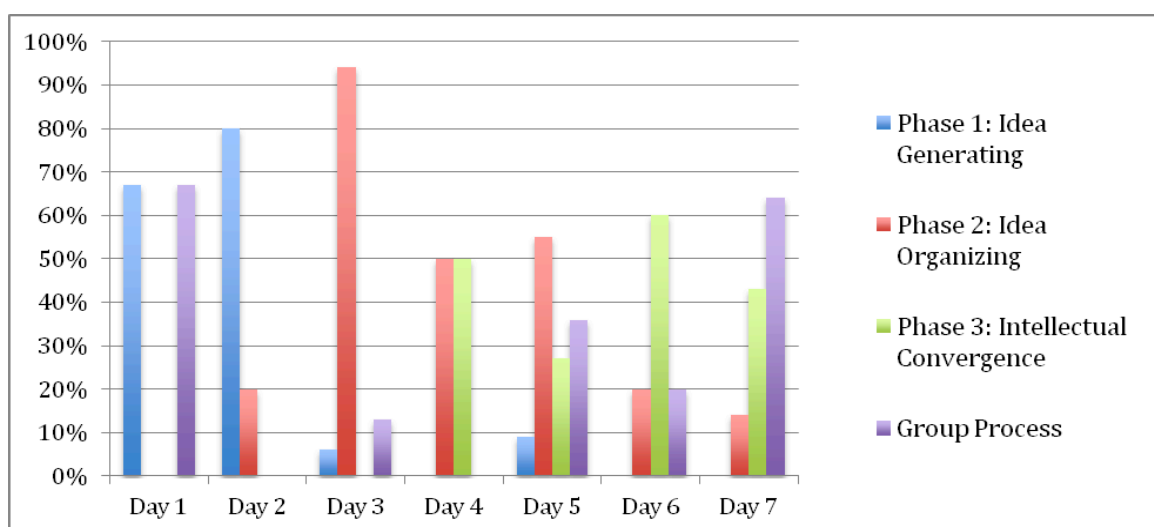Figure 6. Group 2 Forum: Percentage of Posts in the OCL Phases

Figure 7. Group 2 Forum: -Percentage of Posts in the OCL Phases & Group Process

Table 6

Percentage Distribution of OCL Phases and Group Process in Group 2

Day	Posts	Posts with Phase 1 Indicators	Posts with Phase 2 Indicators	Posts with Phase 3 Indicators	Group Process Indicators
Day 1	3 posts	67%	0%	0%	67%
Day 2	5 posts	80%	20%	0%	0%
Day 3	16 posts	6%	94%	0%	13%
Day 4	2 posts	0%	50%	50%	0%
Day 5	11 posts	9%	55%	27%	36%
Day 6	5 posts	0%	20%	60%	20%
Day 7	14 posts	0%	0%	43%	64%

One post had indicators in more than one phase. As with group one, the majority of posts with process indicators were at the beginning and the end of the week. Fourteen percent of the posts were coded as phase one with the vast majority being posted on the first two days of the discussion. Forty-six percent of the posts were coded with phase two indicators from day two to day six. Phase 3 indicators were not evident until day four and continued until the end of the discussion.

Phase 1: Phase one posts tended to be starter threads in which a student posted their initial ideas on what to include in the nursing action plan. For example, in the planning thread the student started with post:

Hi Group,

Here is a start to planning.

Mark: Short term goals:

- Provide safety, food, shelter, and medical assistance for Mark's immediate needs

- Medical supervision of pain management

- Provide assessment of the possibility of DT's

Tyler: Short term goals:

- Continue to provide food, water, shelter and health assessment for Tyler with a primary caregiver that he knows until they can be transported together to a more stable environment.

Phase 2. Once they had the starter thread, students moved quickly into phase two as they demonstrated early forms of convergence as they contributed to shared ideas, had agreement and disagreement statements, weaved ideas together and increasingly referred to each other by name. Some examples include:

- Hi [student name], I like your assessment portion. Is there any need to mention immunizations? I know Tyler was supposed to get his updated, and Mark probably might have been update during MVA treatment (tetanus??). Of course, would there be any concern of other immunities being that they would probably be in shelter care and exposed to who knows what?

- [Group member names], I was thinking for the assessment, while we are assessing for anxiety, we should also assess for Marks depression. I also agree about the immunizations as Tyler was behind, so we would want to administer those. As for Anthony, I don't think at this time we need to add him.

Phase 3. The students moved into phase three by synthesizing the posts such as "Hello Everyone- I have added the stuff that everyone thought should be added to [student name] assessment and will be pasting it below. So that way we can see all of it…" and with increasing conclusive position statements such as "[student name], Great

Point, lets add it to the assessment piece! Particularly since the Neighborhood has had such a drastic event… ".

Collaboration as explained by Online Collaborative Learning Theory was evident among the members of group two. Although participation was uneven, all members participated in five of the seven threads with substantial contributions to the final product. A similar pattern to group one was evident. Initially, it started with phase one, declining in number as phase two pick ups followed by phase three being more prevalent toward the end of the discussion.

Group 3. Group three had five participants with a total of 89 posts of which nine were in the file exchange. They did not divide the different parts of the nursing action plan into different threads as group one and two did. Five posts were eliminated, as three were instructor posts and two were thank you posts submitted after the discussion closed. There was considerable variation in the amount and quality of participation in this group. There was an average of 13 posts among three group members ranging from ten to sixteen posts each. There were two outliers with one student posting seven times with six of the posts being in the first three days of the week and then disappeared until a final thank you post a day after the discussion closed, which was eliminated. The other student had 40 posts with the last one being eliminated, as it was a thank you post submitted a week after the discussion closed. The group member who had 40 posts took on a strong leadership role. She on occasion would evaluate and correct posts made by other students and make suggestions on how they could improve the care plan. She would refer them to look at her plan. For example:

- Good start [student name] but I think putting it in a standard care plan format like I did on Mark may be more appropriate.   As for Tyler, his poor dental health and Immunizations were taken care of before he moved in with his aunt and he also

was gaining weight [this was a correction to what the student had written]. He

had a good bonding with family and adapted easily.

After a participant posted a substantial post with a draft care plan, the leader responded

with: "Great start [student name]. I like when it's in this format. It actually applies to

both Mark and Tyler even though in separate areas. Maybe you can incorporate

something from my CP [care plan] as well for the anxiety portion. What does everyone

think?" In response the student asked for others to help, as she did not have time.

Another group member who did not participate in the consultation thread was given

little to do in this group and posted this concern "you are not leaving much for me".

Group Process. The majority of the posts (58%) were group process posts with

many students making comments about how overwhelmed they felt or about their lack of

availability. Examples to illustrate the challenges this group faced in working together

include:

- I would like to offer my help with compiling it all. I have been having a really hard

  time this term and realize I am coming in on this late. I am off this week and have

  time. Let me know where I can help.

- "Ladies! I agree. What a busy term to juggle school, family, clinical, work, and

  everyday life. We are so close! Thanks for all the support."

- …. I also work tonight, through the weekend. I can do whatever is needed

  though. Please let me know or if someone who does not work is able to format

  and tie up the draft. Thanks group.

- …. It looks as though multiple group members are unavailable this weekend - I

  can compile and submit Friday afternoon if we are unable to have someone do it

  over the weekend….

