THE ANALYSIS OF KNOWLEDGE CONSTRUCTION IN COMMUNITY BASED SERVICE-LEARNING PROGRAMMES FOR BASIC NURSING EDUCATION AT TWO SELECTED NURSING SCHOOLS IN SOUTH AFRICA

A Thesis Submitted to the School of Nursing in the Faculty of Health Sciences: University of KwaZulu-Natal in Fulfilment of the Requirements for the Degree: Doctor of Philosophy (Nursing)

by

SINDISIWE ZAMANDOSI MTHEMBU

SUPERVISED BY PROFESSOR N.G. MTSHALI

2011

DECLARATION

With this, I declare that the thesis hereby submitted titled: “The analysis of knowledge construction in community based service-learning programmes for basic nursing education at two selected nursing schools in South Africa” is my own independent work. All the resources and materials that have been used or quoted have been indicated and acknowledged by means of references.

Student: Date:

Supervisor: Date:

DEDICATION

THIS THESIS IS DEDICATED TO MY FAMILY, THE CELE AND MTHEMBU FAMILIES AND ALL THOSE WHO HELPED ME BELIEVE IN MYSELF AS I PERSEVERED WITH A GOAL THAT WAS ONCE ONLY A DREAM TO ME.

ACKNOWLEDGEMENTS

Success of this magnitude could not have been possible without the following special people and circumstances that contributed to the completion of this project:

- Professor Fikile Mtshali, my sincere and indebted supervisor, for her astute and meticulous professional guidance, and for her moral and academic support throughout the period of the study. I feel fortunate to have her as my friend and supervisor.
- The participants in this study, for their time and contribution, this was really appreciated.
- My mom, Mrs Tospy Cele, for her support, words of wisdom, prayers, encouragement and understanding throughout my studies.
- My sister Nonhlanhla, for her patience and support through difficult times and for being there whenever I needed someone.
- My family, I stand proud; to my husband Bhabha, for believing in me, and my children, Lindokuhle, Nosihle and Khayelihle, for being there for me no matter what.
- Special thanks to all those who believed in me and supported my dream come true.
- The school of nursing, University of KwaZulu-Natal and the National Research Foundation (NRF) are hereby acknowledged for the financial assistance towards this research study.
- My friends and family members, for all and whatever they did or did not do, but which in one way or the other moulded this work and strengthened me when I felt like giving up when the going got tough.
- Lastly and most importantly to the almighty God for his unblemished plan that has come to pass in the fullness of his time.

ABSTRACT

Community based service-learning is one of the fastest growing reforms in higher education, especially in the field of health care. The increased interest in this phenomenon is based on the demands by government and society that higher education institutions should be more responsive to the needs of the community. Literature, however, reflects that service learning lacks a sound theoretical base to guide teaching and learning due to limited research in this area. This study was, therefore, aimed at exploring the phenomenon knowledge construction in basic nursing programmes in selected South African nursing schools with the intention to generate a middle range theory that may be used to guide the process of knowledge construction in community-based service-learning programmes.

This study adopted a qualitative approach and a grounded theory research design by Strauss and Corbin. Two university-based schools of nursing were purposively selected to participate in the study. There were a total number of 16 participants. The collection of data was intensified by the use of multiple sources of data (participant observation, documents analysis and in-depth structured interviews). The data analysis process entailed three phases; open, axial and selective coding.

The results of the study revealed that the phenomenon "knowledge construction" is conceptualised as having specific core characteristics, which include the use of authentic health-related problems, academic coaching through scaffolding, academic discourse-dialogue and communities of learners. The findings showed that there are a number of antecedent conditions and contextual circumstances contributing to how knowledge is constructed in a community based service-

learning programme. The process of knowledge construction emerged as cyclical in nature, with students, facilitators and community members having specific roles to play in the process. A number of intervening variables were identified that had an influence on the expected outcomes on knowledge construction in community-based service learning programmes. These findings led to the generation of a conceptual model. Knowledge construction according to this model takes place in an environment which is characterised by interactive learning, collaborative learning, actively learning and inquiry-based learning through continuous reflective learning processes. The main concepts in this conceptual model include concrete learning experiences, continuous reflection, problem posing, problem analysis, knowledge deconstruction and knowledge generation, knowledge verification, knowledge generation, testing of generated knowledge and evaluation of generated knowledge. The sub-concepts include learning through senses, an initial situation, health-related triggers, social interaction, reflection-in action, reflection-on action, hypotheses generation, conceptualisation of learning experiences, information validation and community interventions.

Recommendations were categorised into education and training of academic staff, application of the model and further research with regard to quality assurance in CBSL programmes as well as the use of other research designs for similar studies.

TABLE OF CONTENTS PAGE

CHAPTER ONE

CHAPTER TWO

CHAPTER THREE

CHAPTER FOUR

CHAPTER FIVE

LIST OF TABLES

LIST OF FIGURES

APPENDICES

ACRONYMS

CBE	Community Based Education
CBL	Case-based Learning
CBSL	Community Based Service-Learning
CCFO	Critical Cross-field Outcome
CHE	Council on Higher Education
CHESP	Community Higher Education Service Partnerships
DoE	Department of Education
HE	Higher Education
HEI	Higher Education Institution
HEQC	Higher Education Quality Committee
IAM	Interaction Analysis Model
JET	Joint Education Trust
NCHE	National Commission on Higher Education
NEI	Nursing Education Institution
NHS	National Health System
PBL	Problem-based Learning
PHC	Primary Health Care
PIM	Practical Inquiry Model
SANC	South African Nursing Council
SAQA	South African Qualifications Authority
SDL	Self-directed Learning
SEDL	Southwest Educational Development Laboratory

S-L	Service-learning

CHAPTER ONE

INTRODUCTION

1.1 BACKGROUND TO THE STUDY

Throughout the world, institutions of higher education are facing the challenges of engaging more closely with their surrounding communities, developing an intellectual foundation for such engagement and integrating the key aspects of their mission, which are teaching, research and community service. In most countries, community engagement by higher education institutions is underpinned by values of social responsibility, political commitment and academic excellence (Lazarus, 2005b). In South Africa, prior to 1994, community outreach and extension community service programmes were the major categories of community engagement in higher education institutions. These programmes were mainly initiated by concerned academic staff in response to the social, economic and political needs of communities at the time. In 1997, the Education White Paper on 'A programme for higher education transformation' laid the foundations for making community engagement and community service an integral part of higher education in South Africa (Department of Education (DoE), 1997).

The Education White Paper (1997) states that one of the goals of higher education is to promote and develop social responsibility and awareness among students of the role of higher education in social and economic development, through community based service programmes. This paper poses three key challenges to the higher education sector in South Africa which are: (a) to address the chronic mismatch between higher education and the skills or human resource needs of a

modernising economy; (b) to help lay the foundations for a critical civil society; and (c) to adopt appropriate policies and practices in teaching and research, so as to move away from academic insularity, or narrow-mindedness, and closed-system teaching programmes (DoE, 1997). According to the white paper, the development of a socially accountable model for higher education can be achieved through the reconstruction of the South African society, and national development priorities can be addressed by the development of partnerships between communities, higher education institutions and other service sectors. This could be underpinned by values of social responsibility, political commitment and academic excellence reinforced through community based service-learning programmes.

Community based service-learning, also known as community-based learning (DoE, 1997; Joint Education Trust Report, 1998; Fichardt, Viljouen, Botma & du Rand, 2000; Fichardt & du Rand, 2003; Lazarus, 2005b), especially in the field of health education, is one of the fastest growing reforms in higher education (Lazarus, 2005b). Mtshali (2009) indicates that nursing education is one of the disciplines which started community-based education decades ago. A number of academic institutions place their students in community settings for experiential learning purposes. Learning in community settings is assumed to be informing knowledge construction in the classrooms as well as the curriculum content (Mtshali, 2009). The increased interest in community based service-learning (CBSL) is based on the demands by government and society that higher education institutions be more responsive to the needs of the communities (DoE, 1997; Favish, 2003). CBSL is marked by a paradigm shift from teacher dominated

learning to learning where students play an active role in the process of knowledge construction (Lisman, 1998; Lazarus, 2005b).

Carr, Barker, Bell, Biddulph, Jones, Kirkwood, Pearson and Symington (2005) assert that the traditional model of teaching and learning in most classrooms can best be described as transmission of knowledge from teacher to learners. This has been an accepted practice, according to Roth (1993), because of the traditions and culture of teaching in both teachers and students. Traditionally, universities have been exemplars of the transmission of knowledge paradigm that is typified by crowded lecture theatres in which a single perspective is dominant, which is that of the university teacher, who is appropriately called the 'lecturer' (Taylor, Fisher & Fraser, 1996). Under such circumstances, according to Taylor et al. (1996), knowledge is regarded as a commodity which can be transmitted from the teacher's mind to the minds of the masses of students in attendance. Consequently, learning is little more than the memorisation of incontestable facts and the memorisation of standard problem types. This impoverished image of learning is reinforced by the traditional practices which isolate learning from real experiences and has, therefore, resulted in the fact that many university students feel that they do not have much control over their own learning (Taylor et al., 1996).

Prior to the last two decades, most teachers accepted the transmission model as appropriate for teaching (Carr et al., 1994). Gagné (1985), however, states that the direct transmission model of student learning began to lose favour because of its inability to explain some important intellectual achievements, such as creativity or the ability to make decisions or solve problems. The thinking about learning has

gradually changed because of developments in learning psychology and epistemology (Wessel, 2004). Cognitive psychologists began to describe the mental functions of students during learning, and philosophers moved away from positivist and empiricist attempts to establish truths towards a constructivist view of knowledge building (Novak, 1998). Furthermore, Wessel (2004) argued that a person expects to understand each new experience in terms of what he/she already knows (assimilate the experience). According to this author, when a student is unable to assimilate a particular experience to previous ones, then some confusion occurs. In order to re-establish mental balance, the student assigns meaning to new experiences through a process of accommodation. This process requires a person to restructure currently-held knowledge or to construct entirely new knowledge (Wessel, 2004).

The paradigm shift in teaching and learning can be traced back to the time of philosophers such as John Dewey. Dewey (1859-1952) is the most prominent American philosopher of the early twentieth century who, in 1938, expanded on the relationship between experiences and learning in his well-known book: '*Experience and Education'*, Dewey argues that learning takes place within a meaningful context that allows students to build upon the knowledge they already have. Furthermore, he emphasized the importance of active social learning environments rather than one-sided lectures, and argued that learning involves the active construction of knowledge through engagement with ideas in meaningful contexts in authentic settings (Dewey, 1938). Marshall and Rossman (1994) state that in social environments, learners collaboratively construct knowledge and negotiate meaning through socially interactive conversation among participants

and facilitators during class interactions. The facilitator serves not only as a facilitator, but also as a co-participant who constructs knowledge with learners.

Schellens and Valcke (2006) assert that the knowledge construction process relates to the extent to which teachers help learners to understand, investigate and determine how the implicit cultural assumptions, frames of references, perspectives and biases within a discipline influence the ways in which knowledge is constructed within it. Von Glasersfeld (1995, 1996) proposed three essential epistemological tenets of knowledge construction to which a fourth has been added in the light of more recent writings. These four fundamental tenets provide the foundation for the basic principles of the teaching, learning and knowing process as described by von Glaserfeld (1995). These are: (a) knowledge is not passively accumulated, but rather the result of active cognizing by the individual; (b) cognition is an adaptive process that functions to make an individual's behaviour more viable, given a particular environment; (c) cognition organizes and makes sense of one's experience and is not a process to render an accurate representation of reality; and (d) knowing has roots in both biological/neurological construction as well as social, cultural and language based interactions. Thus, it is acknowledged that the learner plays an active role in the personal creation of knowledge. The importance of experience (both individual and social) in this knowledge creation process, and the realization that the knowledge created will vary in its degree of validity, is an accurate representation of reality (von Glaserfeld, 1995, 1996).

According to Wessel (2004), Ausubel from (Ausubel, Novak & Hanesein, 1986) was one of the first to describe the importance of the knowledge that students held before coming to the classrooms. Wessel (2004) states that this experiential knowledge has a profound effect on how and what students learn as a result of their classroom experiences. Novak (1998) referred to currently held knowledge when defining rote learning. This researcher defined rote learning as *"the acquisition of new information without specific association with the existing elements in an individual's conceptual structure"* (p. 88). Rote learning then, in other words, is simply memorization. Unlike memorisation, knowledge construction, according to Hammet and Collins (2002), occurs when students engage in meaningful activities which are authentic in real situations. Duffy and Cunningham (1996) further assert that knowledge is the product of an interaction between our ideas about the world and our experiences of the world.

There is currently a growing awareness of the value of learning environments that foster knowledge construction, especially in higher education (Oliver, Harper, Hedberg, Wills & Agostinho, 2002). According to Oliver et al. (2002), learning is achieved by the active construction of knowledge supported by multiple perspectives within meaningful contexts. The social interactions among students who are exposed to authentic, real situations are seen to play a critical role in their processes of learning and cognition. In real community settings, the knowledge construction process is viewed as a social act within a particular community context and activity. Hammett and Collins (2002) posit that individuals create understanding of phenomena in relation to what they already know and believe, and in accordance to what they are experiencing at that particular given moment.

Schön (1987) observed that the growth of a reflective practitioner occurs through dialogue in which both the teacher and student reframe their experience and implement interventions to improve current practice(s). According to Schön (1987), students must actively construct their own knowledge and meaning rather than passively receive information from teachers and textbooks. In the past, the conventional process of teaching, and that of instructional design, has typically revolved around a teacher planning and leading students through a series of instructional sequences and events to achieve a desired learning outcome. In the view of Duffy and Cunningham (1996), these forms of typical teaching focus on the organized transmission of a body of knowledge followed by some forms of interaction with the material to consolidate the knowledge acquisition. Contemporary learning theory, on the other hand, is based on the notion that learning is an active process by which this knowledge construction is supported, rather than a process of knowledge transmission (von Glaserfeld, 1995; Schön, 1987; Duffy & Cunningham, 1996).

Torp and Sage (2002) define CBSL as focused, experiential learning (minds-on, hands-on) organized around the investigation and resolution of messy, real world problems. A problem-focused learning curriculum, which naturally integrates school learning with real life, provides authentic experiences that foster active learning and support knowledge construction. This curriculum approach also addresses state and national standards and integrates disciplines. Students are engaged problem solvers as they identify the root of the problem and the conditions needed for a good solution. They pursue meaning and understanding and become self-directed. Teachers are problem-solving colleagues who model

interest and enthusiasm for learning and are also cognitive coaches who nurture an environment that supports open inquiry (Torp & Sage, 2002; Barrows, 1992). As problem-based learning is an authentic experiential form of learning, it is centred around collaborative investigation and the resolution of real world problems, where students address a problematic situation from the perspective of a stakeholder in the situation. As both a curriculum organizer and instructional strategy, problem-based learning fosters active learning, supports knowledge construction, integrates disciplines and naturally combines school learning with real life (Duffy & Cunningham, 1997).

The effectiveness of problem-based and case-based learning depends on student characteristics and classroom culture, as well as the problem tasks. Proponents of such approaches to learning believe that when students develop methods for constructing their own procedures, they are integrating their conceptual knowledge with their procedural skill. As a student-centered constructivist approach to learning, CBSL can be summarized as: *"the use of a real world problem or situation as a context for learning"* (Duffy & Cunningham, 1997). According to Taylor et al. (1996), the students construct knowledge from perplexing experiences in two steps. Firstly, they attempt to make good sense of their new learning experience and then they construct their ideas or understandings from these ideas in relation to their existing networks of concepts. This process of conceptual assimilation involves incremental knowledge growth and only a small degree of perplexity for the alert and motivated student with appropriate background knowledge. One of the challenges facing a good teacher, according to Taylor et al. (1996) is, therefore, to provide learning experiences that

enable students to critically appraise the quality of their background knowledge, so as to enhance the construction of new knowledge.

1.2 PROBLEM STATEMENT

Literature, (Moore & Marra, 2005; Lu & Jeng, 2006; Schellens & Valcke, 2006), reveals some concerns regarding the process of knowledge construction. Lu and Jeng's study shows that most educational programmes tend to favour knowledge conformation rather than knowledge construction, but sometimes facilitation approaches are used which are helpful for enhancing knowledge construction (2006). The study by Moore and Marra (2005) reveals that most learning activities in the classroom interactions remain at Phases I and II of the Interaction Analysis Model (IAM), which only include the discovery and exploration of dissonance or the inconsistency among ideas, concepts or statements.

The IAM model was developed by Gunawardena, Lowe and Anderson in 1997 who suggest that knowledge construction is made up of five phases which are sharing or comparing observations, dissonance, negotiation, construction, testing and application. Moore and Marra (2005) pointed out that students do not reach the phases of negotiation and construction, or the testing and application of new knowledge. According to these researchers, less knowledge construction means less higher-order thinking skills. The study by Schellens and Valcke (2006) confirms that learners in discussion groups were very task-oriented and that higher proportions of high phases of knowledge construction were observed.

Higher education settings offer unique opportunities and challenges to create a model of teaching and learning that is congruent with espoused beliefs about knowledge and how it is constructed. However, according to Mandl, Gruber and Renki (1996), practices in higher education have been criticized for not developing and preparing students for the expertise required in real environments. Mandl et al. (1996) argue that traditional forms of university instruction focus on rote learning and the acquisition of inert knowledge, which cannot be transferred into the complex problems of working life or real life settings. CBSL becomes the solution.

The work by Giles and Eyler (1994) indicates CBSL as a relatively new social and educational phenomenon that suffers from the lack of a well articulated conceptual framework to guide teaching and learning practices (Giles & Eyler, 1994). According to Markus, Howard and King (1993), cited in Giles and Eyler (1994), CBSL is reflected as "fluff" due to the paucity of research related to its theoretical basis. Furthermore, according to these authors, the existing studies focus on the practical implementation of CBSL programmes. Because of the lack of a sound theoretical base with regard to CBSL there is, therefore, a need for more research in this area. Markus et al. (1993) state that because CBSL is related to experiential education, it raises the question of whether it is a field or a social movement. A transition from a movement to a field involves the challenge of developing a clearly defined and commonly shared body of knowledge. Giles and Eyler (1994) have identified two reasons why this process has occurred slowly with respect to CBSL and these are: (a) the practitioners of CBSL are more oriented to action than scholarly pursuits and, thus, their writings have tended to

be focused more on processes and programme description; and (b) CBSL has been quite marginal to the academic enterprise and, thus, educational theorists outside of CBSL have ignored it as a potential area of conceptual as well as empirical inquiry. This represents a kind of anti-intellectualism that is long on concrete action and practice and short on theory (Giles & Eyler, 1994). Therefore, this study intends to explore the processes involved when constructing knowledge in CBSL programmes in basic nursing education, and to generate a middle range theory or model that is grounded on the processes followed when constructing knowledge.

1.3 PURPOSE OF THE STUDY

This study had twofold purposes which were: (a) to explore the processes involved in constructing knowledge in basic nursing programmes in selected South African nursing education institutions that are involved in CBSL, and the conditions under which this phenomenon (process of knowledge construction) occurs; (b) to generate a middle range theory or model to guide the process of knowledge construction in basic nursing education programmes in South Africa that are involved in CBSL; and (c) to describe the guidelines for the implementation of the model.

1.4 OBJECTIVES OF THE STUDY

Within the context of this study, which followed a grounded theory design, the objectives were:

(a) To explore understanding of the phenomenon "knowledge construction" in a community based service-learning programmes;

(b) To analyse the process (action/interaction strategies) of the phenomenon "knowledge construction" in CBSL programmes in basic nursing education;

(c) To identify and describe the casual conditions or antecedents, context, intervening conditions and consequences or outcomes under which the phenomenon "knowledge construction" occurred in CBSL programmes in basic nursing education; and

(d) To develop a middle range theory or model depicting the knowledge construction process in CBSL programmes in basic nursing education in South Africa.

1.5 RESEARCH QUESTIONS

The research questions for this study according to the outlined objectives were as follows:

1.5.1 Question for Objective 1:

(a) What is the understanding of the concept knowledge construction within the context of CBSL in nursing education institution that provides basic nurse training?

(b) What are the core characteristics of the knowledge construction process in CBSL?

1.5.2 Questions for Objective 2:

(a) How is knowledge constructed (deconstructed and reconstructed) in CBSL programmes in basic nursing education?

(b) What role is played by the different role players (students and facilitators) during the knowledge construction process?

1.5.3 Questions for Objective 3:

(a) What forms the context for the process of knowledge construction in CBSL programmes in basic nursing education?

(b) What are the antecedents or casual conditions that led to the development of the CBSL programmes in basic nursing education?

(c) What are the intervening conditions that mediate for the variables of the knowledge construction process in CBSL programmes in basic nursing education?

(d) What intended or unintended consequences or outcomes are achieved during the process of knowledge construction in CBSL programmes in basic nursing education?

1.5.4 Question for Objective 4:

(a) What theoretical model emerges from the knowledge construction process in CBSL programmes in basic nursing education?

(b) How can a middle range theory be developed to facilitate knowledge construction through CBSL programmes in basic nursing education?

(c) What guidelines can be described to implement the model for knowledge construction in CBSL nursing programmes?

1.6 SIGNIFICANCE OF THE STUDY

Giles and Eyler (1994) argue that if we are to know about the social phenomenon of CBSL, we need a systematic way of generating and organizing our knowledge. Robert Merton (1967), in discussing the relationship between theory and research and the need for theoretically derived research hypotheses wrote, *"By providing a rationale, the theory introduces a ground for prediction which is more secure than*

mere empirical extrapolation from previously observed trends." (p. 94). Giles and Eyler (1994) argue that it is necessary and desirable for community based service-learning to develop a theory, both as a body of knowledge and as a guide for pedagogical practice. Therefore, it is hoped that this research study may contribute to the gap in theoretical basis and guiding model for community based service-learning specifically in nursing education. This current study seeks to make a contribution to the field of basic nursing science education in the design and development of a conceptual model for the knowledge construction process in CBSL basic nursing education programmes in South Africa.

The reviewed literature also indicated that most of the studies conducted on knowledge construction are in the area of on-line teaching (Gunawardena et al., 1997; Garrison & Archer, 2003; Moore & Marra, 2005; Lu and Jeng, 2006; Schellens & Valcke, 2006). Very few, if any, address the phenomenon knowledge construction in other forms of teaching or learning. It is hoped that the results of this research study may bring some understanding on the process of knowledge construction in CBSL, especially because learners bring raw information from the community settings to the classroom, which in turn becomes the curriculum content. The findings may contribute to the enrichment of skills for nurse educators who conduct group discussions. Furthermore, it is hoped that this study, which is one of the few in this field, will provide base-line data that may be used for further research. Moreover, the results of this study may bring a shared meaning of the phenomenon of knowledge construction in CBSL programmes in basic nursing education in South Africa and, thus, advance theoretical propositions to guide policy formulation and implementation as institutions of

higher education in the country continue in their efforts for innovative educational programmes.

The model developed is set out in concepts, statements and the relationships between them to give an overall grasp of vital task in knowledge construction in CBSL, thereby, through the development of the model, this study contributes to nursing education, nursing science, community-based education and nursing practice as a whole. Furthermore, the model is a unique contribution to higher education as it brings nursing education in line with the real-world demands and expectations of nursing education within the current South African context of higher education and health care.

1.7 DEFINITION OF CONCEPTS

1.7.1 Knowledge

Knowledge is defined by Davenport and Prusak (1998) as: *"A fluid mix of framed experience, values, contextual information, and expert insight."* For the purpose of this study, the term knowledge is used in the sense of anything that is known by a person. Knowledge is viewed as the social construction of information that occurs through a process of meaningful learning and perspective transformation (Rowley, 2000). Knowledge is the end product of the process of engaging in an intellectual discourse that is characterised by a number of phases of knowledge deconstruction and reconstruction. According to Duffy and Cunningham (1996), knowledge is the product of an interaction between our ideas about the world and our experiences of the world. Knowledge is, therefore, viewed as the personal

ability to interpret information through a process of giving meaning to the information and an attitude of wanting to do so (Rowley, 2000).

1.7.2 Knowledge Construction

Knowledge construction is a mental act of acquiring new knowledge, as well as communicating existing knowledge. According to Hammet and Collins (2002), knowledge construction occurs when students engage in meaningful activities, activities that are authentic in real situations. Duffy and Cunningham (1996) are of the same opinion, but further assert that knowledge is the product of an interaction between our ideas about the world and our experiences of the world.

1.7.3 Community Based Service-Learning

Community service-learning is an educational approach to teaching and learning in which students participate in an organized service activity that meets identified community needs. According to Lazarus (2005b), CBSL engages students in activities where both the community and the student are primary beneficiaries, and where the goals are to provide a service to the community and, equally, to enhance student learning through the provision of this service. Community service-learning allows students to (a) participate in an organized service activity that meets identified community needs and (b) reflect on the service activity in such a way as to gain further understanding of course content, a broader appreciation of the discipline and an enhanced sense of civic responsibility (Bringle & Hatcher, 1995, p. 112).

1.7.4 Community

A community is a social group determined by geographic boundaries and/or common values and interests. Its members know and interact with one another. It functions within a particular social structure and exhibits and creates norms, values and social institutions (Stanhope & Lancaster, 2000).

1.7.5 Student

For the purpose of this research, a student is a person who is studying at a nursing education institution (nursing school, college or university) and registered with SANC as students for the course leading to registration as a nurse (general, community and psychiatric) and midwife.

1.7.6 Nursing Schools

For the purpose of this research, a nursing school is a tertiary educational institution that offers a diploma or degree in Nursing (General, Psychiatric, Community) and Midwifery to students who at least have a senior certificate and want to qualify as Registered Nurses. SANC defines a nursing school as: "a postsecondary educational institution" (p. 1). Nursing school, nursing education institution and nursing college will be used interchangeable in this research study.

1.7.7 Basic Nursing Education

According to Regulation Number 425 of 22 February 1985 of the South African Nursing Council (SANC), basic nursing education refers to the comprehensive undergraduate education of nursing students leading to registration as a nurse (general, community and psychiatric) and midwife. The duration of this basic nursing education programme is four years (SANC, 1985).

According to Bastable (1997), nursing education is the process of influencing the behaviour of nurses by producing changes in knowledge, attitudes, values and skills required to maintain and improve their competencies for the delivery of quality service to the consumer. The education process is the broad umbrella process of teaching and learning and involves the communication of information about a specific skill in the cognitive, affective or psychomotor terrain (Bastable 1997).

1.7.8 Facilitation of Learning

In the context of this study, facilitation of learning implies creating learning opportunities, and making facilities and/or resources available for learning. In facilitating learning, the nurse educator should be able to create learning opportunities for students in the theoretical and clinical settings, and guide and support students to attain learning outcomes.

1.7.9 Learning Issues

The learning issues in the context of this study, are the topics of any sort which are deemed of potential relevance to the problem identified and which the particular group feels they do not understand as well as they should and therefore forms the content for learning.

1.8 CONCLUSION

This chapter presented the background to the study, which is aimed at establishing processes involved in constructing knowledge in basic nursing education programmes. The rationale for the paradigm shift from knowledge transmission to

knowledge construction in the classroom has been traced. Various contextual grounding has been presented, including the more recent calls from the Education White Paper (1997) on the transformation of higher education, whereby all higher education institutions in South Africa should engage with communities, through CBSL programmes, to promote and develop social responsibility and awareness among students with regard to the role of higher education in social and economic development. Problems highlighted in this chapter are that CBSL has been quite marginal to the academic enterprise and that, consequently, educational theorists outside of CBSL have ignored it as a potential area of conceptual as well as empirical inquiry. This provided the basis for the need of a study on the process of knowledge construction in basic nursing education programmes in South Africa.

1.9 THESIS OUTLINE

The envisaged chapter divisions are as follows:

Chapter one is the overview of the study. It orients the reader by presenting the background to the study in terms of its context, problem statement, purpose statement, objectives and research questions, the significance of the study and the clarification of concepts.

Chapter two is the review and analysis of the literature related to the phenomenon in the study. A review of theoretical and philosophical underpinnings of knowledge construction in CBSL education programmes is presented.

Chapter three presents the research paradigm and design. The grounded theory process is discussed comprehensively, giving an outline of where and how data was collected and analyzed.

Chapter four presents the analysis of data according to Strauss and Corbin's (1990) paradigm model and also provides a sense of direction concerning the purpose of this study. In this chapter, the results and data analysis of the study are outlined in a manner which indicates how the objectives of the study were achieved.

Chapter five presents the interpretation and discussion of the main findings.

In *chapter six*, a middle range conceptual model of the process of knowledge construction in CBSL programmes in nursing education is presented, which is built on the conceptual and theoretical schema provided in chapters four and five.

CHAPTER TWO

LITERATURE REVIEW

2.1 INTRODUCTION

According to Burns and Grove (2007), literature review forms the theoretical and analytical framework that serves as the foundation for the research study. Not only is the researcher helped to identify the methodological techniques used to research similar phenomena, but to identify contradictory findings as well. In this chapter, the researcher will present selected literature to give a background to the study.

According to Strauss and Corbin (1990), a selected literature review is done so that *"the researcher will come to the research situation with some background in the technical reading"* (p. 50). This is supported by Smith, cited by Hunter, Har, Egbu and Kelly (2005), who states that the researcher is able, therefore, to approach the subject with some background knowledge. This researcher adds, however, that it is important that the reading is not too extensive as the theories should evolve from the data itself, thus producing a grounded theory. Further to this, Burns and Grove (2007) state that a literature review is only a means of making the researcher aware of what studies have been conducted and that the information from these studies should not be used to direct data collection or theory development.

Chenitz and Swanson (1986) argue that a lengthy review in grounded theory study can, in fact, reflect overdependence on existing knowledge. These authors further state that a review of existing literature can show gaps or systematic bias in existing

knowledge and thus provide rationale for launching a grounded theory study (Chenitz & Swanson, 1986).

According to Strauss and Corbin (1990; 1999), the selective sampling of a second body of literature review should be woven into the emerging theory during the third stage on grounded theory induction. The literature review, in the context of this study, covered an overview of Kolb's experiential learning theory, Dewey and Freire's learning theories, constructivism theory as well as the theoretical and philosophical underpinnings for problem-based and case-based learning, as these relate specifically to the process of knowledge construction in CBSL programmes in basic nursing education. Against this background, a theoretical model will be created for the design and implementation of a CBSL programme in nursing.

2.2 DAVID KOLB'S EXPERIENTIAL LEARNING THEORY (1984)

David Kolb's experiential learning theory, built upon the foundational work of Dewey (1916; 1933), provides a conceptual framework for CBSL educators. The experiential learning theory emphasizes the notion that true experiences play an important role in the learning process (Bringle & Hatcher, 1996). Experiential learning is defined as a sort of learning which enables students to apply newly acquired knowledge in a relevant setting. Houle (1980) defines experiential learning as *"education that occurs as a direct participation in the event of life"* (p. 221). This researcher maintains that learning is not achieved in a formal setting, but in the practice of reflecting on daily experiences. Kolb (1984) furthers the definition of experiential learning by developing a model which details learning through experience. Kolb's experiential learning model is a continuous spiral process which

consists of four basic elements. This model suggests that when one learns from experience, one goes through a four-step cycle which: (a) starts with a concrete experience, (b) is followed by reflective observations, (c) processing of information through abstraction and conceptualisation and (d) initiation of active experimentation. Kolb (1984) notes that learning can begin at any point in the cycle, and add that reflection is essential to this learning process because it can link the concrete to the abstract (Bringle & Hatcher, 1996; 2000). According to Bringle and Hatcher (2000), the key is to discipline community service-students to base their reflection on concrete experiences, given that many individuals in academic environments have a tendency to leap prematurely into theoretical or conceptual discussions. They believe that by grounding students and connecting them to real experiences will make reflection exercises worthwhile.

According to Bringle and Hatcher (2000), vagueness about reflection in CBSL exists because the term reflection describes both a cognitive process and a structured learning activity (Dewey, 1933; Schön, 1982; Kolb, 1984) as cited in Bringle and Hatcher (1996). The main emphasis of Kolb's (1984) experiential learning theory is the importance of learning experiences whereby the process of education and curriculum activities are more meaningful to the students themselves. According to Betts (1985), student driven learning is more likely to be effective and meaningful when based upon experiences from which they gain a sense of self worth and achievement. For some students, this mechanism for learning will require them to move outside of their 'comfort zone' and be prepared to take risks (Betts, 1985).

2.2.1 Conceptual Representation of Experiential Learning

Kelly (1997) states that experiential learning is not just 'fieldwork' or 'praxis', but that it is the basis for these approaches and is a theory that defines the cognitive processes of learning. Jarvis (1995) asserts that experiential learning is actually about learning from primary experience, that is, learning through the senses. Experiential learning, therefore, may be defined as knowledge, skills and/or abilities attained through observation, simulation, and/or participation that provide depth and meaning to learning by engaging the mind and/or body through activity, reflection and application. Kolb (1984) defines experiential learning as the process whereby knowledge is constructed by the transformation of experience.

Knowledge results from the combination of grasping and transforming ones' experience(s). Based on a four staged 'experiential learning cycle', the model depicts learning as occurring in four consecutive stages in which students encounter the world through a concrete experience (CE); reflect on and make observations about those experiences (RO); develop abstract conceptualisation from those reflections (AC); and conduct active experimentation on those conceptualizations through evaluating, testing and applying their generalisations (AE) (Kolb, 1984; Cavanagh, Hogan & Ramgopal, 1995; Willcoxson & Prosser, 1996; Fox & Ronkowski, 1997; Raschick, Maypole & Day, 1998; Felder & Brent, 2005). Kolb's model focuses on how students most readily perceive the information to be learned and how they prefer to process that information.

According to the four-staged learning cycle, concrete learning experiences are the basis for observations and reflections. These reflections are assimilated and distilled

into abstract concepts from which new implications for action can be drawn. These propositions can be actively tested and they serve as guides in creating new learning experiences and new knowledge (Kolb, Boyatzis & Mainemelis, 1999). In the concrete experience (CE) stage, an individual carries out a particular action and then observes its effect. Experiencing or immersing oneself in the 'doing' of a task is the stage in which the student simply carries out the task assigned. According to Kolb et al. (1999), the engaged person is usually not reflecting on the task at this time, but rather just carrying it out with intention. The next phase is reflective observation (RO), which involves stepping back from task involvement and reviewing what has been done and experienced; the skills of attending, noticing differences and applying terms help to identify subtle events. One's paradigm (values, attitudes, and beliefs) influences whether one can differentiate between certain events.

Understanding the effects of an action in a particular instance is required in order to anticipate what would follow from the action if it were to be taken again under the same circumstances (Kolb et al., 1999). After reflective observation, the student moves into a phase of abstract conceptualization (AC). According to Kolb et al. (1999), this involves interpreting the events that have been noticed and understanding the relationships among them. It is at this stage that theory may be particularly helpful as a template for framing and explaining events. The student's paradigm once again influences the interpretive range a person is willing to entertain (Kolb et al., 1999). Understanding the general principle under which a particular instance falls does not imply the ability to express the principle in a symbolic medium. This is the stage where students build structures of explanations for themselves about the way the world works. Students develop theories or rules to

define their expectations and the cause-effect chain. The last stage of Kolb's experiential learning cycle is active experimentation (AE). During this stage, new knowledge is applied through action in new circumstances, within the range of generalisation. Here, planning takes the new understanding and translates it into predictions about what is likely to happen next, or what actions should be taken to refine the way in which the task will be handled (Kolb et al., 1999).

Kolb's four-staged learning cycle is ideal for learning and, in an ideal situation, these dimensions would constitute a cycle through which the student progresses. In reality, however, students begin at different points of the cycle and may or may not progress in a systematic manner (Kolb et al., 1999). The four learning styles or modes of Kolb are also paired into two continua: concrete experience versus abstract conceptualisation and reflective observation versus active experimentation. The latter pair primarily reflects the differences between inductive and deductive learning. For a complete learning experience to take place, Kolb believes that students must complete all four of the learning stages. Although everyone utilises each of the four learning styles to some extent, each individual has a unique preferred learning style, resulting from a tendency to learn either from concrete experience, or through the construction of theoretical frameworks such as active experimentation combined with the tendency to learn either through abstract conceptualisation or through reflection observation (Fox & Ronkowski, 1997; Willcoxson & Prosser, 1998; Raschick et al., 1998).

2.3 DEWEY'S EDUCATION THEORY: EXPERIENCE AND EDUCATION (1938)

Much of the foundation of CBSL is derived from John Dewey's educational and social philosophy. Dewey (1938) states that experience is necessary for learning, learning is for the purpose of some end beyond itself, thinking and acting are connected by reflection, democracy requires active participation by an engaged citizenry, associating with different others leads not only to learning, but to having a broader view and breaking down of divisions between people and democracy and community life are synonymous (Dewey, 1913; Giles & Eyler, 1994). According to Dewey (1938), the belief that all genuine education comes about through experience does not mean that all experiences are genuinely or equally educative. For Dewey, experience and education cannot be directly equated to each other as some experiences may distort the growth of further experience. Some experiences may be negative to students and may produce a lack of sensitivity and responsiveness. In such cases, Dewey says, *"...then the possibilities of having richer experience in the future are restricted"* (Dewey, 1938, p. 25).

Dewey identifies two aspects of the quality of experience and these are agreeableness and effect on later experiences. He states, *"If an experience has one of these, but not the other, it is not educative."* (1938, p. 25). In specifying how experience is educative, Dewey proposes two principles which form the core of his philosophy of experience. These are the principle of continuity and the principle of interaction. The principle of continuity is based on the fact, according to Dewey, that all experiences occur along a continuum called the experiential continuum. He maintains that each experience builds on previous ones and that they need to be

directed to the end of growth and development. It is, therefore, the role of the teacher to shape and direct experiences along this continuum. This is the temporal or linear dimension of experience and the learning derived from the continuity of experiences (Dewey, 1938). The principle of interaction is the lateral dimension of experience, where the internal and objective aspects of experience interact to form a situation (Dewey, 1938). This means that learning results from a transaction between the individual student and the environment.

For Dewey, these two principles interact and unite to form the longitudinal and lateral aspects of experience. The implication of these principles for education is that for knowledge to be usable through recall and application, it has to be acquired in a situation. Otherwise it is segregated from experience and is forgotten, or not available, for transfer to new experiences. This means that acquisition, as well as application of knowledge is dependent on the context, a key element of which is the interaction in the situation.

The purpose of the interaction is to derive learning from experience through reflective thinking which leads to inquiry, or what Dewey called the scientific method. As Dewey noted in discussing how both ideas and evidence came into play while thinking: *"Reflective thinking impels into inquiry*" (1933, p. 7.) Dewey's definition of reflective thinking is: "*Active, persistent and careful consideration of any belief or supposed form of knowledge in the light of the grounds that support it and the further conclusions to which it tends…"* (1933, p. 7).

2.3.1 The Nature of Knowledge in Dewey's Views

Another element of Dewey's ideas about learning and knowledge that is relevant to theorizing about how learning occurs in CBSL is his idea of reflective thinking (Giles & Eyler, 1994). It is interesting to note that Dewey uses the term 'reflective thinking' to connote a type of thinking and he uses the term 'reflective activity' to mean the complete set of activities related to reflection. It seems that Dewey places specific emphasis on reflective thinking, whereas he uses the term reflective activity in a more general, and possibly less precise, way (Giles & Eyler, 1994). What is central for Dewey, however, is that thinking and action are inextricably linked. He states that: *"…reflection includes observation…"* (1933, p. 102) which is the empirical basis of knowing and also the link between what is experienced and how that experience is processed to produce learning. He enlarges by saying: *"Data (facts) and ideas (suggestions, possible solutions) thus form the two indispensable and correlatively factors of all reflective activity"* (1933, p. 104).

According to Giles and Eyler (1994), the community was a core concept of Dewey's social philosophy as he believed that communal association gave rise to the moral, intellectual and emotional aspects of life, as well as being the foundations of democracy. This view strongly influenced Dewey's idea of organizing schools to resemble a "*miniature community*" (1916, p. 418). Dewey envisioned that *"…the school itself shall be made a genuine form of active community life, instead of a place set apart in which to learn lessons*" (1916, p. 418). It is thus obvious that Dewey's basic theory of CBSL, involving interaction of knowledge and skills with experience, is the key to learning. Students learn best not by reading 'Great Books' in a closed room, but by opening the doors and windows of experience. Learning

starts with a problem and continues with the application of increasingly complex ideas and increasingly sophisticated skills in solving increasingly complicated problems (Lazarus, 2005b). Education is grounded in community experience.

2.3.2 Implications for Teaching-learning Process

Dewey (1859-1952) rejected teaching practices that positioned students as passive receptacles, such as the rote learning of isolated facts, advocating instead for a pedagogical approach that involved students' active engagement with each other and with the world. Dewey emphasized the importance of active social learning environments rather than one-sided lectures. He argued that learning involves the active construction of knowledge through engagement with ideas in meaningful contexts, rather than the passive absorption of isolated bits of information.

Freire (1972) maintained that education must engage with the language and experiences of students drawing upon their thematic universes, learning must takes place within meaningful contexts that allow students to build upon the knowledge they already have. Dewey (1933) asserts that teachers need to understand the experiences and world views of their students in order to successfully further the learning process. Moreover, associate learning is associated with critical reflection, with actively seeking after truth and applying it to future problems. As such, Dewey encouraged educators to implement real-world practical work-shops as well as to provide students with opportunities to reflect upon their experiences and to express their thoughts (Dewey, 1913; 1916; 1933).

Reports by Fletcher (2005) suggest that most teaching, particularly at the level of higher education, still involves the teacher as the authority and the dispenser of knowledge and the students as passive recipients. Perhaps the most obvious marker of experiential education is the shift in roles required for both teachers and students.

Teachers who utilize experiential education become facilitators and, in doing so, engage their students in some of the decision-making and problem solving that have in the past been the sole responsibility of the teacher (Fletcher, 2005). In addition, teachers facilitate the transfer of learning from the experiential activity to the real world, structure the process of reflection for the students in order to derive the most learning from the experience and ensure that the learning outcomes are reached. Some teachers call this shift a move toward student-centred teaching, or a child-centred curriculum (Fletcher, 2005). Overall, it means that the students are placed at the centre and the teacher's role is to develop methods for engaging the students in experiences that provide them with access to knowledge and practice in particular skills and dispositions (Dewey, 1938).