A student who did not engage in the group after day 3 posted the following:

> You are not alone in this boat. I was just adding up all the things I have to do the
> rest of this term and it is so overwhelming. With work, clinical, final projects in this
> class and discussions weekly.... its for sure a challenge. We just need to take one
> step at a time. We are almost there! :-)

The following post demonstrates frustration with the group process:

> Hello all, this is my last post before going to work. I added the signs/symptoms
> for Mark. Still need work on Tyler's. Thanks again and I am hoping at least 3 of
> the group members will participate today to get full credit. I know we are all busy
> but this is a group assignment. I managed to squeeze in time and log on several
> times in between my busy day as well and stayed up until 1 am after working a
> morning shift. It can be done:)

Although the majority of the posts were coded as group process, 21% cent of the posts
were coded as phase one, 35% as phase two and 18% as phase three of the Online
Collaborative Learning Theory. Six posts were coded as both phase one and phase two
and eighteen posts were coded as one of the phases of the theory along with group
process indicators. Group 3 had some challenges with group process issues including
covert conflict, yet they were able to move through all the phases of The Online
Collaborative Learning Theory. Figure 8 shows the percentage of messages in each of
the three phases of the Online Collaborative Learning Theory without the group process
indicators. The group process indicators are included in figure 9. Table 7 presents the
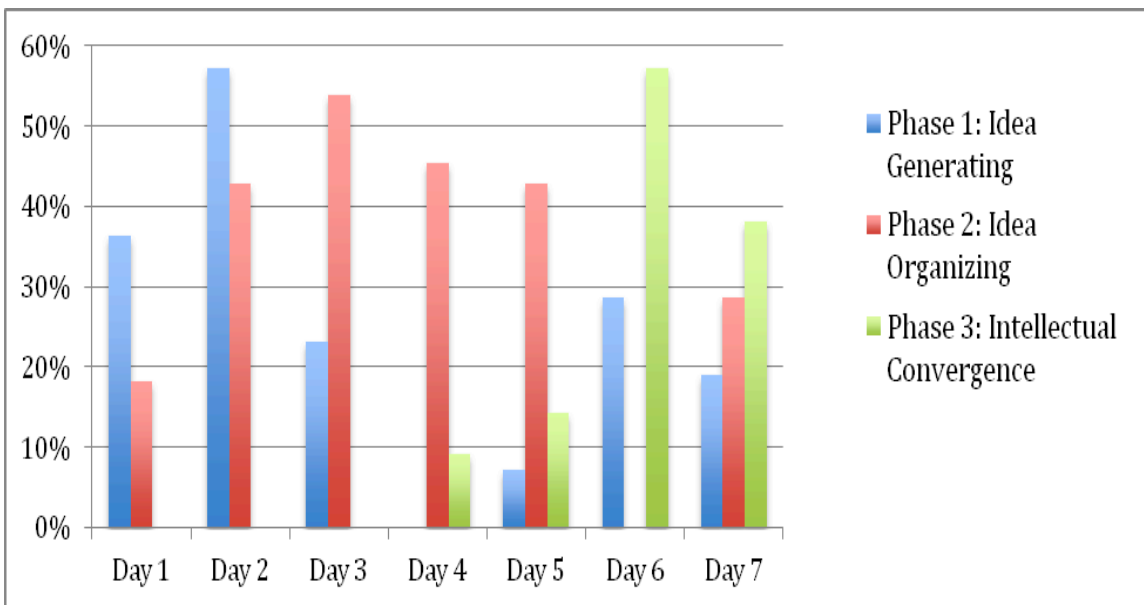same information in numeric forum.

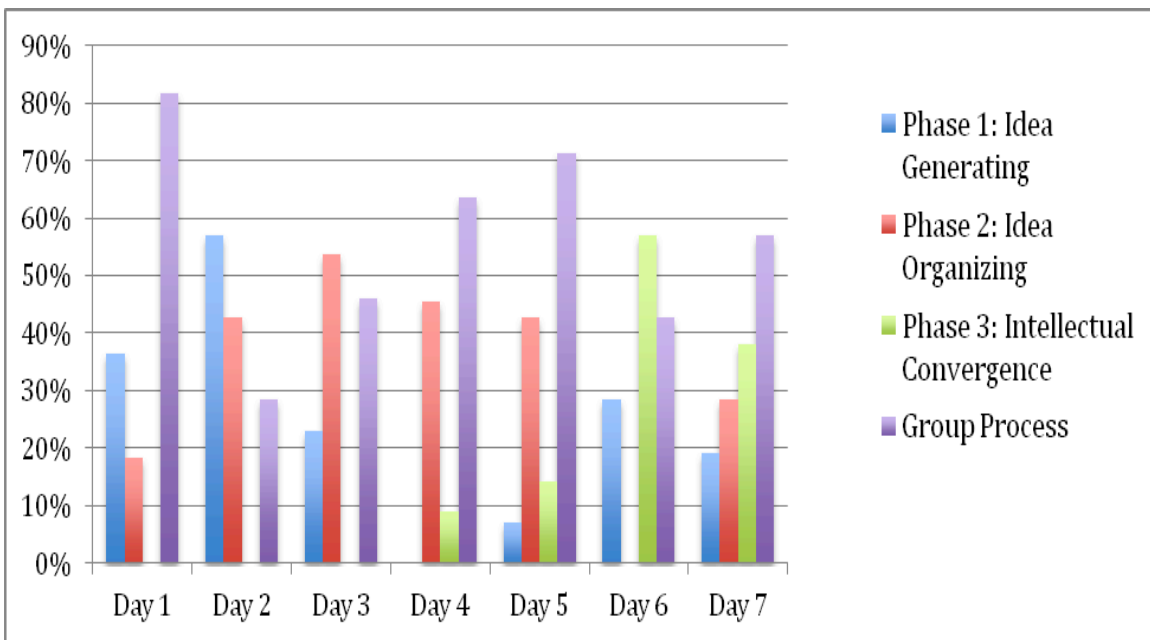Figure 8. Group 3 Forum: Percentage of Posts in the OCL Phases

Figure 9. Group 3 Forum: Percentage of Posts in the OCL Phases & Group Process

Table 7

Percentage Distribution of OCL Phases and Group Process in Group 3

Day	Posts	Posts with Phase 1 Indicators	Posts with Phase 2 Indicators	Posts with Phase 3 Indicators	Group Process Indicators
Day 1	11 posts	36%	18%	0%	82%
Day 2	7 posts	57%	43%	0%	29%
Day 3	13 posts	23%	54%	0%	46%
Day 4	11 posts	0%	45%	9%	64%
Day 5	14 posts	7%	43%	14%	71%
Day 6	7 posts	29%	0%	57%	43%
Day 7	21 posts	19%	29%	38%	57%

Phase 1. Phase one posts consisted of individual care plans being posted reflecting individual points of view along with some new ideas. For example,

> …Tracie was in college and worked as writer/editor and lived with her long time boyfriend John and then after Marks accident she took Tyler in. She is in good health and young and it was noted that apartment they lived in was near the college. This would be another place for shelter as colleges are usually prepared for disasters and have stadiums or large structures to house people. Best thing would be for them all to reunite at Triage #1 site and locate the whereabouts of Marks brother, Tracie's mom and sister and her boyfriend John.

Phase 2. Many of phase two posts consisted of agreement statements as they started to clarify ideas and group them. For example, one post started with, "So, do we all agree that the two priorities for each patient are…" followed by the suggestion to

which others would respond such as, " Yes [student name], I agree with the two priorities for both Mark and Tyler.

Phase 3. The majority of phase three posts consisted of draft care plans in the file exchange that synthesized the ideas presented in the discussion. Harasim (2012) maintains that Intellectual convergence occurs when there is "a time sensitive task to complete" (p. 156). This seems to be the case in this group forum.

The following is one example of many that combined group process with one of the phases of the Online Collaborative Theory.

How about 2 work on Mark and 2 on Tyler's care plan? Then the last person can combine the two for us to review and then submit? I did not do a CP for Tyler, as I ended up staying with Mark, but I will more than gladly give input. What condition was Tyler found in? If uninjured, I would say dehydration risk and anxiety/fear. A person can go only 2-3 days without water and if not resolved lead to shock. (http://adventure.howstuffworks.com/survival/wilderness/live-without-food-and-water2.htm) The high for *the Neighborhood* was 90 degrees for July.

Whoever combines the format, is best done on MS word then copied and pasted to clipboard on discussion. Turns out how you see mine:). Sunday, I work the PM shift (3-11) so would not be able to submit our group work.

Group 3 had many group process issues. However, the Online Collaborative Theory indicators were present and provided the ability to evaluate the collaborative process as they could be seen separately from the group process issues. The pattern was different as phase one indicators were present throughout the entire week and did not drop off as they did in groups one and two. This was due to the leader providing new

input on a continual basis reflecting personal understanding. Use of "I" was used on an ongoing basis with "we" used for 10% of the posts.

Group 4. Group four had five participants with a total of 73 posts of which four were in the file exchange. All 73 posts were coded with 45% being coded as group process and the remaining posts were coded as one of the three phases of the online collaborative theory. Twenty-two per cent of the 73 posts were coded as phase one, 34% as phase two and 12% as phase three. All group members contributed to the discussion with an average of 15 posts each and a range of nine to twenty-two posts.

The group members organized their forum with three different discussion threads that were all related to the group nursing action plan in general. Like group 3, they did not divide it into segments as group one and two did. Figure 10 shows the percentage of messages in each of the three phases of the Online Collaborative Learning Theory without the group process indicators. The group process indicators are included in figure 11. Table 8 presents the same information in numeric forum.
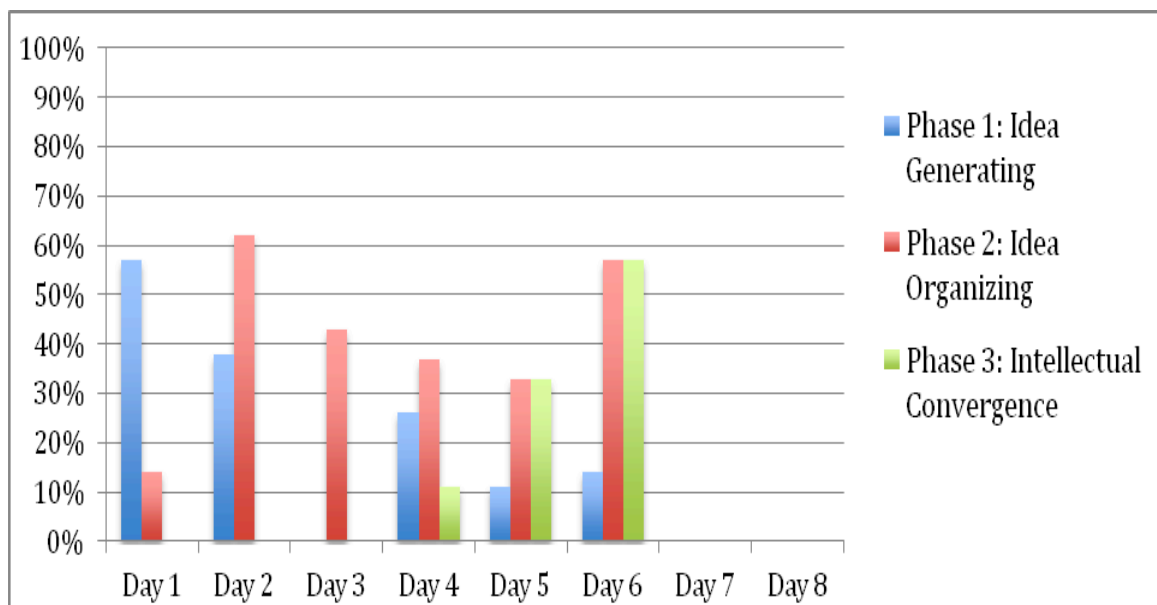
Figure 10. Group 4 Forum: -Percentage of Posts in the OCL Phases
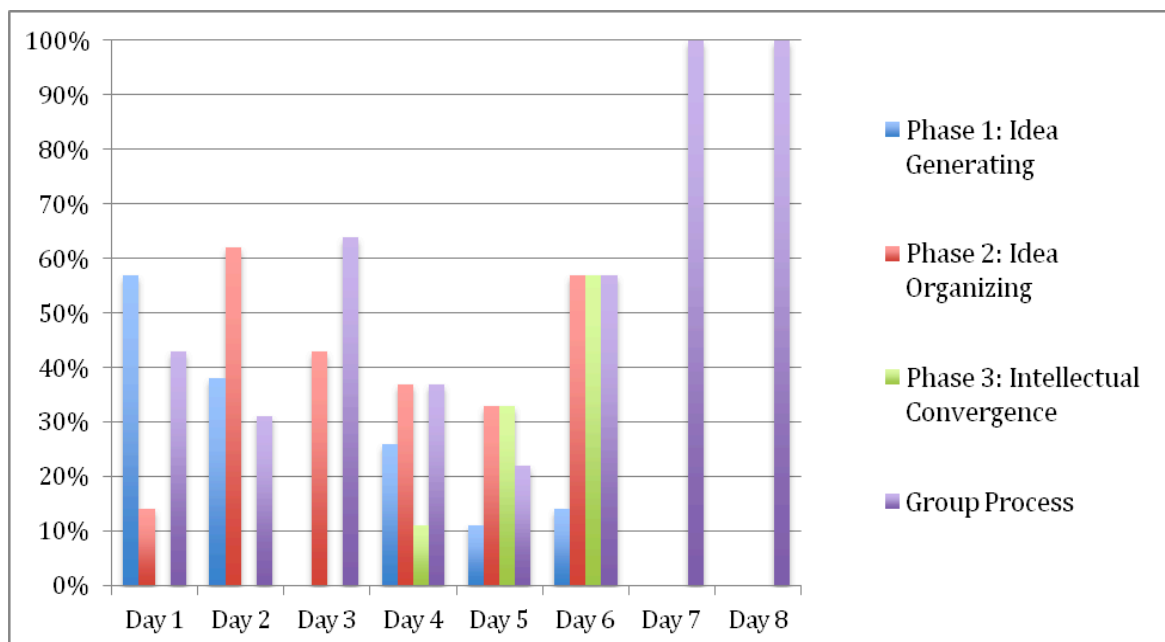
Figure 11. Group 4 Forum: Percentage of Posts in the OCL Phases & Group Process