The role of the student is transformed in relation to the role of the teacher. Therefore, the students become more active and involved, with additional responsibility and ownership in the process of learning. Whether in an outdoor educational programme or a CBSL programme, the student's role is one of engagement and deliberation , a continuous cycle of action and reflection, or *praxis,* as defined by Paulo Freire (Fletcher, 2005).

2.4 FREIRE'S EDUCATION THEORY: DEMOCRACY (1972)

As Hlebowitsh (1992) stated, critical theorists cannot be encapsulated into one category. Paulo Freire, one of the critical theorists, had his own school of thought which had a major impact on revolutionizing education. Sharing the same view, Elias (1975) asserted that Paulo Freire had a reputation of being a teacher who proposed education as a necessary means for achieving revolution. This was evident in his book titled: '*Pedagogy of the Oppressed'* (1972). This book outlined the type of education necessary for bringing about drastic political and social changes in society. In his writings, Freire was challenged by the poverty and developmental shortfall of the oppressed people in Brazil (Bertrand, 1995).

Freire was regarded by many authors (Elias, 1975; Bertrand, 1995; Roberts, 1996; Fletcher, 2005 to mention a few) as the first teacher who developed the notion of conscientization pedagogy and who put forward a critical conception of culture. With his insights into what he called *'the culture of silence'* (Freire, 1998, p. 14), Freire championed changing the world of those submerged in a culture of silence by means of praxis, that is, reflection and action upon the world. In an analysis of Freire's work, Betrand indicated that Freire's pedagogy is positioned between cooperative education, which is very pedagogical in description, and critical pedagogy which is more social and less pedagogical. Weffort in Ellias (1975) also highlighted that Freire's theory of education invested more in political goals and strategies than in education itself.

MacIntosh (1993) believes that nursing must shift paradigms away from what Freire (cited in Betts,1985) refers as the 'banking model', in which nursing education

institutions deposit information in students as receptacles, and move towards a variety of approaches with the emphasis on empowering students to acquire and analyse information on their own. For such a model of learning, the knowledge process, according to MacIntosh (1993), will be facilitated by using blended learning approaches from experience through enquiry, thinking and reflection and relating this experience through learning materials and facilitation. The term '*banking education'* was coined by Paulo Freire to refer to educational pedagogy which is likened to the process of banking. The passive student becomes a depository for storing bits of knowledge which might be withdrawn and used later in life. In banking education, the teacher is the subject of the learning process, while the students are objects or containers that are filled by deposits of information. Freire wrote: *"The more full the container, the better the teacher"* (Freire, 1972, p. 98). Those students easiest to fill are judged the better students, and those students who resist being filled are regarded as 'problem' students (Freire, 1972).

Banking education isolates the student from the content and process of education. It assumes that the teacher knows everything and the students know nothing. The teacher narrates, prescribes and deposits information which the student must mechanically receive, memorise and repeat. The *'banking concept'* of education is based on the perception of knowledge as unchanging finite entities which, like gifts, can be bestowed on those who don't have them by those who do (Fletcher, 2005). The politics of banking education is justified on the basis of the assumption that the student's ignorance is absolute. The teacher is considered to be a 'monopolist' of knowledge whose function is to concentrate on artificial and arbitrary scholarship.

The teaching role is defined in terms of the transference of knowledge from the knowledgeable 'teacher' to the ignorant 'student' (Wessel, 2004; Fletcher, 2005). The implication for education is that the teaching model of banking education is based on student-teacher contradiction and the lecture-based curriculum. According to Fletcher (2005), this model is compatible with the aim of promoting the oppressive cultural forces of the dominant authority in society and with the disempowerment of students. However, in view of the current explosion of knowledge and its continuous challenge to the validity of orthodox opinion, the assumption upon which it is based, that the possession of knowledge brings with it the power to control the future, is no longer valid (Wessel, 2004; Fletcher, 2005).

Contrary to banking education is problem-posing education. According to Freire (1972), problem-posing education poses the problems of human beings in their relations to the world. Freire state that: *"Liberating education consists in acts of cognition, not transferrals of information. It is a learning situation in which the cognizable object intermediates the cognitive actors-teacher on the one hand and students on the other"* (p. 79). Students are active students, who internalize the problems and link them to existing experiences to reflect on. Through problem-posing education students are not only taught facts and information as in banking education, but they learn along with the teacher how to think and to reflect on their lives, experiences and the activities around them. They are no longer passive students, nor are they are passive in their community. They are now knowledgeable and are aware of their humanity, and their voices deserve to be heard (Freire, 1972).

2.4.1 The Nature of Knowledge in Freire's Views

According to Freire (1997), knowledge is constructed, as learning is a constructivist process owned by the student and facilitated by the teacher in interaction with the student. Knowledge is, therefore, not transferred by the teacher from his/her dominating position to the student; rather it is constructed by the students with the guidance of the teacher. Betrand (1995) explains that the teacher commits to constructing knowledge with the student in a permanent dialogue. Regarding Freire's views on knowledge construction, everyone knows something and that the subject is responsible for building up knowledge. According to Gadotti (1997), students only learn when knowledge is meaningful for them in the lives they live. Gadotti emphasizes that students learn through their own transforming action on the world. They are the ones who construct their own categories of thought, organise their lives and transform the world. In other words, students will actively participate in constructing knowledge when that knowledge is meaningful to them (1997).

Freire (1979) condemns the transference of pre-existing knowledge and referred to it as banking education. Dewey (1916), also, did not favour the transference of knowledge to the students. According to Dewey such knowledge cannot be regarded as knowledge, but simply information that has been transferred by the teacher, who claims to know everything, to the student, who is a blank slate. Knowledge, according to Dewey and Freire, is constructed and, therefore, the students should be actively involved in the process of knowledge construction. Gadotti (1997), however, states that certain conservative critics claim that Freire does not have a theory of knowledge because he did not study the relationships between the subject of knowledge and the object, but was only interested in the end product. In defence

of Freire, Gaddoti (1997) points out that this statement is not true because Freire's thinking is based on an explicit anthropological theory of knowledge, as knowledge is socially constructed through the dialectical tension praxis.

2.4.2 Implications for Teaching-learning Process

Betrand (1995) asserts that Freire's theory of education advocates for democratic and cooperative teaching and learning approaches. According to Godatti (1997), Freire proposed a new conception of a teaching relationship that is based on dialogue. For Freire, without dialogue between the teacher and students there is no communication, and without communication there can be no true education. The dialogue moves the student from the level of being an object to being a subject. To promote this, Freire proposed a structured dialogue approach in which every one participates as co-students to create jointly the understood reality (1979). Dialogic action has two basic dimensions, reflection and action. Through dialogue, individuals engage in critical reflection or conscientization, to analyze the social context for personal problems and their own roles in working on the problems (Wallerstein, Sanchez-Merki & Dow, 1999).

The English term 'conscientization' is a translation of the Portuguese term '*conscientização'*, which is also translated as "consciousness raising" and "critical consciousness**"**. The term was coined by the renowned Brazilian educator, activist and theorist, Paulo Freire, in his 1970 work, which was grounded in critical theory. Critical consciousness focuses on achieving an in-depth understanding of the world, allowing for the perception and exposure of social and political contradictions, including taking action against the oppressive elements in one's life.

According to Margonis (1999), the dialogical unity of the student-teacher relationship provides the basis for the recreation of both students and teachers. To Freire, students often bring a wealth of knowledge to educational interactions, but do not have explanatory models which are developed in the academy. Morgonis asserts that intellectuals are often informed by a variety of explanatory perspectives, but lack the knowledge and multiple sensitivities embodied in students' acts and words. Freire, therefore, recommends that educators should soak themselves in this knowledge and assimilate the feeling, the sensitivity and the actions of the masses (1979). Teachers are enriched and transformed by understanding their students. Furthermore, they learn to respect the knowledge of the students. In view of Freire's theory of promoting dialogue in education, Margonis (1999) refers to it as relational education.

Rather than using the banking method, educators subscribing to Freire's pedagogy employ problem-posing methods which facilitate active student involvement. Roberts (1996) clarifies that Freire does not use the term 'problem solving' since students are not always capable of problem solving. According to Freire (1973), problem posing *"...affirms individuals as being in the process of becoming as unfinished, uncompleted beings in and with a likewise unfinished reality"* (p. 100). The incompleteness of individuals necessitates education to be an ongoing activity (Freire, 1972).

Serpa and Serpa (2002), in their review of Freire's '*Pedagogia da Autonomia'* (1997), indicated that Freire provided a framework of principles that inform the

professional practice of teachers engaged in teaching and learning anywhere. There are 27 principles in all, but these are clustered into three: (a) there is no teaching without learning; (b) to teach is not to transfer knowledge; and (c) the process of education is only a human endeavour. Adding to the principle that there is no teaching without learning, Freire highlighted those principles which demanded the interaction of teaching and learning. These included methodological rigor, research, respect for the personal knowledge of each student, critical thinking, risk taking, acceptance of the new, rejection of any form of discrimination, critical reflection about educational practice and recognition of the assumption of cultural identity.

According to Bertrand (1995), Freire believed in democratic instruction as it allows all students to express themselves freely and to make their intentions known. More importantly, Betrand asserted that democratic instruction allows all students to question the answers rather than answering the questions, as in the traditional system. According to Serpa and Serpa (2002), Freire viewed teaching as much more than knowing about a subject here and now, but reaching and transforming the beyond. Education that is based on Freire's pedagogy has a social, political and ethical role. As van Wyk (1999) states, it is not exclusively for liberating the oppressed from the oppressors, which may be the students from the dominating traditional teachers or any other socially oppressed people, but is also applicable to all other groups as it emphasizes the importance of dialogue, reflection and the critical analysis of situations before acting on them. It facilitates cooperative and collaborative learning, which is important in successful teamwork.

2.5 AN OVERVIEW OF CONSTRUCTIVISM AS THEORETICAL UNDERPINNING TO COMMUNITY BASED SERVICE-LEARNING

Constructivism is an epistemology, a philosophical explanation about the nature of knowledge. Meaning-making is at the heart of the philosophy of learning called constructivism (Jonassen, Peck & Wilson 1999). Epistemology is based on the Greek words*, 'episteme'* meaning 'knowledge' and *logos* meaning 'theory' (Wikipedia, 2010). Thus, epistemology is concerned with the definition of the theory of knowledge, the sources and criteria of knowledge, the kinds of knowledge possible and the relation between the one who knows and the object known.

The epistemology of constructivism is that human learning is constructed by deriving meaning from real life environments (Hein, 1999; Southwest Educational Development Laboratory (SEDL), 1998). Constructivist theory has been gaining attention amongst educators who contend that its philosophy is that individual learners construct their own reality on their perceptions of experiences, so an individual's knowledge is a function of prior experiences, mental structures and beliefs that are used to interpret objects and events (Brooks & Brooks, 1999).

Piaget's constructivism is based on his views of the psychological development of children. In short summation of his educational thoughts in the book *'To understand is to Invent'* in 1973 Piaget called for teachers to understand the steps in the development of the child's mind (Brooks & Brooks, 1999). The fundamental basis of learning, he believed, was discovery: *"To understand is to discover, or reconstruct by re-discovery, and such conditions must be complied with if in the future individuals are to be formed who are capable of production and creativity*

and not simply repetition" (Brooks & Brooks, 1999, p. 78). Constructivism's central idea is that "knowledge is constructed and that learners come to learning situations with knowledge gained from previous experience, and that prior knowledge influences the new or modified knowledge they will construct from new learning experiences" (SEDL, 1998). Constructivism is a belief that all knowledge is necessarily a product of our own cognitive acts. By building on previously constructed knowledge, learners can better grasp the concepts and can move from simply knowing the material to understanding it.

Constructed knowledge promotes critical thinking, which allows the learner to integrate concepts within and between disciplines, to represent concepts in multiple forms and to justify, defend and reflect on these concepts (Confrey, 1992). Brooks and Brooks (1999) assert that the understandings that one invents are always tentative and incomplete. Knowledge grows through exposure; and understanding becomes deeper and stronger if one tests it against new encounters. Another perspective holds that knowledge is constructed by assembling meaning from pieces of reality within the mind of the learner, and that genuine transferable knowledge is more likely to occur when the emphasis is shifted from activities that teachers do, to those that learners perform (Bailey, 1996).

Knowledge construction, according to constructivism, is premised on the belief that learners actively create, interpret and recognise knowledge individually. These fluid intellectual transformations occur when learners reconcile formal instructional experiences with their existing knowledge, with the cultural and social contexts in

which ideas occur and with a host of other influences that serve to mediate understanding (Windschitl, 2002).

Grabinger and Dunlap (1995) and Windschitl (2002) claim that the knowledge construction process starts with the view that knowledge must be constructed within the cognitive structure of every individual, so that it is fundamentally personal, while being dependent on experiences in the learning environment and on social interactions. Grabinger and Dunlap (1995) indicate that with knowledge construction, *"meaning is not given to us in our encounters, but it is given by us, constructed by us, and in our own way, according to how our understanding is currently organised"* (p. 28). Furthermore, Grabinger and Dunlap suggest that learners use their experiences to actively construct understanding by having it presented in an already organised fashion (1995).

According to Doolittle (1999) and George et al. (2004), constructivism is defined as a means by which learners acquire knowledge, as knowledge is constructed from the inside, in interaction with the environment, rather than by internalising it directly from the outside. Fish and Taylor (1997) maintain that constructivism can be defined as that philosophical position which holds that any so-called reality is, in the most immediate and concrete sense, the mental construction of those who believe they have discovered and investigated it. Applefield et al. (2001) contend that constructivism is an active process in which learners actively construct knowledge as they try to comprehend their worlds. Within constructivism, reality is constructed by the knower based upon mental activity (Jonassen, 2000). Cobb (1994) argues that constructivism is a philosophy about learning that proposes that learners need to

build their own understanding of new ideas. In similar views Noddings (1990) echoes that the assumption according to constructivism is that an agent or agents create knowledge from their environment (empiricism) or have it emerging from their genes (nativism).

2.5.1 A Constructivist Learning Environment

A constructivist learning environment is: *"a place where learners may work together and support each other as they use variety of tools and information resources in their guided pursuit of learning goals and problem- solving activities"* (Wndschitl, 2002, p. 135). McLoughlin and Luca (2001) postulate that in a constructivist learning environment, there is interaction, communication, exchange of views, collaboration and support for learners, but that learners need to take responsibility for the learning process. The salient features of a constructivist learning environments include an emphasis on features such as authenticity (learning located in actual contexts or real tasks), group work (the social interaction and feedback instrumental in communication and higher order thinking processes), learner control (learners active in defining and negotiating learning tasks) and scaffolding (support of learners as they progress from novice learners to self-regulated experts) (McLoughlin & Luca, 2001).

A constructivist learning environment requires self-regulation and the building of conceptual structures through reflection and abstraction (Von Glasersfeld, 1995). Fosnot (1996) and Von Glasersfeld, (1996) assert that concept development and deep understanding are the goals of instruction rather than behaviours or skills. For educators, the challenge is to be able to build a hypothetical model of the conceptual

worlds of learners, since these worlds could be very different from what is conceived by the educator. Applefield et al. (2001) further states that new technologies present many challenges for educators, for they have great potential for achieving many of the underlying goals of education, however, like any tool, they must be used reflectively and viewed through a critical lens (Applefield et al., 2001). The challenge is to use computer technology in a way that supports learning and responds to the needs of the learners.

2.5.2 Implications for Teaching-learning Process

Knowledge construction in a CBSL classroom is an active process that is learner-centred. Learners select and transform information, construct hypotheses, and make decisions (Hardy & Taylor, 1996). A focus on learner-centred learning may be the most important contribution of CBSL to knowledge construction (SEDL, 1998). Jonassen, Peck and Wilson, (1999) point out that teaching is a process of enabling learners to construct their own meaning from their own experiences by providing those experiences and guiding the meaning-making process. The teacher's role is to guide, monitor and act as a facilitator to enable the learner to be at the centre of the learning process (Bennet et al., 2002). Millar (2002) stresses that teachers should provide opportunities for learners to make their own ideas explicit and at the same time encourage the generation of a range of conceptual schemes.

According to Applefield (2001), the opportunities provided in a classroom should offer the potential to form rich new learning experiences that integrate prior personal experiences and learning, foster rich opportunities in the understanding of future experiences and, consequently, provide an outline for a rich autobiography

for each learner. In any learning environment there are at least three entities: a teacher, a learner and learning content. Tobin (1993) speculates that in a service-learning based situation, the teacher is the facilitator and the learner the constructor of knowledge.

Brooks and Brooks (1999) explain that in a constructivist classroom, the teacher, as facilitator, needs to formulate classroom lessons that are flexible enough to meet the needs and interests of a classroom full of students, but are relevant to the required curriculum. In the community service-learning environment, the role of the teacher is to organise information around conceptual clusters of problems, questions and discrepant situations in order to engage the students' interest (Noddings, 1990). Hardy and Taylor (1996) emphasise that the teacher is not the deliverer of knowledge, but the facilitator and intelligent guide who engages student interest in learning. Students can only construct knowledge according to their developmental stage and their pre-existing knowledge base. Teachers should pose problems of emerging relevance and assess learner learning in the contexts of daily teaching, embedded directly into the current activities (George et al., 2004).

A constructivist teacher acts as a mediator between learners' prior knowledge and their lived worlds, creating a learning environment that will help the leaner to develop increasingly complex understandings and skills (Fisher & Taylor, 1997). A constructivist teacher is also seen as a facilitator who supports, gives guidance, organises and designs appropriate learning tools, and gives feedback to the learners (Tobin, 1993; Fisher & Taylor, 1997; Doolittle, 1999). Bertrand (1995) contends that the teacher's role in a teaching environment is to take into account their

learners' learning processes and knowledge, and also to find out what learners know, as well as their naive or spontaneous conceptions. It is evident that knowing and understanding where the leaner is in terms of teaching and learning, is a fundamental aspect of knowledge construction in teaching (Bertrand, 1995).

Constructivists hold that learning is a personal discovery, based on insight derived as a result of learners' intrinsic motivation. Bennet et al. (2000) stress that considering the characteristics of a constructivist approach to teaching and learning, the learner decides what he or she needs to learn by setting personal learning goals and constructing for himself or herself meaningful knowledge as a result of his or her own activities and interaction with others. According to Wessel (2004), constructivist learning environments provide learners with opportunities to actively choose their own activities, control their own pace and direction, support one another in a co-operational setting, use a variety of tools and information in their pursuit of learning goals or outcomes and solve problems through problem-based learning.

Furthermore, Wessel (2004) point out that the constructivist stance contributes to the validation of *"a view of instruction that is less defined by pre-specific objectives and more open to the initiative of the teacher and learners. The result is instruction that depends more on context sensitive decisions and resources"* (p. 27). Cobb (1994) suggests that a constructivist approach to teaching and learning is both an individual and a social process, and that learners construct meaningful knowledge for themselves as a result of their activities and interaction with other.

Constructivism, thus, puts the learner in charge of his or her learning, and the teacher is viewed as a facilitator.

2.6 PHILOSOPHICAL BASIS FOR PROBLEM-BASED AND CASE-BASED LEARNING APPROACHES

Problem-based and case-based learning are based upon the constructivist philosophy of learning (Jonassen, 1991). This philosophy posits that learners are not just active in interacting with information, but also in building knowledge through using elaboration, interpretation of information, integration with existing knowledge, and articulation and re-articulation of information in the light of further learning or experience. Secondly, learning involves accommodating and accepting a range of perspectives that can co-exist together, which might best be learned through social discourse. Finally, learning and meaning arise from experiences in particular situations (Brown, Collins & Duguid, 1989; Collins, Brown & Neuman, 1990), more specifically, in situations that are 'authentic' in having real world context, utility and relevance from the presenting case.

A problem or case serves as a representation of real-world phenomena and is a safe, yet meaningful, environment in which students can develop understanding of the complexity of networks in communities. Jonassen and Hernandez-Serrano (2002) describe the case-based reasoning cycle as the presentation of a new problem-case to solve. Learners apply previous experiences and general knowledge to solve the problem-case, suggest solutions, test the solutions, revise their suggestions and confirm solutions. During the learning cycle, learners retrieve, reuse, revise and retain understanding until expertise is gained from the problem-case. Expertise is

derived from experience in a domain and expert scaffolding from the facilitator (Jonassen and Hernandez-Serrano, 2002).

2.6.1 Problem-Based Learning Overview

Barrows (2003) define problem-based learning (PBL) as learning that results from the process of working toward the understanding or resolution of a problem. Students learn by doing, and utilizing their problem-solving skills. Through PBL, students develop hypothetical-deductive reasoning skills by acquiring relevant data, synthesizing the data and testing it through acquiring additional data (Duffy & Cunningham, 1997). The end result is an independent student capable of lifelong learning.

Problem-based learning was created by Barrows (1986) as an alternative instructional method to prepare medical students for real-world problems by letting them solve medical problems based on real-life cases, rather than having them learn mainly through lectures which taught the sciences out of context. The students worked in teams which were assigned a medical practitioner, who acted as a facilitator. This practice was consistent with the assumption that learning occurs not in the heads of individual speakers, but in the fields of social interaction (Lave & Wenger, 1991), where social partners also determine what and how someone learns (Cole & Engestrom, 1993; Salomon, 1993). It was argued that PBL made learning more applicable by encouraging students to think and act like they would in the real world of medicine.

In the seventies, cognitive theories of learning influenced the theoretical explanation of PBL by emphasizing what goes on in the head of the learner. Discovery learning, learning in context, and the importance of the activation of prior knowledge and retrieval of information were the main theories supporting PBL (Duffy & Cunningham, 1997). In the eighties, social theories of learning were considered the main underpinning theories of PBL (Barrows, 2003). These stressed the value of small group learning, experiential learning (Kolb, 1984), constructivism and adult learning theories. According to Schmidt (2000), PBL evolved out of the 'learning-by-discovery' approach and the 'case-study method' as a special way of acquiring knowledge about a subject matter (Smith, 2008).

PBL involves the use of complex, 'real-world' problems as the stimulus and framework for learning. It is based on the premise that students will be motivated to 'want to know' and solve the problem posed because it is presented in a context that simulates real world situations. Barrows (1986) distinguished six core characteristics of PBL which include: (a) learning is student-centred; (b) learning occurs in small groups of students; (c) a teacher is present as a facilitator; (d) authentic problems are the starting point for learning; (e) the problems are used as a tool for achieving knowledge and acquiring problem-solving skills; and (f) new information is acquired through self-directed learning (Barrows, 1986).

In PBL, the problems are the starting points for learning. According to Schmidt (2000), the problems consist of descriptions of phenomena to be explained by the students. Classroom groups consist of eight to ten students and groups are facilitated by a teacher, who is generally a content expert on the relevant subject. The group

should first define the problem and also try to explain it in terms of underlying processes, mechanisms or principles (Schmidt, 2000). The PBL group uses a systematic procedure in approaching tasks. In seven steps they analyse the problem, collect additional information and try to arrive at a satisfactory explanation. The initial problem analysis culminates in the formulation of learning issues, i.e. issues on which the group needs additional information. The students gather this information during individual independent study activities, after which the group reconvenes for the reporting phase in which the findings are reported and synthesised. The aim of the final step is to determine whether a deeper understanding of the problem and its underlying processes has emerged. Steps one through to five form the analysis phase, step six the individual study phase and step seven the reporting phase. The latter is the focal step as students have to test hypotheses and share and construct knowledge from the information gathered during independent study activities (Barrows, 1986; Schmidt, 2000).

It has been shown that PBL, as a collaborative learning strategy, enhances student achievement (Cohen, 1999; Johnson, Johnson & Smith, 1991) and higher-order thinking skills, such as applying, evaluating and synthesising knowledge (Johnson et al., 1991). Norman and Schmidt (2000) are of the view that PBL research has so far yielded no conclusive evidence that it is more effective than conventional methods in terms of cognitive outcomes. In multi-faceted collaborative learning environments like problem-based learning, the effects are diffused by a myriad of unexplained variables. This makes it difficult to draw conclusions about the effectiveness of collaborative learning on the basis of effect studies only (Norman & Schmidt, 2000). Nevertheless, it is important to shed more light on why and how

collaborative learning in problem-based learning might have a positive effect on student learning. There is a need for process-oriented studies that examine what actually happens in the 'black box' of authentic tutorial groups. This has led to an increased interest in process-oriented studies focusing on group interactions (Norman & Schmidt, 2000; Felder & Brent, 2005).

2.6.2 Case-Based Learning Overview

Case-based learning is a form of problem-based learning (Barrows, 1986) where student concepts can be understood as what the students thought they learnt through the cases, and student approaches can be understood as how the students approached their learning of the cases in terms of their interaction with the teacher and their colleagues in the classroom (Prosser & Trigwell, 2006). The main trait that case-based learning (CBL) has derived from PBL is that a case, problem, or inquiry is used to stimulate and underpin the acquisition of knowledge, skills, and attitudes. Cases place events in a context or situation that promote authentic learning (Mullins, 1998). Cases are generally written as problems that provide the student with a background of a patient or other clinical situation. Supporting information is provided such as latest research articles, vital signs, clinical signs and symptoms, and laboratory results. CBL allows students to develop a collaborative, team-based approach to their education. Other characteristics include hypothesis generation and the consolidation and integration of learning activities (Mullins, 1998).

Pearson, Barker and Fisher (2003); Hansen, Ferguson and Sipe (2005); Proser and Trigwell (2006) discussed the comparison of CBL with traditional lecture-didactic formats. Pearson et al. (2003) were able to conclude that the innovative CBL

paradigm appeared to be an effective adjunct to the traditional lecture format, but they were unable to determine if this method of teaching could increase other problem solving attributes or improve clinical performance. According to Schellens and Vlacke (2006), CBL can be used to promote deeper approaches to learning and reduced reliance on surface approaches in health professional students. CBL is characterised by the active engagement of students who seek to develop and apply knowledge for the purposes of understanding, theorising and reflecting on the learning task. This contrasts with a surface approach which is characterised by low level memorization; a focus on collection and recall of facts with the aim of finishing the task quickly and meeting assessment requirements (Prosser & Trigwell, 2006; Schellens & Vacke, 2006). Schellens and Vlacke unify constructivism and phenomenographic student learning research to show that meaning is developed through the learning activities of students, which may be influenced, but not imposed, by the structure and design of the teaching tasks.

Mullins (1998) views CBL as a widely acknowledged pedagogical approach for introducing students to the intricacies of ill-structured domains. Cases are narrative structures which immerse students in the context of real-world situations, filled with *"complexity, uncertainty, instability, uniqueness, and value conflict"* (Pearson et al., 2003, p. 104). By analysing case-based material from various perspectives, students are expected to develop those flexible cognitive schemata that are necessary for ill-structured problem solving and knowledge transfer. To achieve this, the cognitive flexibility theory prescribes that learners should thematically "criss-cross" the domain landscape, studying the case material from different conceptual perspectives, in rearranged contexts and for different purposes (Hansen et al., 2005).

Barrows (1986) described a taxonomy of case-based learning as varied forms of teaching and learning including: (a) lecture-based cases in which cases are provided as an illustration of the application of subject matter presented in the lecture; (b) case-based lectures where the lecture is based upon the case, with the assumption that students have already read and analysed the case in detail; (c) the case-method in which students are provided with a complete case for research and discussion during the lecture, where the teacher uses Socratic questioning techniques to facilitate case analysis and learning; and (d) the modified case-method (as above), but where students have greater freedom to explore PBL issues where problems serve as the initial stimulus for learning.

Through the aid of a facilitator, students are encouraged to discuss prior knowledge related to the problem, then explore and reason through the problem applying knowledge and identifying further learning required to fully understand the initial problem. Double loop PBL is the form in which the initial problem is revisited and learning applied to achieve some resolution. Learners are encouraged to reflect on their performance with the aim of improving reasoning and learning (Barrows, 1986).

2.7 EMPIRICAL LITERATURE REVIEW ON THE PROCESS OF KNOWLEDGE CONSTRUCTION

The knowledge construction process relates to the extent to which teachers help students to understand, investigate and determine how the implicit cultural assumptions, frames of references, perspectives and biases within a discipline which influence the ways in which knowledge is constructed within it. Schellens and

Valcke (2006) conducted a study on fostering knowledge construction in university students through asynchronous discussion groups. The purpose of the study was to examine the effects of the shared space on students' behaviours in a computer-supported collaborative learning environment. The results confirmed that students in the discussion groups were very task-oriented and that higher proportions of high phases of knowledge construction were observed. According to these two researchers, group size is a significant interaction variable. Discussion in smaller groups reflected larger proportions of higher levels of knowledge construction (Schellens & Valcke, 2006).

In another study done by Wessel (2004) on knowledge construction in high school, the researcher examined the learning of physics with the aim of exploring and attempting to develop a more complete understanding of the process of knowledge construction. This author concluded that for teachers to develop models of student knowledge construction, interactions among students and teachers have to occur openly. In a classroom which is highly teacher-centred, this type of model is not possible because students do not have opportunities to talk and reflect about their developing concepts with the teacher or with each other (Wessel, 2004).

Oliver et al. (2002) conducted research exploring ways to formalize generic descriptions of some learning designs that foster knowledge construction and problem solving. Their findings were that learning is achieved by the active construction of knowledge supported by multiple perspectives within meaningful contexts and the social interactions amongst students are seen to play a critical role in the processes of learning and cognition. They came up with a framework for

describing learning designs that are conducive to knowledge construction (Oliver et al., 2002).

Lu and Jeng (2006) conducted a study to investigate how teachers constructed new knowledge, the extent of knowledge construction achieved and how instructors participated in and facilitated the online discussion to affect knowledge construction. One of the findings was that most teachers seemed to favour discussion activities at the stage of knowledge confirmation rather than knowledge construction. Another finding was that some facilitation approaches used by the instructors were helpful for enhancing knowledge construction (Lu & Jeng, 2006).

In a study done by Miller (2002) titled *Examining the interplay between constructivism and different learning styles*, the researcher looked at the interplay between constructivism and different learning styles in the teaching and learning of introductory statistics at Drury University in the USA. According to this writer, the instructional strategies that support constructivism are: group problem solving and discussion; allowing students to have multiple representations; think time and wait time; interaction time with peers; activity-based learning; written and oral presentations; and group and individual projects.

Miller (2002) emphasized that instructional strategies that support knowledge construction enhance students' learning and understanding. The conclusion of the researcher in this paper was that it does not matter how researchers define learning styles. What does matter, according to Miller (2002), is that the teacher comes from a paradigm that supports knowledge construction. The researcher indicated that

teachers who come from a constructivist paradigm will naturally make use of multiple instructional strategies to promote the construction of knowledge and, thus, enhance the learning of all students (Miller, 2002).

Yuen and Hau (2006) conducted a case study of an undergraduate Educational Psychology course that incorporated both constructivist and teacher-centred teaching. The learning processes and higher-level learning outcomes were examined through participant observation, interviews with students and analyses of student assignments. In general, the results were that the constructivist teaching facilitated students' creation of their own knowledge as they were given more freedom to think over the problems together and to generate original ideas. Students' performances in recalling, critiquing and generating with the knowledge gained in the constructivist teaching context were also better than those in the teacher-centred context. This could be explained by deeper processing of the material, the activation of students' prior knowledge and the similarity between the situations of knowledge construction and knowledge application (Yuen & Hau, 2006).

Von Glasersfeld (1995, 1996) proposed three essential epistemological tenets of knowledge construction to which a fourth has been added in the light of more recent writings. These four fundamental tenets provide the foundation for the basic principles of the teaching, learning and knowing process as described by von Glaserfeld (1995). These are: (a) knowledge is not passively accumulated, but rather the result of active cognizing by the individual; (b) cognition is an adaptive process that functions to make an individual's behaviour more viable given a particular environment; (c) cognition organizes and makes sense of one's experience and is

not a process to render an accurate representation of reality and; (d) knowing has roots in both biological or neurological construction as well as social, cultural and language based interactions. Thus it is acknowledged that the learner plays an active role in the personal creation of knowledge. The importance of experience (both individual and social) in this knowledge creation process, and the realization that the knowledge created will vary in its degree of validity, is an accurate representation of reality (von Glaserfeld, 1995, 1996).

On the same lines, Garrison and Archer in 2003 proposed a four phased model of knowledge construction. These phases include a triggering event, exploration, integration and the generation of a solution or hypothesis of a dilemma or problem. According to Garrison and Archer (2003), the phases might continue in a cycle with the solution or hypothesis leading to further problems and new triggering events. Lu and Jeng (2006) reported on another frequently used knowledge construction model, being the Interaction Analysis Model (IAM). This model was developed by Gunawardena, Lowe and Anderson in 1997 who suggest that knowledge construction is made up of five phases which are sharing or comparing observations, dissonance, negotiation, construction, testing and application. According to the authors, these phases do not always occur in the same sequence.

Again, Garrison, Anderson and Archer, in 2000, proposed another model, a Practical Inquiry Model (PIM), which is based on Dewey's concept that education is the collaborative reconstruction of experience. According to this model, an educational experience intended to achieve higher order critical thinking outcomes is best embedded in a community of inquiry. The community of inquiry provides a

rich collaborative and reflective environment for the higher order-learning which is required for knowledge construction (Lu & Jeng, 2006).

Comparing the above presented models (IAM & PIM), Lu and Jeng (2006) state that both these models provide a theoretical framework for assessing the levels of knowledge that is socially constructed. These authors, however, favour the IAM model. According to Lu and Jeng (2006), the IAM model is stronger than the PIM because it identifies more specific types of cognitive activities in critical discourse such as argument, resource and evidence of changes. As a result, IAM provides researchers with more specific codes to investigate the knowledge construction process. It provides a holistic view of the discussion flow and knowledge construction and is more practical for analysing a discourse (Lu & Jeng, 2006).

Klein (1997) conducted research, also mathematics based, looking at the "supportive" environment of the pedagogy in mathematical pre-service teacher education. This author posits that mathematics teaching in pre-service education should allow students to construct their own knowledge through problem-solving, exploration, conjecture, invention, working in groups and learning to communicate mathematically (Klein, 1997).

In research done by Kanuka and Anderson (1998) titled, *Online social interchange, discord and knowledge construction*, the researchers used a interaction analysis model developed by Gunawardena et al. (1997) to help understand and assess online learning. The model describes the phases that are attributed to learning development in an online forum. Online forums provide potential for new forms of collaborative

work, study and community service that reduce barriers of time and distance, yet the types of interaction and means by which individuals create new knowledge in online environments are not well understood. These researchers concluded that the interaction analysis model developed by Gunawardena et al. (1997) used to analyse the data for evidence of knowledge construction was a useful preliminary tool for transcript analysis. Specifically, the model provided sufficient conceptual density to assess accurately the construction of knowledge in an online environment. Implications for facilitating the construction of new knowledge in an online environment include: (a) the provision of learning opportunities that capitalize on inconsistencies and contradictions between participants; and (b) the incorporation of activities that help participants become explicit about their own understanding by comparing it with that of other participants (Kanuka & Anderson, 1998).

2.8 CONCLUSION

This chapter traced related literature that addresses theoretical and philosophical frameworks organised around the three integrating themes in the process of knowledge construction in CBSL programmes. These include Kolb's experiential learning model and his learning style models, Dewey and Freire's philosophical underpinnings as well as the theoretical and philosophical basis for problem based and case-based learning, as these were directly linked to the process of knowledge construction in CBSL. Reviewed literature revealed limited empirical data regarding the process of knowledge construction in CBSL, hence a need for this study.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 INTRODUCTION

The concept 'research', according to Verma and Mallick (1999), is often defined in terms of a systematic enquiry and the concept 'methodology' as possible ways, methods or techniques employed in the conduct of this systematic enquiry (Verma & Mallick, 1999). Mouton (2002) goes further to explain that the word methodology is derived from the Greek *'methodos'*, which in turn is made up of two words*: 'meta',* meaning alongside, and *'hodos',* meaning either road or journey. *'Meta-hodos'* literally means 'alongside the road' and is metaphorically the means or method of doing something (Mouton, 2002).

A research method is a strategy of inquiry which moves from the underlying philosophical assumptions to research design and data collection (Myers, 1997). In selecting a research methodology, Guba (1981) suggests that *"it is proper to select that paradigm whose assumptions are best met by the phenomenon being investigated"* (p. 76). Similarly, Howe and Eisenhart (1990) contend that the methodology employed should be judged in terms of its success *"in investigating educational problems deemed important"* (p. 2). This chapter, therefore, outlines a description of the research methodology.

3.2 RESEARCH PARADIGM

Behr (1983) argues that a paradigm is *"an expression of the configuration of beliefs, values… explanations and basis for the solution of problem"* (p. 8), while

Kuhn and Martorana (1982) regard the paradigmatic concept as a cluster of beliefs and dictates which influence what should be studied, how the research should be conducted and how the results should be interpreted. Kuhn (1996) defines a paradigm as a set of *"universally recognised scientific achievements that for a time provide model problems and solutions to a community of practitioners"* (p. viii); while Arjun (2000) points out that a paradigm is a *"disciplinary matrix incorporating the constellation of beliefs, values, and techniques shared by members of a scientific community"* (p. 20). Knill (1991) conversely states that the term paradigm originated from the Greek root *'paradigma',* which means a model. Paradigms represent alternatives within the research arena, the suitability of which needs to be weighed up against the nature of the research in question.

The methodological qualitative paradigm of this study was influenced by both the interpretive and social constructionist paradigms. The premise of the interpretive research paradigm is that access to reality (whether given or socially constructed) is only through social constructions such as language, consciousness and shared meanings (Myers, 1997). The interpretive paradigm is underpinned by observation and interpretation, that to observe is to collect information about events, while to interpret is to make meaning of the information by drawing inferences or by judging the match between the information and some abstract patterns. In this regard, Henning, Van Rensberg and Smit (2004) remark that within the interpretive paradigm, *"knowledge is constructed not only by observable phenomena, but also by descriptions of people's intentions, beliefs, values and reasons, meaning making and self-understanding"* (p. 20). Interpretive research is fundamentally concerned with meaning and it seeks to understand how social members define a situation (Schwandt, 1994). An interpretive theory involves building a second order theory or

a theory of members' theories (Schutz, 1973), which is one of the objectives of this study.

The social constructionist paradigm is rooted in the sociology of knowledge. This paradigm holds the belief that each individual constructs their own view of the world based on experiences and perceptions (Gephart, 1999). Research gathers subjective accounts that reveal how the world is experienced and constructed by people's insight into human behaviour. This paradigm is appropriate for studying inherently subjective phenomena such as individual experience, relationships and motivation as there are multiple interpretations of reality, and one-dimensional, causal explanations are too simplistic.

3.3 RESEARCH DESIGN

Research design can be thought of as the structure of research. According to Trochim (2002b), it is the glue that holds the research project together. McMillan (1992) asserts that the research design is a plan and structure of the investigation used to obtain evidence to answer research questions. Yin (1994) describes the research design as the logic that links the data to be collected and the conclusions that are drawn to the initial questions that motivated the study. Yin (1994) adds further that *"colloquially, a research design is an action plan for getting from here to there, where here may be defined as the initial set of questions to be answered and there is some set of answers or conclusions"* (p. 19).

According to Rubin and Babbie (1993), the research design refers to the decisions made of how the study is to be conducted and can be classified according to the

logical reasoning that bears upon our ability to draw casual inferences from our conclusions. LeCompte and Preissle (1993) assert that the research design involves putting things together and bringing to consciousness and to notebook as many aspects of the research planning and preparation for an inquiry as possible. This study employed a qualitative design with a grounded theory approach. For this study, qualitative research was considered the most appropriate method to gain an in-depth understanding of the contextual factors and/or phenomena that characterize the process of knowledge construction in CBSL programmes in basic nursing in South Africa.

3.3.1 Qualitative Research Design

Qualitative approaches are becoming more widely used as analysis methods and continually improve as people search for better ways of gathering data about a problem (Price, 2002). Strauss and Corbin (1990) define qualitative research methodology as *"any kind of research that produces findings not arrived at by means of statistical procedures or other means of quantification"* (p. 17). These researchers claim that qualitative methods are applicable to research that attempts to understand any phenomenon about which little is yet known. Furthermore, qualitative research is directed toward discovering or uncovering new insights, meanings and understandings (Chenitz & Swanson, 1985).

According to Myers (1997), qualitative research is designed to help researchers understand people and the social and cultural contexts in which they live. Trochim (2002c) maintains that the main reasons for doing qualitative research are for the researcher to become more familiar with the phenomenon of interest and to achieve

a deeper understanding of how people think about topics. Maxwell (1998) enumerates five research purposes for which qualitative studies are particularly useful and those are: understanding the meaning that participants in a study give to the events, situations and actions that they are involved with; understanding the particular context within which the participants act and the influence this context has on their actions; identifying unanticipated phenomena and influences and generating new grounded theories about them; understanding the process by which events and actions take place; and developing causal explanations. Data in this research study was derived from direct observation, participant interviews, written opinions and public documents (Sprinthall, Reiman & Thies-Sprinthall, 1996).

3.3.2 Grounded Theory Approach

This research study entered the traditions of grounded theory, both in the research process and the analysis of data. Grounded theory, sometimes referred to as the constant comparative method, is a qualitative method attributed to Glaser and Strauss (1976). Grounded theory was first described by Glaser and Strauss in 1967 as a qualitative research method for the study of complex social behaviour from a sociological point of view (Strauss & Corbin, 1990).

Grounded theory is primarily an inductive, investigative process in which the researcher attempts to formulate a theory or a theoretical framework about a phenomenon. According to Fischer (1976), it is both inductive and deductive. It is inductive in that it proceeds from empirical incidents to theoretical concepts and deductive in that it applies these concepts in its coding and sampling of data. The

method consists of systematically gathering and analysing relevant data (Glaser, 1992).

The multi-layered process of abstraction of data in grounded theory simultaneously explores previously identified concepts and generates new ones. The analysis proceeds from low-level descriptions to in-depth explorations, which are referenced at every level by other categories from the analysis. This allows for a continual comparative analysis, which ensures a conceptually rich theoretical account of the data (Strauss & Corbin, 1990). Underpinned by symbolic interactionism, grounded theory offers systemic and legitimate methods to study the richness and diversity of human experience in natural settings in order to generate a relevant, plausible theory that can be used to understand the contextual reality of the behaviour (Hutchinson, 1993).