Table 8

Percentage Distribution of OCL Phases and Group Process in Group 4

Day	Posts	Posts with Phase 1 Indicators	Posts with Phase 2 Indicators	Posts with Phase 3 Indicators	Group Process Indicators
Day 1	7 posts	57%	14%	0%	43%
Day 2	13 posts	38%	62%	0%	31%
Day 3	14 posts	0%	43%	0%	64%
Day 4	19 posts	26%	37%	11%	37%
Day 5	9 posts	11%	33%	33%	22%
Day 6	7 posts	14%	57%	57%	57%
Day 7	2 posts	0%	0%	0%	100%
Day 8	2 posts	0%	0%	0%	100%

Group process. Group 4 had group process indicators through the week. They finished their group assignment on day six leaving days seven and eight for final statements such as "Our group care plan was submitted this morning. Wahoo! Enjoy the sunshine everyone!" and "[student name] and "Care Plan Buddies, Thank you so much for all of your hard work. You are the best"

Phase 1. Phase one indicators started high on day one at 57% and steadily declined to 14% on day 6. Phase one indicators included posts that referred to the work they did on their individual care plan, as they were individual points of view that were brought to this forum. One student made a comment about these individual points of view.

> Here is my care plan. The most interesting thing I noticed is how we all have interpreted the assignment. Each one of us did something different. I think our biggest challenge will be determining how to proceed with such varied interpretations. I look forward to what the other members have come up with.

Phase 2. Phase two posts were consistently present from day one to day six, remaining consistently high in comparison to the other phases. There was movement from individual comments to collaboration with agreement and disagreement statements as illustrated by the following three posts:

- You are right Randall has had a hard enough time lately the last thing he needs is to be forgotten

- …The hierarchy components will be different for Yvonne than for Randall. This will be due to age, life circumstance, health issues and socialization. Great idea

- [Student name] "Great information. We may want to have an ethical item in the care plan. Maybe some information on "Survivor's Guilt," and how to help

the Johnson family cope with those issues. I will do some research on ethics

and surviving a catastrophe. Thanks.

The last example was in response to a phase one post in which a student summarized

an article defining catastrophic disasters, ethic dilemmas in disasters, and the role of the

nurse.

Phase 3. Phase three posts consistently increased from 11% on day four, 33%

on day five, and 57% on day six, which was the day the group finished the assignment.

The following two examples reflect intellectual convergence as the group is working

towards closure with shared understanding.

- Ok team, It looks like it is time to start piecing this together. We all agree that

  basic safety and medical care are at the top of the priority list followed closely

  by the psychosocial aspects…Thanks for all the great sharing of ideas; I have

  learned a few things from each of you.

- Hi group! I posted a draft of the care plan in the file exchange. The general

  consensus was to address anxiety and physical needs, so I made some

  changes to Yvonne's plan. I like Randall's plan the way it is, but if anyone

  wants to make changes I will be checking in throughout the day tomorrow.

  Have a great weekend

Collaboration as explained by Online Collaborative Learning Theory was evident

among the members of group four. All the group members contributed substantially to

the development of their final group nursing action plan. The pattern in this group like

group three had phase one indicators throughout the week and did not drop off as they

did for groups one and two. However, group four did not have the influence of one

strong leader as group three did. What these two groups had in common was how they

set up their forum. Groups three and four set up their forum with on large discussion

thread to discuss the nursing action plan, whereas groups one and two set up separate threads for each part of the nursing action plan.

Comparison of Discussion Threads

The forums are more closely compared to each other for the purpose of analyzing the collaborative process between the large and small groups. This allows for further addressing the research question regarding the empirical evidence of collaboration in large and small groups. Initially the two discussion threads in the large class are compared to each other. Figure12 shows the comparison between the consultation thread and the nursing action plan (NAP) thread.
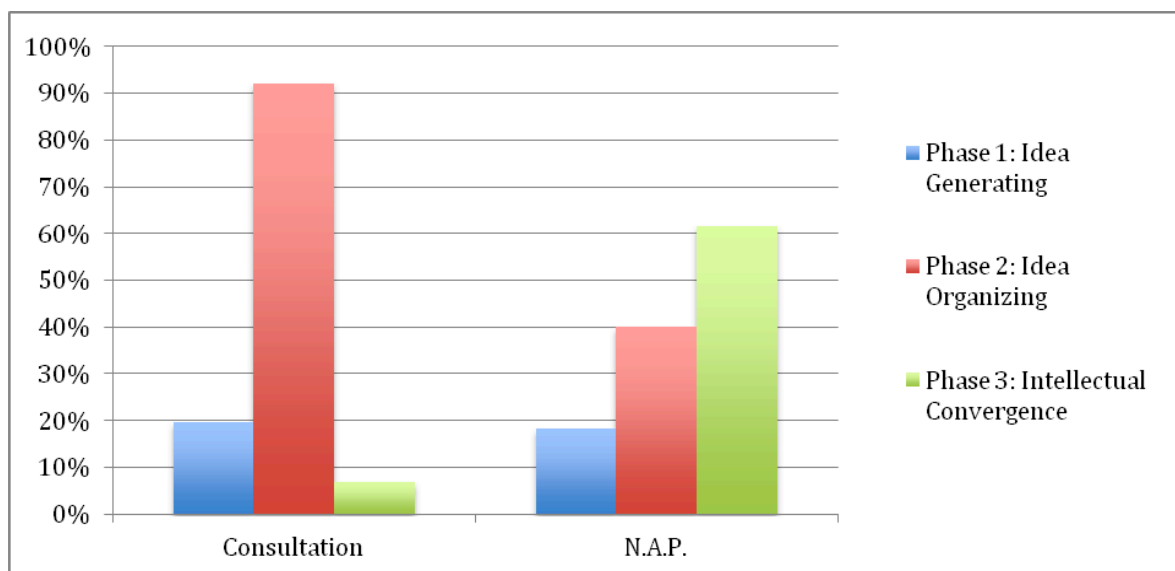
Figure 12. Class Forum: Percentage Comparison of the Three Phases of OCL Theory

In comparing the two discussion threads in the class discussion, the far majority of intellectual convergence or phase three posts took place in the nursing action thread where the individual assignment is required. This suggests that there needs to be an assignment in order for intellectual convergence to take place. It is in working towards an outcome that encourages movement through the phases (Harasim, 2012). One of the hallmarks of collaboration is co construction of knowledge. Even an individual synthesis

is a reflection of co construction if the outcome is different as a result of collaborating in a group. In the discussion thread that does not require an outcome, idea generation and organizing are much more prevalent.

Figure 13 show both threads (consultation and NAP) combined over the week's discussion. Table 9 presents the same information in numeric forum.