Grounded theory makes its greatest contribution in areas where little research has been done and when new viewpoints or gestalts are needed to describe a familiar phenomenon that is not clearly understood (Chenitz & Swanson, 1985). Grounded theory was appropriate in this study because very little has been done in terms of research aimed at understanding how knowledge is constructed in CBSL nursing programmes, either in South Africa and/or globally. The researcher was interested in developing a theory which would explain the process of knowledge construction in CBSL programmes as applied to basic nursing education in South Africa.

3.3.3 An Overview of the Grounded Theory Approach

The natural evolution of grounded theory in practice led to a disagreement between Glaser and Strauss about the way in which the grounded theory approach should be

conducted. From the reviewed literature, it was evident that there are two main methodological schools in grounded theory, one by Glaser and another by Strauss (Stern, 2001; Locke, 1996; Babchuk, 2004; Kendall, 1999; Miller & Fredericks, 1999). Stern (2001) referred to these two versions of grounded theory as Glaserian (after Barney Glaser) and Straussian (after Anselm Strauss) approaches. According to Babchuk (2004), researchers utilising grounded theory should clearly specify which of the two methodological schools they used to guide their study. Before presenting the version to be used in this particular study, the differences between the two founders of grounded theory (Glaser and Strauss) will be discussed.

Mtshali (2009) maintains that although Glaser and Strauss share a common research experience in discovering grounded theory and publishing the book: *'The Discovery of Grounded Theory'*, they differ in certain aspects of grounded theory. According to Babchuk (2004), the essential differences between Glaser and Strauss's versions of grounded theory arise from both epistemological and methodological chasms between their approaches. They differ in how they view the procedures and processes of grounded theory. Their approaches vary in the following aspects: (a) sources of research questions; (b) the use of technical literature and personal and professional experience in grounded theory; (c) data analysis, especially with open coding and axial coding; and (d) verification and validation of the emerging theory and hypotheses (Babchuk, 2004).

The debate between Glaser and Strauss began after the publication of Strauss and Corbin's book titled: *'Basics of Qualitative Research'* in 1990. Strauss and Corbin published this book in response to the concerns raised in their book: *'The Discovery*

of Grounded Theory'. Stern (1994) stated that after the publication of this book Glaser left teaching and went into business, leaving Strauss to answer the multiple charges laid against grounded theory. According to Stern (2001), grounded theory was criticised for its seeming looseness without a guiding frame, for its lack of verification and the tangled description given in the book. Even Strauss and Corbin (1990) admitted that beginners were struggling to construct in-depth and dense grounded theories in a consistent manner because of the problems they encountered. Strauss and Corbin, therefore, perceived a need to fill the gap in the methodology literature on the processes involved in generating meaningful grounded theories from qualitative data (Kendall, 1999) and published their book, *Basics of Qualitative Research*, in 1990. Glaser realised the difference in their (Glaser & Strauss) approaches after the publication of this book, but according to Stern (2001), their students were aware of these differences long before. The two versions of grounded theory are continuing even today with Glaser's students following Glaser's approach to teaching and Strauss' students continuing with his approach as indicated by Mtshali (2009).

Babchuk (2004) identified that Glaser and Strauss differed in the aspect of the research question; about when and how it is formulated and developed. According to Strauss and Corbin, (1990), the research question is developed as early as the beginning of the study. The rationale provided is that in grounded theory a research question *"is a statement that identifies a phenomenon to be studied"* (Strauss & Corbin, 1990, p. 38). It is oriented towards action and process. In other words *"the original research question is a directive that leads the researcher immediately to examine a specific performance, the site where events are occurring, documents,*

people acting, or informants to be interviewed. It gets the researcher and helps him/her to stay focused throughout the research project" (Strauss & Corbin, 1990, p. 39). According to Strauss and Corbin, having a research question from the beginning of the study sets the boundaries on what will be studied because it is impossible to cover all aspects of a phenomenon. The research question narrows the study field to a researchable size (Strauss & Corbin, 1990).

Glaser (1992), on the other hand, is not in favour of having a research question from the beginning of the study. According to Glaser, the research problem is discovered through emergence as a natural by-product of open coding, theoretical sampling and constant comparison. The researcher ideally begins the study with *"the abstract wonderment of what is going on in that issue and how it is handled"* (Glaser, 1992, p. 22). Glaser felt that having a research question from the initial phase of the study is limiting, in that the developed theory may not naturally develop from the data, but will be shaped by the research question. In defence of using the research question, Strauss and Corbin indicate that one cannot study the whole phenomenon; otherwise the study will be too broad.

Having a research question assists the researcher to focus. As a warning, Strauss and Corbin (1990) pointed out that the initial research question should give the researcher flexibility and freedom to explore a phenomenon in depth. The initial question starts broadly, but not so much so that it allows for the entire universe of possibilities, and it becomes progressively narrowed and more focused during the research process as concepts and their relationships are discovered to be relevant or irrelevant. According to Strauss and Corbin (1990), the process of data analysis

helps in refining and specifying the research question, whereas in Glaser's view, the process of discovering the research question begins with data analysis.

Glaser and Strauss also have different views on the use of technical literature as well as personal and professional experiences in grounded theory (Locke, 1996; Struebing, 1999; Babchuk, 2004). Strauss and Corbin (1990) allow for prior theory, technical and non-technical literature and personal as well as professional experiences to enter the field of research. Technical literature in this context refers to *"reports of research studies and theoretical or philosophical papers characteristic of the professional and disciplinary writing, they can serve as background materials against which one compares findings from data gathered in grounded theory studies"* (Strauss & Corbin, 1990, p. 48). Non-technical literature includes *"biographies, diaries, documents, manuscripts, records, reports, catalogues and other materials that can be used as primary data or to supplement interviews and field observations in grounded theory"* (Strauss & Corbin, 1990, p. 48).

According to Strauss and Corbin (1990), all kinds of literature can be used before the research study is begun and during the study itself. In their view (Strauss and Corbin), literature can assist in the process of developing a research question and can facilitate theoretical sensitivity during data collection and analysis. They warn, however, that this previous knowledge should not be taken as a given, testable framework on how to explain a phenomenon, but instead it should serve as a source of inspiration (Struebing, 1999).

On the contrary, Glaser objects to previous knowledge entering the field of research, especially during the analysis (Locke, 1996). Glaser's argument is that Strauss no longer conforms to the high virtues of grounded theory in that theory emerges from data (Locke, 1996; Struebing, 1999). Struebing argued that allowing previous knowledge to enter the research field restricts the emergence of the theory from the data by forcing the concepts to fit the framework from the previous knowledge. Glaser (1992), however, maintains that literature should not be reviewed in the substantive area of study, so as not to contaminate, constrain or impede the emerging categories, their properties and theoretical codes. Glaser believes in a pure methodology that completely refrains from drawing on any kind of previous knowledge, because he believes that any previous knowledge would guide the intentions of the researcher in specific ways. Struebing (1999) also acknowledges Glaser's view that previous knowledge may have an influence on the research study, but the question is how the researcher can clear his/her head of prior knowledge before embarking on a grounded theory research.

The difference between Glaser and Strauss continues on the process of data analysis. According to Kendall (1999), both Glaser and Strauss describe coding as an essential aspect of transforming raw data into theoretical constructs of social process, but the types of coding processes differ. Glaser's process is characterised by two coding processes, substantive open coding and theoretical coding. Strauss and Corbin's processes, on the other hand, are characterized by open coding, axial coding and selective coding. Open coding is described by Glaser (1978) as a way to *"generate an emergent set of categories and their properties which fit, work and are relevant for the integrating theory"* (p. 56). Strauss and Corbin (1990) refer to

open coding as *"the process of breaking down, examining, comparing, conceptualising and categorising data"* (p. 61). Kendall (1999) indicates that both Straussian and Glasserian approaches to open coding are similar, although Glaser places more emphasis on the importance of allowing codes and theoretical understandings of data to emerge than do Strauss and Corbin.

The main controversy in data analysis involves Strauss and Corbin's addition of an intermediary set of coding procedures, called axial coding (Babchuk, 2004; Kendall, 1999). Axial coding is the process of putting *"data together in new ways after coding by making connections between categories and subcategories"* (Strauss & Corbin, 1990, p. 97). Rather than looking for all kinds of relations, Strauss and Corbin (1990) emphasise causal relationships and the fitting of subcategories into a basic frame of generic relationships called the paradigm model. This paradigm model, or framework, consists of the following elements: causal conditions; context, action/interaction strategies; intervening conditions; and consequences (Strauss & Corbin, 1990).

Causal conditions, also known as antecedent conditions, refer to the events or incidents that lead to the occurrence or development of the phenomenon. Context represents the specific set of properties that pertain to a phenomenon, that is, the location of events or incidents pertaining to a phenomenon alongside a dimensional range. Context also refers to a set of conditions influencing action/interaction. Intervening conditions act to facilitate or to constrain the action/interaction strategies taken within a specific context. Intervening conditions may include time, space, culture, economic status, technological status, career, history and individual

biography. Consequence refers to certain outcomes or consequences of action and interaction taken in response to, or to manage, a phenomenon (Strauss & Corbin, 1990). Subcategories are linked to a category through this frame or paradigm model.

Arguing for the use of this paradigm model in linking subcategories to categories, Strauss and Corbin claimed that this paradigm model enables the researcher to think systematically about data and to relate data in very complex ways. Glaser's view on the process of axial coding, however, is that the researchers may easily miss the relevance of the data by forcing it into a preconceived framework, and the results may yield full conceptual descriptions at the expense of theory development or generation (Babchuk, 2004). Thus, the difference between these two grounded theorists is that Glaser strongly believes in the process of emergence as the methodological requirement for generating a theory while Strauss and Corbin generate codes and categories from a predetermined organising schema which, they claim, helps grounded theory researchers to construct complex and meaningful theory more reliably (Kendall, 1999).

Kendall, from lived experiences, warns that Glaser's concern about using a paradigm model is true. This author used Strauss's paradigm model and was so consumed in it that she ended up fitting data to these elements. Furthermore, this author highlighted the possibility of ending with conceptual descriptions if one does not move on to selective and theoretical coding. Researchers need to move beyond the conceptual descriptions into conceptualisation and theorising (Mtshali, 2009).

Kendall (1999) recommends the use of Strauss and Corbin's approach to new researchers *"as it provides an escape from being lost in the data"* (p. 49).

Glaser (1992) makes theory generation versus theory verification a central theme in his text in his criticism of Strauss and Corbin's approach. Glaser and Strauss differ on verification and validation of the findings. According to Strauss and Corbin (1990), verification and validation are important when developing a theory. Verification is important during axial coding, where the researcher verifies the hypotheses against actual data. If the researcher has questions about certain categories, he/she has to return to the data and look for evidence, incidents and events that support or refute the questions. The researcher may also look for evidence in the data to verify statements of relationship and instances where the relationships might not hold up (Strauss & Corbin, 1990). In other words, verification is important in grounded theory studies to find evidence of differences and variations and to provide evidence that supports the researcher's original questions and statements.

Glaser believes in constant comparative analysis to develop a theory that is grounded on data. He does not favour verification like Strauss, as in his view, verification and validation fall outside the parameters of grounded theory. Glaser argued that rigorous verification methods could be used for testing a few of the central hypotheses only (Glaser, 1992).

Following axial coding is selective coding which, according to Strauss and Corbin, is *"the process of selecting the core category, systematically relating it to other*

categories, validating those relationships, and filling in categories that need further refinement" (1990, p. 61). Glaser does not support 'validation' because he believes in emergence. Glaser accuses Strauss of validating what is looked for, not what is emerging, and for promoting practices that prematurely anticipate the data and that interfere with the ability of the phenomena studied to inform discovery (Babchuk, 2004). On the other hand, Strauss and Corbin (1990) believe that *"validating one's theory against the data completes its grounding"* (p. 133). Validation is conducted by laying out the theory in memos, either diagrammatically or narratively.

The statements regarding the category relationships under varying contextual conditions are then developed and finally validated against the data. The statements are checked against each case to determine whether they fit or not. The researcher looks at whether they fit in a general sense into most cases. It is not necessary, however, that they fit in every case. Modifications and changes can be made in the statements until a general match is made (Strauss & Corbin, 1990). Glaser frowns upon the validation process because it forces the data to fit into preset categories. Strauss and Corbin warn that occasionally one may come across a case that does not fit the pattern and the researcher needs to be aware of the factors that might lead to that, such as a different context or intervening variables.

In this study, the researcher used the Straussian method because literature had to be reviewed in order to establish the need for a study of this nature and also to refine the research question. Another reason why the researcher used this method was because it provided a concrete, structured and clear way to analyse grounded theory data, whereas the Glaserian method lacks a definitive process and set of operational

steps, making his method extremely difficult. Furthermore, the Straussian approach seemed accessible and useful in helping to organise, describe and conceptualise the depth and extent of the process involved in studying the phenomenon of interest (knowledge construction process). Nevertheless, the limitations of Strauss and Corbin's approach, as expressed in the reviewed literature, were taken into consideration, especially the need to ensure that data analysis moved beyond conceptual descriptions of the phenomenon under study to conceptualisation and theorising.

3.4 SETTING DESCRIPTION

Qualitative researchers collect their data in real world and naturalistic settings (Polit and Beck, 2006). According to Strauss and Corbin (1990), in a grounded theory approach, the selection of settings is directed by theoretically relevant concepts and, therefore, the researcher must select settings that will provide relevant data. In this particular study, the inclusion criterion of the setting was determined by the existence of well established CBSL programmes in basic nursing. In South Africa, there are several nursing education institutions throughout the country that offer these programmes (Hospital and Nursing Year Book of Southern Africa, 2005/2006). Through internet searches, the researcher identified the nursing education institutions that had well established CBSL programmes and these included the University of KwaZulu-Natal, the University of Witwatersrand, the University of the Free State, Walter Sisulu University, Frere College of Nursing, the University of the Western Cape, and Lilitha College of Nursing and its seven satellite campuses. The researcher selected two nursing education institutions from different provinces. The university in Durban (KwaZulu-Natal Province) and

another in Bloemfontein (Free State Province) were identified for inclusion in this study because of their well established and widely renowned CBSL programmes (Mtshali, 2009).

3.5 STUDY POPULATION

The population is described as all the elements or subjects that meet the criteria for inclusion in the study (Burns & Grove, 2007). It comprises the entire group of persons or objects that the researcher is interested in studying and refers to the aggregate or totality of those conforming to a set of specifications (Polit & Beck, 2006). The target population for this study were all the nurse educators or lecturers employed by the selected participating nursing education institutions who were involved in the CBSL programmes, and these numbered a total of 16. The total population of nurse educators was taken as the sample for this study (Polit & Beck, 2006).

3.6 SAMPLING PROCEDURE AND SAMPLE DESCRIPTION

According to Patton (1990), building grounded theory not only requires participants who are rich in information, but, more importantly, it requires an interactive process of data collection, coding, analysis and planning what to study next, which in this study was enhanced through *purposive sampling* and *theoretical sampling*. Purposive sampling, according to Merriam (1998), *"is based on the assumption that the investigator wants to discover, understand and gain insight and therefore must select a sample from which most can be learned"* (p. 6). Patton (1990) refers to purposive sampling as sampling where the phenomenon is known to exist. Cantanzaro (1998) portrays purposive sampling as a technique used to obtain

maximum information as well as a full array of responses from the participants. Theoretical sampling, on the other hand, is a process of data collection for developing a theory whereby the analyst collects, codes and analyses the data and then decides what data to collect next and where to find it, in order to develop the theory as it emerges (Glaser & Strauss, 1967). According to Creswell (1998), the term theoretical sampling means participants are selected on the basis of their ability to contribute to the development of a theory.

The selection of participants from the nursing education institutions was dependant on the role they played in the CBSL programmes. In the South African context, all pre-registration nursing programmes run for a period of four years and at each year level there is usually an academic level coordinator who is responsible for the administrative work at that particular level. There is also a programme director who is responsible for overseeing the whole undergraduate nursing programme. The researcher interviewed the head of department or deputy head of the nursing education institution, the programme director and coordinators at the level where the CBSL component was offered, and the facilitators (or lecturers), including clinical facilitators, where applicable, who were involved in the CBSL programmes. The students involved in the CBSL programme were not interviewed, but observations of their classroom sessions and interactions were carried out.

Study samples differed in the two nursing education institutions depending on the way the programmes were structured, and also on the spread of the CBSL activities within the programme. Theoretical sampling continued until the stage of saturation was achieved. Saturation was decided by the completeness of coding when no new

conceptual information was available to indicate new codes or expansion of existing codes. The researcher, as indicated by Hutchinson (1993), ultimately achieved a sense of closure by repeatedly checking and asking questions to contrast, compare and verify categories of the data.

To be precise, the sample size for interviews comprised of 16 participants. In nursing education institution 'A', the sample comprised of the deputy head of the school, the basic nursing programme academic coordinator, the second year level coordinator (the level offering CBSL) as well as four facilitators for this level, bringing the total of participants at this nursing education institution to seven. In nursing education institution 'B', a total number of nine participants were interviewed. These were the head of the school, the undergraduate programme director, four level coordinators (one for each level of the basic nursing programme) who also acted in the role of facilitators, two more facilitators and one clinical facilitator.

3.7 DATA COLLECTION PROCESS

A number of data collection techniques were employed in this study. According to Denscombe (2007), it is acceptable to use different techniques to collect data about the same issue because as more data becomes available, it allows the researcher to gain multiple perspectives on the same matter. Furthermore, the use of multiple data collection methods contributes to the trustworthiness of the data (Glense & Peshkin, 1992; Painter & Rigsby 2005). Data collection is eclectic in nature and the utilization of rich and diverse data answers questions about the complexity and variability of human life (LeCompte & Preissle, 1993). The process of

interpretation and explanation attempts to bring all the items together into a meaningful whole (Maxwell, 1998). Creswell (2007) explains that data collection involves aspects such as setting boundaries for the study, collecting information through observation, interviews, documents and visual material as well as establishing the protocol for recording information. Most importantly, Seliger and Shohamy (1989) point out that the methods used to obtain results must be considered and compared.

Grounded theory emerges from close involvement and direct contact with the empirical world to enhance the collection of rich data (Patton, 1990). In this study, the researcher intensified the collection of rich data by using multiple sources of data (observation, documents analysis and individual interviews). The whole process of data collection focused on the process of knowledge construction by learners in CBSL (in the classroom and in the community settings). A study of the CBSL programmes, run at the participating nursing education institutions, brought about an understanding of what and how knowledge was constructed in these nursing education programmes, the activities involved in such programmes and the whole process of teaching and learning within the South African context. During the process of data collection, the researcher began by examining and analysing the practice of CBSL in both the selected nursing schools. During this period of observation, the researcher spent a few days on each site, mainly doing observations and analysis of documentations.

3.7.1 Document Analysis

The researcher requested copies of documents pertaining to the CBSL programme for analysis. These included documents regarding the philosophy, the mission statement, the conceptual frameworks, the level or course outcomes and its assessment criteria as well as the evaluation instruments of the programme. According to Wilson (1997), the agency's perspective and interpretation of the phenomena often emerges from the analysis of the documents. These documents were analysed in relation to the data that was emerging during observations and interviews. Ongoing and concurrent analysis of data, at this stage, capitulated preliminary concepts and constructs describing CBSL processes and practices as understood and practised by the selected institution. It also gave insight on how learners applied the knowledge they had learnt in the community settings when back in the classroom. These concepts and constructs formed the basis for the next stage of data collection.

3.7.2 Observation

Observations included looking, listening and asking questions as they arose, in order to offer insights to what was being observed. The researcher observed the process of knowledge construction in CBSL as it occurred in community learning sites and also in the classroom setting, and how learning in the community was transferred into the classrooms and then back to the communities. During each session, the researcher documented events as they occurred in a form of field notes. Observation of learners in community learning sites and also in the classroom helped the researcher to gain insight into the practise of CBSL. The researcher shared with the participants their understanding of the meaning behind the practice

of CBSL and the process of knowledge construction in both the community and the classroom. The researcher prepared questions that served as outlines for the interviews. Those questions had to be flexible and exploratory in nature as the researcher was directed by the participants' responses to probe further on issues of interest (Strauss & Corbin, 1999).

Observational techniques are methods by which an individual or individuals gather first-hand data on the programmes, processing or behaviours being studied (Hopkins, 1993). They provide researchers with an opportunity to collect data on a wide range of behaviours, to compare a great variety of interactions and to openly explore the evaluation topic (Hopkins, 1993; Merriam, 1998). Merriam (1998) also notes that observation, as a qualitative data collection method, is a research tool when it serves a formulated research purpose and is deliberately planned and systematically recorded. Patton (1990) states that learners find the experience of being under observation less threatening than an interview and that observation provides the researcher with supplementary data that could not be acquired in any other way. In this study, the researcher's role was that of an observer during the implementation of the CBSL programmes at the participating nursing education institutions.

The researcher observed how the CBSL programme was implemented, and focused on how students gained knowledge and experience by their interactions with the communities in need of health interventions and how this knowledge and experience once gained, was taken back to the classroom for further reflection, application and evaluation. Field notes were taken as supportive sources of data

collection during the observations to assist in assessing the extent to which the CBSL projects were implemented. Field notes are a written account made during the observation, either on the spot, or as soon as possible after the event, that represent the interaction and activities of the researcher and the people studied (LeCompte & Preissle, 1993). Field notes, as the name suggests (Maykut & Morehouse, 1994), include the experiences, interactions and observations made by the researcher in the process of data collection and analysis. However, not all events and activities were translated into field notes, as the researcher recorded only the interesting and relevant activities and conversation that had to do with the research question pertaining to this study.

3.7.3 Interviews

Interviews are used to gather a description of the life world of the interviewee with respect to the interpretation of the meaning of the described phenomena (Kvale, 1983). According to Merriam (1998), *"an interview is a conversation, but a conversation with a purpose*" (p. 74). McMillan (1992) and Lofland and Lofland (1995) further assert that using selected interviews could be described as key informant interviewing. Strauss and Corbin (1999) emphasise on asking questions as a primary tool for collection of data in the grounded theory approach. Glaser further states that *"Observational data is not enough. The researcher should provide interviews along with observations so that the analyst can get a meaning of what is observed. Observations do not in and of themselves have the meaning or perspective in them of the participants"* (p. 49).

During the interviews, the responses of the participants were audio-taped. Hand written notes and memos were utilised to provide a system of backup information throughout the process of data collection. Interviews were mainly based on data that had emerged during observation on each site so as to cross check, fill gaps and verify categories and concepts that emerged from the data of each site. The head of department, deputy head, academic programme directors, level coordinators, facilitators, lecturers and clinical facilitators were all interviewed during this stage. The interviews addressed questions related to the CBSL context and its implementation in each school, CBSL curricula, graduate competencies, the nature of learning experiences used, community-based learning experiences or activities, teaching and learning processes, and the roles of those involved in the programme and their community involvement.

The other primary aim of individual interviews in this study was to elaborate on what had been observed, in order to gain a more profound insight into the opinion of the participants regarding the nature of the graduates, the nature of the programme, the nature of the learning environment, the characteristics of the knowledge construction process, the roles of the teacher and the learner and their relationship, barriers and challenges to teaching and learning as well as perceived benefits of CBSL programmes. The gist is that the researcher wanted the participants to expand on specific responses emanating from the observations that were made in order to gain deeper understanding about the experiences they had acquired through the application or use of the CBSL programme based in those nursing education institutions.

3.8 DATA ANALYSIS

Data analysis can be viewed as a staged process by which a whole phenomenon is divided into its components and then reassembled under various new rubrics (LeCompte & Preissle, 1993). Data analysis in qualitative research assists the researcher to discover themes and concepts embedded throughout the interviews and, as the final stage of listening, enables the researcher to hear the meaning of what has been said (Rubin & Rubin, 1995). Strauss and Corbin (1990) point out that data collection and data analysis are tightly interwoven processes and must occur alternatively, because analysis directs the sampling of data. The aim of analysis and interpretation of qualitative data is to discover patterns, ideas, explanations and understandings. McMillan (1992) and Creswell (2007) argue that it is important to note that the process of data analysis is eclectic, in other words, there is no 'right way' of analysing data. In this study, data collection and the initial stages of data analysis (category development, category saturation and concept development) were conducted concurrently as recommended in grounded theory (Strauss & Corbin, 1990).

Grounded theory is a repetitive process because the analyst is required to return constantly to data sources to check aspects of the emerging interpretation and to gather new data when and where appropriate. Therefore, the researcher analysed the data as she continued with data collection. The guidelines for analysing grounded theory studies in Strauss and Corbin (1990) were also followed.

Analysing data by grounded theory, according to Chenitz and Swanson (1986), is an intricate process which reduces raw data into concepts that are designated to stand for

categories. The aim of using the grounded theory is the identification of core categories achieved by the grouping and integration of coded concepts under a single term. Three coding procedures were followed because, according to Strauss and Corbin (1990), there are three coding procedures at the heart of the grounded theory, which are open coding, axial coding and selective coding. Strauss and Corbin define coding as *"the actual process through which the data are broken down, conceptualised and put back together in new ways into some form of theoretically meaningful structure"* (1990, p. 57). Open coding involves dividing data into categories of concepts, assigning properties along the continuum and breaking those properties into dimensions (Strauss & Corbin, 1990).

Axial coding, according to Strauss and Corbin (1990), involves procedures for connecting categories found in open coding. Selective coding, on the other hand, is the process of selecting the core categories identified in the analysis and relating them, in a systemic way, to the other categories uncovered in the research (Strauss & Corbin, 1990). It is during this phase that the resulting theory begins to emerge by itself. The theory eventually solidifies and is then validated. Strauss and Corbin (1990) state *"validating one's theory against the data completes its grounding"* (p. 133). This is done by diagrammatically laying out the theory in memos. Then, the statements regarding the category relationships under varying conditions are developed and finally validated against the data (Strauss & Corbin, 1990).

3.8.1 Open Coding

The first coding procedure of data analysis is open coding which is the analytic process through which concepts and their properties are identified, thus forming codes (Strauss & Corbin, 1990). Open coding involves the process of breaking down, examining,

comparing, labeling and categorizing data. In simple terms, open coding means assigning themes to quotes and categories. Categories are defined by Strauss and Corbin as *"…higher in level and more abstract than the concept they represent. They are generated through the same analytic process of making comparisons to highlight similarities and differences that is used to produce lower level concepts. Categories are the 'cornerstones' of developing theory. They provide the means by which the theory can be integrated…"* (p. 66).

According to Moghaddam (2006) a category is an abstract conceptual label which summarises the key characteristics of a passage. Miles and Huberman (1994) refer to coding and categorising as the process of *'data reduction'*. According to Tesch (1990), data reduction refers to the process of selecting, focusing, simplifying and abstracting the data that has been collected. The process of interpretation and explanation attempts to bring together all data items into a meaningful whole, thus translating the conceptual model into a story line (Strauss & Corbin, 1990). In this research study, open coding involved the working through of transcripts, coding of all texts and labeling and categorizing of concepts.

Some of the texts were multiple coded. Many categories were identified from the first transcript and then, progressively, fewer new categories emerged from each successive transcript as the proportion of new information decreased. The researcher used the 'microanalysis' approach to generate categories. Strauss and Corbin (1999) define microanalysis as *"the detailed line-by-line analysis necessary at the beginning of a study to generate initial categories and to suggest relationships among categories"* (p. 57). This means that all the data was examined at several levels, that is, word-by-word

analysis level, line-by-line analysis level, sentence-paragraph analysis level and, finally, the whole document analysis level (page-by-page, document to document) as stated in Strauss and Corbin (1990; 1999).

After each set of data, categories were revised in light of the new data analysed. This alluded to the idea of 'progressive focussing' which runs throughout grounded theory (Strauss & Corbin, 1990). The process of assigning specific themes to categories was repeated by a second, independent person (research assistant) to eliminate 'operator variance' and ensure consistency and credibility. The end point of this process was the production of an initial list of categories. The next stage was to identify the properties of the categories, for instance, their context or pre-conditions.

3.8.2 Axial Coding

The second coding procedure of analysis was axial coding. Whereas open coding fractures the data into concepts and categories, axial coding puts those back together in new ways by making connections between a category and its subcategories. According to Strauss and Corbin (1990), axial coding involves procedures for connecting the categories found in open coding. The starting point for axial coding, in this study, was the full list of categories produced at the end of open coding. The initial list of categories developed included categories such as the nature of the graduates, the nature of the programmes, the nature of the learning environment, the knowledge construction process, the role of the teacher, the role of the learner, etc.

Axial coding involved further analysis and refinement of the list by deleting or combining some of the categories once connections had been made between them. Categories were

linked according to properties and dimensions and as the sets of categories become established, it was possible to define them more precisely. Consequently, only minor adjustments were needed as the analysis progressed. An entire document analysis approach was used in the analysis of programme documents.

In the analysis of documents, the researcher first looked to find what made some documents similar to the others, then specifically analysed any similarities and differences. Documents that were analysed included the basic programme curriculum, the institution's philosophy and mission statement, and the conceptual framework and course outcomes for the levels where the CBSL programme was dominant. The phrases, words and concepts used by the participants were utilised in the grouping or coding of data. All concepts were grouped according to their 'fit' to form categories as indicated in Strauss and Corbin (1990). Some of the categories were named from the words and phrases used by the informants themselves and some were named from a pool of concepts that the researcher knew from her academic subject and professional reading. Strauss and Corbin (1990) refer to the latter source of concepts as literature-derived concepts.

After linking the categories together according to their properties, the initial data was coded using a broad category with broad dimensions. Within this broad category, *'subcategories'* were created which further linked some of the data and defined their relationship according to properties and dimensions. Strauss and Corbin (1990) state that coding is geared towards discovering and relating categories in terms of the '*paradigm model'*. This involved procedures for connecting sub-categories found in open coding into a category, and later, categories into each other. '*Coding'* processes are concerned with matching casual conditions, context, action/interaction strategies, intervening

conditions and consequences with the intention of uncovering the phenomena observed in the data analysis. This process of coding data requires repeated re-examination of data and its interpretation and making repeated comparisons of data until the stage of *'category saturation'* is reached (Strauss and Corbin, 1990; 1999).

All the data in each category was examined to determine whether it fitted the emerging pattern of characteristics as identified by the researcher. *'Category reduction'* followed immediately after the saturation of categories. Category reduction is aimed at reducing the number of categories, which, at this phase of data analysis, have become numerous. During category reduction, categories were linked together with the intention of understanding relationships among them and according to how they fitted the characteristics of a defined category. Those which shared similar characteristics were merged into higher order categories according to Strauss and Corbin's paradigm model (casual conditions, context, action/interaction strategies, intervening conditions and consequences).

3.8.3 Selective Coding

The third and final coding procedure is selective coding, which is the process of integrating and refining categories (Strauss & Corbin, 1990). This stage involved the identification of a core category (general themes) from which the theory arose and all the major categories were integrated to form a larger theoretical scheme. Grounded theory encourages the use of literature in this final stage, in order to confirm findings and to illustrate where the research differs from the literature. In this way existing theories and typologies can be 'tested' against the data. Hammersley and Atkinson (2007) argue that the coding will not be sufficiently established to allow 'testing' in this way until the final

stages of analysis. They argue that *"the process of testing requires considerable further development of the theory or explanation"* (p. 124). *Selective sampling of literature* then followed the linking of categories to determine whether the present findings 'fitted' the findings from earlier studies and existing theories. Then, through the process of reduction and comparison, the core variable emerged.

According to Burns and Grove (2007), the core variable refers to a category which accounts for most variation in the pattern of behaviour and which helps to integrate other categories that have been discovered in the data. The core variable became the central theme or focus of the study. Other categories that emerged at this level were named as subsidiary categories. Relating of subsidiary categories to the core category was done by means of the paradigm model (discussed below). Categories were analysed in relation to these paradigms to determine which categories fitted the paradigm.

The resulting theory began to emerge by itself and eventually solidified through the process whereby diverse properties were merged to become integrated. Modifications took place as the researcher took out all the irrelevant properties of the categories and integrated details of relevant properties into an outline of interrelated categories. This process, according to Burns and Grove (2007), is called '*concept modification and integration'*. The next step was finding ways to delimit the theory with a set of high-level concepts. The theory was finalised and was once again compared with the data.

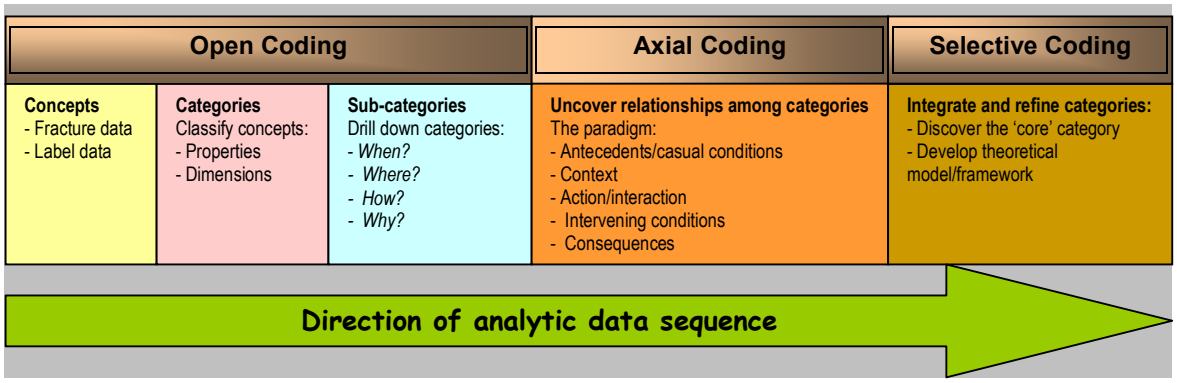
According to Strauss and Corbin (1990), *"validating one's theory against the data completes its grounding"* (p. 133). This was done, as stipulated by Strauss and Corbin, *"by laying out the theory in memos diagrammatically"* (p. 133). As a final step, the

statements regarding the category relationships under varying conditions were then developed and validated against the data. Figure 3.1 depicts the analytic process of the study.

3.8.4 The Paradigm Model

Strauss and Corbin (1999) identify the paradigm as *"an analytic tool devised to help analysts integrate structure with process"* (p. 127). In grounded theory, axial coding subcategories are linked to a category in a set of relationships according to the paradigm model. According to Strauss and Corbin (1999), the basic purpose of the paradigm model is to enable the researcher to think systematically about data and to relate to it in complex ways. By answering the questions of who, when, where, how and with what consequences, analysts are able to relate structure with the process.

Figure 3.1: The Grounded Theory Analytic Process for the Study

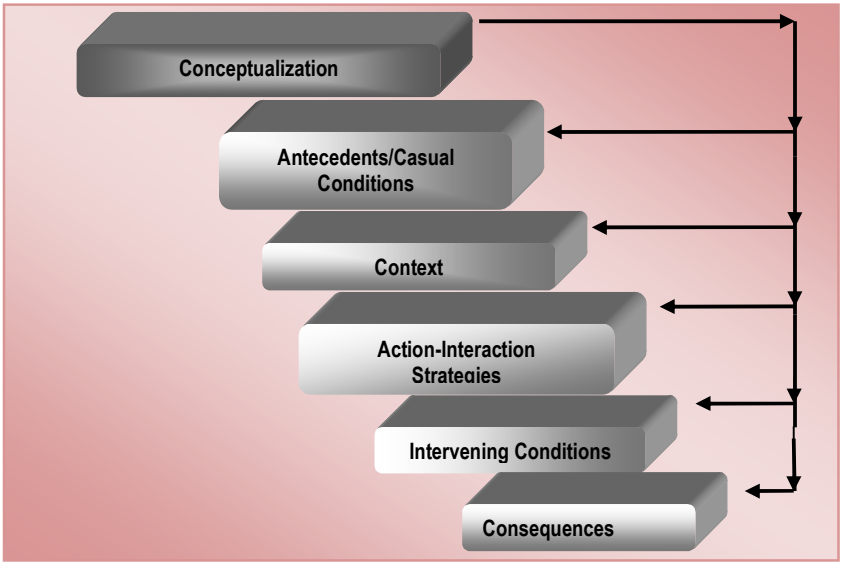


Adapted from Harwood (2002)

The paradigm model is an organising scheme that connects subcategories of data to the central idea or phenomenon to help the researcher think systematically about the data and pose questions about how categories of data relate to each other (Strauss & Corbin, 1990). The paradigm model denotes the casual conditions, context of the phenomenon,

action/interaction strategies, intervening conditions and consequences as depicted in figure 3.2 below.

Figure 3.2: The Basic Features of the Paradigm



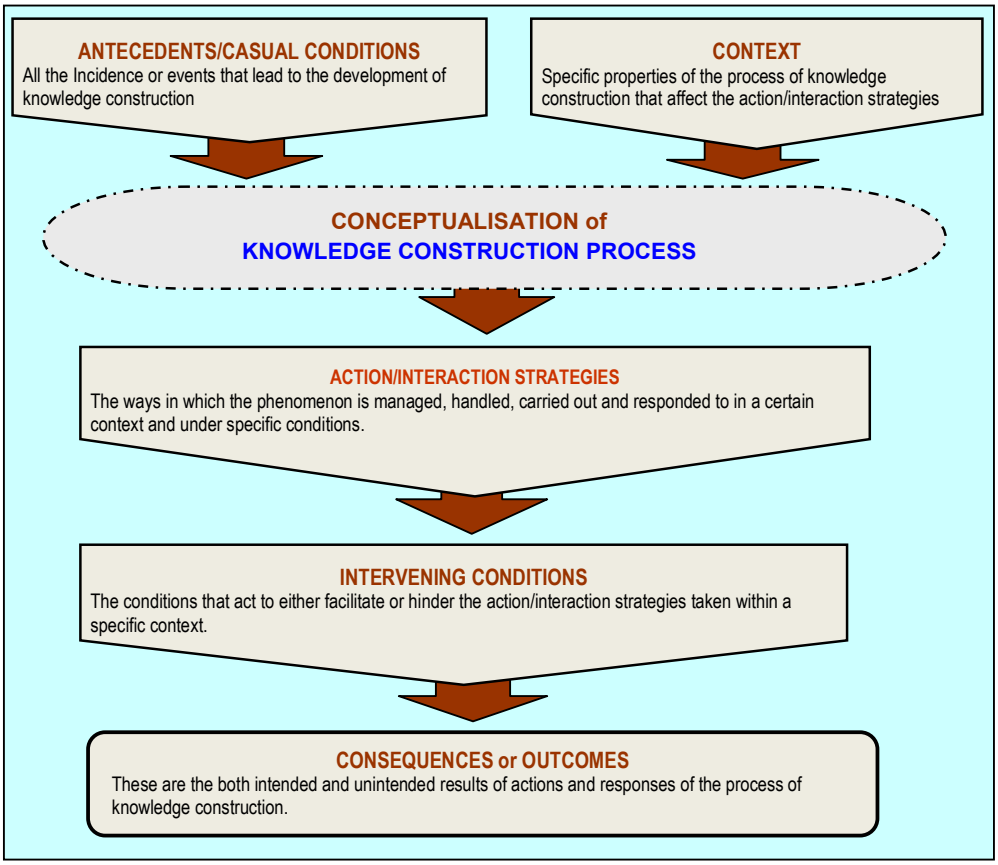
Adapted from Strauss and Corbin (1990)

According to Strauss and Corbin (1999), the phenomenon under study is the core category which is the central idea which indicates a problem, issue, event or happening that is defined as being significant to the respondents. In this study, the core category was the process of knowledge construction in CBSL programme in basic nursing education. Casual conditions are the incidences or events that lead to the development of the phenomenon (Pandit, 1996). Context refers to the specific properties of the phenomenon, as well as to a series of a particular set of conditions that affect the action/interaction strategies (Strauss & Corbin, 1999).

According to Pandit (1996), context is a set of conditions in which the phenomenon is couched. Contextual conditions have their source in casual and intervening conditions

and are the product of how they crosscut to combine into various patterns dimensionally. Action/interaction strategies refer to the ways in which the phenomenon is managed, handled, carried out and responded to in a certain context and under specific conditions (Strauss & Corbin, 1999).

Figure 3.3: The Components that Formed Part of the Study Paradigm Model



Adapted from Strauss and Corbin (1990)

According to these authors action/interaction strategies are strategic or routine responses made by individuals or groups to issues, problems, happenings or events that arise under those conditions and are represented by the questions, by whom and how. Intervening conditions act to either facilitate or constrain the action/interaction

strategies taken within a specific context. Intervening conditions, according to Strauss and Corbin (1999), can be thought of as the broad structural context pertaining to the phenomenon which may have an influence by facilitating or constraining the action/interaction strategies in a particular context. Consequences refers to outcomes, both intended and unintended, of actions and responses (Pandit, 1996). Consequences are represented by questions as to what happens as a result of those actions/interactions or the failure of persons or groups to respond to situations by action/interaction, which constitutes an important finding in and of itself (Strauss & Corbin, 1999). Figure 3 (on page 78) depicts the components that formed parts of this study's paradigm model.

3.9 ACADEMIC RIGOUR

Academic rigour refers to the logical accuracy, scientific adequacy or trustworthiness of the research outcomes with respect to openness, scrupulous adherence to the philosophical perspective of the approach and thoroughness in collecting data (Burns & Grove, 2007). The potential strength of a qualitative research theory may be lost if appropriate strategies are not followed to reduce careless handling of data and the researcher biases (Khalifa, 1993). In grounded theory sampling, data collection techniques and processes used in analysis ensure rigour and comprehensiveness (Strauss, 1987). The concept of trustworthiness is used to make certain of the quality and value of the final results and conclusions reached in qualitative research (Lincoln & Guba, 1985) and this concept (trustworthiness) is composed of four main aspects, namely credibility, dependability, confirmability and transferability. Strauss and Corbin (1990) suggest that *"grounded theory should initially be judged on criteria related to the*

process of generation theory of which firstly, the data needs to be valid, reliable and credible (triangulation of the findings); secondly, the research process should be adequate (trustworthiness) and thirdly, the research findings should be empirically grounded" (p. 253).

3.9.1 Credibility

Credibility refers to the authentic quality of the data in that it should portray what the researcher was looking for (Guba & Lincoln, 1994). Credibility in qualitative research is defined as the extent to which the data and data analysis are believable and trustworthy. Qualitative research is valid to researchers, to whom it gives an accurate and useful representation of the particular instance that has been studied (Stake, 1988). Miles and Huberman (1994) acknowledge that researchers often 'get it wrong' and that findings often simply do not fit the data. Guba and Lincoln (1994) suggest that credibility is aimed at establishing that the enquiry was conducted in such a manner that the subject was accurately identified and described. Credibility in qualitative research is usually obtained from the discovery of human experiences as they are lived and perceived by informants (De Vos, 1998), is the 'truth' of the findings from the informants (Guba & Lincoln, 1994) and relates to issues such as the truthfulness of responses, accuracy of records and authenticity of historical artefacts (Anderson, 1990).

It is essential that the enquiry must be credible to the participants as well as the constructors of the original multiple realities (Guba & Lincoln, 1994). To achieve credibility the researcher used several measures. The researcher gave a detailed description of the research process and the process of data analysis. Data and

categories discovered were discussed with the research supervisor at regular intervals and other experts in qualitative research were consulted. The researcher also used triangulation, which refers to the use of different methods of data collection. The researcher promoted this aspect by using three data collection techniques, being in-depth interviews, analysis of documents and observation of group sessions. Membership check, which refers to the researcher's ability to recheck the participants to validate the accuracy of the information given and recorded, was also applied (Khalifa, 1993). The researcher went back to those interviewed to verify if the recorded data was accurate or needed correction or elaboration on construct.

3.9.2 Dependability

Dependability refers to the stability of the data in the study (Guba & Lincoln, 1994). It is the process of detailing the consistency, reasonable stability over time and convergence of accounts across methods such as observations of informants, contexts, connectedness to theory, data quality checks or audits and peer review of coding (Guba & Lincoln, 1994). According to Krefting (1991), dependability refers to whether the findings of the research would be consistent if the study were repeated with the similar subjects in a similar context. De Vos (1998) maintains that consistency is the extent to which repeated administration of a particular measure will provide the same data or the extent to which a measure administered once, when repeated with different people, will produce equivalent results. Researchers should be in a position to trace each others' methods of research (Kock, 1994). This is called the '*audit trail'* and is based on '*dense or thick descriptions'* (Merriam, 1988), which implies a complete, literal description of the

incident or entity being investigated. Dependability, according to Seale and Erasmus (2005), can be achieved through auditing, which consists of the researcher's documentation of data, methods and decisions made during a thesis, as well as its end products. To ensure dependability, the researcher conducted data quality checks or audits, peer review coding and consultation of qualitative research experts. The qualitative research experts were consulted to monitor the data collection process, and the analysis and interpretation of the data.

3.9.3 Confirmability

Confirmability refers to the objectivity of the research process and outcome, and is the degree to which data confirms the findings and is free of researcher bias. This can be achieved by ensuring that the conclusion depends on the subjects and condition of enquiry rather than on the investigator (Guba & Lincoln, 1994). Confirmability is the degree to which the research findings can be confirmed by another researcher (Krefting, 1991).

De Vos (1998) asserts that confirmability refers to the degree to which the findings are a function solely of the informants and conditions of research and not of other biases, motivation and perspectives. In qualitative research, the value of findings increases when the distance between the researcher and the informants decrease (De Vos, 1998). Marshall and Rossman (1994) insist that in qualitative research, the researcher must be able to confirm the findings of his research by keeping all collected data in a well-organised, retrievable form so that the researcher can easily make them available if the findings are challenged or if any other researcher wants to re-analyse the data. Confirmability, in this study, was promoted by taking

detailed field notes, by taping and transcribing interviews verbatim to identify variations in responses and by making field notes available for audit checks and verification. This was done following data collection, where the field notes were made available to interviewees for cross checking and verification.

3.9.4 Transferability

Transferability is the assumption that the findings derived from research in a particular context will also apply in other similar contexts. We say that research findings are transferable when they fit into contexts outside the study situation. The degree of transferability is determined by the degree of similarity or 'goodness of fit' between the two contexts (de Vos, 1998). Seale and Erasmus (2005) advocates that transferability is achieved by providing a detailed, rich description of the settings studied to provide the reader with sufficient information to be able to judge the applicability of the findings to other settings that they know. Guba and Lincoln (1994) define transferability as the extent to which the research findings from one research study can be applied into other contexts or to other participants.

Transferability is more the responsibility of the person wanting to transfer the findings to another situation or population than of the researcher of the original study (Guba & Lincoln, 1994). Marshall and Rossmann (1994) agree that it is the responsibility of the investigator who is interested in applying the findings to another setting or a group of people to demonstrate the relevance of the first set of findings to the new context. According to Denscombe (1998), transferability does not necessarily prove that the researcher 'got it right'; but that the researcher achieved consistency across techniques and that the findings are not tied to a

particular method of data collection. To ensure that the developed theory is applicable to the context under study, the researcher used purposive sampling, gave a detailed description of the context or setting and provided detailed descriptions of the whole process of the research study, including the research procedures and findings to enhance transferability to other similar contexts.

3.9.5 Triangulating the Findings

One of the most important ways to improve the trustworthiness of qualitative research findings, as mentioned above, is by triangulation, which is used as a protocol to ensure the accuracy of data collected (Tellis, 1997). Since different methods entail different weaknesses and strengths, methodological triangulation consists of a complex process of playing each method off against the other so as to maximise the validity of the efforts leading to a reduction of the threats to internal and external validity (Denzin, 1989). According to Maxwell (1998), triangulation reduces the risks of systematic distortions inherent in the use of only one method. Because of the importance of triangulation as a criterion, the concept is briefly discussed. Triangulation refers to using multiple data collection methods, data sources and analysts to check the validity of the findings. If similar themes are noted in the data collected, then the credibility of one's interpretation is enhanced (Miles & Huberman, 1994; Leedy, 1997).

Triangulation corrects biases when there is only one researcher investigating a phenomenon. It also prevents the researcher from accepting the validity of findings too readily. In addition, it serves to enhance the scope and clarity of constructs developed during the investigation (LeCompte & Preissle, 1993). According to

Babbie and Mouton (2001) "*triangulation is the best way to elicit the various and divergent constructions of reality that exist within the context of a study are to collect information about different events and relationships from different points of view"* (p. 277). Triangulation is ubiquitous in the methodological literate of the social sciences and is regarded as a metaphor rather than a precise concept.

Furthermore, Fielding and Schreier (2001) state that triangulation has come to be used to determine which of the meanings is most appropriate for conceptualising the combination of methods. In view of this, these authors distinguished three meaning to triangulation: (a) triangulation as the mutual validation of results obtained on the basis of different methods (the validity model); (b) triangulation as a means toward obtaining a larger, more complete picture of the phenomenon under study (the complementary model); and (c) triangulation in its original trigonometrically sense, indicating that a combination of methods is necessary in order to gain any (not necessarily a fuller) picture of the relevant phenomenon at all (the trigonometry model) (Strauss & Corbin, 1990; Fielding & Schreier, 2001). In this study, the several data collection techniques that were used were observation (with field notes), individual interviews (with memos and audio recording) and document analysis. The collected data was reduced using qualitative techniques and categories were identified and clustered as have already been explained above.

3.10 ETHICAL CONSIDERATION

Ethics is a set of moral principles which are suggested by an individual or group which are, ideally, subsequently accepted. These moral principals offer rules and behavioural expectations about the most correct conduct to be used towards

subjects and respondents, employers, sponsors, other researchers, assistants and learners (Strydom, 1998). Bassey (1999) states that ethical consideration should take into account the ethical guidelines which include: (a) respect for democracy; (b) respect for truth; and (c) respect for person (p. 73). Creswell (2007) argues that the researcher has an obligation to respect the rights, needs, values and desires of the informants. Almost always, data gathering is done on somebody and the gathering of most educational case data involves, at least, a small invasion of personal privacy.

The procedure for gaining access is based on the enduring expectation that it is needed (Stake, 1995). The researchers should (Silverman, 2000) always remember that while they are doing their research, they are in actual fact entering the private spaces of their participants. Against the above background of ethical considerations, it was important for the researcher to follow the strict ethical guidelines laid down by the University's Research Ethical Committee, in order to protect the dignity and the rights of the participants (nursing education institution staff members, learners and community members) as well as to ensure that the research was conducted in a fair and equitable manner. Ethical guidelines serve as standards for the researcher to use as a basis in guiding ethical conduct during the research process. The following sub-section describes how ethical issues in the conduct of this particular research were addressed:

Permission to conduct the study: Permission to conduct this study was obtained from: (a) the University of KwaZulu-Natal Faculty of Health Sciences Research Ethics Committee; (b) the heads of the two schools that participated in this study.

Informed consent: The researcher obtained the informed consent of all the participants, that is, the nursing education institution staff members who participated in the study (heads of department, deputy head of school, programme coordinator, academic level coordinator, facilitators, learners and community members) particularly about their roles in the research. In the light of this, Silverman (2000) stresses that informed consent inevitably implies that the participants should be informed about the purpose of the research. Although students were not regarded as participants, their interactions and participation in classroom and group activities would be observed and, because of this, they were informed and their permission was sought.

Personal introduction of the researcher: The researcher introduced herself to the participants (nursing education institution staff, learners and community members, where and whenever relevant) and informed them of the nature and extent of the research prior to commencement.

Voluntary participation: The researcher, with the lecturers concerned, ensured that learners were not coerced into participating in the research (Trochim, 2002a). Learners were not participants as such, but because they would be under observation, their consent had to be obtained.

Risk of harm: In this research study, the researcher had to guarantee that no participant was put in a situation where they might be harmed, either physically or psychologically, as a result of their participation (Trochim, 2000a).

Statement of confidentiality and anonymity: The researcher ensured the confidentiality and anonymity of the participants. All data collection devices, that is, audiotapes and transcripts were confined to the researcher. The researcher made

it clear that the participants' names would not be used for any purposes, nor would information be shared that revealed their identity in any way.

3.11 CONCLUSION

This chapter addressed the question of which core research methodology or strategy would be employed in this study. The chosen research design was presented and described, followed by the research paradigms, qualitative research design, grounded theory research approach, setting description, study population, sampling procedure and sampling description, data collection and analysis strategies. Lastly, academic rigour in terms of the trustworthiness of the research and ethical considerations were established and discussed.

CHAPTER FOUR

PRESENTATION AND ANALYSIS OF THE MAIN FINDINGS

4.1 INTRODUCTION

The aim of the presentation and analysis of data is to provide a sense of direction for the purpose of this study. The data presented was the result of *'slices of data'* (Glaser & Strauss, 1967, p. 65) from the multiple sources (observation, participant interviews and document analysis) which were used in this study. The results are outlined in a manner which indicates how the first three objectives of this study were achieved. These objectives were: (a) to explore conceptualisation of the phenomenon of knowledge construction; (b) to analyse the process of knowledge construction (action/interaction strategies); and (c) to identify and describe the casual conditions or antecedents, context, intervening conditions, and consequences or outcomes under which the process of knowledge construction occurred in community based service-learning (CBSL) programmes in basic nursing education.

The categories and subcategories presented in this chapter emerged from the words and phrases which were used by the participants themselves, and some additional categories were extracted from the pool of concepts the researcher had learned from her disciplinary and professional reading. Strauss and Corbin (1990) described these concepts as *'literature-derived'* concepts. To indicate that the participants shared perceptions and notions on particular categories and sub-categories, examples are given *by quoting, in italics,* the exact words of some of the participants.

Since knowledge construction was the phenomenon of interest in this study, it became the core concept around which the other concepts revolved. The outline of the study followed Strauss and Corbin's (1990) paradigm model of data analysis and was presented as: (a) conceptualisation of knowledge construction; (b) casual conditions or antecedents that contribute to the process of knowledge construction; (c) context within which knowledge is constructed; (d) action/interaction strategies during the knowledge construction process; (e) facilitative and hindering intervening conditions; and (f) the consequences or outcomes of the process of knowledge construction in CBSL programmes.

4.2 SAMPLE REALISATION

The participants were from the two nursing education institutions (NEIs) which were chosen for inclusion in the study. These two university nursing education departments were from different provinces in South Africa. The criterion for inclusion of the NEI was determined by the existence of a well-established CBSL programme as part of their basic nursing education. The sample size was dependant on the role the participants played in the CBSL programme.

Sampling differed in the two selected NEIs due to the differing approaches used by them in their staffing and/or patterns of staffing models. In NEI A, the participants included the deputy head of the school; the basic nursing programme coordinator; the level coordinator, who was also a facilitator of the second year level in which students are exposed to CBSL; and four other facilitators. A total of seven participants were interviewed in this NEI. In NEI B, the sample comprised of the head of the school; the undergraduate programme director; four facilitators,

one for each level; two other facilitators; and one clinical facilitator. The total number of the population at this NEI was nine. The total sample size for this study was 16 as depicted in Table 1 (on page 90).

Table 1: Total Population and Sample Size

Population	NEI A	NEI B	Total
Interviews:			
Head of School	-	1	**1**
Deputy Head of School	1	-	**1**
Programme Coordinator/ Undergraduate Programme Director	1	1	**2**
Level Coordinator	1 (2nd year level)	4 (all levels)	**5**
Facilitator/Lecturer	4	2	**6**
Clinical Facilitator	-	1	**1**
Total Interviews	**7**	**9**	**16**
Total Population			**16**
Direct Observations:			
Number of Groups	3	4	**7**
Number of Sessions	9 (each group observed thrice)	4	**13**
Total Observations	**12**	**8**	**20**

4.3. THE RESULTS

4.3.1 Conceptualisation of the Phenomenon "Knowledge Construction"

To reiterate, Strauss and Corbin (1990) define a phenomenon as the central idea, event or, happening about which a set of actions/interactions is directed at managing or handling, or to which the set is related. Data sources revealed that there were different determinants through which the process of knowledge construction in CBSL programmes was manifested. These factors include that knowledge construction: (a) is grounded on authentic health related problems; (b) enhances academic discourse dialogue; (c) requires cognitive coaching (scaffolding); (d) is interactive and takes

place in communities of learners; (e) requires active learning; (f) promotes reflective learning; (g) is collaborative in nature; and (h) requires inquiry-based learning.

Knowledge construction is grounded on authentic health related problems: Participants revealed that all learning activities, both in the classroom and in community settings, were based on solving real-life problems which had been identified in the communities. The use of authentic health problems from the community was the core in the process of constructing knowledge in CBSL programmes. It emerged that identified community health needs served as a drive behind the whole process of knowledge construction. The rich and diverse community environments promoted learning through the investigation of community problems within authentic contexts and encouraged students to draw on live experiences. Real-life community problems became the tools for learning as, within the communities, students were exposed to the various stages of problem solving and were encouraged to practice their problem solving skills whilst they acquired substantive contextualized knowledge. Some excerpts from the participants state that:

> *In authentic context, students acquire content and skills through the resolution of realistic problems... the knowledge and understanding that are developed in their realistic and complex situations are more easily retrieved when needed.*
>
> *The use of real life problems relates the educational environment to future professional practice and thus helps bridge the theory/practice gap.*

The identified authentic health needs form the basis of the content covered in class… knowledge construction is directly based on these real health needs.

Concepts are grounded in experience and practice, and this is deemed to enhance motivation and lead to a deeper approach to student learning… community-based education and service helps the students to appreciate the communities in their realistic environment in which they will work.

Knowledge construction enhances academic discourse dialogue: In class, the participants guided the discussion process to ensure that the focus of students' dialogue was on the theme or learning issue at hand, not on other unrelated issues. It was revealed that the class discussions were theme-oriented. Within the themes discussed, it emerged that the process of knowledge construction was characterized by the exchange of ideas, viewpoints, arguments and debates of issues until a consensus was reached on what was regarded as relevant within the context of the discussion.

Group discussions and arguments were based on scientific or research-based literature which students brought to class to share with colleagues and to use in supporting their arguments. Students brought in their own resources (such as reports of personal experience, literature citations and data collected) which they used to explore their differences and negotiate new meanings through the discussions. It became evident that these interactions within the groups resulted in enhanced understanding and the creation of new personal constructions of

knowledge. There were a variety of cognitive activities performed by the students and their facilitators which included questioning, clarifying, negotiating, synthesising, arguing, and sharing facts and statements in class. Some of the participants explained as follows:

> *We have an important role to guide the nature and success of the discussions in class... We have to assist students in brain-streaming.*

> *All students should be actively involved in this process for effective knowledge creation… By providing equal opportunities, all students develop a sense of ownership to newly constructed knowledge and reduce the tendency to think unidirectional.*

> *Students' interactions during classroom discussions encourage students to critically analyse the data at hand for the purpose of constructing meaning and then validate knowledge through discourse and action.*

> *During active dialogue in class, students remember the core content better, and are able to align the data they have at hand with the with new information they didn't know before shared by their colleagues thereby expanding their knowledge base.*

> *The more inquisitive and talkative some students are, the more the whole group or class will learn.*

Knowledge construction requires cognitive coaching (scaffolding): Participants revealed that students' independence and ownership of learning did not preclude

the use of scaffolding. Scaffolding was done to guide, support and coach students so that they were able to cope with the learning issues at hand. Participants gradually and purposefully facilitated the process of learning to a stage where the students were capable of managing their own group processes, such as contributing to discussions and accepting criticism. This was done by identifying the period and content within which scaffolding (support) was needed during class interaction and the appropriate time to implement such support. It was also necessary to devise a method to assess the progress of the students and determine when the scaffold could be removed. The support was gradually removed as students progressively developed their own cognitive learning skills and developed autonomous group processes. Some of the participants revealed that:

> *We provide some form of supportive guidance to students that help them to engage in group tasks… to discuss up to the level that would normally not be possible to accomplish by working independently.*

> *Cognitive coaching is purposive support given to students for the purpose of academic achievement… in our case; it is performed within groups in the classroom and in the communities.*

> *Through our coaching and guidance, students are actively engaged at their current level of understanding until the point where the support is no longer required… they are guided in the process of mastering a group task or concept by stimulating their thought processes and assist them draw knowledge from previous experiences… they need someone to stimulate that reflective process.*

Knowledge construction is interactive and takes place in communities of learners: Participants revealed that knowledge construction in CBSL was manifested through sharing, negotiation and joint problem solving. Through the process of interaction between facilitators and their students, each identified community health problem, situation and/or learning issue was viewed from different perspectives, in order to jointly construct new meaning and understanding and, therefore, new knowledge. It emerged that the participants endeavoured to facilitate effective classroom interactions during teaching and learning, as they believed that such an interactive teaching and learning style promoted group discussions which helped the students to learn from their own experiences and from the experiences of their peers. Such interactive learning enabled the students to engage in the process of constructing knowledge from varied community-based clinical experiences, as well as the reflections of others through sharing and the exchange of knowledge. It emerged that when students engage in group processes, they form communities of learners who share the same goals of solving community health needs and/or problems, as evidenced by some of the following excerpts from the participants:

> *Students learn together by interacting with each other and with the facilitator… they work together to solve community identified problems… all possible perspectives are considered jointly to find a common solution to problems identified.*

> *We strive for student interaction during learning in our approach… students learn from their experiences and those of their group mates, they also learn from their inputs during the classroom sessions and group*

discussions… I say interactive because they learn together and from each other… In such a learning environment we should allow the students to question and challenge through reflections… ask for clarity and be open to justifications of their thinking or feelings… the same goes to us, challenging their perspectives so that we generate meaning and understanding of the situation together.

Working as a team over a problem allows all of the students to look at different ways of solving it because you explore various alternatives and debate them until a consensus is reached on the best solution that will solve the individuals, clients, families or community problems. This sharing and exchange of ideas and reflections contribute to increased construction of knowledge and problem solving skills.

Knowledge construction requires active learning: It emerged that active learning implied that students accepted more responsibility for their own learning. Participants revealed that the students constructed knowledge as they engaged in active learning by deliberately or consciously seeking out solutions for the learning issues at hand or the community problems that needed solutions. Some of the participants mentioned that:

Students learn actively and accept more responsibility in community contexts… through careful deliberations in the community and in class, students look for meanings in identified problems and learning issues.

In essence, learning is more effective when it is an active process rather than a passive process.

Knowledge construction promotes reflective learning: Data revealed that a student is perceived as a person who creates new understanding for him/herself. Participants revealed that during community intervention projects, the facilitators were there to facilitate learning through questioning and suggestions, and allowed the students opportunities to practice, ask questions, try new things or experiment in the community as they constructed knowledge. It emerged that an important part of the knowledge construction process was that the students reflected on, and talked about, their learnt activities to confirm the knowledge they had constructed.

Participants revealed that students kept learning journals where they recorded their community experiences, how they felt about specific encounters, the verbal reactions of others to the learning experiences and how they viewed certain individuals, families and even the communities to which they were allocated. From time to time, the learning journals were read and students were encouraged to reflect and then assess, if given the same scenario, whether they felt they had gained any new knowledge. Participants revealed that students should be allowed to control their own learning process and to lead the way by reflecting on their experiences. Such reflection helped students to make connections between their community service and their learning experiences. Some participants mentioned that:

Reflection makes students be experts of their own learning… our role as facilitator is to help create situations where students feel safe to question

and reflect on their own learning processes, either as individuals or as groups.

Students keep journals in a writing class where they record how they felt about the encounter with the community and about their community projects, the visuals and verbal reactions of others to the experience.

Periodically, we read these journals and holds conferences with the student where we assess what new knowledge the student has created, how the student learns best and the learning environment and our roles as the facilitators in it.

As facilitators, we follow an approach to teaching and learning, designs learning experiences where the student reflect-on and evaluate their learning experiences… also build on previous learning experiences to construct new knowledge and meanings.

Thinking about learning experiences in terms of what one understands and how one learns is a critical feature because it allows for knowledge to be created.

Knowledge construction is collaborative in nature: Participants revealed that an environment that promoted knowledge construction relied heavily on collaboration amongst students. It emerged that the students learned about learning, not only from themselves, but also from others such as peers, clients,

families and/or other members of the community. Collaborative learning emerged as a collection of perspectives based on the principles of interpersonal interaction. Through collaborating with each other, students became active partners and active participants of the reflective learning environment, and hence actively participated in the knowledge construction process. Participants revealed that collaborative learning involved grouping, or pairing, of students for the purpose of achieving a common learning goal, and in this way students become responsible for one each other's learning in the process of knowledge creation. Thus, the success of one student helps other students to be successful which, in turn, enhances the development of positive relationships for both the students and the communities and enhances the process of knowledge construction. Positive relationships were viewed as necessary for the effective facilitation of knowledge construction in community settings. This was indicated in the following quotes from some of the participants:

> *Collaboration amongst students themselves promotes knowledge to be constructed collaboratively... when students review and reflect on their learning processes together, they can pick up strategies and methods from one another… it doesn't stop from them alone but from different stakeholders including individuals, families, aggregates and the community at large.*

> *Working together is necessary… consultation and cooperation with each other is imperative. Collaboration helps students to be active participants of the reflective learning environment… it involves forming of partnership, sharing of information, co-operation and consultation amongst the*

students themselves, with different stakeholders in the community and with different university departments.

The development of positive relationships among all stakeholders in a teaching and learning situation is a significant aspect in the facilitation for effective knowledge construction especially in CBSL context.

Knowledge construction requires inquiry-based learning: Participants revealed that students used inquiry methods to ask questions and investigate topics. They also used a variety of resources to find solutions through explorations that led to more questions and answers until, eventually, new knowledge would be constructed. A few excerpts from some participant are as follows:

As students explore the topic, inquiry into the topic comes in, and students will use different means to reach solutions… then conclusions are drawn by students and as exploration continues, they revisit those conclusions.

Exploration of the questions through inquiry leads to more questions and, eventually, to new knowledge.

4.3.2 Antecedents or Casual Conditions

To reiterate, antecedents or casual conditions are those events or incidents that lead to the occurrence or development of a phenomenon (Strauss & Corbin, 1990) which, in the context of this study, is the construction of knowledge in CBSL programmes in basic nursing education. The two categories that emerged as antecedents in this study

were: (a) the nature of the graduates produced from the traditional curriculum; and (b) the nature of the graduates produced after engaging in the new curriculum.

The Nature of the Graduates Produced from the Traditional Curriculum

Data sources revealed that graduates produced from the old traditional curriculum were inadequately prepared. The academic NEIs had to revisit their curricula because of concerns that nursing graduates were inadequately prepared to respond to the needs of the communities as consumers of health care services. Their inadequate preparation was as a result of a curriculum which was not relevant to the realities of the immediate communities. It emerged that the curriculum was geared towards covering the content within the approved time frame of the school calendar. Both the teacher and the students worked towards ensuring that the examination syllabi were covered within the specified period, irrespective of the relevance of the content. Participants revealed that the traditional curriculum was teacher-centred, standardized and disconnected from students' experiences and that this type of teaching did not promote either active or meaningful learning, as indicated in the following excerpts:

> *The graduates from the old programme were inadequately prepared in a number of ways. The old curriculum was content driven and fragmented… was teacher-driven and did not promote student-centred learning.*

> *Their clinical learning appeared to be fragmented and not reality driven… students were only exposed to clinical learning sites based in hospitals to cover the required hours… therefore meaningful learning was not taking place thus causing students to struggle after graduation.*

Furthermore, the old curriculum was blamed for producing graduates who were professionally competent, but who lacked transferable life skills such as problem solving skills, analytical skills or critical thinking skills. Students also experienced difficulty working in teams, particularly those which included other health care professionals such as doctors, social workers or pharmacists. A reflection from one participant revealed that:

> *The students were deprived of the opportunity to develop problem-solving and critical thinking skills, the skills which are crucial in practice and in a community-oriented graduate… their product could not manage diversity… functioning in teams, especially multi-disciplinary health care teams was a challenge.*

It became apparent that as the old content driven programmes produced under-prepared graduates who were unable to meet the needs of the communities, there was a need to revisit the method of teaching so as to produce graduates who were professionally competent and in possession of transferable life skills. The traditional teaching programmes emphasised the theoretical content to be covered in the classroom, where the teacher was an active knowledge giver and the students were passive recipients of information. Participants explained that such educational programmes limited the active participation of students in class, thus limiting the development of the transferable skills associated with student centred learning, as stated in these abstracts:

> *As a school, we had to revisit our teaching methodologies with an aim to improve and strive for relevance in our curriculum.*

The old programme focused on pushing the content, with students passively taking notes… that crippled the students in developing to be active participants in their learning in preparation for their practice after graduation.

The methods of teaching which were used in the old programme were not adequately synchronized with the principles of adult learning. There was no active learning or active involvement of students which, thus, promoted passive academic behaviour and as a result the students were deprived of the opportunity to develop problem solving and critical thinking skills. The traditional curriculum which was used by the NEIs, was based on a bio-medical model which focused on sick and curative care, with little mention of health promotion or illness prevention. Participants explained that this type of curriculum, which addressed health issues in developed countries, was irrelevant to the needs of many communities in SA, because such teaching approaches did not take into account the specific health problems of disadvantaged societies, as indicated in the following excerpts:

Students were taught about the health problems common in developed countries which some were very rare in the South African context… and allocated to urban areas. The current and critical health problems or issues were not addressed in the education of nurses.

The change to CBSL was brought about by the irrelevance of nursing education to the needs of under-resourced communities.

Changing to CBSL was aimed at broadening the curriculum by giving students the opportunity of experiencing real-life situations within a community. It emerged that CBSL programmes exposed students to diverse community needs, thereby enhancing the scope of knowledge constructed by exposing them to the different health related issues facing different communities in the South African context, as the some of the participants stated:

> *Changing to CBSL was in line with educating appropriate standard so that our graduates can be able to function appropriately.*

> *South African context is wide and diverse… so the educational standards should be articulated to meet the needs of the diverse population in South Africa.*

The Nature of the Graduate Produced after Engaging in the New Curriculum

The data sources, especially the curriculum documents (graduate competencies, conceptual framework and programme philosophy sections), clearly reflected the nature of the graduate that should be produced after adopting a problem-oriented community-based curriculum. The nursing profession requires graduates who are responsive, not only to their own personal needs through self-awareness, but also to the needs of the consumers.

The participants described a responsive graduate as being professionally competent, according to the requirements of the regulatory body, and being in possession of transferable core skills which are in line with those stipulated by the South African Qualifications Authority (SAQA) as critical cross-field outcomes (CCFO's). To

facilitate the development of such graduates, the participants believed that problem-based learning (PBL), community-based education (CBE), case-based learning (CBL) and service-learning (S-L) were the ideal innovative teaching approaches. Some of the participants explained that:

> *On completion of the programme, our graduates register with the South African Nursing Council as registered nurses and they can be employed wherever they want to work, here in Africa and abroad. Our programme therefore aims at producing graduates that are comprehensively trained to be able to use the knowledge and skills attained and to render synthesised, comprehensive nursing care and… across all context.*

> *CBSL is the perfect tool to achieve that… graduates are critical-thinkers, problem-solvers and proactive competent professional nurses who will be able to function in all spheres within the nursing profession… and possess CCFO's as needed by the SAQA and the regulatory body.*

> *The new programme has created opportunities for us to permeate the advancement of the science and art of nursing to students and therefore, innovative teaching methodologies are required for the production of an innovative graduate.*

4.3.3 The Context

The context represents the specific set of properties or incidents that pertain to a phenomenon alongside a dimensional range (Strauss & Corbin, 1990). The three categories that emerged under the context of knowledge construction in CBSL

programmes were: (a) transformation of higher education; (b) transformation of the health care system; and (c) transformation of nursing education in South Africa.

Transformation of Higher Education in South Africa

The subcategories that emerged under this category included: (a) The Education White Paper (1997) on a programme for the transformation in higher education; and (b) The National Commission on Higher Education of 1996b.

The Education White Paper (1997): Participants made reference to the Education White Paper Number 3 of 1997 when explaining the transformation of higher education. This white paper set out broad national goals for the higher education institutions (HEIs) and referred to community engagement as an integral and core part of higher education in South Africa. Furthermore, this paper laid the foundations for the inclusion of CBSL in HEIs, where students learn by actually offering health care to the communities. It emerged that the CBSL programmes were characterised by both learning and service. Some of the participants illustrated that:

> *The White Paper of Education was influential in the promotion of social responsibility in students… as a result; a number of HEIs engaged their students in community activities that facilitated both learning and rendering of service to community members.*

> *This programme is therefore based on this white paper and our faculty community service policy is based on this Education White Paper.*

> *The Education White Paper makes specific reference to the role community engagement can play in transforming the higher education*

system, and HEIs were called on to demonstrate social responsibility… and their commitment to the common good by making available expertise and infrastructure for community service programmes.

It also emerged that *The National Plan for Higher Education* also made a call for all academic HEIs to be responsive to the needs of the communities through academic programmes, research and community service. Some of the participants reported that:

The National Plan for education and for health simultaneously presented transformation strategies that required us to equip students with skills and qualities required for participation as citizens in a democratic society… this called for extensive curricula transformation.

Nursing department uses CBSL as a way of conforming to the community service policy our institution following CHESP projects… we also used JET reports to support our initiatives.

The Higher Education Quality Committee (HEQC) and JET Education Services, (2007) made specific reference to the role *community engagement* could play in the transformation of higher education. This document (HEQC & JET Education Services, 2007), which was presented as one of the documents providing context to CBSL education in Higher Education Institutions, including NEIs, made further reference to the National Plan for Higher Education as a secondment to the community engagement call. Some of the excerpts from the participants were that:

The white paper identified community engagement as integral and core part of higher education in South Africa. Higher Education Institutions should demonstrate social responsibility… and their commitment to the common good by making available expertise and infrastructure for community service programmes.

The National Plan for Higher Education called for innovative approaches to teaching and learning through which the facilitation of social responsibility and community engagement would be promoted.

The priority in the National Plan for Higher Education is the enhancement of the responsiveness to regional and national needs, for academic programmes, research, and community service.

It emerged that NEIs, in the past, had been using traditional, didactic teaching practices that promoted passive learning rather than the active involvement of students in the learning process. These traditional ways of teaching had promoted a superficial coverage of materials which the student noted down and sought to memorise, rather than to understand. The need for change became apparent and, hence, the change to PBL, CBE and CBL approaches which are grounded in community problems as a means of teaching nursing students. The following are some of the extracts from the participants illustrating the need for change:

For a long time nurse education had been solely relying on the traditional, lecture-based way of teaching… these were criticized for spending too much time on content mastery and too little time and effort to helping

students to develop life-long critical skills that will enrich their lives and make them successful.

Traditionally students were primarily engaged in rote learning, which were lecture-based and content-based.

The old nursing education system was historically irrelevant of the needs of the communities… it was for this reason that there was an emergence of the conditions that led to the adoption of community-based problem-based strategies to teaching… these changes brought about in the country post 1994 era and the transformation that took place on the health care system as a whole demanded a paradigm shift in the approach to education and training.

CBSL is important because it develops students in the area of handling health care problems of diverse customers with diverse health needs in all health settings… traditionally the graduates were not necessarily better prepared for practice with respect to community based needs.

The implementation of CBSL programmes in health professional education resulted in a paradigm shift to a model of education that is governed by community engagement. The participants highlighted the significance that this review of the curricula had had in their institutions. They revealed that this process provided for substantive changes which had given effect to problem-

solving approaches. Some of the participants elaborated on this by mentioning that:

> *Previously our students were not exposed to innovative teaching approaches like problem-based and community-based clinical experiences that encouraged the application of cognitive strategies to identify and solve community health problems resulting in responses that displayed the rational decisions.*

> *The community based service learning programme is a means of achieving relevance of training programmes to community needs... This paradigm shift from classroom based education has been adopted by the province in the training of both medical and nursing students.*

Data sources revealed that there was a necessity and a willingness for the NEIs to react to the wide variety of community health problems by reviewing the nursing education curriculum to accommodate societal issues. The policy on community service-learning serves as a reference and provides the context within which the CBSL curricula in the NEIs are based. The CBSL nursing programmes are not only aimed at developing students' social responsibility, but at developing professionals who will be able to take full responsibility for their actions and engage with the communities to better their lives. The following are some of the excerpts from the participants:

> *There was a strong need for us to be responsive to community health needs including socio-economic needs as well as a commitment to seeking solutions to societal health related problems… The adaptation of*

innovative teaching and learning methods and curriculum transformation were imperative.

Policy in education was strongly influential in the promotion of social responsibility in our students. This is why we opted to engage our students in community-based activities that facilitate both learning and rendering service to community members... through community-based education for health professionals.

This department uses CBSL programme as a way of conforming to the community service-learning as an institutional policy requirement... following community engagement as an imperative or call for all HEIs in South Africa.

The service-learning policy in our institution serves as a reference and provides the context within which our CBSL curriculum is based. The community service learning programme is aimed at promoting social responsibility and awareness amongst students of the role of nursing practice in socio-economic health promotion and development.

Over the years there has been a paradigm shift in health care services where more and more health care consumers are attending the first level of health care services based at community health care centres rather than going to the hospitals. This called for a programme to train students who would be able to work in a variety of health care settings Participants revealed that the educational approaches used to

facilitate learning in CBSL programmes empower students to be able to help those in the communities to identify their own health problems and take the necessary initiatives to find the solutions. It emerged that the education and training of nurses had to reinforce the notion of case-based learning and enhanced clinical praxis. Clinical praxis was explained as the application of clinical professional skills in practice rather than just theorizing. Some of the participants' reflections regarding the changes in the education and training of nurses were as follows:

> *Nowadays we find less in-hospital care to more ambulatory community based services… because communities worldwide have multidimensional problems that cross cultural and socioeconomic sectors. The concept of facilitated group discussion used in CBSL programmes to help empower people for finding solutions to their problems or to agree with decisions made together.*

> *The design of our programme was changed to help facilitate students' ability to identify the health care needs of the community… to assess available resources, and to plan health promotion programs and opportunities to meet those needs.*

> *Transformation in the health care system suggested that graduates must be capable of working in community settings… In designing learning environments to support these authentic activities there must be an alignment between the context in which learning case-studies are presented in the formal setting and the real life setting in which that knowledge can be called upon.*

The Higher Education Act (1997) gave effect to the recommendations of the Education White Paper and made provisions for the establishment of the Higher Education Quality Committee (HEQC) as a permanent sub-committee of the Council on Higher Education (CHE). It was the HEQC which was responsible for implementing the goals of the Education White Paper with regard to community engagement in higher education institutions. In 2001, the HEQC identified academically based community service as one of the three areas of assuring the quality of higher education, along with teaching and research. The data sources revealed that the HEQC audit criteria called on higher education institutions to have quality-related arrangements for community engagements which are formalised and integrated with those for teaching and learning (HEQC/JET, 1997). Some participants explained that:

> *CBSL is a vehicle for community engagement... since the release of the Education White Paper I think in 1997, the understanding and perception of community engagement has changed significantly in South African HEIs… through the work of the JET and CHESP which accelerated the contextualisation and provided new insights into knowledge production, curriculum development, teaching and learning.*

> *The premise underlying the new approach in terms of nursing education was that early student exposure to health-related problems in the communities better prepares the students to deal with challenging situations in their future careers. The innovative community-based service-learning education is effective in preparing nurses for the realities of current and future practice.*

CBSL holds the potential for transforming the curriculum and for developing or revising the curricula to be more responsive to the national and regional context of public accountability… This has redefined scholarship and involved society in a productive discourse about the role of higher education in South Africa.

The National Commission of Higher Education (NCHE) in South Africa (1996b) on a Framework for Transformation in Higher Education: The data revealed that it had become apparent that all HEIs in the field of health care should revise their curricula in order to equip health professional students and health personnel educators with comprehensive knowledge, competencies and attitudes to meet the health related challenges and problems of the communities. Participants revealed that the NCHE had called for curricula transformation in all education programmes in South Africa. The nursing schools and colleges, therefore, were required to change from content centred to outcomes-based curricula, as some of the participants stated:

The NCHE document called for all health-related programmes to review their curriculum, to train comprehensively so that the graduating student is able to respond to the health-care needs of the population of South Africa.

In reality, the NCHE actually required contextualisation of learning and narrowing of the gap between curricula content and the realities of health-care practice.

The reason for change of curricula at the school of nursing which was using teaching methods that were not adequately synchronised with the principles of adult learning, there was no active involvement of students in the learning process characterised by passive academic behaviour and as a results, the students were deprived of the opportunity to develop problem-solving and critical thinking skills… the school had to adopt problem-based/community-based learning to facilitate the application and implementation of adult learning principles.

It further emerged from the data sources that the NCHE also called for the necessary shifts in the curriculum of all programmes in higher education in terms of theory and practical competencies as well as teaching methodologies. Participants revealed that HEQC provided the foundation to CBSL programmes and offered the funds to support all the pilot projects of HEIs that were prepared to initiate the CBSL programmes. One participant reported:

The NCHE document implied for the change in curricular organisation not only from disciplinarity to interdisciplinarity, but also from subject-based teaching to student-based learning; from knowledge to competence; and from theory-based learning to problem-based learning.

Again, the CBSL programmes were identified by HEQC for all HEIs and provide in-principle support to feasibility studies and pilot programmes which explored the potential of CBSL in higher education.

Transformation of the Health Care System in South Africa

The subcategories that emerged under this category were: (a) Health White Paper Number 1 of 1997 for the transformation of the health system in South Africa; and (b) National Health Care Policy of 1996.

The Health White Paper No. 1 of 1997 for the Transformation of the Health System in South Africa: This white paper established a number of important principles that guided human resource planning, production and management within the health sector. The data sources revealed that this policy document identified the critical areas for the nursing profession in terms of the education and training of health care professionals. These included the evaluation of the education and training of nurses in terms of appropriateness, cost benefits, core competencies and standards for practice; the promotion and maintenance of a caring ethos within the nursing profession; ensuring that national health priorities were addressed in all nursing education programmes; and the creation of a cadre of competent and skilled nurses who would be lifelong students and critical thinkers. One participant stated that:

> *The transformation of health care system document was the pillar for the transformative occurrences in nursing education… its critical areas identified for the training of health care professionals.*

The National Health Care Policy (1996): Data sources revealed that the changes in the National Health Care Policy in 1996 emphasised primary health care as a means of improving and maintaining the health of the South African population. It emerged that the delivery of a comprehensive, high-quality primary health care service should be a priority for the National Department of Health, especially for

communities in under serviced areas such as the more rural areas and informal settlements. Some participants reflecting on the National Health Care Policy commented:

> *The demands from the National Health Care Policy called for a paradigm shift in education approach used by the school, the health professional education programmes had to be restructured so that they produce graduates with relevant knowledge, skills and attitudes to serve the South African communities.*
>
> *The delivery of a comprehensive, high-quality primary health care service was a priority for the national department of health, especially for communities in under serviced areas.*

> *We adopted CBSL curriculum based on the National Health Care Policy which called for the integration of the primary health care approach to training and education of nurses in South Africa. This called for transformation in the teaching approaches, our school moved from traditional hospital-oriented approach to clinical teaching to more innovative community-based approaches.*

Transformation of Nursing Education in South Africa

The South African Nursing Council (SANC) discussion document on the Education and Training of Professional Nurses in South Africa: Transforming Nursing Education (1999) emerged as the subcategory of this category. The data sources revealed that certain changes took place in the country's health care system because of The White Paper on the Transformation of the Health Care

System, The National Health Care Policy as well as the South African Qualifications Authority (SAQA). Participants revealed that the SANC, as one of the bodies influencing the education of nurses, had to respond to the call for reform in the national health care system and education in South Africa. Some participants reflected that:

> *Any major changes in health care must be underpinned by relevant education and training… Accordingly, NEIs were increasingly challenged to develop programmes that would be able to produce the type of nurse practitioner who would be capable of matching the education requirements dictated by the National Health Policy as well as SAQA directives.*

> *The new programme is aimed at meeting the increasing demands for affordable health care in SA.*

It emerged that the SANC initiated changes in the education and training of nurses following the changes in the political system of the country and, as a result, the new approach to nursing education placed an emphasis on the community and community-based education. A community-based approach to education was then adopted where students would be sensitised to community needs and then various community projects would be implemented by the students, who would assist community members by teaching them to take responsibility for their own health. Data sources revealed that as a contribution to the process of change, the SANC supported the call that nursing education should be more primary health care-based and community-based as opposed to hospital-based, in order to prepare

nurses to work independently in primary health care settings and in the communities. Participants revealed that change of curricula to CBSL programmes had to be provided through an integrated learning programme that supported the primary health care approach. The following abstracts indicate the participants' views on the implications of the process of change in nursing education in South Africa:

> *To accommodate these needs, the SANC advocates for the development of teaching and learning strategies that enhanced student-centred education and training… and the acquisition of core competencies and learning outcomes with particular focus on the health care needs/problems of individuals, families and communities as the main method of acquiring knowledge.*
>
> *In 1999 the SANC discussion document referred to community-based education as the key to the call for nurses who could provide primary health care approach as required by the transforming health care system.*
>
> *Consequently, nursing curricula throughout the country were undergoing extensive revision to orientate them towards outcome-based education, community-based education, and student-centred problem-based learning, with emphasis on primary health care which was in line with the Department of Health imperatives.*

Participants revealed that the SANC advocated a student-centred approach involving PBL and CBE programmes. It further emerged from the data sources

that the NEIs had to change their traditional teaching and learning approaches to be more innovative and thus provide a strategy, in accordance with the SANC's philosophy, whereby facilitators should guide the students' clinical experiences in a way that will encourage their independent collaboration of scientific data to community learning experiences. The data sources revealed that NEIs were increasingly challenged to develop programmes that would produce the type of nursing practitioner capable of matching the education requirements as dictated by the national health and education policies, as well as meeting the increasing demands for affordable health care. Some of the participants mentioned that:

> *The SANC had identified problem-based learning and community-based learning as techniques of choice in the enhancement of the primary health care learning and teaching…*
>
> *In the traditional nursing education the student had been deprived of learning experiences at other levels of health care and yet these were important in rendering comprehensive and relevant care.*
>
> *Problem-solving approach is a very much appropriate pedagogical strategy is for the development of nurses who can explore options, are articulate and have the capacity for developing strategies based on reflective decision-making.*
>
> *NEIs had to produce a nurse practitioner who will be analytical critical, creative and reflective thinking skills that will facilitate problem solving and decision-making to improve practice… this was to be provided*

through as integrated innovative learning programme that supported the primary health care approach… through CBSL.