Figure 13. Class Forum: Percentage of Posts in the OCL Phases

Table 9

Distribution of OCL Phases in the Class Forum

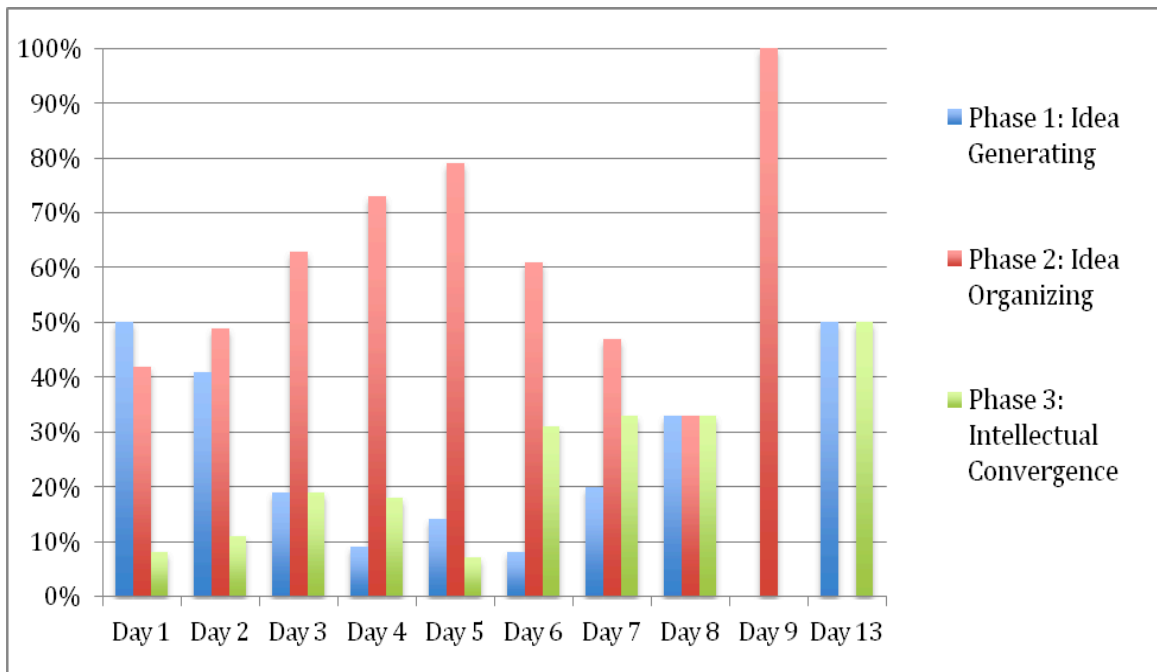| Day	Posts	Posts with Phase 1 Indicators	Posts with Phase 2 Indicators	Posts with Phase 3 Indicators
Day 1	12 posts	50%	42%	8%
Day 2	37 posts	41%	49%	11%
Day 3	32 posts	19%	63%	19%
Day 4	22 posts	9%	73%	18%
Day 5	28 posts	14%	79%	7%
Day 6	49 posts	8%	61%	31%
Day 7	15 posts	20%	47%	33%
Day 8	3 posts	33%	33%	33%
Day 9	3 posts	0%	100%	0%
Day 13	2 posts	50%	0%	50%

All three phases are present for the first eight days when the two threads were combined. The posts on the last three days, in which all three phases were not present, were late posts. Phase one started high at 50% and moved up and down throughout the week. Phase two posts remained relatively consistently high throughout the week whereas the percentage of phase three posts increased as the week progressed.

Given that the two threads took place in the same forum over the same period of time, the data was reviewed as one discussion to compare to the small groups. Figure14 compares the three phases of the theory with the group process indicators.
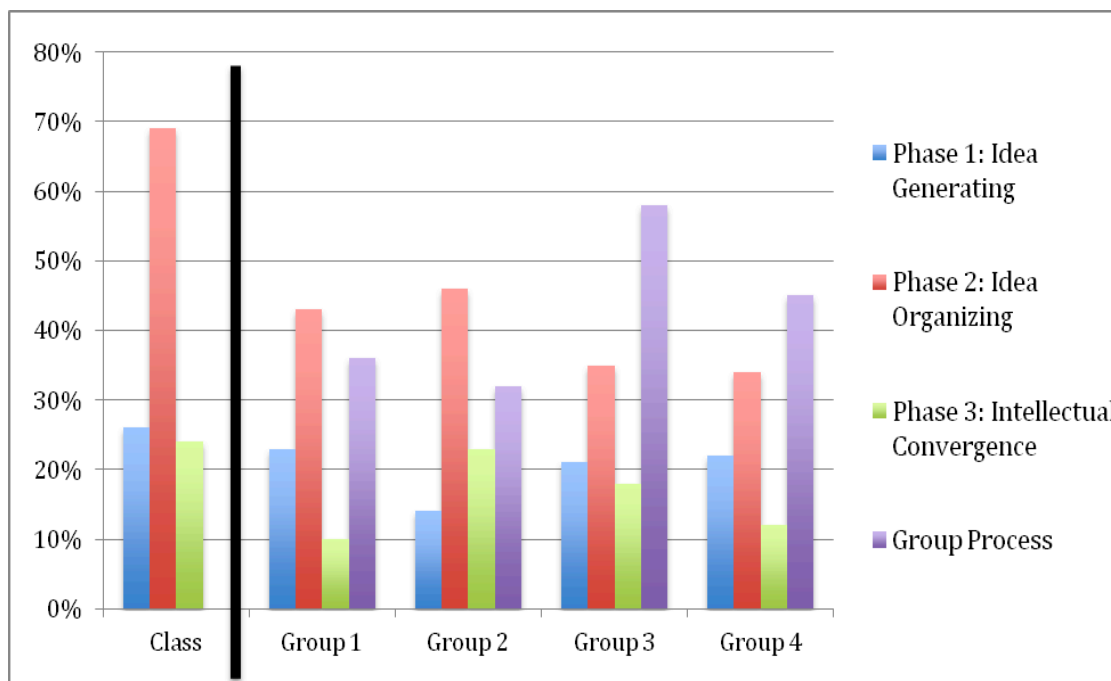
Figure 14. Comparing Large and Small Group Discussion

In comparing the large class discussions to the smaller group ones, a major difference rests in the use of group process indicators. No group process indicators were coded in the large class discussions. This is probably related to the fact that there was no group project required for these discussions. Collaborating for the purpose of producing a group assignment requires decisions to be made about how they will work together. There was no need to discuss these issues when working on an individual outcome. The large class discussion also had the most phase 2 (idea organizing) indicators. Again, this was probably related to the fact that there was no dependency on each other to develop their final product leaving more time to contribute to each other's ideas without having to come to any group decisions on the final assignment. Intellectual convergence was noted in their individual nursing action plans. Co construction of knowledge was evident in that their individual action plans were different

than they could have done on their own. Their action plans reflected the synthesis of ideas from their discussion in the consultation thread.

There does not seem to be any relationship between the number of group process indicators and intellectual convergence among the groups. Groups 3 and 4 had more group process indictors at 58% and 45% respectively compared to groups1 and 2 that had 36% and 32% group process indicators. Group 2 had the most intellectual convergence indictors at 23%. In comparing the way the groups set up their forums, groups one and two set up specific threads addressing the different parts of the nursing action plan whereas groups 3 and 4 had one thread to address the nursing action plan. Again, this did not impact the number of intelligence convergence indictors.