CBSL programmes are intended to re-direct curricular activities to the health needs as identified by the communities together with the nursing students, thus narrowing the gap between the learning content and the realities of health care practice.

It therefore emerged from the data that the adoption of CBSL was as a result of the policy statements from all the policy and legal frameworks that govern the education of health professionals, including the Department of Health, the Department of Education and the SANC. Similarly, the SANC supported the move towards a more innovative approach to teaching and learning in the form of problem-based and community-based education. It emerged from the data sources that the revised SANC policy promoting community-based nursing education was also influenced by the DoE's call for community engagement and/or community service-learning in higher education. Some of the participants explained that:

We adopted CBSL curriculum because it was a directive from SANC, DoE and DoH. All these bodies called for community engagement in HEIs.

The SANC policy serves as a point of reference for the community based service learning programmes in SA to meet the changes of the National Health Care Policy and incorporation of the primary health care approach to training and education of nurses in SA.

4.3.4 Action/Interaction Strategies

According to Strauss and Corbin (1990), action/interaction strategies are the processual, purposeful and goal oriented properties taken in response to, or to manage a phenomenon. The action/interaction strategies are, therefore, devised to manage, handle, carry-out or respond to a phenomenon under a specific set of conditions. Furthermore, Strauss and Corbin (1990) indicate that these are strategic actions directed to the problem or phenomenon. This section presents the analysis of the actions and interactions which were observed during the process of knowledge construction. In simple terms, it refers to the activities that took place during the teaching and learning process. The categories that emerged as the action/interaction strategies for the phenomenon of knowledge construction included: (a) the nature of the learning environment; and (b) the knowledge construction process.

The Nature of the Learning Environment

The subcategories that emerged from this category were: (a) the communities as providers of raw content; and (b) the community environment as a setting for testing knowledge constructed.

Communities as providers of raw content: It emerged that the content used during the knowledge construction process was based on information obtained from community learning sites as these communities provided authentic learning problems and experiences. Participants revealed that the selection of clinical learning environments, especially the community sites were considered an important aspect for the process of knowledge construction. Students were placed

in urban and suburban communities as well as in informal settlements. It became apparent that these diverse communities all had the same characteristic of providing rich information in the raw content material and variety of health problems which could be used as the point of departure during the knowledge construction process. Some of the participants reported that:

> *Our students are placed in three types of communities… the urban community is found in the city centre, that's the flats right in town… suburban are residential areas around the city and the informal settlements in the townships.*

> *The community learning sites are characterised by diversity and an ability to provide rich information… the community environments are rich and diverse… promotes investigation and learning of community problems within authentic context.*

> *The community learning sites exposes the students to real problems of real people in their own places. Students get to observe clients in their daily living environments… get to identify first-hand community problems.*

The community settings created opportunities for students to be taught in a rich variety of contexts as they were exposed to the social and cultural practices of a variety of people living in diverse areas. These diverse communities to which students were allocated provided unique opportunities for experiential learning. Participants revealed that through guided reflections and critical discourse, it was noted that the students were able to link community-based, theoretical knowledge

with the clinical applications in the classroom. It was observed that the communities offered students good opportunities to link new material with existing learning from which the students could draw experiences. Some participants mentioned that:

> *Students must be fully exposed to the social and cultural environments… to understand the important elements of community life and relationships of these elements to health related factors and activities… these environments includes all social and cultural community environments.*

> *The use of real life problems relates the educational environment to future professional practice and thus helps bridge the theory-practice gap.*

Community environment as a setting for testing knowledge constructed: The communities in the context of this study were viewed as authentic clinical learning sites. The rationale was that these communities provided real-life problems and allowed students to practice problem-solving skills. Real-life problems in authentic community settings became the tools for learning. Students were being exposed to various stages of problem solving and were able to practise their problem solving skills whilst acquiring substantive contextualised knowledge. It was observed that the students were getting direct experience in community settings and that real-life problems helped them to link theory to practice. Participants revealed that such experiences helped students to understand their communities better. Some of the participants reported that:

> *The use of real-life problems in health relates the educational environment to future professional practice... helps bridge the theory-practice gap...*

In authentic context, students have to resolve realistic problems... understandings that are developed in their realistic and complex situations are more easily retrieved when needed... that's proof of knowledge testing.

Students are given an opportunity to plan and implement community interventions… from the community surveys and profiles, students identify major community problems and together with the community members plan intervention strategies to combat the problems... this is then how they put into action, gained knowledge and its how it is tested in real community settings.

The communities were used as the source of the health issues/problems which formed the content of the curriculum. This was perceived as being crucial to ensure that the curriculum content was current, relevant, up-to-date and with authentic learning issues. It emerged that the students were encouraged to consider issues such as social and environmental factors and their impact upon the health of the communities as the classroom content derived from the communities for learning experiences. The CBSL programmes assisted NEIs to enhance the application of the core elements of responsiveness to the community and attention to critical thinking and reflection, which are essential to health care delivery, through partnerships between the students and the communities. The combination of these core elements improves the educational experience for the students and strengthens the community academic partnerships which are increasingly

important to the clinical training experiences of future health care providers. Some of the participants reiterated that:

> *The process and content which the student must master is identified by the student in the community settings... to increase their understanding and appreciation of cultural factors that influence the health of communities.*

> *At the community settings the students master the content of health issues identified by them… a lot of classroom session and learning is based on health care scenarios or case studies allowing students to explore issues within the information from the communities.*

> *The communities around the university are used extensively as a learning environment to give our students an opportunity to understand the capacities and initiatives of the communities they serve.*
> *Problems identified in the community settings provide for the basis on which to organise the curriculum content. The identified needs or problem issues in the community are current and are from real life settings… that's the reason our curriculum is relevant with up to date content, moreover, the curriculum becomes community-oriented.*

The Process of Knowledge Construction

The process of knowledge construction emerged as one of the subcategories under the action/interaction strategies. The data sources revealed that the two NEIs were using different problem-oriented approaches to teaching and learning (problem-based learning and case-based education) and, therefore, the presentation of the

characteristics of knowledge construction will be presented in two different scenarios of the knowledge construction process. The first scenario presented is for NEI A and the second for NEI B. The dimensions of the knowledge construction process observed in both NEIs included: (a) the preparation of students for the knowledge construction process; and (b) classroom interactions. The final section highlights the similarities and differences of the knowledge construction process in the two NEIs. The data slices also revealed that the role of the teacher and that of the student formed part of the knowledge construction process. These roles will be presented as the last subcategories under the category of the knowledge construction process.

Scenario One: Nursing Education Institution A

Preparation of Students for the Knowledge Construction Process

It emerged from data sources that the process of knowledge construction in class was preceded by the special preparation of the students for the process of learning. According to data sources preparation had four dimensions including: (a) orientation block; (b) problem identification process; (c) team building excursion; and (d) setting of shared group norms.

Orientation block: It emerged from the data that at the beginning of each academic year, orientation of students takes place three weeks before the university's scheduled opening time because learning in the CBSL programme requires intensive preparation that does not fit within the university time-table. Orientation block introduces the students to aspects such as group dynamics, cultural diversity, learning how to learn, the learning process in problem-based

learning and CBSL, the primary health care approach, community entry, community participation, how to do rapid appraisals, epidemiological studies, learning contracts as a means of promoting self-directed learning and also includes the outcomes of the programme. The outcomes of the programme are both process and content oriented so that students can understand how the knowledge construction process in problem-based learning programme facilitates the achievement of desired programme outcomes. Some of participants explained:

> *Student orientation takes about two weeks… Students learn about the activities that will be taking place in the communities including home visits, conducting family studies, monitoring of growth in children under fives and physical assessment in adults and the strategies to achieve all the expected programme outcomes.*

> *We allow students to discover and construct knowledge based on the problem-solving process… the problems identified in the communities form the content of learning… knowledge is therefore attained in context.*

Orientation equips the students with the study methods and problem-focused strategies which are promoted throughout the programme and are, in fact, the main emphasis of the curriculum, as indicated in the following excerpt:

> *We give them handouts on basic study skills… tell them how they would work in groups… take them through the steps of problem-based learning to familiarise them with problem-solving skills.*

Because the knowledge construction process in the CBSL programme is facilitated by information obtained from the community learning sites, students do field trips to community sites as part of the orientation programme. Participants revealed that these field trips give students an opportunity to visit the community sites and be introduced to the key stakeholders in the community with whom they will have to work closely. Their initial learning experiences during the field trips are followed by a reflection session which the participants called 'look, listen and learn'. These orientation activities are almost like a trial run of how information obtained from the community settings will be used in the classroom during the knowledge construction process. Some of the participants mentioned that:

> *The purpose of the look, listen and learn exercise during community visit community visits is for the students to view the sites in preparation for conducting community surveys...*

> *We give students an opportunity to reflect on what they had seen and learnt in the community and what they think its impact was on health of the communities.*

The following example was an observed session of a field trip of one of the groups allocated to a suburban community. The facilitator was applying a 'look, listen and learn' exercise to orient students for the first time in the community and provide a trial run of identifying problem issues impacting on health in the community. In this scenario, the group walked down the main street in the area and realised that they were walking towards the industrial area. With the guidance of the facilitator, they assessed the situation and identified that industries and air

pollution had an impact on health. The narration of the observation went as follows:

Facilitator: *Can you identify the industries along that road?*
Student I: *Yes, it's Engen (a petroleum company).*
Student II: *Sapref (the crude oil refinery).*
Facilitator: *What do you think is the problem with the existence of these companies in this area?*
Student III: *These companies are emitting air pollution into the air.*
Facilitator: *What's wrong with that?*
Student II: *Air pollution concentrations may exceed stipulated levels in accordance to the standards and health guidelines.*
Student IV: *The community can suffer from chest conditions.*
Facilitator: *What kind of chest conditions? Give examples.*
Student I: *ASTHMA, pneumonia, upper respiratory tract infections, tuberculosis…*
Facilitator: *Explain these conditions…*

From the narrated scenario, it was noted that the role of the facilitator was to facilitate the reflection process and probe further to establish whether the students were able to align what they had observed to the level of impact that it could have on health. It also revealed that the orientation block introduced the students to the role of the teacher as a facilitator as in the following abstract from one participant:

> *It is important that they are aware that our role as to facilitate the reflection process and to establish whether what was observed did have impact on health.*

Problem identification process: As part of preparation for the knowledge construction in class, the students had to identify raw content in the communities in a form of problem identification. Therefore, the orientation process was

followed immediately by the problem identification process, which took place in community settings. It was observed that students were placed in a variety of settings which included urban, suburban and informal settlements. As part of the problems identification process students engaged in conducting community surveys, epidemiological reports and family studies. Reports from these three exercises were concluded with the formulation of a list of problems relating to health and social issues impacting on the community members' health. These problems, which were identified in the communities, were brought into the classrooms for analysis and discussion as part of the classroom interactions and culminated in three reports on community assessment: the epidemiology report, the family study and the problem list (see annexure 8: sample of the list of community problems).

Participants believed that under the guidance of the facilitators, the students played a critical role in the process of problem identification in the communities. It emerged that knowledge was constructed from the identification of a problem situation, which then would then stimulate further knowledge building as students took the initiative and applied their problem analysis skills, while being guided and supported by the facilitators. The problems which had been identified by the students provided the basis on which to organise the curriculum content and were actually used as module/subject learning content. The following are the participants' statements to illustrate the point:

> *The end-result of our initial field trips is the emergence of the list of community problems. These problems form part of the class content as*

well as compilation of the three projects which the students are expected to submit by the end of the first semester.

The community health problems that the students identify during community survey community assessment as we call it; family and epidemiology studies are all used as tools for developing the curriculum content.

Learning is driven by challenging community health needs … problems are then taken as learning issues… the learning issues are taken to class for refinement and discussion to find solutions to them…

The students ensue the discussions of the problems that were identified in the community... eventually learning takes place through the process of problem-solving.

Team building excursion: Data sources revealed that students were taken on a team-building excursion to prepare them for working in groups. This usually took the form of a weekend outing some weeks after orientation, away from the NEI site. Participants revealed that because the process for knowledge construction required students to work in groups, the aim of this exercise was to teach the students about group dynamics and culture diversity. Participants revealed that such team building exercises were effective because differences were noted in the functioning of the teams after the excursion. Some participants indicated that:

We require the students to work in groups and that is why they are taken for the team building excursion which takes place after two months after the programme had begun… One of the aims for the team building excursion is to allow the students to build sustainable and effective student teams and to strengthening group cohesion as well as team work amongst the students… Team building exercise is delayed so that students can first experience difficulties in work in groups… to appreciate the benefits of the team building exercise.

Team building is important for the students to learn group dynamics and group skills… the activities that they do are fun and educational at the same time, teaching them skills to effectively participate and function within groups… they always come back united and having learnt personalities of each other. These skills are necessary when they go out to the communities… they'll be able to understand each other and be able to assist each other and work together as teams to achieve their own set goals.

Before the excursion, they will be fighting; undermining each other, some of them would have worked on their own to prove that they can survive without the other group members. You can even see the different racial groups beginning to appreciate each other and the contributions they make.

Setting of shared group norms: Part of the preparation for class interaction and the knowledge construction process included the setting up of shared group norms. Data sources revealed that a set of norms was developed in each classroom. Group leaders were selected by their group and rules were set by the students themselves, once they had reached an agreement. The students also decided what disciplinary action would be taken for group members who did not conform to the rules. During this process, the community of students and their facilitators outlined the roles of the facilitator and the students in the student-facilitator relationship. This also included the preparation expected by both parties for classroom interaction, as mentioned in the following excerpts:

> *The group norms enforce discipline and help in ensuring smooth running of the class interaction and the knowledge construction process.*

> *Students set their own agreed upon rules and select group leaders on their own. Group leaders have the responsibility to keep registers of attendance and constantly liaise with the facilitators to keep them updated of the groups' behaviour and actions.*

> *Students take disciplinary actions against one another accordingly; we are not part of those decisions… and they conform to the set of agreed upon set of rules… which are documented and serve as a source of reference should there be a group member who was not adhering to the norms.*

Expectation to come to class well prepared for the problem or learning issue at hand so that they are able to positively engage in the discussion… is one of the agreed upon norms and they all should abide by the rules.

Classroom Process and Interactions

The process of knowledge construction in class reflected a number of dimensions including: (a) classroom environment arrangement; (b) establishing each day's plan and learning issues; (c) reflection on preparation for classroom session; (d) confronting the problem;
(e) presenting the problem; (f) prior knowledge or experience; (g) conclusion of the session; (h) evaluation of the classroom session and ; (i) testing of knowledge constructed.

The classroom environment arrangement was seen to be an important factor in the knowledge construction process. The seating of students was arranged to facilitate the classroom interaction sessions. In NEI A, the classroom environment was organized as a tutorial classroom set up to cater for small groups of up to 12 students. The rationale given for smaller groups was that the students needed individualized attention and that it was easier to monitor the participation of each student during class interaction. The seats were arranged in a u-shape, circle or horse-shoe, making use of tutorial classroom tables which were used in the place of desks to cater for the resources (books, articles) brought by the students to class. Some participants reflected as follows:

The numbers are very important because the facilitator needs to be able to assist each individual student to tackle problems, and in the process

discover their needs to understand certain concepts and thus become more motivated to learn…

A smaller group allows everyone to participate in different ways and learn to assume different roles. I found that you consider things from different perspectives that you might not have considered before hearing others opinions.

Rather than using desks, tables are used to allow space to accommodate all the resources used during discussion. Students bring a variety of sources like articles, journals and books as references on the session day so that is why tables are used and not desks.

Establishing the day's plan and learning issues: According to data sources, each class session began with establishing the plan of the day. Roles and responsibilities (chair, time keeper, board scribe and paper scribe) were assigned for each and every session. The facilitator established from the students which learning issues or tasks had been agreed upon to be covered that day. These were written on the board by the student who served as the board scribe. The content to be covered on that day came from the problem list formulated during the first session. One of the participants explained the daily planning as follows:

We equip our learners by letting them take charge of their own learning. At the beginning of the class session, they make important decisions of the objectives of the session, choose a facilitator of the session, a time keeper… state when the break will be taken, how long each topic will e

discussed, and who will be the board scriber and paper scriber. These roles are rotated in each session.

We ask students what the learning issues to be covered are… they then make use of the initial community health problems list to prioritize learning issues.

Reflection on the process of preparing for classroom session: Data sources revealed that once the learning issues or tasks had been established, the students were given an opportunity to reflect on the process of preparing for the class in terms of the availability and quality of learning resources, their understanding of the task at hand, the time needed to do the task and any other challenges faced. They also had to reflect on what strategies they would use to address any of the challenges they had encountered. The nature and quality of resources consulted is critical in the knowledge construction process as arguments and discussions in class are based on these resources. In one of the sessions, the paper scribe collected the lists of sources consulted by group members to form a comprehensive resource list for that session which could be used later by the group when studying as individuals.

According to data sources each student is expected to bring into the classroom at least one journal article, as a source of reference, to share with the other group members during the class discussion. Participants indicated that students must openly acknowledge these resources in order to establish whether they are

adequate and varied and if they are current and relevant to the learning issue at hand. Some reflections from the participants were that:

> *Students are given a chance to tell the group, what materials were consulted prior to class, and what problems they had if any, in finding the sources.*

> *Having put some thought into the preparation for the lesson, the students were required to establish which resources needed consultation.*

> *We have to ask each student to indicate to other group their experiences of students when preparing for the session… the sources of references used for that particular learning issue are loudly stated to the whole group, the title, year and publication mentioned… that they share reading materials from recent relevant nursing journals, books and the use of internet search; with each other.*

> *The quality of the provided resources is evaluated by the facilitator together with the students.*

Data sources revealed that the facilitators always highlighted the relationships and links between current issues and those which had previously been covered in class, especially at the beginning of the class sessions, as reported in the following excerpt:

It is always helpful to put bits and pieces of information together… and allows the students to identify commonalities and differences from previous concepts and principles to what would be covered then.

A narration during one of the sessions observed in class was as follows:

Facilitator: *The last session was about HIV/AIDS and today we are doing TB as one of the common problems in the community. How is this session linked to the previous section?*
Student I: *TB is one of the opportunistic infections associated with HIV/AIDS.*
Student II: *The high incidence of TB may be as a result of late diagnosis of HIV. People come forward when they are at a stage when they are really sick.*

***Confronting the problem*:** Having established the plan of the day and acknowledging their resources, the students proceeded to confront the health problem of interest for that particular day. To give an example of how problems were confronted in NEI A, a group of students who had been allocated to an informal settlement community were observed in the classroom. The group facilitator gave the background information as indicated in the following abstract:

This group is exposed to the community in informal settlements. This community has difficulty in accessing clean water supply and is poverty-stricken. There is no electricity supply and you find that the community members are also financially disadvantaged. The community is living under unhygienic conditions and which already exacerbates illnesses.

The problem issue that was to be discussed in class was '*Diarrhoea in children'*. The narration of the observation went as follows:

Facilitator: *Students, please reflect and share your knowledge on the diarrhoea case of the child you came across while conducting family studies..*
Student I: *When I was checking the "under- five" immunization card of the child in the identified family, I noted that the child was repeatedly hospitalised with diarrhoea and vomiting. On exploring about the water supply, it came out that they use river water because it was nearer to their house. There were communal taps but were reported to be very far. When the family was asked about boiling water before use, the mother of the child stated that paraffin used for the stove when cooking is very expensive. Therefore, boiling water was out of question because the mother and the father of the child are unemployed.*
Facilitator: *Can anyone explain what diarrhoea is?*
Student II: *Diarrhoea is a running tummy whereby a person will have frequent loose stools sometimes accompanied by vomiting. It is more common in children.*

During the discussion, the board scribe captured information about the case, in summary form, on the board. The students also gave information from their family studies reports and their community survey reports. They analysed the cultural background and socio-economic history of the client, the home environment, availability of clean and safe water supply and toilets, family's medical history, physical examinations and observations, nursing management and management done at home, clinical investigations and referrals for further management. Participants, reflecting on the differences in the way problems were approached, stated that:

> *Unlike in a case-study approach where students are given are given a case prior to class, in our classroom interaction sessions, the students confront the problem in class for the first time and as a group.*

We allow students to reflect on the problem at hand based on their life experiences, community, and hospital and/or community health care setting experiences.

In one session it was observed that the facilitators explored the situation further in class and encouraged student to student interaction by asking questions and guiding class discussions. The continuation of the narration of the observed classroom interaction went as follows:

Facilitator: *What information did you gather when preparing for class with regards to the case? (The facilitator exploring the situation and encouraging student to student interaction)*
Student II: *The mother of the baby is unemployed and there was no father, he left since the mother was pregnant. The mother had three other children and stay in an informal settlement, no clean running water, no electricity and no proper sanitation. All these factors predispose the child to diarrhoea.*
Facilitator: *Can you see that diarrhoea is one of the common illnesses affecting people of low social status?*
Student II: *The mother gave history that the baby was admitted to hospital before, several times, more than three times. No other child was reported to have had this problem except for the young one.*
Student III: *When we assessed the child, we found that skin had lost elasticity, eyes sunken, baby could not even cry, looked dull and sleepy, but was breathing, when made to drink, she drank eagerly showing that she was thirsty.*

The students presented the whole case and a summary was written on the board. The facilitator asked questions that made students analyse the case further and identify links with diarrhoea.

Presentation of prior knowledge or experience: It emerged that the students were probed to actively draw knowledge from previous experiences. During the class session, the facilitator stimulated students to recall information from their own past experiences by asking questions that made them reflect on previous experiences or encounters. This was critical to ensure that the discussions were linked to real life experiences thus making learning more meaningful. The facilitator had the role of probing further, asking questions such as what do you mean, why and how, which allowed the student to unpack the experience as narrated in the following observation:

Student IV: *I had seen a child of my relative with the same condition.*
Facilitator: *What was wrong with your relative's child? Please explain.*
Student V: *The child had with watery stools, foul smelling and the child was dull and very dehydrated. The baby we saw reminded me just of that child at home.*
Facilitator: *Anyone else who has seen a similar situation?*
Student VI: *I remember a case of a child with diarrhoea I saw from the hospital where we were placed at first year. The child was managed in intravenous fluids, intravenous antibiotics and kept "nil per mouth".*

The above extracts highlight how the facilitator draws information from the students regarding different methods of treating diarrhoea. While observing dialogue in class, it became clear that the process of discussing a problem or scenario required the use of knowledge from other subjects including fundamental nursing experiences. As the discussion progressed, the students covered the clinical presentation of the dehydrated child, the physical assessment, the investigations to be undertaken and the management of that child. One participant stated that:

Students have vast of prior knowledge and given the opportunity, they'll share all the knowledge and skills they already have. They also link the learning issues to the practical experience… bring in the content from different community settings they were exposed to.

The observations further revealed that whatever information was generated in class had to take into consideration the client context; the environment, the educational status and the socio-economic status. With the guidance of the facilitator, the students discussed all aspects of the case. During one of the observations, it came under discussion that some of the interventions may not be affordable and that the client might need some assistance in understanding the medical terminology of the prescription so that it can be contextualised and applied. The narration of the scenario went as follows:

Student VII: *The educational level of the clients can also be a problem.*
Facilitator: *Please explain what you mean?*
Student VII: *Because if the mother of the child has no understanding to the instructions given to her for example with regards to treatment, then it would be difficult to implement the intervention.*
Facilitator: *You are not specific give us an example.*
Students VII: *In the case of the mother of the child with diarrhoea, as part of medications for the child, the mother was given Sorol powder to make a rehydrant solution for the child. Measurements were stated in terms of millilitres, of which it was difficult for the mother, and the book writes it in millilitres, instead we have to explain to individuals in the manner they will understand, maybe in spoons and cups of water not millilitres.*

Scenarios observed during class sessions revealed that students were encouraged to put the information they had derived from textbooks into context, especially

when solving a client's problems. Solving problems required the integration of knowledge from various other subjects including anthropology, social sciences, anatomy, physiology and pharmacology. It emerged that students also applied information derived from the community itself to solve health-related problems as they took into consideration the socio-economic conditions affecting the lives of that particular society. Participants revealed the importance of integrated learning where interdisciplinary knowledge was brought forward for comprehensive analysis and collaborative learning. The following are excerpts from some of the participants:

> *The students critically examine and evaluate ways to approach problem situations or issues that have been raised in the community settings and in the classrooms… We encourage them to evaluate data in comparison with textbook knowledge*.

> *When students refer to books, they don't accept what the book revealed as it but it contextualises the book information to the situation of the individual, family, groups or community*.

> *When discussing in the classroom we encourage students to integrate knowledge from other subjects… they must incorporate the knowledge of anatomy, physiology, social sciences... apply this knowledge to presenting community health problems at hand and I must ensure that the application is relevant and useful for knowledge application.*

Participants highlighted the fact that it was necessary to give students time to think during the process of knowledge construction and revealed that they would, from time to time, allow a moment of silence during the class discussions. These moments of silence allowed students time to retrieve information from their long-term memory, refer to the information in their textbooks and take into account their experiential prior knowledge. One participant reported that:

> *It's always helpful to handle silence with extra care… allow time to think and recall old information so that the responses they give are relevant and well thought of. Sometimes they need time to consult their resources so if they are rushed through, they won't be able to consolidate all the information prepared.*

> *We allow students to think their answers to questions through to ensure that they give correct information... This information is further evaluated for relevance before it is shared with the group.*

***Concluding the session*:** At the conclusion of the session the facilitator would request one student to provide a summary of what had been discussed. The other students were allowed to provide additional comments, information or fill in any gaps in the summary. A scenario observed from one session was narrated as follows:

Facilitator: *We have come to the end of our session today. Have we found a satisfactory solution to the issue of lice? Who would like to sum-up for us today?*
Student III: *Today we were looking at the problem of lice especially at lower primary schools. We defined the problem by presenting the situation that was encountered in the community, possible causes of the problem were mentioned and preventive measures at home and at school level were also covered.*

Facilitator: *Any additional comments to what had been said?*
Student VII: *I really did not understand the nursing intervention measures to be taken if someone is already having lice. I think that the curative aspect is also important, especially for those clients who comes to the clinic already infected with lice.*

The facilitator would then, with the help of the board scribe, read the learning issues for the next session and ask students to volunteer for the chair role. The facilitator then closed the session by allowing each and every student to evaluate the session by stating how they had found the session in terms of what information had been learnt and whether the class session had been helpful. The facilitator also reminded the group of the learning issues for the next session.

Evaluation of classroom session**:** Data sources revealed that the students were given an opportunity to reflect on their preparation, their involvement in class interactions and their contribution to the discussion for each session as well as evaluating the participation and interjections of any of the other students. Self, peer students and facilitator evaluations were conducted with the use of a specially designed evaluation form (see annexure 7: the group process evaluation form). The names of all the students were listed on the form. Some of the participants reported that:

> *We openly allow students to evaluate each other in terms of their involvement and what they had contributed to discussion*.

> *The aim of the evaluation tool is to evaluate if students found the session useful for them and that they can listen to others, communicate their ideas or questions, and feel comfortable participating in group situations.*

It was revealed that all the classroom evaluation sheets and paper scripts were kept in the group file which could be accessed by all, if and when needed. Data sources revealed the importance of this file as evidence of class themes, since it was the record of all the learning issues covered in the classroom and formed the content of the curriculum. Some reflections on the class file and evaluation of sessions were that:

> *The students can access the file anytime… to refer, take notes, discuss any issues from the file as it form parts of the content for class and for the assessments as well.*

> *Students go back to the communities to evaluate effectiveness of applied knowledge through community interviews; they compile reports about community interventions, interrogate and debate these reports in class.*

> *Suggestions for areas of improvements are made and recorded in their community reports.*

Testing of knowledge constructed: It emerged that students were given the opportunity to transfer knowledge constructed to real life community contexts. Once the information had been put into context, the next phase was that of applying it to real life. The knowledge constructed in class was tried out or tested in real life settings. This was achieved through the implementation of community projects which were based on the interventions developed during class interactions. For example, in one of the communities it was noted that there was a

high level of diarrhoeal diseases affecting young children. This was associated with the use of dirty water from the river. The students had to research diarrhoeal conditions in under-resourced communities and the relevant interventions. The interventions included preparing health education messages and working together with the department of water to install water pipes and taps in the affected communities. During class interactions, students learned how to prepare health education messages for different categories of people, literate and illiterate, young and old.

The implementation of a community intervention was seen as a platform where students transferred or tested the knowledge and information acquired in the class to the communities. The students were assessed on their ability to transfer what they learned in class to real life settings, their ability in planning appropriate and effective health education messages and their use of relevant media sources, as learnt in class. Students were also assessed on their skill in delivering messages to the community in an appropriate manner, taking into consideration the age, level of education and physical status of their target groups. The implementation of a community intervention was followed up by assessors or examiners to establish whether students had been are able to transfer classroom theory to practice. Some of the participants mentioned that:

> *Students prepare for addressing the identified community problem(s) through health promotion strategies… they select preferred strategy relevant to the identified community need for example, they can choose to organise a community intervention day where they will address and health educate the community on… teenage pregnancies… that will be their*

project and they run with it, can invite youth experts to address the community on the issue.

The intervention programme is implemented with the community playing an active role and the students facilitating the process.

In summary, it was observed that the process of knowledge construction in NEI A began at the community level, went to the classrooms, went back to the community and ended up back in the classrooms. The final product of classroom interactions was a refined problem list, which was taken by the students back to the respective communities for verification. A process of prioritisation followed, whereby the students asked the communities to rate the issues in order of their priority and highlight about two problems that may be addressed by the communities in partnership with the students. The students also requested the community members to give their personal details if they were willing to be part of the team planning a community intervention project. This was crucial in the process of the construction of context driven knowledge because the community members had genuine and critical input regarding their health related issues or problems. This process then led to the testing of the knowledge constructed in class. This testing was referred to as 'implementing the community intervention project'.

The students analysed the data obtained from the survey and compiled a report that served as a base for developing a project proposal. The community project proposal was accompanied by further interrogation of the problem(s) identified as

priority problems by the community. As examples, in one suburban community, the members of the community pointed out child abuse and teenage pregnancies as priority problems. Another community, in an informal settlement, pointed out poor sanitation and high unemployment as priority problems. Coming up with relevant interventions required students to draw in experts from other disciplines which included social workers; psychologists; love-life HIV/AIDS non-government project specialists; community health nurses, who worked with teenagers in youth health-care centres; the agricultural department, in cases where students wanted to start gardening projects and required seeds; and the department of economics, for advice and guidance on business plans and budgeting tips.

Students were engaged in activities where the knowledge constructed in class was tried out in the real environment where people lived. This process culminated with an evaluation of whether the knowledge had been applied in an effective manner and came in a form of an evaluation report. Students engaged in reflective learning activities that helped them evaluate the whole process of knowledge construction from the phase of identifying the problems to the phase where the knowledge gained in class had been applied in real-life settings through information transfer.

Scenario Two: NEI B

It emerged that the subcategories for the process of knowledge construction in NEI B were: (a) preparation or orientation of students for the knowledge construction process; and (b) classroom interactions.

Preparation of Students for the Knowledge Construction Process

The process of student preparation for knowledge construction involved: (a) orientation block; and (b) problem identification process.

Orientation block: As with NEI A, it emerged that the process of knowledge construction in the classroom was preceded by the preparation of students through orientation. Data sources revealed that the orientation was done on the arrival of students in the first year and it involved orienting students to the type of programme they would be involved in and the case-based learning approach adopted by the NEI. The students were made aware of the programme expectations and the programme outcomes. Case study booklets were distributed to students during orientation block. This afforded the students an opportunity to work on the tasks in the booklet at their own pace in preparation for the scheduled class discussions. In class, the knowledge construction process began with problem-solving and was then followed by dealing with the cases. It emerged that in their first year of study, students had been assigned to various communities and had been required to compile community profiles, epidemiological surveys and family studies, and had also been expected to become involved in community development projects. The following were the views of the participants on the preparation of students for the knowledge construction process:

> *As part of the preparation, students are given workbooks, case study booklets and more information regarding timeframes and deadlines.*

> *We give students workbooks case-booklet… cases from day one… the workbooks contain course description, expected outcomes, assignments,*

projects due dates, short notes on the case-based approach, case study questions, tasks and activities, reading references and evaluation tools.

When students first come to the programme, we sensitised them that they will be placed in the communities for clinical experiential learning… the placement integrates with the practical and theoretical components.

Using the material collected by the students in their previous year, the facilitators developed the case studies. It emerged that the cases were well researched and real-life cases from the immediate communities. Current and complex community issues had been selected to encourage problem-solving, reasoning and the application of theoretical knowledge into the practical settings in the community. Participants revealed that the case methodology did not only provide cases as examples of existing knowledge, but that students were expected to extend their ability to learn from previous experiences. Some of the participants reflected on the teaching approach as follows:

Case-studies are narratives or storied developed from real problems… we use guided cases where the student is provided with the outcomes to be achieved, a description of the case, questions to be answered by students and learning resources to be consulted.

In this school, we use CBL approach… in the form of complex real as well as hypothetical narratives which are grounded in actual problems and challenges in the community where the actual integration of theory and practice should occur.

Case-studies offer a means to contextualize learning in a way that connects content and action.

Cases-based reasoning requires students to compare a new situation to previous experiences by looking for matching characteristics and then adapting old solutions to create a new one.

Students analyse and search for information to develop possible solutions which are tested in discussion with peers.

CBL focuses on the building of knowledge… the group works together assisted by the facilitator to engage in class interaction and dialogue to examine the case.

Problem identification process: It emerged that NEI B used *paper problems* for class content. These paper problems emerged from real community problems identified in the community settings and addressed the individual, the family and the community. The real problems were modified to cover the expected learning outcomes, as specified by the program, and were presented as case-study briefs or short scenarios.

Participants revealed that each and every problem that was developed for a case-study was placed in its proper social context. It emerged that although the content of the curriculum was delivered via case studies prepared by the facilitator; these

were based on authentic community issues which had been identified by the students in their previous year of study. Participants explained as follows:

> *We identify problems in the communities and include those problems in the curriculum as content.*

> *Selected problems are modified to cover the required content for class and presented on paper in the form of short scenarios for learning purposes.*

> *Every problem that is developed for the case-study is placed in its proper social context… It is very important that selected problems that will give purpose and cover what is expected in that particular level of the programme.*

> *Our school prefers paper problems because it is believed that they are more structured than the use of problems arising from the clinical settings... structured paper problems are organised in a more systematic way, directing the learning process towards ensuring that reasonable important content is covered... is process oriented at the same time students are developed in a number of lifelong skills including problem-solving, critical thinking, decision making skills etc.*

Classroom Process and Interactions

The dimensional properties that emerged under this subcategory of classroom process/interaction included: (a) classroom environment arrangement; (b) case review; (c) case analysis and problem identification; (d) solution development; (e)

group interaction; (f) reflection on the group process; and (g) conclusion of the session.

Classroom environment arrangement: It was observed that the classroom environment was arranged to cater for larger groups of about 50 students. Although the desks were fixed, there were movable chairs which allowed for group work when there was a need to break the students into sub-groups of about 10. The podium was fixed in place and the facilitator was positioned in the front near the chalkboard. One participant reported that:

> *The case-study approach is used at the school because it is allows for teaching bigger student numbers.*

Case review: The initial presentation of the problem or case review in class was done by the facilitator. It was observed that the facilitator read the short scenario from the case booklet. The facilitator kept the document with the full information about the case in question. Students were then invited to read or skim through the case. Participants explained that reviewing the case is a strategy that is used to familiarise the students with the sense of the issue, the scope of the problem and the setting where the scenario takes place. It is also used to stimulate the students' thought processes. The facilitator then began asking questions with the aim of stimulating the students to think about the case and to facilitate student- to-student interactions. Some of the participants' views on the case review process were as follows:

> *We take a minimal role when presenting the case scenario to students for analysis, so they do the rest…*

The kinds of questions that we ask are meant to open discussion as well as to allow for the exploration of attitudes, beliefs and knowledge of students… for instance what did you think of this case? What did you think about the situation the client was in?

An observation was made of a classroom session where *'Gout'* was the theme. The facilitator began the session by presenting the case to the students and explaining the chief complaints of the patient in the case-study and the reason why the person had visited a health care facility. A narration of the observed scenario is as follows:

(The facilitator instructed the students to open the case study for the session from the case study booklet and read the scenario to the group).

Facilitator: *A 37 year old man visits a clinic with complaints of severe pain in his right big toe. (Interjecting… Now imagine a big painful toe). The client also state that he has pain in his knee and toes. The assessment findings of the physical examination are as follows: His height is 1.5m and he weighs 96 kg, he's hot, he's red, swollen and very painful. (Interjecting… Okay you've got the picture). Now his vital signs were as follows, his blood pressure 160 over 110,*

Students: *hypertension*

Facilitator: *Possible, possible, hypertension, we'll see, okay we'll think of hypertension in this case, but for now we say it's an elevated blood pressure reading. Pulse rate is 108 (group interjected and said too high.*

Facilitator: *Too high, am I right? Mh? What about Temperature if its 37.2ºC*

All students at the same time: *Normal*

Facilitator: *Normal, do you all agree? 37 years of age, yes still normal. What about the respiratory rate of 22?*

Student I: *Normal*

Facilitator: *And the Blood Pressure?*

Student II: *Normal*
Facilitator: *What about the weight? 37 years is the patient obese?*
Student III: *96 kg patient is obese.*

On this particular day, it became apparent that the students had become too excited by the case and had arrived at conclusions which were not always correct. The students, in their eagerness to solve the case, had not waited for enough information to make more informed decisions about the client's actual problems. For example, in the scenario, the students jumped to the conclusion that the patient was suffering from hypertension whereas, in fact, it was not the primary problem. It highlighted the critical role played by the facilitator in guiding and directing the students' thinking.

Case analysis and problem identification: During the classroom sessions, after students had been given the initial information, they were allowed a quiet period of about three to five minutes to internalise the case. This was followed by the questions from the facilitator to establish their understanding of the case. Students were then allowed an interactive student-centred exploration of the client's problems after which they presented the case, highlighting the scope of the client's health problems according to their understanding.

The facilitators allowed the students to do the analysis of the case in what they called '*problem posing and problem analysis.'* During their first year of study, students had been allocated to different communities, close to the NEI, for community learning experiences and during this time they had been expected to conduct community surveys, epidemiological studies and family studies. Students

had been given the opportunity to plan for community intervention strategies to overcome some of the community problems that had been identified. The strategies were wide and varied and included vegetable gardening projects, which were done in partnership with the agriculture department within the university and HIV/AIDS projects done in partnership with government and non- governmental departments. Participants revealed that students raised issues from different perspectives emanating from some of these and other previous experiences and that the realistic and specific situations were explored. Some participants mentioned that:

> *The students analyse the case on their own… to allow students to describe what the problem is. In this phase, students are allowed enough time for reading and analysing the case thoroughly and not just skimming it.*

> *Students brainstorm their ideas… and formulate hypotheses based on what they think.*

It emerged that the facilitators established the common understanding of core concepts with the group and guided the students to understand problems by integrating knowledge from other subjects such as pathophysiology, anatomy and physiology. Student to student interactions were encouraged and ideas were built on until a consensus of common understanding was reached. It was observed that the process of knowledge construction was cumulative in nature as it allowed for the formulation of new conceptions and a more comprehensive understanding of the case under discussion. A narration of the observed scenario during case presentation went as follows:

Facilitator: *Okay now from the history of the patient name findings that will confirm gout. Now before we get there, who can tell us what is gout?*

Student IV: *Inflammatory regenerative illness of the joint.*

Facilitator: *Okay a bit more.*

Student I: *Isn't it when you have too much uric acid and it start crystallising and it goes into your synovial fluids?*

Facilitator: *Excellent, what you said is correct and it to what you were saying. Yes, anybody else with a bit more to add to?*

Student V: *Isn't it inflammed?*

Facilitator: *Yes you said inflammed, but you are right. So what are the clinical signs and symptoms of inflammation?* (The facilitator had to ask students for the signs of inflammation to establish whether they know the term in the same way or not).

Student III: *It's when you have an excessive uric acid in your body and your body struggles to get rid off it, so then it crystallises and it goes into your synovial fluid.*

Facilitator: *Do you all know the anatomy of the joint?*

All Student reply: *Yes.*

Facilitator: *So that's the background knowledge, synovial fluid in your joint, it crystallises, it causes inflammation and it becomes painful. Where does this pain comes from? It's like foreign objects, so it causes pain and inflammation. Inflammation itself contributes to pain. Now tell me what clinical signs and symptoms will indicate any type of inflammation?* (Closure of the first issue - the facilitator summarises the first issue in preparation to move to the next issue).

Student VI: *Swelling.*

Facilitator: *Swelling?*

All Students give different answers at the same time: *Yes, No.*

Facilitator: *Redness, hot. How do you distinguish hot? What type is hot?*

Student VI: *temperature of the surrounding skin.*

Facilitator: *Yes, temperature of surrounding skin compared to that opposite side, the other side with your palm feels best? Any questions so far, gout. So you all know what is gout? You've read it; you have a bit of a summary made; now what findings in this patient will confirm gout? Remember we only hypothesising, we think off, with a differential diagnosis. We haven't finalised it but we want to know what findings will give you a confirmation of gout?*

Student VIII: *Because it's in the big toe, it's usually where gout starts and the inflammatory symptoms go along with gouty arthritis.*
Facilitator: *Okay, so well done its inflammatory symptoms of the joint. So the big toe, but what other joints are mostly affected?*
Student IV: *Ankle.*
Facilitator: *First your…?*
All students answer: *Big toe.*
Facilitator: *But what is big toe, its part of what?*
Student II: *A small…*
Facilitator: *Peripheral… come now people, we are scientists. We want give it better wording than your big toe. Metatarsal bones…*

Data sources revealed that questions were asked to stimulate the students so they could begin analysing the case and be able to recognise the potential issues and major contents of the case. It emerged that a list of ideas about what might be affecting the patient (hypotheses) was developed and listed on the board to enhance visual stimulation. For each hypothesis that was generated, students were encouraged by the teacher to explain their thinking and understanding out loud to the group, as participants explained:

> *We allow students to identify and record on the board, key word, facts and issues… to formulate a statement of the problem(s) for each particular case scenario at hand.*

> *Writing student thinking and all ideas on the board helps to enhance their individual skills and learn from others in the group… this serves to make visible existing individual and collective knowledge, reasoning, and communication skills.*

The facilitators applied the important skill of questioning the students during class discussions to guide the learning process. They believed that a conducive environment, one which made students feel at ease to share their views with respect and openness, was the key to an effective class dialogue. It emerged that each facilitator used his/her own individual skills to manage the group process. The views of participants on information seeking were as follows:

> *Instead of giving information and demonstrating skills to students, our role is to guide the process of discovery in students through skilled questioning.*

> *As facilitators, we need to establish a friendly environment for open discussion, making clear the ground rules for open, respectful dialogue. I do the facilitation of the sessions in a way that collects as many different issues, perceptions, and solutions as possible.*

The facilitator opened the discussion pertaining to the physical assessment and history taking, and how it is done, by probing students and asking them what they had seen in the clinical area. Students were then guided into answering the questions on the case study as appearing in their study guides. The case was then analysed by the group. In order to identify whether there might be any missing data from the case-study, the facilitator gave the students an opportunity to reflect if they had all the data they needed regarding the case of the patient with gout. Most students contributed something at this stage saying, for instance, that they hadn't been told whether the patient had drunk alcohol or eaten red meat, these being factors that could aggravate gout. The facilitator continued probing the

students by asking questions to close the knowledge gaps in the case information. Examples of some of the questions asked were:

What investigations should have been done to this client to assist you in the formulation of the initial hypothesis?

What do you think should have been given about the social history of the client to help you understand the problem better?

***Solution development*:** Participants revealed that once the class debates and the question and answer process had been concluded, the end result was usually a long list of assumptions and case diagnosis responses from the group members. It emerged that with continued interactions and probing from the facilitator, information about the case was disclosed serially rather than all at once, as the students added to and/or re-evaluated and re-prioritized their initial assumptions in the light of new information and then engaged in further discussions to clarify the learning issue. It emerged that the students were prompted by their teacher, and by each other, to explore every bit of knowledge they had, until they had formulated a clear picture of the client's problem. Participants revealed that as facilitators, they constantly generated questions that led to the acquisition of answers, which helped the students to build upon, and connect, existing knowledge. Participants explained:

> *Further probing about the patient's history, physical examination, and laboratory findings helps students to evaluate and prioritize their hypotheses. In doing so, they continually explore their understanding of relevant mechanisms that helps explain the problem.*

Every step along the discussion, recognition and articulation of pre-existing knowledge helps provide a link for newly acquired information and aids in its storage and retrieval… thus building up of new knowledge from existing knowledge base.

The initial list of hypotheses is usually very broad and long… students will throw their raw ideas generated from this initial hypothesis of the case.

Group interaction: Data sources revealed that the facilitators followed a problem-solving process in conducting classroom sessions which enabled students to interact with each other and the facilitator, in order to analyse the cases presented. Participants revealed that triggers were used to stimulate the discussion in the knowledge construction process. The facilitator's behaviour had a direct bearing on the creation of a conducive learning environment because, in addition to the preparation of a suitable case study to present to the students, the facilitator directed the discussion in such a way that collected as many different issues, perceptions and solutions as possible.

Participants revealed that while the basic questions of 'who, what, why, when and where' helped to engage the students in a particular activity or case study, the process of skilful facilitation involved more than just getting the students engaged. The facilitator summarized the key issues and directed the discussion by asking questions that helped the students identify the issues and stay on track, but did not lead them to a specific conclusion. Some participants explained:

The problem-solving approach allows for the analysis of cases through the involvement of all students in class.

Activators that stimulate students to think deeply about the case presented on the case tie that which the students have witness the community settings with what is discussed in class. The triggers are used right through the session, for each learning issue until all the aspects of the case are covered.

It is helpful to use the same cases from more than one perspective to help students understand the multi-dimensionality of real-life situations. Facilitating student discussion may appear to be simple, but in reality requires the educators to use great skill in helping students explore and discuss the case in ways that maximize their learning.

The facilitators asked questions to probe students' thought processes. It became clear by the nature of their responses that the students had done their preparatory reading of the case and the condition before coming to class. As the class discussion continued, the facilitators elaborated and added to what the students had said. It was interesting to note, while observing the class, that due to the large number of students, only about half were actively involved in the class discussion whilst the other half remained quiet and did not participate. One participant reflected:

Due to the numbers of our students in class, it is easy for some students to hide and keep quiet… we try to engage all of them in the learning process.

A process of brainstorming and hypotheses development followed as the presentation of the case study continued. During this process, it was observed that students were able to challenge one another. It was noted that should any of the students give wrong suggestions or interventions, or was speaking out of context, many of the other students would respond loudly, offering the correct responses to the facilitator. The facilitator did allow those few moments of noisy reaction, but not for long. After a brief period she controlled the class and channelled them to the correct response, or emphasised those responses which had been correct, if any. It was also noted that the facilitator did try to stimulate the participation of all the students by specifically calling for responses from the row at the back, who were not actively participating.

Reflection on group process: At the end of the group discussion, facilitators gave an opportunity for students to look back and reflect on their preparation for the class experience and the group process. Students were encouraged to reflect on their learning and to write down their experiences on the learning process and their plans for areas of improvement, if any. Some of the participants explained:

> *At the end of the session, I allow a few students to verbalise how the group interaction changed their viewpoints or how it added value to what they had prepared before coming to class.*

> *It is important to determine how the case has helped them link theory to real-life clinical settings… and determine areas of improvement for next time if any.*

It is important for students to keep paper trail of all the learning experiences, good or bad and the solutions, areas of improvements or no improvements on their part, as part of reflection in action and on action.

Conclusion of the classroom session: At the end of each classroom session, students were allowed to identify their learning needs. It was revealed that because of the large student numbers, not all students were able to indicate their views. They were, however, encouraged to think about their needs and record them in their learning diaries so that should any major problems be encountered that could hinder their learning experiences, they could make an appointment with the facilitators. Furthermore, observations revealed that the facilitator took the leading role in concluding the session by giving a summary of the case, the findings and what had been agreed upon in the discussions, but also allowed the students to give input and share with the other students on how they had found the interaction and what they had learnt. Some of the participants explained this in the following excerpt:

We ask what students need to learn in order to prove or disprove their ideas, following the whole discussion on the case.

At the conclusion of the classroom interaction, it is useful for the group to take time to reflect on how they have understood the case.

In closing the session, the facilitator thanked the students for their active participation in the class discussion and acknowledged the fact that they had been adequately prepared for the discussion by having done their reading homework.

In summary, the process of knowledge construction in NEI B followed tasks or case studies the facilitators had prepared; with each case being discussed through a guided discussion. The facilitators guided the process of knowledge construction by ironing out the health related problems presented in the case study until a final conclusion had been reached.

Similarities and Differences of the Knowledge Construction Process in the Two NEIs

It is, therefore, concluded that both the participating NEIs used community-based health issues in the classroom grounded by the exposure of students to community settings. Students in both the NEIs were allocated in the communities for community surveys, family studies and epidemiological studies. Students in both the NEIs conducted community intervention projects that were based on these studies. Both NEIs adopted a facilitative approach as compared to a lecture-based teaching approach and in both institutions teachers acted as facilitators of learning and students as constructors of knowledge. There were, however, some significant differences between the two NEIs, mainly in their general approach to teaching and the number of students in the classroom. The main difference was in the identification of case studies for the process and content to be covered in the classroom.

In NEI A, community problems were identified by the students and taken to the classroom as course content, while in NEI B, the content covered in the classroom was identified by the facilitators and pre-determined before students came to class.

It emerged that although the two NEIs were both using problem-focused approaches to teaching and learning, they nevertheless used different methods; the one used PBL and the other used CBL. The students attending NEI A actually went into the communities to source authentic problem cases themselves, whereas at NEI B, the facilitator presented paper-based community problems to the students in the classrooms. The number of students per classroom also differed, as well as the seating arrangements. These factors were interrelated with the differing teaching strategies adopted by the two NEIs, whereby in NEI A, PBL required a small number of students per group while in NEI B, CBL allowed for larger classrooms**.**

The process of knowledge construction in the classrooms for both the NEIs was informed by health problem or issues in surrounding communities. Knowledge construction took place in a comfortable and safe learning environment governed by group rules that maintained discipline. Orientation block were informative sessions that informed students of the nature of the programmes and the process of knowledge construction. The community health problems or learning issues served as springboards for group discussion and class interactions. Each session began with a raw problem that had to be understood in its context. Problem interrogation started with analysis of the problem to establish common understanding. Each problem was analysed, hypothesized, concluded and explored further to identify possible nursing interventions. To reach common ground the students argued from differing viewpoints, interrogated the facts, used their prior experiences and backed it all up with empirical evidence from journals,

articles or books, while at the same time taking the clients' context into consideration before coming up with possible solutions and interventions.

In both NEIs, classroom interactions were characterized by student to student and teacher to student dialogue and arguments, which were backed by literature and the integration of different subjects and disciplines. Both NEIs came up with community-based interventions where solutions generated in class were taken to the communities for testing and evaluation. As a form of assessment, community surveys, family and epidemiological studies and intervention projects were presented and marked for relevance and accuracy.

The Role of the Teacher in Knowledge Construction Process

The role of the teacher emerged as one of the subcategories for the knowledge construction process. The dimensions that emerged under this subcategory were: (a) facilitating class interactions; (b) allowing for student autonomy; and (c) scaffolding for successful knowledge construction.

Facilitating class interactions: Data sources revealed that for both participating NEIs, the role of teachers was to facilitate learning by enabling and promoting the learning process, both in the classroom and in the community. Participants revealed that their roles were not to teach, but to guide the learning process so that students could achieve the learning outcomes. Some of the reflections from the participants are as follows:

> *Our role is to facilitate student learning so that at the end of the classroom session, a change in student's thinking or behaviour can be observed.*

We facilitators lead the classroom discussion to ensure that learning outcomes are met by the end of each and every classroom session.

Participants explained that knowledge did not occur in emptiness or a vacuum. Students were seen as active constructors and co-constructors of knowledge with their peers who were always ready to actively control their learning. Participants believed that the process of facilitation is the key to effective class interaction and, ultimately, knowledge construction. They saw their role not as an instructive role, but rather a way of motivating students to take the lead in their own learning. They maintained that the facilitative approach to learning allowed for creativity and gave students the freedom to use their capabilities with regard to the community development projects they were involved with. These were some of the participants' views regarding their facilitative roles:

Students are active participants in the process of knowledge construction… ready to actively control their learning. The lecturer is a facilitator of the process of learning. I therefore encourage students' commitment and responsibility for learning… my main responsibility during class interactions is to set up problems to assist students in exploring different situations and to guide their direction… inquiry and to promote new patterns of thinking.

Effective facilitation is the for effective class interactions to enhance learning… I facilitate and encourage student independence for the attainment of learning.

The importance of the balanced support for the students with independent adult learning principles and the desire to encourage an active, enquiring approach are important for effective knowledge construction.

I am a progressive teacher who allows students to use their fullest capabilities to grow. In our school, students take charge of their learning and teachers are there to guide them, if they do community development project, they are given freedom to plan, organise, make decisions on their own… we there to support them.

It emerged that knowledge was constructed by exchanging ideas, listening to one another, respecting each other's viewpoints, being critical and by asking questions that challenged and probed the issues. By asking relevant questions to the students, facilitators stimulated and encouraged higher-level thinking during classroom sessions. They also used a variety of complex community health issues to allow students the opportunity to relate theory to practice, to draw out existing knowledge and to check their current understanding, as they believed these were important factors in the construction of knowledge.

During classroom observation, it emerged that facilitators tried to hold back the giving of information, but teased out the students' thinking and reasoning rather than answering the questions for them. It emerged that a facilitator's role was to challenge the students to reach beyond a simple factual response and that the students were relentlessly encouraged to connect and summarise concepts by

analysing, predicting, justifying and defending their ideas. Some of the participants reported in the following excerpts:

> *Asking relevant and appropriate questions is the key aspect of our roles as facilitators… Asking questions in class stimulate critical thinking… we give students the opportunity to tackle puzzling community situations in the context of their relevant group allocations… this enables the student to develop higher order thinking and to recognise required learning outcome.*

> *In this role we assist the students with the learning content and focus on thinking skills by asking questions. Moreover, we encourage students to learn using a guided discovery approach. However, there is still some way to go with regard to helping the students question each other and become more analytical.*

> *Sometimes as facilitators, we're not good at getting them to question each other they're relying on the facilitator to question the other students. I always try to ask open-ended questions and allow waiting time for the student responses because the reflective thoughts take time and is often built on others' ideas and comments.*

> *Some students are not always able to challenge each other and evaluate what they had found. We therefore challenge the student to think about what they were saying and how that related to practice... challenging students in class enhanced the ability for in-depth discussion in class.*

Allowing for student autonomy: Participants revealed that student autonomy fostered self-directed learning. Providing students the opportunity to discover solutions on their own emerged as a powerful way to instill ownership of the process of knowledge construction and, enhanced engagement. Autonomy allowed students to be themselves, to reflect from previous experiences and draw knowledge from literature sources. Facilitators were there as consultants, to guide students as and when needed and not to volunteer information, but to constantly probe students for what they already know. Some participants mentioned that:

> *For us, complete autonomy involves providing spaces for the students to create their own knowledge in the context of their culture and the society. During deconstruction process our role is to question and break down information and knowledge at hand… the intention is discover other perspectives and/or concepts of reality within what is covered in the class.*

> *The teachers' role is to facilitate learning… I therefore act as the reference or source of knowledge to students and not as a knowledge giver… we are consultants for students; we do not volunteer information but consulted.*

> *I am aware that the discussions can always take unexpected turns as students are given the autonomy to direct their own explorations. I am always there to give them the appropriate guidance rooted in the literature.*

Data sources further revealed the participants encouraged the students and gave them the freedom to be critical, to raise issues and to air their views on the shared

topics. Students were placed in groups to discuss and solve the problems/learning issues without hints. However, it emerged that the main role of the facilitator was to question students to promote critical thinking and to guide them, rather than tell them, how to create the model answers for the problem cases. Through such guidance, some degree of autonomy was given to the students to make the final decision in terms of what was learnt. Some of the participants explained that:

> *As facilitators, we solicit questions to enhance discussions. I respect the students' ideas and encourage independent thinking… they attain their intellectual identity and intellectual freedom. I allow the students to frame questions and issues on their own, to analyse and answer the responses by peers and by that, will take responsibility of their own learning… and be self-directed and problem-solvers.*

> *I allow students into groups to solve the problems without hints… my role is to guide students rather than to tell them what information is correct and what is not correct, I tell no answers but at the same time, ensure that the content covered is correct for the cases. While working with peers the onus is on students to create solutions to the problem at hand.*

Scaffolding for successful knowledge construction: Another dimension that emerged from the data sources on the role of the facilitator was the amount of input required from the facilitator during classroom interactions. Participants revealed that the level of support and guidance to students depended on the stage of the programme. Most students required a great deal of support, guidance, nurturing and reassurance at the beginning of the programme, but became more

self-sufficient as their course progressed. This gradual shift in their needs was described by the participants as one which suggested that increased intervention was required at the beginning, and that the teachers' role was to model students' thinking process around the stages of problem-solving techniques. One participant reported that:

> *I have noted that in the early stages of the programme, when the hypothetico-deductive clinical reasoning skills are still under-developed, students need more intense facilitation and support… and that's where as an experienced facilitator I would lay a good foundation.*

> *With the students' increasing experience, the ability to follow the process becomes a learned behaviour… as the group matures, the level of intervention should be reduced… the more inquisitive and talkative some students are, the more the whole group in class will learn. Our role as facilitators will be to provide support and affirm the arguments, provide additional new examples that are not discussed in the debate.*

Participants revealed that they are required to provide individualized support to each student, based on their development, in order to facilitate their ability to build on prior knowledge and internalize new knowledge. It emerged that the encouragement and support given by the facilitators enabled students to achieve what they would not have been able to without such support, and engaged them actively at their current level of understanding until the point where the support was no longer required. It is the role of the facilitators to develop the students, to guide them in attaining academic skills and to prepare them for examinations and

practical assessments through scaffolding. The following extracts from the participants illustrate this point:

> *Students should be coached to the extent that they perform intellectual tasks, like the clinical reasoning process, all on their own… we must go beyond just being a 'facilitator' of the group process to being an 'activator' of learning by motivating students… and challenging them with non-directive questions at the meta-cognitive level.*

> *We give individual attention to those students in need… one on one interactions enhance student growth and development… Guidance and support in class discussions plays a crucial role in student development… development of arguing skills, debating skills and meaning making because at the end of the day, knowledge gained should be internalised and re-used later in real life settings, recalled in the examinations and assessments.*

Scaffolding the students prepares them to think critically and to make informed decisions. The facilitators explained this role as coaching, moderating and suggesting, but at the same time, allowing the students room for practice, asking questions and experimenting with their nursing interventions. The participants facilitated the communication of ideas between students and themselves, students and students, students and other professionals and students and clients or communities by creating a climate which enabled the students to examine new ideas. Some of the participants reflected:

We facilitators work together with the student to bring skills and sensitivity in human relations to the teaching-learning process. In addition, we have to be aware of their individual needs and motivations and the effect of these upon the learning process…

Students' learning is most effective when they are committed to and accept responsibility for their own learning process and bring to the learning environment a desire to learn… this is most exciting for them when applied to communities.

The Role of the Student in Knowledge Construction

The role of the students emerged as another sub-category for the knowledge construction process. The dimensions that emerged under this category were: (a) participation in group processes; and (b) directing own learning.

Participation in group processes: Participants revealed that the students were encouraged to participate actively in group processes and to take responsibility for their own learning. Students were expected to participate fully in all the group activities. The students' role of engaging in group processes and interactions required that they actively responded to the issues discussed in class and responded to questions posed by peers and facilitators. Their role is to raise concerns on learning issues and challenge other students with the aim to learn. In the classroom, students reflected from lived community experiences and knowledge was constructed based on those experiences. Some of the participants reported that:

A student's role is to actively search, question and engage in constructing meaning and relating it to the problem at hand, the service and the academic material in the programme. Students have to participate in every step of the group process. We do not delivering vast amounts of information… we use a variety of hands-on activities in the community settings to promote learning.

Students need to fully engagement in the classroom interactions. They are required to be self-directed, to search for a solution, often by assuming the role of a key actor in the problem situation. You find that they share information, opinions, and idea with others based on what they have learnt through the experiences in the communities.

Through the process of inquiry, it emerged that the students brainstormed with each other and gathered information from multiple sources. It was also observed that the students reached solution building stages as they worked in teams, discussing alternatives and examining possible solutions to different problem issues in class. Some of the participants mentioned that:

The student's role has over the years been reconceptualised… from that of a passive receiver of information to an agent who actively constructs knowledge. This means that the learning system should pay attention to what the student already knows and that's exactly what we did in our classrooms.

In class, we expect all students to give their opinions and viewpoints based on their everyday knowledge in a variety of ways... as well as give

opinions based on the a variety of searched academic sources like books, journal articles and others.

Students will ask questions and express interests in the activities in the classroom … they initiate interactions with peers. Students make their own decisions and they are very confident in their ability to share their ideas and opinions with others.

Connections are made of what was covered in class discussions based on previous experience and community experiences.

It was revealed that the students required all the traits necessary to take the initiative, with or without the help from others, to diagnose their own learning needs, to formulate goals, identify human and material resources, to choose and implement appropriate learning strategies and to evaluate learning outcomes. The importance that each and every member actively contributed to the group they were working with was confirmed by an evaluation form that each student was required to fill in an on every other member of their group to determine how they had all performed during the classroom discourse. Some of the participants mentioned that:

It is a requirement that all students are active agents in the teaching and learning process… prevalent roles are required in the classroom.

Knowledge building occurs when all students are actively engaged… they take responsibility not only for their own, but for other's learning.

Discourse requires the student to take responsibility for learning what they need to know, learning from self as well as peers.

It emerged that effective functioning in groups involved knowing how to organize the work, distribute responsibility, break up complex tasks and provide useful feedback on work that was done. The teachers were expected to contribute by helping students to understand the merits of group work and by guiding them to work efficiently in groups. As a member of a group or team, students were expected to prepare for the team sessions and to contribute actively to the discussions. It was believed that their learning would be enhanced and deepened through sustained collaborative interactions with peers while engaged in solving community issues or problems. Some of the participants explained:

Group work is integral to PBL and students need to learn how to make optimal use of their time and resources while working in groups… each and every facilitator needs to be clear about these skills.

Team-based, active learning facilitates student empowerment, in which encouragement is given to students to take responsibility for their own learning outcomes.

This method of teaching actively involves students in discovering the knowledge base of the profession, and helps prepare them to solve the problems they will encounter during fieldwork.

Directing own learning: Another role of the students was that they be responsible for directing their own learning. Participants revealed that students were required to actively engage in the learning process in the classrooms and not passively sit back and receive information. It emerged that the PBL students were responsible students who were able to take charge of their own learning by proper planning and active participation in the learning process. The knowledge constructed was grounded in problem solving as stated in the following excerpts:

> *Students are aggressive seekers of knowledge, they don't just sit and expect someone to dish out knowledge but they are self-directed, they go out there to seek for solutions to identified problems.*

> *Our students are self-directed and responsible for their own learning… they actively participate in the process of teaching and learning by identifying community problems, analysing the identified problems with the purpose of developing grounded knowledge... knowledge that is grounded on identified community needs.*

4.3.5 Intervening Conditions

Intervening conditions are the broad and general conditions bearing upon the action/interaction strategies (Strauss & Corbin, 1990). Data sources revealed that knowledge construction in the CBSL programmes was influenced by facilitative and hindering intervening conditions.

Facilitative Intervening Conditions

The subcategories that emerged under facilitative intervening conditions were: (a) preparedness and orientation of facilitator to teaching methodology; and (b) facilitator skills in scaffolding for effective class discussions.

Preparedness and orientation of facilitator to teaching methodology: It emerged that the coaching of facilitators was vital for successful classroom interaction. Some facilitators were well oriented with the teaching approach used by their NEI and a few revealed that they had received some form of preparation and/or orientation to the teaching methodology used by their institutions. A number of them explained that they had observed senior facilitators in class, so as to learn from them. The participants revealed that the teaching approach used encouraged them, as academic staff, to be more engaged with the students and to closely monitor the process of knowledge construction. The following abstracts explain:

> *I was made to observe and shadow senior academic staff members for two or three sessions so as to learn from facilitation skills from them… over time, I have sort of gained experience and my own approach.*

> *When facilitating learning in groups, one ensures that there is an exchange of ideas to promote active engagement of all students in learning. The students are encouraged to question the answers provided to them as we are trying to develop critical thinkers. It is always rewarding to see students develop… as well as developing relationships with the group.*

Facilitator skills in scaffolding for successful class discussions: Data revealed that the participants scaffold students to equip them for effective discussions in class. It emerged that effective scaffolding included the activities that were done at the beginning of the programme to help students develop the right mindset for the type of the teaching approach used in the institution. Students were nurtured and taken by hand through the knowledge construction process. Well guided and nurtured student learning led to good grounding for success in knowledge construction and the testing of such knowledge. Participants emphasized that the students needed guidance and support because the different approach to teaching was new to most students and they were not used to working in groups. Some participants mentioned that:

> *We are successful in engaging students with the problem at hand, divide activities into manageable tasks amongst each other and direct the students' attention to essential aspects of the learning outcomes.*

> *The effectiveness of our teaching approach depends to a large degree on our facilitation through the support and guidance provided by us to students… students are not thrown to the deep end for them to swim through… remember this is all new to them.*

Hindering Intervening Conditions

The subcategories that emerged as hindering intervening conditions for the knowledge construction process in CBSL programmes were: (a) unpreparedness of students for class interactions; (b) impact of poor facilitation skills; and (c) lack of capacity building initiatives for facilitators.

Unpreparedness of students for class interactions: Participants revealed that the students who come to class unprepared and/or not aware of the learning issues for discussion not only made it difficult to achieve a smooth, productive and lively discussion in class, but they also retarded the whole process of group learning. It emerged that the lack of preparation by certain students led to disengagement with the classroom realities and even conflicts amongst students.

Participants revealed that knowledge construction becomes almost impossible for students who are not properly prepared. It was revealed that when faced with problems or learning issues, some students found it difficult to follow class discussions because they had not prepared for the task(s). It was noted that some students would come to class not sure of how to relate to the problems or learning issues on hand with what they already knew. It emerged that the group process was hindered if students were unprepared for the learning issue. Some participants explained that:

> *Sometimes students come to class unprepared for the learning issue of the day. The students who do not prepare for classroom interactions are always be miserable, quiet and unable to follow the discussions easily. It becomes difficult to have an effective complete class session*

> *The other thing is that they do not only lose alone… the whole process of learning in the classroom becomes disturbed by their unpreparedness. Sometimes students will fight and blame each other for ineffective class interaction.*

Students are not able to tackle a given learning issue… they find it difficult to identify critical issues and generate coherent ideas for it. Those students are ungeared for the task. If students are ungeared with task at hand and they do not come forward for help, then the group process will be disturbed, there will be no progress whatsoever… but if students have an appropriate learning context and the need to seek the necessary information, they also see how things finally come together

Lack of capacity building initiatives for facilitators: Participants revealed that the teaching methodologies used by the NEIs for directing the process of knowledge construction in CBSL programmes were fairly new innovations and that a structured orientation programme was needed to lay the foundations and remove the fears of such a different methodology, especially to new staff members. It was suggested that some of the facilitators were new to the NEIs and were more familiar with the old methods of lecturing. It appeared that some were frustrated by the fact that they had to accompany their students to the communities to facilitate the process of knowledge construction.

Participants felt that training and development were needed to demonstrate how facilitation should be done both in community settings as well as in the classrooms. It emerged that it was sometimes difficult for the NEIs to get community members on board due to differing reasons and this affected the students' activities which had been planned and the attainment and creation of knowledge construction. It emerged that the older staff members had not been trained in facilitation skills and that there were no immediate plans for initiatives

to support them. Some of the participants felt this was unfair as they were not entirely confident in their practices, as reflected in the following abstracts:

> *The paradigm shift in teaching methodology from the traditional clinical settings to community settings which are assumed to be unsafe environment brought about fear and unfamiliarity in concept and in facilitation skills… therefore there is a need to prepare and develop all the new staff and to provide ongoing support for older staff members as well.*

> *I strongly feel that the service and community members need to be oriented to our school's approach to teaching and learning. This will increase their cooperation and engagement in the students' initiatives and activities… at a moment it is a challenge to get members of the community involved in our activities, this in turn has detrimental consequences on students learning.*

> *We are not capacitated in facilitation skills, one has to figure it out on her own, what to do and when… this is not fair especially for the new staff members. That's why we lack confidence in what we do.*

Participants revealed that problems arose when facilitators lacked group facilitation skills. Monitoring the understanding and the process of knowledge construction of students was a skill that facilitators needed to be well grounded in, and that such skills developed over time. On-going training and continuous mentoring emerged as an important support mechanism needed for the

development of good facilitation skills and confidence. The following extracts are some of the views of the participants on poor facilitation skills:

> *If the facilitator is not familiar with the process of inquiry and facilitation of group interaction… it becomes a challenge. Poor facilitation skills are the key area of concern. There is a need to balance support for the students with independent learning principles and the desire to encourage an active, enquiring approach, which are important for CBSL programme*.

> *Training is not the only capacity building need for facilitators… the provision of ongoing support is much needed as well. We need appropriate facilitation skills and the development of such skills from time to time… to acquire deeper understanding and acceptance of the philosophy underlying the teaching approach used by the institution.*
> *The challenge is facilitating groups of differing backgrounds… to be able to manage students to work well together is a skill to be learnt over time.*

> *The key challenges for us are in relation to developing facilitation skills, balancing input or guidance with facilitating independent learning.*

Consequences or Outcomes of the Knowledge Construction Process

Consequences refer to the certain outcomes or results of action/interaction strategies taken in response to, or to manage a phenomenon. These outcomes can be intended or unintended and are not always predictable (Strauss & Corbin, 1990).

Intended Outcomes

The subcategories that emerged as intended outcomes for knowledge construction in CBSL basic nursing programmes were: (a) transferable learning experiences; and (b) professional and personal development and growth.

Transferable Learning Experiences

The dimensions that emerged under the subcategory transferable learning experiences were: (a) critical cross-fields outcomes (CCFOs); and (b) communication and information retrieval skills.

Critical cross-fields outcomes: Participants revealed that every academic learning programme in the South African education system has to reflect South Africa's nationally recognised transferable core skills and learning experiences known as CCFOs. It emerged that the terms, transferable core skills; transferable life skills, developmental outcomes and CCFOs were all used interchangeably, and were in accordance with the SAQA. Participants revealed that the CBSL programme was about students identifying community health related problems and making provisions for planned community interventions to meet the identified health needs or problems on their own and, furthermore, that the CCFOs were regarded as vital for the development of the capacity for lifelong learning. They maintained that it was imperative that all learning programmes, regardless of their nature, contribute to the full personal development of each student and the social and economic development of society at large. All individuals should be aware of the importance of reflecting on, and exploring, a variety of strategies to learn more effectively as they participate as responsible citizens in the lives of local, national

and global communities. Participants revealed that the CBSL programme enabled students to develop critical frameworks with which to interpret and critique their own practices as well as those of others. Problem-solving, decision making and critical discussion skills are enhanced as students undergo the process of knowledge construction as stated in the excerpts below:

> *We the facilitators are responsible to create the environment that is conducive for students to construct their own knowledge, skills and values through interaction. The first critical cross-field outcome accepted by the SAQA is that students should be able to identify and solve problems by using critical and creative thinking skills… which is exactly the outcomes of the CBSL programme.*

> *The vision of the NQF implies that all qualifications, learning programmes and unit standards should give attention to the critical cross-field outcomes… being culturally and aesthetically sensitive across a range of social contexts; exploring education and career opportunities; and all of that, in our school is achieved through our innovative programmes of undergraduate programme.*

> *The teaching methodology used in our school has been used the longest in education history to promote clinical problem-solving skills and develop the decision-making process.*

> *From the nature of the programme of our institutions, our graduate nurses would be encouraged to become questioning and critical practitioners;*

practitioners who would not only evaluate themselves and their peers effectively, but be able to analyse the shortcomings of policy and practice.

Communication and information retrieval skills: Over and above the CCFO's, communication and information retrieval skills emerged as another critical dimension of the transferable learning experiences. Participants revealed that the graduates produced after engagement in CBSL programmes have the ability to arrive at informed judgments by effectively defining problems, gathering and evaluating information related to those problems and developing solutions for such problems. The knowledge created from such a process can be applied in a variety of community settings. Participants revealed that the students gain research skills and the ability to confront new challenges based on facts. Some of the participants mentioned that:

Our products are characterised by high-level skills in communication and information retrieval… these enable them to gain and apply new knowledge and skills as needed…

Our graduate students will have the ability to address specific problems in complex, real-world settings, in which the development of workable solutions is required. The critical skills that they gain through the programme rarely become obsolete but are usually transferable across life experiences and careers.

As educators, we need to design educational experiences for students that require them to be active, information seekers, independent students and problem solvers rather than passive recipients of information.

Professional and Personal Development and Growth

The dimensions that emerged under this subcategory were: (a) adult learning; (b) lifelong learning; (c) self-directedness; (d) critical thinking skills; (e) team skills; and (f) leadership skills.

Adult learning: Participants revealed that their institutions incorporated adult learning principles that encompass professional and personal development into their teaching strategies. They maintained that it was important to treat students as adults because they come to class with vast knowledge and experience from previous engagements in life on which they base all their learning and understanding. Data sources revealed that the adult learning principles were considered important in the training of nurses because it was considered that adults learnt best when a spirit of collaboration was fostered in teams or groups. The participants revealed that in nursing education there is a need to appreciate that the students are adults and should be treated as such, and then they will treat their clients likewise. Students have the capability to construct and co-construct knowledge. The excerpts from some of the participants are as follows:

Application of the adult learning principles contributes to the development of students academically, professionally and personally and the students are allowed an opportunity to build on their past experiences.

Treating students as adults, irrespective of their level of knowledge, allowing them to build on their past experiences and making them work collaboratively in teams inculcate the attitude that the input of other people is very important, irrespective of who they are.

Andragogical approaches to teaching is favoured because it strives towards developing self-directedness and empowers students to be able to solve problems.

Lifelong learning: It emerged that the knowledge construction process in CBSL programmes equips the graduate nurses with the skill to learn and re-learn as knowledge develops, which participants believe is necessary for lifelong learning. The long-term goals of most educational endeavours is to produce graduates with the ability to determine their own learning goals, locate appropriate resources and assume responsibility for learning what they need to know. To be a lifelong student, one needs to be able to take charge of one's own life and be able to achieve set goals. Some explanations from the participants:

Lifelong learning may be most usefully thought of as a policy which has been requiring individuals to become more active in managing their lives… it starts right here, students managing their studies.

To be lifelong students need to develop a culture of being responsible for learning because the learning is a lifelong process. Nowadays, the education system requires students who are active in their learning for learning to take place.

Self-directedness: Self-directedness emerged as an important concept in the process of knowledge construction, especially because the CBSL programmes were aimed at producing lifelong students who were able to direct their own knowledge creation and its application. The following are abstracts from two of the participants:

> *CBSL programme is a positive curriculum approach… teaching and learning process we use teaches the students self-directedness. Students are self-directed and responsible for their own learning… the products of our department are self-directed, lifelong students.*

> *Students acquire skills to control their own learning by identifying their own learning needs and accessing appropriate resource as and when needed.*

Participants explained that through self-directed learning, students owned their learning and were able to take initiatives and monitor their progress accordingly. They expanded that self-directed learning gave students the courage to use opportunities, get involved in discussions and arguments and ask questions relevant to the theme in hand. Such courage to discuss, argue, challenge, ask questions and construct knowledge relevant to their experience was seen as having positive aspects because the students would develop into self-directed care-givers who would be able to challenge policies, guidelines and protocols in the workplace in order to address work-related issues and needs. They reported that:

> *Self-directed learning is a process in which students initiate, monitor, and reflect on their own learning… it is an important element of life-long learning, an important and challenging outcome for nursing education.*

Self-directed learning skills and disposition are important for students to develop and be more responsive to the rapidly changing demands of the workplace and offers opportunities to discuss, argue, ask questions, and construct knowledge relevant to their experience and to challenge and develop practice.

If the programme is done well it helps the students to identify learning gaps that they need to address or that need to be addressed in their future learning... that is very helpful because that is very much how real life works.

I think it's good at helping them to identify what they need to learn and how they'll need to go about learning it and in that respect, a very effective way of learning for effective professional nursing practice.

Certainly we are producing a student that is much more likely to challenge or debate in practice and is much more likely to go and read protocols and read guidelines and keep up to date and is also much more likely to share in the group.

Critical thinking: Participants revealed that the important aspects of critical thinking were asking questions, making connections between new and existing knowledge, generating solutions, analyzing arguments, and making and justifying decisions based on evidence. They believed that the students who had graduated

from a CBSL programme were equipped with the skill of questioning and would not just accept things as they were said, as stated in the following excerpt:

> *Critical thinking is about asking questions to make conclusions between the now and before, thereby finding solutions to take one forward. Another pretty big thing that PBL taught me is to ask why? If you do not know the answer to why, then you need to do more research.*

> *I see the students grow in their ability to think and at the end they will start to question each other.*

Team skills: It emerged that the ability to function as a member of a team was very important to work successfully in health care settings. Participants maintained that the process of knowledge construction in CBSL programmes developed the students' ability to work effectively in groups, and their joint efforts contribute not only to their classroom projects, but also to their own benefit. Students were made to understand that they were not competing with each other, but were there to help each other. These were the views of some of the participants on team skills:

> *Working with others was one of the areas the students enjoyed most. Their skills improvement in teamwork is one of the highest areas of personal growth and development.*

> *Students learn to work and think of themselves as a team rather than being in competition with each other.*

In team and group work, its where learning takes place, you find that students are there to help and support each other, it's not a competition… in time of challenges and group problems, it is advisable to let them take time out from the trigger material and discuss what is happening in the group and to deal with group conflicts and resentments.

Leadership skills: Participants revealed that the leadership skills gained by the students boosted their confidence, and that it was confidence that assisted the students in critical decision-making skills. Participants revealed that with leadership skills, students learn to manage conflict better by voicing their opinions while at the same time listening to others. It was hoped that students would learn from this experience of handling conflict maturely and be able to apply what they have learnt in future life. Some of the participants stated that:

Leadership skills enhance one's confidence… and confidence enhances one's decision making skills… these go hand in hand and complement each other. That is the kind of the graduate we aiming to produce, a leader, a decision-maker, a progressive learner.

Students feel confident in making decisions by consensus… and they also learn to understand the other person as well… they can handle conflict differently (more healthy) in all angles, even in their relationships outside of school hopefully.

Leadership; cooperation; communication; resource utilization; collaborative team building; and decision-making skills are crucial to

group success and are developed through the CBSL learning… these skills are crucial to group success.

Unintended Outcomes

The subcategories that emerged as unintended outcomes in this study were: (a) collaborative learning and partnership development; and (b) enhanced applicability to the clinical and/or community setting(s).

Collaborative learning and partnership development: Collaborative learning emerged as an important outcome of the process of knowledge construction in CBSL programmes. Collaboration in these programmes was observed in both the classroom and in the community settings, where student groups engaged jointly with the communities in community assessment, identifying health-related needs, analysis, planning, implementation, monitoring and evaluation of community-based projects. It emerged that students, irrespective of their numbers in class, worked together and managed to achieve the learning outcomes through collaborated efforts and team work. Some of the participants reported:

We have a group of about 60 students in the first year that are subdivided into groups for community placements and they'll work together throughout the year... they really grow from that experience both as individuals but importantly as groups.

Student groups are mixed culturally, gender and age-wise therefore, working in groups is never easy they have to learn to collaborate and understand each other, to work together to meet a common shared goal,

have to support each other and most importantly have to respect each other... each one is diverse on his/her own.

Partnership development emerged as another dimension in this subcategory. In the two NEIs researched, both models of CBSL had implemented a strategy to address the apparent disintegration of the health care system and to improve the education of nurses. Data sources revealed that this initiative within the nursing education system was seen as one of critical collaboration between the NEIs and other departments within the university, the Department of Health and other non-governmental organizations. It emerged that collaboration with community-based service providers was essential in preparing students for the practice of nursing.

Students gained knowledge about the different dimensions of the professional discipline of nursing and a deeper appreciation of the roles and responsibilities involved in being a health professional. It emerged that CBSL required partnerships with clients and members of other disciplines to develop effective interventions for the health care consumers and to help them achieve a healthy life. Participants revealed that the partnerships between the university and the communities were sustained until the completion of the projects. Some of the participants reflected:

The relationship between the academic institution and the other stakeholders in the community health improvement is one of integration rather than domination… of mere cooperation or advocacy.

Students and faculty engage in community service as policy makers, advocates, coordinators, health managers or health service providers.

Collaboration with community-based service providers and colleagues is thus essential in preparing students for nursing practice... Students learn how to work with different attitudes and people who are afraid of being delegated to and sharing responsibilities and things... they are connected the disabilities in their communities.

Partnering with communities provides nurses with realistic understanding of the choices and the compromises that occur in the daily lives of the clients and the impact that the community has on their lives and health.

The CBSL experience prompts student's negotiation skills… students negotiate times for their planning meetings and community interventions…they acquire some skills in collaborating and came to appreciate that it requires time to meet, talk, plan and engage in decision-making.

Students gain the skills and practical knowledge of all aspects of the profession and learn to appreciate their roles and responsibilities.

CBSL programme requires partnerships with clients and members of other disciplines to develop effective interventions for individuals, families, groups, communities and populations; and to assist them toward

independence and optimal levels of health… these partnerships are ongoing and true partnerships in which the partners work collaboratively; and the voices of the clients, their families, groups, communities and populations are heard.

Partnering with communities exposes the students to real community issues and the necessary skills to meet such issues are developed.

Enhanced applicability to the clinical and/or community setting(s): Participants revealed that the students who had participated in CBSL had had the opportunity of applying what they had learnt in the classroom in the communities. They believed that students who had participated in such a programme were enabled to develop health promotion strategies and advocacy skills and also the ability to acquire any new competencies they might need to practice in a changing health-care environment, as explained in the following excerpts:

CBSL is useful in enhancing the transfer of knowledge from the classroom to the clinical setting… due to the reality of the scenarios in the communities.

The problems identified in the clinical settings are dealt with in class with the intention of correlating what is taking place in the practical settings to the theory covered in class.

Students are to develop the necessary competencies to become effective nurses in the dynamic health care situation.