At the conclusion of the analysis it was apparent that no inductive inferences were developed in addition to identifying the Online Collaborative Learning Theory phases. The group process indicators were seen as separate from the intent of the theory. As stated previously the intent of the theory is to explain the process of collaboration for the purpose of building knowledge. Group process is related to the relationship between the participants and how they structure their work. Group 3, which had the most process indicators and struggled the most with group process issues moved through the three phases of the online collaborative theory in a much similar pattern to the other three groups.

Chapter 5: Discussion and Conclusions

The purpose of this study was to conduct a transcript analysis of asynchronous discussions between RN to BSN students working on a disaster case study using a virtual community to address the research questions:

1. What is the empirical evidence of collaboration in an asynchronous online course in large and small groups using a case study of a disaster in a virtual community?

2. How does Online Collaborative Learning Theory provide a framework for evaluating collaboration between RN to BSN students?

The conclusions from this study are drawn from the research questions and the findings and therefore address three areas: (1) the differences between large and small groups in collaborating online; (2) the usefulness of using Online Collaborative Learning Theory as a framework for evaluating student collaborative skills; and (3) recommendations for online instructors. This chapter presents a discussion of the major findings and conclusions including implications for online instructors followed by limitations of the study, the researcher's recommendations and final reflections on this study.

Comparison of Large and Small Group Discussions

The transcript analysis provided empirical evidence of collaboration in both the large and small groups in the learning module studied. There were five discussion forums related to a disaster in a virtual community. All five forums had evidence of moving through the three phases of Harasim's (2012) Online Collaborative Learning Theory. Harasim (2012) identifies that movement through the phases is on a continual basis, advancing based on a feedback spiral as shown in the following flow chart.

Idea Generating   Idea Organizing   Intellectual Convergence   Possible Outcome
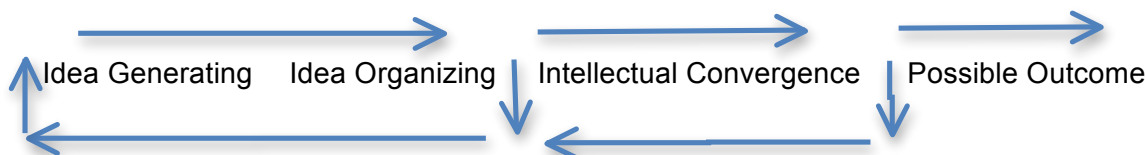
Figure 15. Example of Online Collaborative Learning Process (Adapted from Harasim, 2012)

In the large group forum the students moved through all three phases on a daily basis if both discussion threads initiated by the instructor are taken into account. This is probably related to how the students' role-played in the consultation thread and were required to present their individual work in the nursing action plan thread. The role-play led to students considering themselves as members of a disaster team working together to help the victims of the earthquake. As a result there were several posts that updated the team by synthesizing the information gained (phase 3) that triggered new ideas (phase 1).

Further the individual care plans that merged the information from different sources were coded as intellectual convergence as they constructed their action plan based on co construction of knowledge in the larger group. These individual nursing care plans were different from the ones developed by students who did not merge the information gained from the consultation thread. In response to these nursing action plans, students provided feedback with statements of agreement and disagreement (phase 2) and presented new ideas to add to the student's plan (phase 1).

The concept analysis as discussed in the literature review, revealed that one of the antecedents to collaboration is a group process with a shared purpose. Harasim (2012) identifies that intellectual convergence takes place when the group move towards co producing a product. In this study, both the large and small groups had a shared purpose of discussing the nursing role and creating a nursing action plan, yet the

outcome of this shared purpose was different. In the large group, the students were required to collaborate with each other and produce an individual plan whereas in the smaller groups they were to develop a group plan. As a result, a comparison of group size on the collaborative process with the same outcome could not be made. Nonetheless, the collaborative process as defined by the Online Collaborative Learning Theory did occur. Findings from this study suggest that movement through the three phases can also occur when an individual outcome is required.

This finding of empirical evidence of collaboration for an individual or group outcome is relevant to nursing practice as nurses need to be able to collaborate for the purpose of making individual and group decisions. The ability to synthesize and merge different perspectives is critical to nursing practice in order to make decisions about nursing care.

The pattern of the collaborative process in the small groups was different from that of the large group. In the small groups students were required to develop one nursing action plan by combining all their efforts and making decisions about what should be included. The flow or movement of the groups tended to follow the pattern suggested by the theory moving from phase one to phase two and then phase three. In groups one and two, a similar pattern emerged starting with phase one, which declined in number as phase two picked up followed by phase three being more prevalent towards the end of the discussion. Groups three and four were different in that phase one indicators were present throughout the entire week and did not drop off as they did in groups one and two. This difference is likely related to how the forums were set up.

Group one and two set up a separate thread for each part of the nursing action plan which lent itself to a very similar pattern for each thread. Each thread started with phase one, then moved to phase two followed by phase three as they took the

information provided by the group members and made final decisions for each part of the nursing action plan which resulted in closure of the discussion.   The final care plan was developed with no more than three drafts. However, groups three and four did not separate parts of the nursing action plan into separate threads. They had more drafts of the nursing action plan synthesizing the information gained (phase 3) which led to more idea generating before they settled on their final nursing action plan. One can posit that how the pattern emerges may be related to how the discussion threads were set up by the group members and did not influence the ability to move through the phases.

The number of group process indicators was the most striking difference between the large and small groups. Group process indicators were narrowly defined as those posts that included discussions about how to set up the discussion, availability, expressions of support and social comments such as "thank you" and "good job". These indicators were only present in the small groups. As stated in the previous chapter, this is probably related to the fact that there was no group project or outcome required for the large group discussion as there was in the small groups. These findings suggest that group process indicators may not be required for collaboration to occur and reinforce the chosen theory in which these indicators are not included. This is contrary to the findings of the concept analysis as discussed in the literature review, which found that group process was an antecedent to collaboration.

The process indicators as defined in this study are related to interpersonal skills and are often seen as part of group development theories such as Tuckman's forming, storming, norming, performing, adjourning model (Arnold & Boggs, 2011). Gajda's stages of collaborative development (assemble, order, perform, and transform) are similar to Tuckman's group development model and also include similar process indicators. Both of these models were not developed from the online environment.

However, they do provide a good foundation for understanding group and collaborative development that can be seen online.

Some collaboration theories placed collaboration on a continuum from social presence to production such Murphy's model described in the literature review (Murphy, 2004). Many of the social presence indicators found in Murphy's study were similar to those labeled as group process indicators in this study. For example, references to working together as a group, expressions of appreciation for contributions made, and expressing emotions such as feeling overwhelmed were found in this study as well as in Murphy's study. However, given that these group process indicators were not found in the large class, the implications from this study are that they are not required for collaboration to occur.

Online Collaborative Learning Theory as a Framework for Evaluation Purposes

The findings suggest that Online Collaborative Learning Theory would provide a valuable framework for evaluating collaboration. No other indicators that reflect collaboration were inductively derived from analysis of the transcripts suggesting that the theory provides a good framework for evaluating collaboration if the group process indicators are seen as separate from collaboration. Three relevant findings to suggest separating group process from the collaborative process include: (1) group process indicators were not required to move through the phases of The Online Collaborative Learning Theory if an individual outcome was required; (2) the number of group process indicators did not seem to impact the movement through the phases; and (3) conflict and unequal participation did not prevent group 3 from moving through the three phases of the theory. Group 3 also had a very strong leader, which may account for reaching intellectual convergence. Leadership qualities are also part of group process.

Thompson and Ku (2006) found that the quality of the group project was related to the degree of collaboration with more collaboration resulting in a better final product. Since they did not separate interpersonal group process indicators from cognitive indicators, it is not clear what the relationship is between them or how they impact the final product. Group three in this study had some interpersonal challenges, yet produced an outstanding final nursing action plan that did combine their different efforts.

Frey, Sass and Alman (2006) found that the ongoing number of responses did not necessarily contribute to higher levels of thinking. In fact they found that "high level cognitive skill was demonstrated very early in respondent postings in some threads" (Frey, Sass and Alman, 2006, p.11). This is similar to the findings of this study in which intellectual convergence, which does require higher order thinking occurred in some forums early in the week. The findings of this study that group process indicators are not required for collaboration to occur suggest that group development and collaboration could and should be assessed separately. Doing so would facilitate purposeful assessment of cognitive and affective domains of learning to enable targeted areas for student development depending on the outcome of the evaluation.

The Online Collaborative Learning Theory could be used to evaluate individual student's contributions. An instructor would be able to evaluate if each student is moving through the collaborative process. Harasim (2012) maintains that the online collaborative process encourages knowledge development and conceptual change. No other nursing studies were found that used The Online Collaborative Learning Theory. This study may be the first to use it in nursing.

For educational purposes, a grading rubric that evaluates the quality of the responses made by the students as they move through the phases would be a valuable evaluation tool. Harasim (2007) recommends that a grading rubric address the quality of

posts by including such elements as citations, adding new insights, posing new ideas

and questions, and building knowledge measured by moving through the three phases

of the theory. Including citations and adding new insights from reading the course

content, research outside the course content and personal experience are common

features of discussion grading rubrics. Using a grading rubric that incorporates the

theory would enhance the evaluation of the student's ability to meaningfully contribute to

the collaborative process. It would provide the instructor with the ability to assess the

student's skill and growth. For example, a student may be strong in generating new

ideas but needs to develop skill in identifying associations between ideas. This would

also have the potential of furthering the understanding of how collaboration is different

from cooperation. Further, it would potentially meet one of the priorities as set by Oncu

and Cakir (2011) regarding the need to develop reliable and valid assessment

techniques for online learning environments.

The Course Module

The course content was not the focus of this study. However, the course module

used for this study had some interesting features that warrant some discussion. Most

notably was the use of a virtual community to address disaster nursing. Virtual

communities have been used in nursing education to apply a wide range of clinical

nursing concepts, professional practice issues, and the role of the professional nurse

(Giddens, 2010). Emergency preparedness is a required concept according to the

baccalaureate essentials (American Association of Colleges of Nursing, 2008) and using

a virtual community to address this concept is an innovative approach.

In using the virtual community, students developed a role-play that was not the

initial intent of the design but seemed to be a natural progression from using the virtual

community. It proved to be a very effective way for students to engage collaboratively

through the first two phases of the theory. Role-playing facilitates the student actually experiencing what it would be like to be a nurse in a disaster promoting a "lived experience". This provides for a depth of insight related to the content that is not readily accessible in the traditional discussion board format (Adelman & Nogueras, 2013; Levitt & Adelman, 2010). A finding of this study was that the first two phases of the theory could be reached through role-playing. However a final outcome is required to reach the third phase.

In the large class, 15 of the 19 students were fully engaged and developed a care plan based on group collaboration. All students participated in the group discussions. This was probably due to 50% of the grade being assigned for equal participation in the group effort. The intent of this kind of design is that everyone is expected to do the research so that they can contribute more fully to the final product and the research is done for the most part before working in a group. This may reduce the anxiety for those group members who are waiting for some of their classmates to participate as everyone comes to the group prepared. The heavy emphasis on collaboration through the grading also drives home how reliant members of the team are on each other. This is often the case in nursing practice as well.

Study Limitations

Qualitative research has limitations related to external validity. However, when using a credible theoretical framework, translating findings to similar contexts may be justified (Garrison et al., 2006). Harasim's Online Collaborative Learning Theory was developed a decade ago and has been published for the purposes of research and education. However, only one other study had been found using the theory. Caution should be used in generalizing the specific findings of this study beyond the environment in which this study occurred.

A further limitation may be that the data for the study comes from a class taught by the researcher. Consent was obtained approximately a week prior to the course completion in order to ensure reaching the students prior to graduation. There was also a statement in the syllabus indicating that their postings may be used for research purposes. It is unknown if these factors had an impact on the quality or quantity of participation in the collaborative process.

Recommendations

The following recommendations are based on the findings, analysis, and conclusions of this study and are related to the use of Online Collaborative Learning Theory (OCL) in RN to BSN education for the purposes of online instruction and evaluation. This is followed with recommendations for further research.

Online instruction. The following recommendations for online instructors are offered.

1. For some individual assignments, a class discussion regarding the assignment could be set up prior to the students submitting the assignment. This is related to the finding that the students moved through all three phases only if an outcome was required. This would be appropriate for assignments in which input and feedback from classmates in addition to personal research would facilitate the development of being able to merge different perspectives.

2. Although not a direct finding of this study, it is recommended that faculty consider how they scaffold their programs and courses to facilitate the students learning how to collaborate. This would facilitate how prescriptive to be in setting up collaborative activities and how involved the faculty member needs to be in the discussion. For example, students new to collaborative learning need help in

understanding how collaboration is different from working together cooperatively. They may also need help in structuring their discussion forums.

3. When groups are brought together to develop a group outcome, the instructor needs to keep an eye on the group process and may need to provide assistance if the group dynamics are interfering with their ability to work together. Knowing when to step in and when to leave the group to work through conflict on their own needs to be carefully considered. The instructor needs to take into consideration the learning objectives of the group assignment and experience of the students with online learning and group work.

4. Consider the use of role-playing as a different approach to learning. Although, in this study, it emerged serendipitously, it was found to be an engaging format for working through the first two phases of the collaborative process.

5. The virtual community was found to be an interesting avenue for engaging students in the collaborative process and is recommended for use in exploring complex concepts.

Evaluation. In evaluating a group's ability to collaborate, it is recommended that the phases of The Online Collaborative Learning Theory be used to evaluate the group and/or individual students' ability to collaborate. Group process skills should be evaluated separately. Group process has more to do with interpersonal skills whereas collaborative learning has more to do with cognitive skills. Both are required for practicing nurses. When evaluated separately, the student learning needs would be more clearly delineated.

Further Research. The following recommendations for further research are offered.

1. A further similar study using The Online Collaborative Theory to compare the findings to this study in regards in the collaborative process with using an individual and group outcome.

2. Given the limitations of this study, it is recommended that a study of the collaborative process be undertaken in which the researcher is not the faculty member of the class being studied.

3. Given the findings of this study, it is recommended that further studies be done that investigate the relationship between group development and the collaborative process.

4. A study to closely examine the role of the instructor in facilitating the collaborative process to facilitate understanding best practices for instruction in the online environment as related to collaborative learning with nursing students.