It emerged that the teaching approaches used by the participating NEIs allowed for a student-centeredness which empowered students to conduct research, integrate theory and practice, and apply knowledge and skills to develop viable solutions to defined problems. Students developed the knowledge, skills and other attributes to become effective citizens who are able to identify and act on issues and concerns that affect their own communities. Participants believed that by intentionally linking academic standards to the real world of their communities, knowledge created in CBSL nursing programmes narrowed the gap between knowledge and action, and between what students learnt and what they could contribute in the communities. Some excerpts from the participants are as follows:

> *The learning experiences through our programme assist the students to acquire, practice, and apply subject matter or let's just say knowledge and skills… when implemented thoughtfully; these strategies create the pedagogy of community engagement.*

> *Students invest time and attention and expend real effort because their learning has meaning and purpose.*

> *This type of engagement helps students build a sense of connection to their communities… it challenges them to develop a range of intellectual and academic skills.*

> *Exposing students to CBSL is an excellent tool to link theory to practice... and to authentic knowledge construction.*

Community exposure enriches basic nursing coursework by encouraging students to apply knowledge and analytic tools gained in the classroom to the pressing health related issues that affect local communities.

4.4 SUMMARY OF THE FINDINGS

In summary, the findings of the study reveal that *firstly*, the phenomenon knowledge construction was conceptualised in terms of the activities that the students were engaged with in the communities and in the classroom. Knowledge construction was also conceptualised in terms of the different determinants which were manifested in CBSL programmes including grounding in authentic health related problems, enhancement of academic discourse-dialogue, cognitive coaching (scaffolding), interaction in communities of learners, and active, reflective, collaborative and inquiry-based learning.

Secondly, the conditions that emerged as antecedents or casual conditions leading to the adoption of CBSL programmes in basic nursing education included: (a) the nature of the graduates produced by the traditional curriculum; and (b) the nature of the graduates produced after engaging in the new curriculum.

Thirdly, the categories that provided the context for knowledge construction in CBSL programmes in basic nursing education were: (a) transformation of higher education; (b) transformation of health care system; and (c) transformation of nursing education in South Africa.

Fourthly, the action/interaction strategies for successful knowledge construction in CBSL programmes in basic nursing education included: (a) the nature of the learning environment which were communities as providers of raw content and community environments as settings for testing knowledge constructed; (b) the knowledge construction process included the preparation of students for the knowledge construction process, classroom processes and interactions, and similarities and differences in knowledge construction processes in the two NEIs; (c) the role of the teacher in the knowledge construction process was revealed mainly as a facilitator of class interactions, allowing a large degree of student autonomy, asking relevant questions, scaffolding for successful knowledge construction and encouraging team work; and (d) the role of the student in knowledge construction process was to be adequately prepared, participate in group processes and direct own learning.

Fifthly, the intervening conditions that influenced the success of the knowledge construction process in CBSL basic programmes emerged as facilitative and hindering intervening conditions. The facilitative intervening conditions included: (a) preparedness and orientation of facilitator to the teaching methodology; and (b) facilitator skills and expertise in scaffolding for successful class discussions. The hindering intervening conditions included: (a) unpreparedness of students for class interactions; (b) impact of poor facilitation skills; and (c) lack of capacity building initiatives for facilitators.

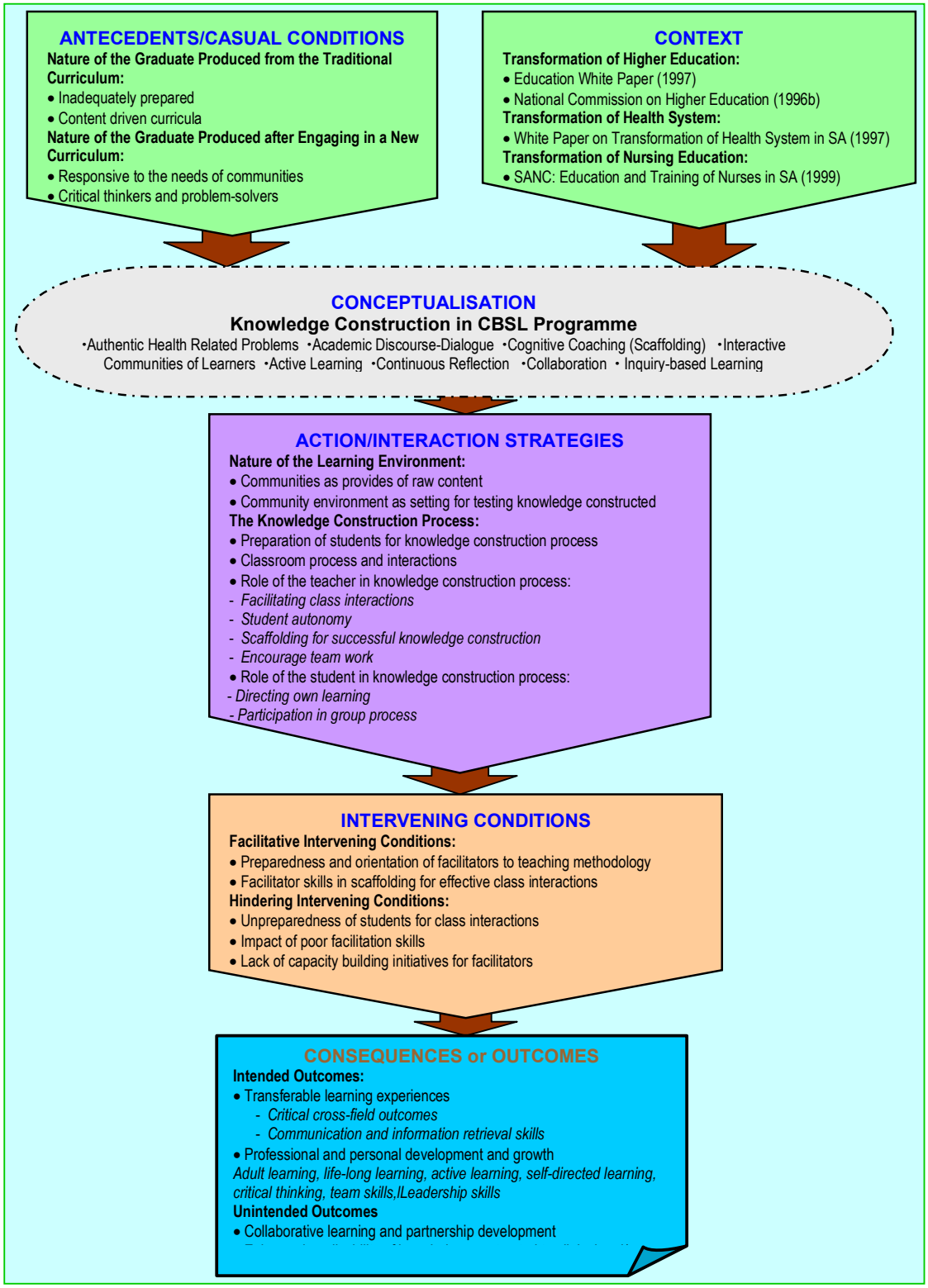
Lastly, the consequences or outcomes that surfaced in this study due to the nature of knowledge construction in CBSL programmes in basic nursing education were categorised into two. The intended outcomes were: (a) transferable learning

experiences which included critical cross-field outcomes and communication and information retrieval skills; and (b) professional and personal development and growth which included adult learning, lifelong learning, active learning, self-directedness, critical thinking, team skills and leadership skills. The unintended outcomes were: (a) collaborative learning and partnership development; and (b) enhanced applicability of knowledge constructed to the clinical and/or community settings.

4.5 CONCLUSION

This chapter presented the main categories and the sub-categories that emerged in this study. The schematic representation of the process of knowledge construction in CBSL programmes in basic nursing education in South Africa is outlined in Figure 4 on page 190. The formation of these categories and subcategories was influenced by Strauss and Corbin's paradigm framework as indicated earlier.

Figure 4: The Schematic Representation of the Conditions for Knowledge Construction



CHAPTER FIVE

DISCUSSION OF THE RESULTS

5.1 INTRODUCTION

In this chapter, the researcher discusses and interprets the results presented in the previous chapter. New literature has been reviewed and is presented in this chapter to expand and fill the gaps in the emerging theory, as stated in Strauss and Corbin (1990) and Stern (2001). Stern refers to a literature review at this stage, as selective sampling of the second body of literature. This literature should be woven into the emerging theory in order to establish the meaning of the findings.

According to Stern (2001), selective sampling of literature at this level of the study adds completeness to the emerging theoretical description of the phenomenon of interest, which in the context of this study is 'knowledge construction' in CBSL programmes in basic nursing education. Tanner and Tanner (2006) add that in educational studies, attaching meaning to what is practiced as education requires more than a '*common sense outlook'* on educational and curriculum matters, it requires philosophical consideration guiding the means and ends of education. Therefore, the discussion and interpretation of findings also draws some concepts from different educational philosophies which appear to be in line with the emerging theory in this study.

The purpose of this study was to explore the processes involved in constructing knowledge in CBSL programmes in basic nursing education and to generate a

middle range theory or model to guide the process of knowledge construction in such programmes in South Africa.

Briefly, this chapter is presented as follows: (a) conceptualisation of the phenomenon knowledge construction; (b) antecedents or casual conditions; (c) the context; (d) action/interaction strategies; (e) intervening conditions; and (f) consequences or outcomes of knowledge construction in CBSL programmes in basic nursing education in South Africa.

5.2 CONCEPTUALISATION OF KNOWLEDGE CONSTRUCTION

This study suggests that knowledge construction is the integration of academic learning with community-based service, as students learn while addressing some of the social and health needs of a community. In this study, this was observed during the community project implementation and evaluation phase. Meeting communities and working with community needs enlightened the students on different cultural, religious and traditional beliefs present in the types of communities where they will be working in the future. The locus of this action must be where people live, work and need to be cared for and not only in the classroom.

For Hammet and Collins (2002), knowledge is viewed as a social phenomenon and is, therefore, socially constructed. It further emerged from this study that the phenomenon knowledge construction in CBSL programmes is manifested by a number of characteristic elements. These elements were observed both in the community and in the classroom settings. Knowledge construction (a) is grounded

in authentic health related problems; (b) enhances academic discourse-dialogue; (c) requires cognitive coaching (scaffolding); (d) is interactive learning that takes place within communities of learners; (e) requires active learning; (f) promotes reflective learning; (g) is collaborative in nature; and (h) requires inquiry-based learning.

Knowledge construction is grounded in authentic health related problems: This study found that the use of authentic health problems from real-life settings is the core in the process of constructing knowledge in CBSL programmes. Knowledge construction, including all other learning activities, both in the classroom and in community settings, revolves around identifying and solving authentic community problems and needs. Lombardi (2007) asserts that authentic health related problems comprise complex learning tasks to be investigated by students over a sustained period of time, requiring significant investment of time and intellectual resources. More importantly, the identified health problems serve as a drive behind the whole process of knowledge construction. This was observed in all the knowledge construction phases in this study where community health needs or problems served as a driving force for learning.

The use of problems as the centre in the knowledge construction process is not new. Dewey (1916) advocated for the use of real-life problems in the curriculum as they promote development of problem solving and critical thinking skills. According to Hmelo-Silver and Barrow (2006), learning through solving real problems promotes practicality and relevance of knowledge constructed. Dewey (1916) also adds that authentic problems make the subject matter relevant and

interesting to the learner, as was also revealed in this study. This means that the construction of knowledge is based on realistic problems and felt needs derived from the communities. Real problems serve as starting points in the process of knowledge construction and dealing with problems is observed throughout the knowledge construction process. Supporting this statement, Callister and Garbett (2000) are of the view that the use of authentic problems makes CBSL a powerful pedagogical strategy that encourages students to make meaningful connections between the content in the classroom and real-life experiences as manifested by the communities. In this study, health problems identified in the communities informed learning in the classroom.

This study revealed that the sources of health problems are authentic learning experiences for students. In line with these findings, Lombardi (2007) posits that authentic learning contexts typically focus on real-world, complex problems and their solutions, using problem-solving activities and participating in communities for practice. An authentic learning environment is similar to the real world application or discipline and it automatically brings into play multiple health disciplines and multiple individual, family and/or community perspectives, ways of thinking, ways of working and ways of learning with and in the community. As stated by Gibbon et al. (1994), it emerged in this study that the process of knowledge construction is activated by triggers which include the need to solve the problems, thereby producing new knowledge at the end.

Knowledge construction enhances academic discourse-dialogue: This study found that the process of knowledge construction is characterized by the exchange

of ideas, viewpoints and arguments as students discussed realistic community-based issues in group processes. The discussions were aimed at finding solutions that were relevant in that particular community context. This is in line with Peterson (2010), who maintains that dialogue between students within a group is critical in building shared meanings and definitions of the problem. Brooks and Brooks (1999) stated that students should exchange their personal views, engage in dialogue and test their knowledge against the ideas of others, create and co-create knowledge based on empirical evidence shared in the group process, and all these elements were observed in this study. For knowledge to be created and co-created, academic discourse-dialogue has to be effective.

Effective discourse during classroom sessions needs to be nurtured not forced, as was observed in this study. During group processes, it emerged that student discourse and dialogue were skills that made their thought processes visible. Discourse allowed assumptions to surface in the discussions and be challenged, and exposed the sources of disagreements which then grew to agreements or consensus, as highlighted in Peterson (2010). Academic discourse-dialogue allowed each student to participate equally and provided a potential solution to problems by all students. As stated by Jonassen (2000), this study found that by providing equal opportunities, all students developed a sense of ownership to newly constructed knowledge and reduced the tendency for them to think uni-directionally.

It surfaced from the results of this study that the interactive nature of processes of knowledge construction enhanced academic discourse, and this is echoed by

Schellens and Valcke (2006). Although Schellens and Valcke's study was on asynchronous on-line discussions, it revealed that the interactive process of knowledge construction enhanced academic discourse. These researchers reported that higher proportions of high phases of knowledge construction were observed during the cognitive interactive processes. Brooks and Brooks (1999) assert that academic discourse helps students change or reinforce their ideas. These researchers state that if students are given a chance to present what they think regarding the ideas of others and are comfortable enough to express their own ideas, then meaningful dialogue will occur; and when meaningful dialogue happens, meaningful construction of applied knowledge takes place (Brooks & Brooks, 1999). Freire (1968) states, *"Without dialogue there is no communication, and without communication there can be no true education."* (p. 81). Being sensitive to the '*silence of the oppressed'* (Freire, 1968), Freire frequently mentioned the problem of silence and monologue (Freire, 1973). He emphasised critical and liberating dialoguing with people (Freire, 1968; Smith, 1979; Waldstein, 2003).

Knowledge construction requires cognitive coaching (scaffolding): The results indicated that the students required guidance, support and coaching from their teachers from time to time, so that they could cope with the learning issues. McLoughlin and Luca (2001) point out that scaffolding is a form of assistance provided to students by a teacher that helps students to perform tasks that would normally not be possible to accomplish by working independently. It is clear that the effect of the teacher is an important one in supporting students. Dennen (2008) is of the opinion that teachers are well placed to provide that support to students

through cognitive coaching. In this study, cognitive coaching, in the form of scaffolding, assumed the form of modelling cognitive skills on the part of the teachers, who emerged as providing systems of research skills development embedded in the inquiry and reasoning skills that were later transferred to new problem solving as stated in Dennen (2008). This study further revealed that scaffolding is, however, weaned off as students gain independence and ownership of knowledge constructed. As stated by Ewell (1997), scaffolding entails the gradual withdrawal of the teacher from the group process, when the students can manage on their own. This was observed in this study towards the end of the semester when students were used to the system. Dennen (2008) emphasises that as the teacher ceases scaffolding, the students take greater responsibility over facilitating the group processes. This requires them to be primary instigators in the construction of knowledge with the teacher gradually handing over the responsibility to them.

Fading of scaffolding during knowledge construction occurs as students gain independence and no longer rely on the support of the facilitator to complete the learning tasks or issues at hand, as posited by Dennen (2008). Dennen is of the opinion that students actively engage at their current level of understanding until the point where the support of the teacher is minimally required. It surfaced from the findings of this study that the facilitators actively and purposefully facilitated the process of learning up to a certain phase of development. Students were then encouraged to move slightly beyond to achieve the next level of learning, where they actively participated in their own construction process.

Knowledge construction is interactive in nature and takes place in communities of learners: The findings of this study reflected that the process of constructing knowledge was not unidirectional from the teacher to student, but as Wenger (1991) explains, it was multi-directional in nature with interactive engagements of the facilitator with the students and/or students with the community members. The students, facilitators and the community members form the communities of learners. Lave and Wenger (1991) are of the view that knowledge construction in communities of learners is embedded in real-world situations in which students function as part of a community, helping to solve real-world problems. It was observed in this study that a community of learners is a group of learners who share common objectives, investigate issues and share what they learn with others in the community or group, thus advancing both their individual knowledge and knowledge of the community.

In the context of this study, members of the community of learners included students, teachers, community members and members from the agencies which included governmental and non-governmental organizations. The study findings revealed that members of this community of learners were learning from each other. For example, community members were found to be knowledgeable with regard to the health related problems existing in their communities and the ways of dealing with them at community level. Collins and Bielaczyc (2007) state that because of the changing nature of health needs in the society, students need to develop ways of dealing with complex issues and dynamic health problems that require different kinds of expertise that no one individual can ever provide. Students, therefore, need to work with and listen to the communities; be able to

learn new things from a variety of resources and people; and be able to investigate, question and bring their learning back to the community as Collins and Bielaczyc (2007) mentioned. Similarly, and in line with the findings of this study, Winberg (2006) is of the opinion that community members have a lot to offer to the students because they are better informed about the health issues and problems prevailing in their settings. Community members are better equipped to judge which interventions and solutions will meet needs in addressing their problems and issues.

It surfaced from this study that as communities of learners, students were able to construct critical knowledge in terms of personal and collective knowledge creation. As pointed out by Smith (2008), communities of learners link together several views from varying bodies of knowledge in such a manner that students have opportunities for a deeper understanding and integration of the material they are learning, and have more interaction with one another and with their teachers as fellow participants in the learning enterprise. Furthermore, Smith acknowledges that knowledge is constructed through the interactive sharing of ideas, constructive discussion and questioning, which implies the active role of all participants who share a common learning goal (2008).

The results of this study revealed that the process of knowledge construction was characterised by the exchange of information between students (student to student), students and facilitators and students, facilitators and community members. They became stakeholders in a learning team, part of the community of learners. In agreement with these findings, Winberg (2006) is of the view that

students learn best when they interact with peers, with community members and with teachers in communities of learners. The teacher, as a member of the community of learners, creates learning opportunities and provides strategies to enable students to communicate effectively with each other and to build relationships with community members to achieve the educational outcomes. The findings of this study revealed that the members of the community of learners have different abilities and skills to engage in a common set of learning tasks or issues, which incorporate their associated contexts, traditions and ways of working, as stated by Winberg (2006). In the community of learners, students collaborate in their groups and share what they know with the rest of the group with the assumption that others will understand and that knowledge can be co-constructed.

Interaction between the students emerged as another important element in knowledge construction. Maor (2007) surmised interactivity as a dialectical relationship existing between the individuals contributing to the knowledge and the social dynamics of the community. Communities of learners engage in interactions in an effort to collaborate and negotiate meaning and to develop informed knowledge. According to Jonassen (2000), when individuals come together, such as in group discussions and/or group processes, their construction of knowledge undergoes continuous revision due to the critical cognitive input of others. As observed in this study, students interacted and negotiated meaning with each other through the creation of a community of learners which gave them opportunities for interaction to co-construct knowledge as stated by Jonassen (2000).

Knowledge construction requires active learning: This study found that CBSL programmes encouraged students' active learning as they identified health problems and deliberately sought solutions for the learning issues at hand. The process of knowledge construction is in itself an active problem-solving process with the emphasis on action by the students. Oliver et al. (2002) assert that learning is achieved by the active construction of knowledge supported by multiple perspectives in meaningful contexts. As was observed in this study, the students actively constructed their own knowledge rather than passively receiving information from teachers and textbooks (Jonassen, 2000). In agreement with Jonassen, Maree, van der Walt and van Rensburg (2009) indicates that knowledge is physically and actively constructed by students who are making their own representations of action in selected learning issues.

This study reflected that active learning techniques were manifested as students actively planned and implemented community interventions of the identified community problems. Stover (2001) is in accordance with the results of this study as this researcher is of the idea that through active learning techniques, students shed the traditional role as passive receptors as they learn and practice how to apprehend knowledge and skills and use them meaningfully.

Knowledge construction promotes continuous reflective learning: It surfaced from the findings of this study that learning from the communities included continuous reflection of students on their experiences. Reflections incorporated all the experiences students brought to class from the community surveys, family

studies and epidemiological surveys. In line with these findings, Edgar Schön, an influential writer on reflection, described reflection as a creative process that organises one's thinking and which happens in two main ways: reflection-*in* action and reflection-*on* action. In this study, students reflected-*in* action as they worked in the communities and with the communities. Students reflected-*in* action to clarify and find solutions to community problems and had to change their ways of thinking to address these new tasks, as stated by Schön (1983). Reflection-*on* action is looking back after the event whilst reflection-*in* action is happening during the event Schön states, *"We reflect-on action, thinking back on what we have done in order to discover how our knowing-in-action may have contributed to an unexpected outcome"* (1983, p. 26). Students reflected-*on* action as they evaluated the community intervention projects and what had been done in order to discover how their knowing-in-action may have contributed to an unexpected outcome, as stated by Schön (1983).

The results of this study further revealed that the process of knowledge construction promoted concrete and prior learning experiences, whereby the identification of community health problems or issues and its interrogation in the classroom facilitated correlation of theory and practice. In line with these findings, Jakovljevic (2002) points out that reflection on learned experience concretely connects an experience to the learning associated with it. Similarly, Jinadu (1992) highlighted that reflection encourages students to explore what they encountered in the environment, promotes deeper construction of knowledge and develops students' skills in working with the health problems identified in the community settings. It emerged from the findings of this study that through continuous

reflection, students thought about and interpreted their experiences as they sought to achieve realistic learning outcomes, a deeper understanding of nursing skills and an understanding of each other. The problems that students identified from the community settings were dealt with in the classrooms with the aim of integrating what was occurring out in the community with the theoretical basis of the discussions in class. Sivan, Leung,Woon and Kember (2000) echo the findings of this study as they indicate that students make connections between community learning experiences, theoretical grounding of the learned experiences, and the real world and its application to community contextual settings. Reflection is the link between learning and service; the ability to step back and be thoughtful and analytical about what one is doing, as stated by Bender (2006a). Bringle and Hatcher (1999) are of the similar opinion that reflection is a crucial element in transforming concrete experience into knowledge.

The results of this study revealed that all students reflected on their everyday experiences, creating a worldview or lens which will determine their future behaviour and strategies of dealing with community issues. Through reflection, academic and democratic solutions were considered and then applied to the problem in the form of community service. In line with these findings, Bringle and Hatcher (1999); Zuber-Skerritt (2002) reveal that reflection is the core component that provides the connection between what is learned in the classroom and the application of that learning to the particular community problem. Construction of knowledge in this present study was as the result of an active process of articulation and reflection within an authentic context. Jonassen (1991)

asserts that knowledge created is a product of the mind and results from an individual's experiences with and interpretations of the context.

Knowledge construction is collaborative in nature: The study findings revealed that through collaborative learning, students constructed jointly and shared their perspectives to reach a deeper understanding of community problems. Students engaged in collaborative discussions and dialogue of learning issues until they reached a common understanding of the issues at hand. The consensus reached was regarded as knowledge in their context. Jonassen (2000) supports this study finding. This researcher posits that knowledge construction in community based learning contexts is collaborative and embeds students in meaningful context. Similarly, Damon (1984) is of the same view that collaborative knowledge construction enhances an active give and take of ideas between students rather than one student passively learning from the other.

Collaborative learning experiences are the ones in which participants discover solutions and create knowledge together. This type of engagement emerged as critical for students to construct knowledge; and more so, as groups through collaborative problem-solving strategies. In line with these findings, many researchers (Stover, 2001; Bradshaw & Lowenstein, 2007) are of the notion that knowledge construction is always discursive in nature and hence, enhanced by collaborated group process. The teamwork among students that occurred through the collaborative process of knowledge construction aided in developing, testing and evaluating different beliefs and hypotheses for posed problems within learning contexts; students were enabled to build new and modify existing

knowledge structures as posited by Stover (2001); Savery (2006) as well as Bradshaw and Lowenstein (2007). Similarly, von Glaserfeld (1996) is of the view that collaborative groups are important because students can test their own understanding and examine the understanding of others as a mechanism of enriching, interweaving and expanding their understanding of particular learning issues. It was noted that other students were the greatest source of alternative views other than own views and played the role of challenging one's current views and, therefore, served as the source of puzzlement that stimulates new knowledge, as posited by Dewey (1938) and von Glaserfeld (1996).

Knowledge construction requires inquiry-based learning: The process of knowledge construction, according to the findings of this particular study, is based on the inquisitive nature of the students. In line with these findings, Dewey (1933) believed that education begins with the curiosity of students. Curiosity in the context of this study was observed as the classroom activities which were student-centred and focused on questioning and probing students for the purpose of stimulating inquisition. Inquiry leads to critical thinking and problem-solving.

Based on Dewey's philosophy of education, Savery (2006) affirms that inquiry-based learning activities begin with a question. Each question is then followed by investigating solutions, creating new knowledge as information is gathered and understood, discussing discoveries and experiences and reflecting on newly-found knowledge. It surfaced that the inquisitive nature of students provided a framework for knowledge creation as students independently gained not only the knowledge and skills, but also the disposition to use those skills, along with an

understanding of their own responsibilities in the communities, as stated by Savery (2006). It was observed in this study that inquiry encouraged a student-led, hands-on approach where students practiced the scientific method of authentic problem solving. In line with these results, Savery (2006) highlights that the students construct knowledge as they become involved in questioning and solving real-life issues in communities, provided such opportunities are made for them. Students lead their own learning through inquiry-based interactions in the classrooms.

In summary, it emerged from the findings of this study that the phenomenon knowledge construction is conceptualised in terms of the activities engaged in by the students, both in the classroom and in the learning setting or context. Knowledge construction in CBSL is also manifested in terms of the different determinants including grounding in authentic health related problems, enhancement of academic discourse-dialogue, cognitive coaching (scaffolding) of students until they are well grounded in the group process and the interaction of students with teachers, other students and community members as communities of learners. In the classroom, there is active learning, continuous reflection, collaborative learning and inquiry-based learning.

5.3 ANTECEDENTS OR CASUAL CONDITIONS

The two categories that emerged as antecedents in this study were: (a) the nature of graduates produced from the old curriculum; and (b) the nature of graduates produced after engaging in a new curriculum.

The nature of graduates produced from the old traditional curriculum: It surfaced from the findings of this study that graduates produced from the old curriculum were inadequately prepared to meet the health needs of the South African population. These graduates possessed content-driven knowledge which was not contextualised and could not be applied in practice. This is because students were mainly placed in hospital settings and had limited or no community learning experiences. Therefore, these graduates failed to transfer knowledge to settings outside the hospitals. In line with the findings of this study, several researchers (World Health Organisation (WHO), 1985; 1993; Mattock & Abeykoon, 1993; Cohen, 1999) point out that the old curriculum is criticised for placing more emphasis on teaching curative aspects of health care rather than health promotion and illness prevention.

In another critical report, Oliver et al. (2001) blames the traditional curriculum approach of teaching and learning for its limitation of not being able to provide personalised learning content that will meet the individual needs of students as well as the community, and this view was supported by the participants in this study. It emerged that the knowledge constructed in CBSL seemed to have the potential of giving students the appropriate content required by them, while at the same time meeting the needs of the communities.

It surfaced from the study findings that in traditional classrooms, students learnt to depend on teachers for their learning direction, goal setting, progress monitoring, self-assessment and achievement. A fundamental limitation of this approach is that students are given little opportunity to conduct and manage their learning

activities, which are important for knowledge construction. Echoing these findings, Julie, Daniels and Adonis (2005) are of the opinion that higher education institutions face enormous challenges in preparing graduates to function effectively as professionals in a rapidly changing health care system and they report that there has been a growing interest in context-based knowledge. Julie et al. (2005) stated that CBSL, therefore, provides higher education institutions with a strategy to explore ways of enhancing student achievement by engaging them in their communities as part of their academic curriculum.

The community based context in the study provided a platform for the interconnection between the students and the knowledge of the real world. It has been highlighted in this study that the information acquired from the traditional curriculum does not adequately equip the graduates to meet the needs of communities, either in primary health care (PHC) settings, or in the broader social context. Cohen (1999) associates this problem with the setting that was mainly used by traditional programmes for clinical learning. According to Cohen, the hospital setting focuses on the curative nursing aspect and has limited exposure to wider aspects of health, thus limiting students in addressing the wider social, economic and political forces affecting community health. This researcher indicated that the main problem was the irrelevance of the information given to students in the broader social context.

The participants in this study confirmed that the traditional curriculum was content-driven and teacher-directed thereby limiting students from actively engaging in the process of constructing context-driven knowledge. The rational

for a curriculum of this nature was that large amounts of content needed to be covered in the classroom. Ironside (2001) posits that such a curriculum cripples the development of active learners. This author is of the view that in such programmes, the most commonly used method of teaching was the lecture method. The traditional programmes limited students to a hospital setting which, according to Oliver et al. (2002), provided only a narrow view of health problems. Similarly, Fichardt et al. (2000) maintained that the traditional methods of nursing education and teaching deprived students of the opportunities to develop problem solving and critical thinking skills, the skills which, according to Refaat, Nooman and Richards (1989), are crucial in practice and for a community-oriented graduate. Roberts (2003) is of the opinion that content-based curricula do not allow students to grasp the relationship between content and real-life situations. Asserting to Roberts (2003), Carr et al. (2005) are of the view that CBSL is the expanded approach to nursing education that equips students with the necessary skills, knowledge and attitudes to meet community needs, as indicated in the findings of this study. The content-based curriculum was aimed at the mastery of knowledge as the topics of a subject are unpacked into a syllabus. Sources of information were mainly textbooks and lecturers, as pointed out by Oliver et al. (2002).

The nature of graduates produced after engaging in a new curriculum: The findings of this study indicate that the nursing profession is in need of critically thinking professionals. The NEIs were under pressure to produce graduates who would be able to use sound clinical judgment and participate as full partners in shaping the policy and delivery of health-care in this country. In line with the

findings of this study, Carr et al. (2005) indicate that the health-care climate is rapidly changing in ways that challenges the abilities of the professionals who provide health care. Carr et al. (2005) reveal that the nursing profession needs graduates who have an awareness and sensitivity of the lived experiences, human conditions and community needs, and this can be achieved with the new curriculum.

The focus for the nursing profession has been on producing students who are constructors of their own knowledge in a context which is similar to the context in which they would apply that knowledge. Tiwari et al. (2005) argue that with the constantly evolving community health needs, it is essential that graduating students are well equipped to be flexible, adaptable and be prepared to take responsibility for the needs of the communities and for their own learning. It is suggested in this study that it is vital to ensure that students develop the necessary nursing skills and it is the responsibility of the NEIs to develop teaching and learning methodologies that actively encourage students to be autonomous, independent and motivated. Meyer (2007) asserts that there is a need for a paradigm shift in the concept of higher education from the concept of providing instruction to students to one of promoting self-directed and active learning.

Nursing should aim at producing active students who, guided by adult learning principles, are able to work together in teams, solve problems collaboratively and be self-directed as indicated in Maor (2007). Many other researchers (Fichardt et al., 2000; Mogale & Botes, 2001; Gwele, McInerney, Van Rhyn, Uys, & Tanga, 2003; Lekalakala-Mokgele & du Randt, 2005) also echo the findings emanating

from this study that the graduates produced after adopting the new curricula in the basic nursing programmes in South Africa are assertive, scientific thinkers and lifelong learners capable of addressing the changing health-care needs of communities.

The need for autonomous nurse graduates who are capable of making critical decisions and standing on their own cannot be more emphasised. In support for the need of an autonomous nurse practitioner, Haith-Cooper (2003) and Rideout (2001) affirm that the new programme in basic nursing training appreciates the potential of community-based education as an appropriate andragogic technique to develop such nurses. For Haith-Cooper (2003) and Rideout (2001), nursing education programmes are mandated to produce graduates who can explore options, who are articulate and who have the capacity to develop appropriate strategies, based on their reflective decisions.

The nature of the process of knowledge construction in CBSL programmes in basic nursing education is to produce graduates with a strong sense of responsibility for widening their own learning and who are adaptable to change and innovation, as indicated in the results of this study. In a study of the outcomes or effects of community service learning by Tiwari et al. (2005), it was revealed that motivation to learn, self-direction in learning, active, interactive and student-centred learning, and enjoyment of learning were increased amongst the students in the innovated community service learning programmes, and this is consistent with the findings of this present study.

5.4 THE CONTEXT

This results of this study reflected that the political changes in South Africa in the 1990's are considered to have been the most critical forces in the process of transformation in nursing education. In line with these findings, Ornstein and Levine (1997) are of the notion that education is generally highly influenced by social and political changes. Bender (2006a) makes a similar point that the political changes in South Africa, post apartheid era, resulted in the adoption of an educational system that will respond to the needs and demands of a changed society. These changes of a democratic South Africa have had an impact on the health care delivery system as well as the preparation of the graduates to serve in the new health care system. Uys and Gwele (2005) assert that the changes in the health care delivery system in South Africa necessitated a different kind of health care professional who would be responsive to the health needs of the community, as found in this current study. The findings of this study revealed that the contextual factors for knowledge construction in CBSL are: (a) transformation in higher education; (b) transformation in the health care system; and(c) transformation in nurse education in South Africa.

5.4.1 Transformation of Higher Education in South Africa

It surfaced from the findings of this study that different educational policies affected decisions of the educational system in the country to initiate a move towards CBSL programmes, especially in higher education institutions (HEIs). The Education White Paper and the National Commission on Higher Education (NCHE) were the greatest forces in motivating the NEIs to change over to CBSL programmes. In line with these findings Seale, (2008) is of the opinion that various factors such as political driving forces and visionary leadership in HEIs

led to the initiation of CBSL programmes in HEIs. The Education White Paper on the Programme for Higher Education Transformation and the National Commission of Higher Education (NCHE) in South Africa formed the dimensions under this sub-category.

The Education White Paper on the Programme for Higher Education Transformation: As revealed in this study, the policy document, namely, *Education White Paper No. 3 of 1997* laid the foundation for the inclusion of CBSL in HEIs. This white paper on the transformation of higher education articulates the multiple purposes of higher education which include the need for higher education institutions to contribute to development and critical citizenship. It further stipulates that education programmes should strive to promote an awareness of social and economic development in the sphere of highest education, as suggested by Lazarus (2005b). Bender (2006a) affirms that in accordance with the education white paper, CBSL programmes are expected to promote an awareness of the role of higher education in social and economic development and broaden participation in social interests and needs. Similarly, many other researchers (Fichardt et al., 2000; Reddy, 2004; Lekalakala-Mokgele & du Randt, 2005; Lazarus, 2007; Lazarus et al., 2008) further acknowledge CBSL as an ideal pedagogy to promote such awareness.

According to Reddy (2004), the Higher Education White Paper 3 (1997) emphasises the goals that: *"...social responsibility and awareness amongst students of the role of higher education in social and economic development through community service programmes;... producing skilled graduates who are*

competent in critical, analytical and communication skills to deal with change, diversity and tolerance to opposing views…" (p. 37). CBSL provides a unique opportunity for students to internalise their knowledge and to recognise the value it has for the community and society (Lazarus, 2007).

National Commission of Higher Education (NCHE) in South Africa: The findings reflected that the NCHE highlighted the need for all HEIs to incorporate CBSL components in their programmes. The imperative from the NCHE was that all HEIs, including health professional education institutions, should revise their curricula in order to equip graduating students with comprehensive knowledge, skills, competencies and attitudes to be responsive to the needs of the South African population (Lazarus, 2007). Fichardt et al. (2000) are of the same opinion and explained that the NCHE called for a shift from content and teacher-centred curricula to outcomes-based curricula.

The outcomes-based outcomes, according to Mogale and Botes (2001), cannot be achieved using the traditional teaching methods, but can be achieved by learner-centredness, as revealed in the findings of this present study. The HEQC documentation provides a definition of community engagement as initiatives and processes through which the expertise of the institution in the areas of teaching and research are applied to address issues relevant to its community needs through formal and structured academic programmes. Lazarus et al. (2008) state that in reality, this meant contextualising learning and narrowing the gap between curricular content and the realities of health-care practice, as in CBSL programmes.

The programme of CBSL is reported as a typology of community engagement programme (NCHE, 1996b; Lazanus, 2006; Lazarus, 2007). It was revealed in this study that CBSL is embedded in South African policy documents such as the Green Paper on Higher Education Transformation (1996), the White Paper on Higher Education (1997), the National Plan for HE (2001), the Founding Document of 2001 of the HEQC of the CHE, the HEQC Criteria for Institutional Audits (2004) and the HEQC Criteria for Programme Accreditation (2004). The Founding Document of 2001 of the HEQC has identified knowledge based community service as one of the three areas along with teaching and learning, and research for the accreditation and quality assurance of higher education, as explained by Lazarus et al. (2008).

The HEQC incorporated community engagement and its service-learning component into its national quality assurance systems in the document HEQC (2004a). In June 2004, the HEQC released its criteria for institutional audits, including criteria on service-learning (criterion 7) and community engagement (criterion 18). In November 2004, the HEQC released its criteria for programme accreditation, including minimum requirements for community service-learning (criterion 1) (HEQC, 2004a), as indicated by Lazarus (2005b).

5.4.2 Transformation of the Health Care System in South Africa

The results of this study reflected the impact of country's political change on the health care policy and the implementation of the new Health Care System post 1990. There was a demand that health professional education institutions should

change their teaching methodologies to accommodate problem-solving and primary health care (PHC) paradigms (Julie et al., 2005). At that point in time, the NEIs were running programmes that were hospital oriented with very limited PHC aspects in the curriculum. Fichardt et al. (2000) indicate that the former nursing education programmes were primarily hospital-based and the health care needs of communities were not considered as important variables in the planning of programmes at the NEIs. The National Health System (NHS) provided the context for the introduction of CBSL as explained by Fichardt et al. (2000) and Julie et al. (2005).

It became evident in this study that the NEIs had to respond to the changes and national policies of the country. This was confirmed by Fichardt and du Rand (2000) who pointed out that the global movement towards health-for-all by the year 2000 augmented the need for change in the South African health system which then adopted a PHC approach as a national health care delivery system. The NEIs had to transform and renew their educational enterprise by linking the classroom to the world praxis as suggested by Julie et al. (2005). This was achieved through CBSL programmes that allow nursing students the opportunities to meet community needs while developing the core values of the profession as well as their own competencies. Through modelling of the professional values, Julie et al. (2005) is of the opinion that the students get an opportunity to meet community needs and thereby contribute to the greater needs of society in the process, which is in line with the findings of this study.

5.4.3 Transformation of Nursing Education in South Africa

This study found that over the past years, nursing education in South Africa was increasingly under pressure to focus on developing nurse graduates who were fully prepared to work in rapidly changing, multicultural environments influenced by technological advances and fiscal constraints. To meet these challenges, the findings revealed that a paradigm shift was necessary in teaching strategies. In line with these findings, Fichardt and du Rand (2000) state that the SANC emphasised teaching strategies that would ensure that students take responsibility for their own learning and become independent, self-directed and lifelong students. Many NEIs responded to the call by SANC and SAQA for innovative educational programmes by introducing community-based education (CBE); problem-based learning (PBL) and case-based learning (CBL) in an attempt to develop lifelong and self-directed learners (SANC, 2001).

This study found that NEIs required their students to be actively involved in the process of knowledge construction and to be critical thinkers. The contextual situational analysis depicts that nursing practice needs an independent practitioner who is a critical thinker and good problem solver. The SANC (2001) indicates in its philosophy that the development of critical analytical thinking is essential to the nursing students. A possible solution to this national imperative and need of critical thinking nurses was the implementation of CBSL programmes using PBL and/or CBL within a community-based education model as teaching strategies (SANC, 2001). This study finding indicated that the knowledge constructed in such teaching strategies is enhanced and immediately applied to authentic contexts. In line with these findings, Mogale and Botes (2001) assert that

problem-solving methodologies to teaching and learning are characterised by the use of client's problems as a context for students to learn problem-solving skills and acquire knowledge about basic clinical nursing sciences. Students are stimulated to develop the capacity to interpret scientific data for nursing actions, make inferences and draw conclusions as indicated by the SANC (2001) and SAQA (2002). The SANC further states that the education and training of nurses shall be directed specifically at the development of the nurse on a personal and professional level and that the principle of learning leads to behavioural change in the cognitive, affective and psychomotor aspects through active involvement of the student nurse.

The synopsis of the context for knowledge construction in CBSL programmes is based on the response of NEIs to national policy imperatives. It can be concluded that CBSL is a responsive education programme, a political instrument that has influenced not only a change in the country's health system, but a change in nursing education as indicated by the innovative nature of the programmes run by the education institutions. The processes of knowledge construction were also reviewed so as to produce graduates who will be able to respond to the needs of the communities. The CBSL programmes in basic nursing programmes are relevant and responsive methods of education in that they emerged as a response to the needs of the surrounding communities, the needs of the South African population at large as well as a response to national policies in South Africa, which were aimed at transformation for the improvement and relevance of nursing education (SANC, 2001; SAQA, 2002).

5.5 ACTION/INTERACTION STRATEGIES

The action/interaction strategies for knowledge construction in this study were those actions that enhanced knowledge construction in CBSL programmes in basic nursing education. These strategies were: (a) the nature of the learning environment; (b) the process of knowledge construction; (c) the role of the teacher; and (d) the role of the student.

5.5.1 The Nature of the Learning Environment

It surfaced from the results of this study that the nature of the learning environment was an important determinant of the relevance of the CBSL programme. For knowledge to be constructed it was reflected in this study that the clinical learning environment should have certain characteristics. Students were exposed to real life community settings with diverse learning experiences and the settings provided raw curriculum content that allowed context-driven knowledge to be produced, which eventually formed the curriculum content. In line with these findings, Haque (2002) asserts that the community settings provide fresh, up to date realistic learning experiences, which are refined by the students with the help of the facilitator during classroom interactions. This means that the process of knowledge construction begins in the communities and is taken to the classroom, as indicated in this study. In support of these findings, Savery and Duffy (1995) are of the opinion that real-life problems form the organizing focus and stimulus for knowledge to be constructed, the community problems are the development of clinical problem-solving skills and new information is acquired through self-directed community-based exposure.