5. To further enhance the understanding of the value of this theory for nurses; it is recommended that a study be conducted looking at conceptual change. This is particularly important given the change from content to concept driven curriculums in nursing.

6. Given that nursing is a practice discipline, it is recommended that a study be conducted investigating how engaging in collaboration online impacts the nurse's ability to collaborate in practice.

Final Reflections

As a closing to this dissertation the following reflections and lessons learned are offered. First of all in coding the transcripts, re-coding and especially the use of a colleague to code 25% of the transcripts proved to be invaluable. In future studies, a

colleague would be asked to code 80% of the transcripts as the discussion that evolved over the differences proved to be instrumental in ensuring that the coding adhered to the intent of the theory. It would also further increase the validity and reliability of the study.

Although there is a recommendation that a study be conducted in which the researcher is not the faculty member, this was a meaningful and revealing experience. This study provided the opportunity to examine teaching strategies and provided insights that may not have been gained otherwise. It will change instructional practice especially in terms of finding ways to help students develop skills in leading groups through a collaborative process. Group process and interpersonal skills will be evaluated separately from the cognitive learning.

The weight of the grade on the collaborative process was examined and will be changed so that the group is not held hostage to a non-participating group member. Although this did not happen in this study, there was unequal participation in some of the groups. It did not hinder the group from reaching intellectual convergence but does not provide the opportunity to hold those students who put in minimal effort to be held accountable.

By addressing the recommendations for online instruction and evaluation that came out of this study, it is the hope that online learning by nursing students will be richer and more meaningful as nursing faculty continue to develop in this educational format.

Appendix A: Informed Email Consent

Dear Class,

      As many of you are aware, I am working on my PhD in Nursing and my research is related to collaborative learning. In order to do my research, I am asking permission to use your discussion postings in the Summer NURS 475 course. I would remove all identifying information so it would be anonymous. If you give your permission, could you please:

1.   Reply to this email stating I have your permission

2.   Provide an email address and phone number that I may use to reach you, if needed, for the next 12 months. I may have further things I need to discuss with you as I am completing my research.

Please let me know if you have any questions. Thank you!

Henny

Appendix B: Syllabus Statement

Potential Use of Course Work:

Your discussion postings may be used for research purposes to improve our knowledge about online education. Your personal identifier information will be removed; so, your information will remain anonymous. IRB approval is solicited by anyone conducting research in keeping with university policy.

Appendix C: Virtual Disaster Case Study Description

The college uses *Blackboard* Learn as their platform for online courses. The RN to BSN program has in its final semester an eight-credit Integrated Experiential Learning (IEL) course. Part of the requirements for this course includes a virtual clinical experience using *The Neighborhood*, a virtual community developed by Jean Giddens. *The Neighborhood* features the unfolding stories of several characters representing community and nurse members. The stories are enhanced with pictures, video clips, medical records, and newspaper clippings (Giddens, 2010).

The community members used in the course include three different families; (1) an elderly Native American couple who have been married for 56 years (2) a 35 year old single mother and her 15 year old son, and (3) a 27 year old single father and his two year old son who live with the extended family. The fictional community member stories represent a variety of family and individual social and health-related issues (Giddens, 2010).

The students are required to collaborate as a class and in groups to develop a nursing action plan for members of a virtual community in which a disaster has taken place. The virtual clinical experience includes the following steps.

Week 1
The students are instructed to read several selected episodes of the unfolding story of the elderly couple.

Week 2
The students are instructed to read several selected episodes of the unfolding story of the single mother and her son.

Week 3
The students are instructed to read several selected episodes of the unfolding story of the single father and his son.

Week 4
In preparation for the case study, the students are required to engage in a discussion about their reflections on what they have learned in the program to date as well as their clinical knowledge to address the risks and strengths of the family related to their health and well-being they have been assigned to.

Week 5

An announcement is posted in the course and their email that an earthquake has struck the community that morning. Video clips of past earthquakes are posted to give the students a visual picture of the disaster. Each student is assigned to one of the families. Two discussions thread are set up in one discussion forum. One discussion is for consultation and the other to post their nursing action plan.

Week 6

The class is divided into small groups to work collaboratively to develop one nursing action plan.

Appendix D: Instructions for the Case Study Discussion

Consultation Thread Instructions

As you participate in the case study discussion and develop your Nursing Action Plan, it is important to also consult with your nursing colleagues who are also caring for individuals and families in the community. It is important that we work collaboratively to meet the needs of the community especially during a time of crisis.

Please consult with at least one nurse who is caring for a family different that the one that you are caring for and ask for help from others.

Some ideas for consultation:

- Offer suggestions for care based on your knowledge of the family;
- Provide moral and emotional support to your colleague nurse who is practicing in a stressful, crisis situation;
- Share resources and ideas for community support;
- Disseminate accurate and timely information;
- Ask questions and discuss assessments and goals for care;
- Seek clarification and help in understanding the role of the nurse;
- Demonstrate leadership;
- Communicate needs, concerns, and priorities;
- De-brief, support, and share the burden.
- Other as needed

Nursing Action Plan Instructions

Please post your care plans by replying to this thread. Feel free to provide feedback to each other and ask questions.

Group Work

You have been assigned to a group based on the family you were assigned to last week. You have each developed a care plan. As a group discuss your individual care plans and decide how you would like to proceed in order to bring together all your ideas to develop one practical care plan that will be even better than any of you could do on your own. You need to add your rationale for how your prioritized your community member's physical and psychological needs. Be sure to back up your points and opinions with evidence based literature or theory.

Appendix E: The Coding Tool

The Online Collaborative Learning Theory guides the analysis of the data. These characteristics and indicators are based on Harasim's theory and customized based on the case study in the course module (Harasim, 2012).

Analytical Constructs	**Idea Generating**	**Idea Organizing**	**Intellectual Convergence**
Characteristics	Divergent thinking Individual points of view presented leading to multiple perspectives New ideas generated Participants are engaged and contribute Democratic participation	Idea linking Identifying associations between ideas Ideas become clarified and grouped into various positions Movement from individual comments to collaboration Early form of convergence as participants contribute to shared ideas	Shared Understanding Synthesis of Ideas Co-construction of knowledge based on shared understanding Discussions leading to conclusion on plans or ideas for action
Quantitative Indicators (These indicators are for descriptive purposes, not predictive, which maintains the methodology as qualitative (Gerbic & Stacey, 2005)	Number of initial postings	Increased number of references to previous messages Increased number of references to other participants by name Number of agreement & disagreement statements; shared understanding; weaving ideas together	Increased number of substantive contributions (messages that compare, structure, extend, and synthesize ideas) Number of conclusive position statements
Qualitative Indicators	Personal Understanding Providing examples Use of "I" "my"		Development towards shared understanding Working towards closure Use of "we", "our"

Appendix F: Data Analysis Plan

Starter Threads

Individual Nursing Action Plan

Consultation

Group Initial Posting

Initial Response

Initial Response

Group 1

Group 2

Group 3

Group 4

Replies

Replies

Replies

Replies

Replies

Replies

Replies

Replies

Replies

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Replies

All replies represent a unit of analysis and are coded by constant comparative analysis to one of the analytical constructs of the OCL theory and other constructs that may arise from the data.

Idea Generating(G

Idea Organizing

Intellectual Convergence

Other

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