This study reflected that authentic community settings exposed students to lived dynamic community contexts. These community-based learning contexts taught students about the socio-political, economic and cultural factors that influence health. In line with these findings, Thistlethwaite (2000) states that the understanding of all the aspects of community health gives a complete holistic view of the individuals, families and community, and of health and illness to students. As students were reported to be learning by exploring these issues, they developed a better understanding of them, which equipped them to deal with such problems and/or issues during knowledge construction.

Thistlethwaite (2000) indicated that having real communities as these sources of the curriculum context ensured that knowledge constructed is relevant to the primary needs of the communities as consumers of health care services. Echoing these views, Jonassen (2000) highlights that the construction of knowledge is *"viewed as something directly created, discovered and experienced in the communities"* (p. 58). What was regarded as knowledge in CBSL programmes, according to the findings of this study, was generated mainly from the community problems and needs, as indicated by Jonassen (2000). This generated knowledge is described as grounded, authentic, contextualised and constructed with information to give a holistic view of an issue of interest. The characteristics of the nature of the learning environment in this study were: (a) the communities as providers of raw content; and (b) community environments as settings for the testing of constructed knowledge.

Communities as providers of raw content: The findings of this study suggest that the selection of communities as clinical learning sites was an important aspect for the process of knowledge construction in CBSL programmes. This is because of the belief that the nature of the graduate produced is predicted by the clinical learning site used. According to Aziz, Kazi, Jahangeer and Fatmi (2006), medical and other health professional education is influenced by the training settings where students can observe and master defined competencies that are relevant to serving in those clinical learning settings. The findings of this study further revealed that community learning environments provided rich and diverse learning experiences for students that enhanced active learning and promoted students' investigation and learning of community problems within authentic contexts. Aziz et al. (2006) agree that community environments encourage the growth of the students' responsibilities, initiative, decision-making and intentional learning, and cultivate collaboration amongst the students.

In order to confront real-life problems, Savery and Duffy (1995) recommend that the curriculum should incorporate the relevant applications of knowledge whereby the students can develop necessary insights and clinical judgements which take account of that knowledge. According to Savery and Duffy, real-life problems form the organizing focus and stimulus for learning, the problems stimulate the development of clinical problem-solving skills and new information is acquired through self-directed community-based exposure. Of the same mind, Eyler and Giles (2002) reveal that one characteristic of authentic community service-learning experiences is that *"they offer opportunities to engage in problem-solving by requiring participants to gain knowledge of the specific context of their*

community learning experiences and community challenges, rather than only to draw upon generalized or abstract knowledge such as might come from a textbook" (p. x). Eyler and Giles (2002), furthermore, highlight that each of the vignettes in the community shared a common element of being appropriately context driven and challenging to the students. This is supported by the findings of this study which revealed that students engaged in challenging community issues to find relevant interventions and solutions to the identified problems.

Community environments as settings for testing constructed knowledge: It was made apparent from the findings of this study that knowledge construction was taking place beyond the confines of the classroom and hospital settings as students were receiving their training in authentic community sites. In support of these findings Aziz et al. (2006) are of the opinion that such exposure enhances the development of a deeper knowledge of the needs of the vulnerable and underserved groups. Similarly, Hamad (2000) is of the view that the understanding of all the aspects of community health gives students a complete, holistic view of the clients and of health and illness. According to this researcher, the community environment provides a comprehensive and more preventive and promotive approach to health issues.

This study revealed that the students explored various issues within the communities in which they had been placed and developed a better understanding of them, which equipped them to deal with many of the health problems and/or issues. It is suggested in this study that what is regarded as knowledge in CBSL programmes is, in fact, generated mainly from the community problems and

needs. This knowledge can be described as grounded, authentic, contextualised and constructed with information to give a holistic view of an issue of interest (Magzoub & Schmidt, 2000; Hamad, 2002; Aziz et al. 2006).

A number of researchers concur with the view that a community forms the source of the curriculum content (WHO, 1993; 1997; Cohen, 1999; Magzoub & Schmidt, 2000; Hamad, 2002). These researchers posit that the relevance of the curriculum is mainly determined by the curriculum's orientation to the community problems as it emerged in the findings of this study. Along the same lines, Smith (2008) describes a community-oriented curriculum as a contextualised curriculum, in that it is based on the needs of the surrounding community. Smith further argues that knowledge construction in community settings is dynamic and yet applicable, because of the changes taking place in the community and that the knowledge constructed in such community-oriented settings is likely to be current and up to date and depends on the prevalent or primary problems in the surrounding community, as found in this study. Also relevant to the findings of this study, Jonassen (2000) observes that when students solve authentic problems or learn complex knowledge in rich settings and construct their own solutions, it leads to the most effective construction of knowledge experience.

5.5.2 The Process of Knowledge Construction

Central to the process of knowledge construction, it surfaced from the findings of this study that there was a sharing of thought processes when students worked in groups. In groups, students tried to reach a shared understanding by means of interactive academic dialogue that led to collaborative construction of new

knowledge. In line with these findings, Visschers-Pleijers, Dolmans, de Leng, Wolfhagen, and van der Vleuten (2006) are of the view that knowledge construction is stimulated by the nature of students' interactions with persons and objects in their environment. These researchers maintain that students should be given the opportunity to discuss issues from differing points of view and engage in collaborative problem solving activities (Visschers-Pleijers et al., 2006).

The findings revealed that students worked in groups to discuss, debate and solve health related problems or issues identified in community settings. Academic discourse enhanced the process of knowledge construction through the exploration and investigation of learning issues that were open-ended enough for different responses and solutions to be possible. Freire (1970; 1995) believes that education is a process of continuous group discussion in a form of dialogue that enables students to acquire and construct collective knowledge that they can use to change society. In the context of this study, students were asked questions to help them identify the problems facing the communities and during the knowledge construction process, students discovered ideas and/or created symbols that explained their life experiences to encourage the analysis of prior experiences and society as basis for new academic understanding, social action and conscientization. The subcategories in process of knowledge construction include: (a) group process; (b) use of prior knowledge; (c) role of the teacher and; (e) role of the student during the process of knowledge construction.

Group process*:* This study reflected that through group processes, students engaged in dialogue as problem solvers, who analyzed and got to the root of

problems and/or learning issues and identified the conditions needed for a good solution, pursuing meaning and understanding of the learning issues at hand. According to Visschers-Pleijers et al. (2006), knowledge construction is based on the learning issues which are used to engage students such as activities, problems and interactions.

It emerged from this study that the learning issue(s) or problem(s) that were analyzed during the group process were collaboratively reviewed by the whole group. Duffy and Canningham (1997) affirm that students identify learning needs or outcomes in relation to the learning issues at hand and are of the opinion that the fundamental role played by the learning issues is in determining how students will engage in group processes and the forms of knowledge construction that will take place. Similarly, Albanese and Mitchell, (1993) echoed the sentiment that learning issues are the questions that students pose that delineate aspects of the problem that they have to understand. Boud and Feletti (1997) assert that the learning issues help to generate and focus class interactions. In their opinion, students are continually encouraged to define what they know, and more importantly, what they do not know, as was revealed in this study.

It became apparent from the study findings that the group processes were theme-oriented and context-oriented, with the facilitator merely guiding the discussion process to ensure that the focus of the dialogue remained on the theme or learning issue at hand, and was not diverted to other unrelated issues, as also mentioned in Gibbon et al. (1994).

The results of this study indicated that the process of knowledge construction was activated by triggers, these being the problems that required solving. Gibbon et al. (1994) affirm that triggers direct the problem-solving process until new knowledge is produced at the end of the process. The study revealed that the students did follow a process in class. They first ranked the learning issues in order of priority and then decided what resources would be needed to research the learning issues and where they could be found. When students reconvened, they explored the previous learning issues, integrating their new knowledge into the context of the problem, as highlighted by Albanese and Mitchell (1993). These researchers emphasize the point that students should be encouraged to summarize their knowledge and connect new learned concepts to old ones.

The findings reflected that the discussions and arguments were based on scientific or research-based literature to ensure that the end product of the knowledge constructed would be academically sound and informed. Peterson (2010) is of the opinion that the process of knowledge construction should allow students to brain-stream; a procedure that sequentially solicits ideas pertaining to a problem from group members. He argues that brainstorming involves a random solicitation of information that tends to favour the more verbose and quick thinking individuals, whereas brain-streaming, which is the preferred strategy, allows all group members equal opportunity to participate in idea generation, as was indicated in the findings of this study.

It also surfaced that through the process of knowledge construction, students worked in collaborated groups where they organized their ideas and previous

knowledge related to the problem in an attempt to define the broad nature of the learning issues. Students continued to define new learning issues as they progressed through the problems which had been identified in the community. It became evident that collaboration led to the creation of new knowledge as individual students pooled their knowledge and learned new skills. In line with these findings, Jonassen (1991) suggested *"the focus on knowledge construction, not reproduction… presentation of authentic learning tasks… (that) provide real world community case-based learning environments… (that) foster reflective practice and enable context and process dependent knowledge construction… (that) support collaborative construction of knowledge through social negotiation, and not competition among learners for recognition"* (p. 35).

The findings indicated that the group process was seen as a natural extension of students' ability to learn from the community experiences so as to construct applicable knowledge. In support of these findings, Hammet and Collins (2002) are of the notion that as students debate and argue in groups, their arguments and questions can stimulate them, or their group members, to hypothesize, predict and generate explanations of the issues which puzzle them and to reflect on their own ideas. According to Chin and Chia (2004), this can engender productive discussion in class, which in turn leads to meaningful knowledge construction. These authors are also of the notion that knowledge construction implies that students learn better when the content is related to real-life issues that they can identify with, as indicated in the results of this study which revealed that students were constructing knowledge by interacting with the environment and with each other and with the environment (Zemelman, Daniels & Hyde, 2005). The results

of this study revealed that in the classroom, knowledge construction took place by discourse dialogue which referred to engagement with community experiences that were fed by the concrete learning experiences student had been exposed to in the community settings. In line with these results, Dooley (2009) assert that classroom conversations about given situations or experiences stimulate students' thinking and reflection on practices observed in the community and their responses to these are essential for knowledge to be constructed.

To reiterate, it surfaced from the results of this study that during the process of knowledge construction students engaged in discussions as a form of group process. During these engagements, students were required to examine the learning issue(s) on hand by collecting, recording and analyzing data; formulate and test hypotheses; reflect on previous understandings; and construct their own meaning in relation to what had been observed in the communities. In line with these findings, Jonassen (2000) states that the construction of knowledge is the result of an active process of articulation and reflection in context. The knowledge that is constructed by students is the product of their deliberations, and results from the individual's experiences with, and interpretations of, the context. The contexts in this particular study were those experiences that students had encountered in authentic community environments. Students had, therefore, constructed knowledge by making their own meanings from what they had experienced rather than from learning them out of context.

Use of prior knowledge: This study results revealed that students used prior knowledge in an attempt to analyze, explain and find solutions to learning issue(s)

at hand during group process. In accordance with these findings, many researchers (Hammett & Collins, 2002; Lazarus, Erasmus, Hendricks, Nduna & Slamat, 2008) indicate that students create knowledge in relation to what they already know and believe. Furthermore, Jonassen (2000) points out that students use their own experiences to construct understandings that make sense to them. The knowledge construction activities put students in the context of what they already know, and they can apply their understanding to authentic situations. Chin and Chia (2004) affirm that knowledge construction implies that students learn better when the content is related to real-life issues that they can identify with. Students determine and explore what they already know and what they need to know in order to advance their understanding of the learning issue(s). Lankard (1998) affirms that during the process of knowledge construction, students have an opportunity to share their knowledge and understanding of their community experiences with one another, noting ways in which their learning experiences were meaningful to them.

In support of Lankard, Jonassen (2000) states that solving authentic problems allows students to apply meaningful knowledge in realistic settings. Hammett and Collins (2002) are of the opinion that during academic discourse, students construct new knowledge by making connections between former experiences and each other's ideas. These researchers stipulate that the classroom discourse is said to be sequentially organized by virtue of the fact that the moves combine into exchanges, exchanges combine into sequences and sequences combine into longer episodes of discussion related by a common subject-matter. In this particular study, the learning issue(s) at hand were at the centre of the discussions.

5.5.3 The Role of the Teacher in Knowledge Construction Process

The dimensions that emerged under this sub-category include: (a) facilitating class interactions; (b) allowing for student autonomy; and (c) scaffolding for successful knowledge construction.

Facilitating class interactions: It became evident from this study that the role of the teacher was not to convey knowledge and teach as a content expert, but to encourage student-to-student interactions and to facilitate the process of knowledge construction. In support of these findings, Murray and Savin-Baden (2000) are of the opinion that the facilitator's role in class is to encourage wide debate around the issues raised by the trigger and to assist the group to identify individual and group learning needs. The observation in this current study was that the role of the facilitator was to support, challenge and guide the student in exploring, trying out and verifying the knowledge that has been generated from group sessions and shared cognitions. Maree et al. (2009) make a similar point that the facilitator should assist the student to construct knowledge through dialogue, discussion and negotiation with others until shared meanings are established.

This results of this study highlighted that the major role of the teachers was their ability to use facilitory teaching skills during knowledge construction. In affirmation of these findings, Rovai (2004) states that facilitory teaching skills are the skills embodied by educators during knowledge construction that allows students to expand their thinking capabilities and make connections with prior

knowledge for meaningful creation of knowledge. Barrows (2003) is of the view that students can be taken to the edge of their knowledge and skills and be assisted to build a bridge to the next level through teacher's facilitative strategies. These suggestions are in line with what has been reflected in the results of this study.

This study also revealed that during the group process, facilitators modelled higher order thinking by asking questions which deeply probed students' knowledge. In line with this finding, Barrows (2003) is adamant that the teachers' interactions with students should be at a metacognitive level. Functioning at a metacognitive level requires the teacher to encourage students to think critically and creatively and to monitor their own understanding. Teachers, according to Barrows, should challenge students' thinking and constantly ask questions like: *Do you know what that means*?; *What are the implications of that*?; and *Is there anything else*? Barrow's views are that superficial thinking and vague notions should not go unchallenged in class.

This study revealed that it was the responsibility of facilitators to constantly challenge students' thinking until common understanding was reached in class and meaningful knowledge constructed, as stated in Maree et al. (2009). Gibbon et al. (1994) argues that the facilitator acts as a cognitive coach who guides the discussion process to ensure that the focus of the dialogue is on the theme or learning issue at hand, and not diverted to other unrelated issues. The findings of this study revealed that the role of the facilitators is crucial in ensuring that the group process is not manipulated to reach an agreement on the issue, but that the questions asked by the group members to each other, directs the emergence of

clarified meanings until all viewpoints are accurately understood and accepted by all members of the group and not only the views of dominant members, as stated in Gibbon et al. (1994).

Student autonomy: The results of this study reflected that teachers, as facilitators, promote a large degree of student autonomy. The findings revealed that teachers let the groups solve problems without hints and only used questions to promote student thinking. In line with these findings, Hmelo-Silver (2004) suggests that flexible knowledge is constructed by using problem-solving approaches and, consequently, a high rate of student autonomy may be expected when these approaches are implemented. This author argues that the facilitator should carry out essential facilitation actions by guiding the learning process of the group by probing, prompting and questioning. Tan (2005) affirms that the guided discussions of the students are based on information that the students have gathered, analyzed and synthesised from a variety of sources that they themselves have identified, accessed and brought to class for their own use. Chin and Chia (2004) assert to this self-directedness of students and state that students may consult expert professionals, look up information from print and electronic resources, using both library searches and the internet. Facilitators are not used by students as resources of knowledge in class, but as consultants.

The findings of this study further indicated that the role of the teachers was to create supportive learning communities and to provide strategies to enable effective communication between students. Several researchers (Schmidt, 2000; Boud & Feletti, 2001; Tan, 2005) have a similar point of view and maintain that

the students become increasingly responsible for their learning, giving them more motivation and a greater feeling of accomplishment, thus setting the pattern for them to become successful leaders in the learning process. Oliver et al. (2001) are of the notion that the teachers, in turn, become mentors and evaluators, guiding the students in their problem-solving efforts, as it emerged in this study finding. It also emerged that facilitators became problem-solving colleagues to the students. Oliver et al. (2001) claim that facilitators are seen as modelling interest and enthusiasm for knowledge to be created and also act as cognitive coaches who nurture an environment that supports open inquiry.

Scaffolding for successful knowledge construction: It surfaced from this study that the teacher in knowledge construction was seen as meta-cognitive coach who facilitated the learning process. Through scaffolding, the teacher guided students from what was unknown to what was known. Tan (2005) supports these findings stating that the teacher is an enabler and promoter of the learning process and leads the class discussion to ensure that specific learning outcomes are met by the end of a particular classroom session. In this study, it was observed that during the first few group sessions, the role of the teachers was to challenge both the level of understanding and the relevance and completeness of the issues studied. Gradually however, the students took over this role themselves as they become effective self-directed creators of own knowledge, as pointed out by Barrows (2003). Similarly, Ewell (1997) emphasizes that *"learning occurs best in a natural and cultural context that provides both enjoyable interaction and substantial personal support through scaffolding"* (p. 54).This confirms the findings that learning occurs best in a context where a group of students engaging with a compelling

problem interact amongst themselves, whilst the facilitator guides the whole knowledge construction process through scaffolding.

It surfaced from the findings of this study that teachers no longer play a didactic, transmission-oriented role, but rather a role that facilitates, actively guiding the learning and challenging the thinking of their students. Many researchers concur with these findings. (Boud & Feletti, 2001; Hmelo-Silver, 2004; Tan, 2004; 2005) indicate that in this role, the teacher functions to assist the student in learning content and on focusing their thought processes by asking relevant open-ended questions. Chin and Chia (2004) posit that open-ended questions not only force students to expand their thinking, but also generate new questions, new answers and new ideas. Tan (2005) makes a similar point that the teacher encourages students to learn via a guided discovery approach. According to Tan, guided discovery learning is a learner-centered approach that combines didactic instruction with more student-centered and task-based approaches. It is a method of inquiry-based instruction that believes that it is best for students to discover facts and relationships for themselves (Tan, 2005). According to Bruner (1967) discovery learning takes place in problem-solving situations where the students draw on their own past experience and existing knowledge to discover facts and relationships, and new truths during the process of knowledge construction. Reichert (2005) echoes Bruner's (1967) views of discovery learning. Reichert points out that guided discovery is characterized by convergent thinking. These theories give confirmation to the findings of this study in which the teachers logically questioned students, step by step, guiding the students in making a series of discoveries that led to the achievement of solutions to the learning issues.

The findings further revealed that the role of teachers during the knowledge construction process was to lead the students towards reflective discussions that promoted critical thinking and a more comprehensive understanding of learning issues. In line with these findings, Seale (2008) asserts students should be academically supported by the teachers in executing complex community project or tasks. Seale states that the teachers expose students to community problems and have the role to monitor student exploration, guide the direction of student's enquiry and promote new patterns of thinking, as observed in this study during the group process.

5.5.4 The Role of the Student in the Process of Knowledge Construction

The dimensions under this sub-category were (a) directing own learning; and (b) participating in group process.

Directing own learning: The findings of this study indicated that students' roles involved preparing for the group sessions and participating in the group process. Students were expected to review literature relevant to learning issues prior to the group process. It became evident that it was essential that students read and considered the issues, perceptions and possible courses of action before coming to class for an interactive class discussion. Students were expected to participate actively in the process of learning rather than passively taking notes quietly. In line with these findings, Price (2003) and Wolff (2000), assert that students have roles and responsibilities in class processes. Wolff (2000) states that students should explore the problem or learning issue at hand so as to clarify terms and

concepts that they do not understand. According to Price (2003), students have to identify what they already know and what is pertinent in regard to what is being explored or will be explored in class. Furthermore, students have the role to identify what they do not know. As a group, they are expected to prioritise their collaborated learning needs, set learning goals and outcomes and allocate resources. They are expected to engage in a self-directed search for knowledge and return to the group to share the new knowledge effectively so that the whole group can learn from the information. They are expected to apply the knowledge and integrate the knowledge acquired into a comprehensive explanation and then reflect on what has been learnt and the process of learning (Price, 2003; Wolff, 2000).

Participating in group process: The study findings further revealed that another role of the students in the process knowledge construction was to actively search, question and engage in constructing meaning and relating it to the identified problem(s) or learning issue(s). It was imperative that each student participated in every step of the group problem solving process, and that they knew when to request guidance from the facilitator. Lu and Jeng (2006) confirm this by pointing out that students should view themselves as a community of learners with all members of the group having different, but important, roles to play in assisting each other during the group process. According to these authors, students routinely engage in constructing, symbolising, applying and generalising their views and ideas within groups and feel less tension and anxiety when expressing their ideas to peers. It was observed in this study that the interaction of peers within a group plays a major role in building up the self-confidence of the

students. As a member of a learning team, students are expected to prepare for the team sessions and actively contribute to the discussions. Students build knowledge by exchanging ideas, listening to one another, respecting each other's viewpoints, being critical and asking questions that challenge and probe the issues. According to Wood (2005) the role of students is to participate in discussions, to listen to and respect contributions of others, to ask open questions and also to research and share information with others.

5.6 INTERVENING CONDITIONS

The findings of this study revealed that the process of knowledge construction in CBSL programmes was influenced by some facilitative and some hindering intervening conditions. Facilitative intervening conditions were: (a) preparedness and orientation of facilitator to teaching methodology; (b) facilitator skills in scaffolding for effective classroom discussions. Hindering intervening conditions were: (a) unpreparedness of students for classroom interactions; (b) impact of poor facilitation skills and the lack of capacity building initiatives for facilitators.

5.6.1 Facilitative Intervening Conditions

Preparedness and orientation of facilitator to teaching methodology: It emerged from the results of this study that the preparation of facilitators was vital to the successful classroom facilitation. The older academic staff had received some form of preparation or orientation to the teaching methodology used by the NEIs, whereas the newly appointed staff had missed that opportunity. According to Bostrom et al. (2007), it is imperative that the facilitator has experience in running problem-solving sessions and has the appropriate skills and knowledge to undertake the session. Facilitator need to possess skills of encouragement and

calling for input from all students in the group and such skills needed to be developed, enhanced and mentored. Chin and Chia (2004) emphasise that the facilitation skills of the teacher during the process of knowledge construction is the determinant of the quality and success of any educational method aimed at developing students' thinking or reasoning skills including problem-solving and critical thinking skills.

The facilitator needs to be a subject expert and a group process director to influence both the theme of the learning issue(s) covered in class and the dynamics of the group session. In order to undertake these actions, Bostrom et al. (2007) point out that the facilitator must have prior experience and knowledge of group dynamics and problem solving techniques. Another factor that surfaced from this study was that the facilitators should have well developed verbal and presentation skills, be sensitive to the group and be aware of participants' non verbal communications. In line with these findings, Bostrom et al. (2007) is of the view that creative ideas often arise out of completely unrelated information on learning issues discussed in class. Chin and Chia (2004) state that the group must be given time to explore the information and associate apparently unrelated and disconnected data. This requires facilitators to be as flexible as possible and be able to allow the issues to be explored fully (Bostrom et al., 2007; Chin & Chia, 2004).

Facilitator skills in scaffolding for effective classroom discussions: The results of this study revealed that good facilitation skills were needed to scaffold students for effective discussions in class. McLoughlin and Marshall (2000) confirm this

finding, saying that facilitators should be able to provide assistance to students during the group discussions in the form of scaffolding. This is also supported by Dennen (2008) who argues that the effect of the teacher is an important one in supporting students in knowledge construction. According to this author, effective scaffolding includes the activities that are done at the beginning of the course or programme to help students develop the right mindset for the type of the teaching approach used in the institution, as was the case in this research study which revealed that students were nurtured and taken by hand through the learning process. Boud and Feletti (2001) posit that facilitators learn scaffolding skills over time and that these skills of asking various types of questions that seek clarification, elaboration, paraphrase and/or verification assist the way students learn.

It was noted in this study that because the approach to teaching and active group involvement were new to students, they needed guidance in the beginning stages, but it could gradually be weaned off to allow students to direct their own construction of knowledge in teams and as individuals, as stipulated by Dennen (2008).

5.6.2 Hindering Intervening Conditions

Unpreparedness of students for classroom interactions: It surfaced from the findings of this study that it was problematic for the facilitator and the students to effectively engage in the process of learning if any of the group members came to class not having prepared for the learning issue(s) of the day. In support of these findings, Dolmans, De Grave, Wolfhagen and Van der Vleuten, (2005) are of the

opinion that the process of learning is hindered the most when the group process is disorganized or haphazard. Dolmans et al. (2005) argue that the group process and/or student engagement with the learning issue(s) becomes shallow if students come to class unprepared. It was observed in this study that unprepared students became too passive in group process, they were unable to communicate and the interactions became limited, as indicated by Dolmans et al. (2005). This view is supported by Smith (2003) who suggests that preparedness to contribute is essential in group interaction classrooms. Furthermore, Schrage is of the notion that a well prepared group discussion yields positive collaborated students' dialogue that is manifested by the sharing of opinions and views. This researcher indicates that it is not possible for an individual student to understand all the complexities without drawing from the views of others, and if others are not prepared for the group process then the whole process of creating knowledge will be disturbed.

Lack of capacity building initiatives for facilitators: The results of this study revealed that the orientation of academic staff on CBSL facilitation was crucial for effective productivity. The preparation of teaching staff appeared to be crucial to the successful implementation of the CBSL programmes. This was supported by Booyens (2004) who indicated that the general principles of effective utilisation of personnel, and improvement of productivity and competence, require orientation and induction of personnel. It surfaced that it was important to introduce the concept and rationale of teaching in a CBSL programme. This orientation, according to Lowenstein and Bradshaw (2004), defines the goals and objectives, and clarifies the roles and responsibilities of the facilitator and

students in the group. If the expectations of the class process are instilled early in the programme, then all parties (students and teachers) become informed of the expectations (Lowenstein & Bradshaw, 2004).

The lack of capacity building initiatives for facilitators emerged as hindering the success of the CBSL programmes and it became evident that the adequate preparation of the teachers was the key to the adoption of a CBSL curriculum. In support of this study finding, McLoughling and Darvill (2007) view the teaching staff as the backbone of the innovative approaches to teaching and, therefore, it is necessary that they be properly prepared for the change. In support of this view, Des Marchais and Chamberland (2000) point out that staff development is an essential component of any good quality programme, as no one was born a great teacher or superb educator. Des Marchais and Chamberland (2000) argue that teachers require thorough preparation on the student-centred facilitation approaches that are dominant in CBSL schools' programme. Maree et al. (2009), in agreement, suggest continuous staff orientation and support that should extend across sufficient time. This suggestion is in line with the results of this study which revealed the lack of continuous support and capacity building for the facilitators in the CBSL programmes researched. Staff development is at the heart of institutional development and any organisation that neglects this factor will fail to adapt to change and lose relevance to its clientele and society. McLoughlin and Darvill (2007) emphasise that it is essential to prepare and support students and facilitators for the change to CBSL. Murray and Savin-Baden (2000) posit that the preparation of facilitators is crucial in developing a sense of consistency across a large group of facilitators. McLoughlin and Darvill (2007), in confirmation with

the observations of this study, stipulate that support for academic staff in service-learning development includes enhancing staff knowledge and awareness of the CBSL programme; cultivating staff interest in the programme and providing opportunities for staff to tie community learning experiences to the theoretical abstract conceptualization in the classroom; creating adequate infrastructure to support staff in managing the logistics of CBSL (allocation of students to different groups, allocation of students to communities, transportation and other logistics); providing staff with incentives and rewards for community engagement; and encouraging influential staff members to assume leadership roles in advancing CBSL at the university and (via partnerships) in the community.

5.7 CONSEQUENCES OR OUTCOMES OF KNOWLEDGE CONSTRUCTION

In this study, the intended outcomes were: (a) transferable learning experiences; and (b) professional and personal development and growth. The unintended outcomes were: (a) collaborative learning; and (b) partnership development and enhanced applicability to clinical and/or community settings.

5.7.1 Intended Outcomes

Transferable learning experiences: This study found that every academic learning programme in the South African education system has to reflect the nationally recognised critical cross-field outcomes (CCFOs) and developmental outcomes in accordance with the SAQA framework. The SAQA Act No. 58 of 1995 designed twelve CCFOs that are broad outcomes to form a foundation for the description of specific learning outcomes in all teaching and learning

programmes. These transferable learning outcomes form the basis of South African education policy and also *"describe the kind of citizen the education and training system should try to produce"* (SAQA, 2002, p. 8). Van Schalkwyk (2005) is of the view that CCFOs support the use of innovative methodologies of teaching and learning, providing students with a capacity for lifelong learning. Such a person communicates effectively uses creative and critical thinking to solve problems; possesses good self-management skills; works effectively with a team or group for goal achievement; collects, processes and analyses information; takes a global view of world systems; behaves responsibly towards the environment and other people; is tolerant of cultural and other diversity; and is a responsible citizen and entrepreneur, as revealed in the results of this study.

It surfaced from the study findings that the CBSL programme was an ideal approach to complement the CCFOs. Van Schalkwyk (2005) postulates that the generic outcomes shape all teaching and learning and extends across curricula, and is thus not restricted to a specific learning context. In addition, Lee, Wong and Mok (2003) argue that these outcomes address the cognitive, social, psychomotor and affective areas of student development. The endeavor to achieve these outcomes forms an integral part of the overall implementation process of the community development projects in the nursing courses concerned. It was observed in this particular study that students engaged in group work activities, used different forms of technology and partook in public speaking when addressing communities, conducting meetings and during reflection sessions. These, according to Lee et al. (2003) are all complimentary to the achievement and realization of the CCOs. Lee and fellow researchers stipulate that students

develop effective cognitive strategies for problem solving through clarifying thoughts, sharing ideas, exploring and thinking through problems, and proposing and evaluating possible solutions through community engagement initiatives. The CCFOs' applicability in the context of the CBSL include that: (a) the process of knowledge construction requires students to be problem solvers who will anticipate, identify and solve unique and complex community health problems by using critical, analytical and creative thinking skills; (b) the process of knowledge construction regards teamwork as an integral part of a holistic approach to community health needs which facilitates partnership, collaboration and active student involvement in interactive knowledge construction and results in the achievement of the CBSL learning outcomes; (c) to achieve the learning outcomes students are required to organize and manage themselves and their activities responsibility and effectively, and be willing to take the responsibility of pursuing the community health problems which they themselves have identified; (d) collecting, organizing, analysing and critically evaluating information, and investigating and conducting research by making a community diagnosis is an intellectual activity which involves critical thinking in identifying problems, investigating its causes, making plans, drawing conclusions and designing sustainable community intervention projects; (e) students are required to communicate effectively both orally and in their written presentations and to develop visual and mathematical skills in order to master and understand the meaning of community health problems and to negotiate strategies to solve the health issues; (f) effective learning in knowledge construction needs the adoption of innovative teaching and learning approaches to explore a variety of learning strategies for activities (Seale & Erasmus, 2005). The results of this study

revealed that the exposure of students to knowledge construction processes that are community based met all the above CCFOs requirements.

The findings showed that students who were immersed in authentic learning activities cultivated the kinds of 'portable skills' that newcomers to the profession find difficult to acquire on their own. Lombardi (2007) points out that these portable skills include: (a) judgment to distinguish reliable from unreliable information; (b) patience to follow longer arguments; (c) synthetic ability to recognize relevant patterns in unfair contexts; and (d) flexibility to work across disciplinary and cultural boundaries to generate innovative solutions (Lombardi, 2007).

Communication and information retrieval skills: This study revealed that students developed effective communication techniques including active listening, questioning and non-verbal communication. Information retrieval skills enabled students to gain and apply new knowledge in community based learning projects, as needed. These skills enhanced the students' ability to address specific problems in complex, real-world settings, in which the development of workable solutions is required. These findings are supported by Boyer (1998), who asserts that effective skills in communication is the hallmark of clear thinking informed by a rich and diverse experience.

It also became evident from the study findings that the graduates produced after engagement in CBSL programmes had the ability to arrive at informed judgments by effectively defining problems, gathering and evaluating information related to

those problems, developing solutions for such problems and applying the solutions in a variety of community settings. To substantiate these findings, Boyer's Commission Report (1998) on undergraduate education at higher education institutions highlights the notion that universities must facilitate inquiry in the libraries, the laboratories (clinical skills) and by providing access to computers. Boyer states that the institution's ability to create such integrated education produces a particular kind of graduate who is equipped with a spirit of inquiry and a zest for problem solving; one possessed of the skill in communication that is the hallmark of clear thinking; one who is informed by rich and diverse socio-cultural learning experiences. For Boyer (1998) the graduate produced from community-based programmes "*…is that kind of individual that will provide the scientific, technological, academic, political, and creative leadership for the next century"*(p. 16). The outcomes of the process of knowledge construction are community-oriented cultural competencies and knowledge sharing with communities (Seifer, 1998; Lazarus, 2005b; 2007).

Professional and personal development and growth: It became apparent from the observations of this study that the students were growing personally and academically from learning through experience and problem-solving. In line with these findings, Biley and Smith (1999) assert that the CBSL programmes enhanced the confidence of graduates in their thought processes and decision making skills, and in their ability to function independently. Clark and Hobbins-Garbett (2000) posit that the students develop a number of life skills such as problem-solving skills, critical thinking skills, independent learning skills, self-directed skills, communication skills, decision-making skills, leadership skills,

lifelong learning skills and many other interpersonal skills in CBSL. Based on their views, the benefits of CBSL to students includes a sense of personal satisfaction, professional growth, a higher level of critical thinking skills, preparation for nursing practice in a dynamic and diverse health care delivery system, and an increased awareness of unmet needs in clients, families, communities, and populations. Similarly, Bender (2006a) indicates that professional and interpersonal development in CBSL is reflected by the appreciation of other cultures, self knowledge, personal efficacy, leadership skills, communication skills, feeling of connection to community and a valuable career in helping others.

Adult learning principles were considered important in the preparation of innovative nurse graduates in the findings of this study. It emerged that the facilitation of knowledge construction in CBSL programmes required that students assume control and direct their own learning. This, however, is based on the principles of adult learning that requires the involvement of all stakeholders in the process of knowledge construction which include the student, teachers and the communities at large, as indicated by Maree et al. (2009). From a similar standpoint, Knowles (1980,) cited in Maree et al. (2009), states that the students are regarded as adults, and adult learning is characterised by the principles that adults are capable of self-direction; adults learn from their own life experiences; and adults learn best if learning is task, problem or inquiry-centred.

It surfaced that the knowledge construction process led to the development of students' skills to learn and re-learn as knowledge develops. In support of this,

Maree et al. (2009) reveal that to learn and re-learn is a skill necessary for ***lifelong learning***. Lifelong learning and self-directed learning skills are the long-term goals of most educational endeavours, as posited by the Commission on Higher Education (CHE) (2002), and include the ability of students to determine their own learning goals, locate appropriate resources and assume responsibility for learning what they need to know. The CHE emphasises that lifelong learning is a necessity as what is learnt does not last for a life-time, but changes at tremendous speed with the development of science, technology, communication and knowledge. Similar views are shared by Maree et al. (2009), who are of the opinion that in the professional practice of nursing, lifelong learning is associated with the formal process of continuing professional development, which aims to improve health and social-care services to the benefit of the communities who use those services. It is also associated with career development and is a way of maintaining employability (Maree et al., 2009).

Lifelong students need to develop a culture of being responsible for learning. According to Maree et al.'s views, lifelong learning is a significant additional professional outcome in reflective knowledge construction. One of the aims of higher education in the South African context is autonomy of learning. The following is a definition by the CHE (2002): *"A learner capacity for lifelong learning is the extent which a learner can undertake action for learning independently, the extent to which the learner takes responsibility for his/her own learning and the extent to which a learner is self-reflexive about, and can evaluate the quality of his/her learning, and eventually that of others"* (p. 49). Lublin (2008) describes the characteristics of lifelong learners as learners who

have inquiring minds, have the skill of rising above the surroundings to see the bigger picture, are information literate, have a sense of personal urgency, take responsibility for themselves and their learning and have a repertoire of learning skills and attitudes that facilitates lifelong learning, and these are the type of students that were observed in this study.

Self-directed learning (SDL) surfaced as one of the outcomes of CBSL programmes in this particular study. It became evident from the findings that students took ownership of their learning and became critical and reflective thinkers by justifying their answers to peers during classroom sessions. In confirmation, Levett-Jones (2005) claims that SDL increases students' confidence in, and capacity for, independent learning within dynamic and challenging educational and work environments. SDL is the means by which lifelong learning is facilitated. Students in this study developed independent thinking skills and a commitment to lifelong learning, as well as essential elements enabling potential practitioners to continue developing the necessary skills in a continuously changing environment, as stated in Levett-Jones (2005).

It emerged from the findings of this study that nurse education should go beyond teaching the basics as required in traditional education, but should also teach the basics for survival in a democratic world. Della-Dora and Wells (2001) are of the opinion that the distinguishing features of education in a democracy should be to teach people how to exercise their individual and group rights in a responsible manner. According to these authors, there should be evidence that students learn to be more self-responsible and more self-directed as they progress with their

education.William (2004) found that students who had experienced CBSL entered their professions not only adequately knowledgeable and skilful, but also equipped to cope with change. They were comfortable with the idea of taking personal responsibility for their ongoing learning; seeking additional knowledge or confirmation of their knowledge base; showing initiative; being self-directed in their learning; and using the problem-solving approach automatically on most occasions (William, 2004). The responses of participants in this study revealed that their perceptions of self-direction manifested in CSBL programmes were in line with the above.

While observing the students interactions with each other and their interactions in the communities when dealing with learning issues, it became clear that students in this study were equipped with the skills to question each other and not just accept things as they were said. They displayed the important aspects of ***critical thinking*** which involved asking questions, making connections between new and prior knowledge, generating solutions, analyzing arguments, and making and justifying decisions based on evidence. Maree et al. (2009) outlines critical thinking as a purposeful, reasoned and goal directed application of those cognitive skills or strategies that increase the probability of a desired outcome. A person who employs critical thinking is able to evaluate an issue and make judgements based on the merits or weaknesses of such issues.

Team skills: It emerged that the ability to function as a member of a team was very important to work successfully in health care settings. In this study, students learnt to work effectively in groups not only in the classroom, but in other aspects

of personal growth. The CBSL programme had positive effects on students' social and cognitive dimensions and promoted competencies allowing students to work in teams. In line with the findings of this study, Koh, Khoo and Wong (2008) are of the view that innovative teaching methodologies promote affective competencies such as team skills and appreciation of the social and emotional aspects of health care. Smyth (2005) reported that CBSL helped students not only to look out for each other, but to work better in teams. He stated, furthermore, that students developed a sense of loyalty to the group and if absent; they felt they were letting the group down.

The findings suggest that the ***leadership skills*** gained by the students during the knowledge construction process assisted them in boosting their confidence which, in turn, assisted students in making decisions by consensus. In line with these findings, Smyth (2005) states that with leadership skills, students are able manage conflict and voice their opinions in a manner that can be understood, while at the same time taking into account the opinions of others.

5.7.2 Unintended Outcomes

Collaborative learning and partnership development: It surfaced from this study that students were encouraged to work collaboratively in groups in their community learning activities. It became apparent that the objective of collaborative learning was to encourage groups of students to work together to solve community health problems. Many authors (Stover, 1998; Savery, 2006; Lowenstein & Bradshaw, 2007) assert that collaborative learning strives to foster teamwork, individual accountability, prompt feedback and respect for diversity

among group members. According to Savery (2006,) collaboration coupled with experiential learning, using community issues or using real-life community examples and scenarios, encourages the sharing of practice and theory. Collaboration is seen as an essential skill for students to have in their careers, as they will invariably be working as responsible members of health care teams (Barrows, 2003; Lowenstein & Bradshaw, 2007). Barrows (2003) further indicates that collaboration allows students to develop the security and authority they need to be responsible for their own learning.

Students, according to the research findings of this particular study, were allocated in groups to the communities and every student was expected to participate in collective group tasks that were clearly defined, without the immediate supervision of a teacher. Lowenstein and Bradshaw (2007) indicate that collaborative learning and partnership development are important during the teaching and learning process, as most of the learning experiences are confronted by students as teams or groups, both in the community and classroom settings. Okasha (2009), along the same lines, states that team learning in the construction of knowledge enhances early professional socialization and provides opportunities for the development of leadership skills. Okasha (2009) suggests that collaborative learning is aimed at achieving the outcome of being able to work harmoniously in a team, and that team learning promotes respect for other team members and the community as well. Similarly, Maree et al. (2009) state that when students collaboratively approach tasks and solve problems in authentic community settings, they bring their own prior learning and viewpoints to the situation. Furthermore, Maree et al. are of the notion that students look at a

problem from different perspectives, and negotiate and generate meanings and solutions through shared understanding. Such collaborated efforts require teachers to accommodate students, not just as individuals, but as communities of learning that works toward similar and shared goals, the achievement of which depends upon collaboration (Maree et al., 2009; Okasha, 2009).

Enhanced applicability to the clinical and/or community settings: It was revealed from the study findings that as students constructed knowledge, they had opportunities to apply what they had learnt in the classroom to the communities. In line with this finding, Callister and Hobbins-Garbett (2000) assert that through this design the student is able to integrate academic and clinical skills with principles of community health promotion and prevention. Similarly, Carr et al. (2005) postulate that the community-based nursing education provides nurses with a new model for clinical learning that provides the necessary opportunities for undergraduate nurses to provide care along a continuum from wellness to illness, work with interdisciplinary teams, work within and across diverse health-care delivery environments and communities, and provide care for diverse populations, including diverse ages, sex, ethnicity, healthy-ill populations, and acute-chronic health states.

It was revealed in the study findings that students became empowered with the skills to conduct research, integrate theory and practice, and apply knowledge and skills to develop viable solutions to a defined problem. In line with these findings, Bender (2006a) suggests that in CBSL, a deeper understanding of the subject matter and the complexity of social issues, and the application of subject matter

and experience is associated with more knowledge constructed. Bender (2006a) further indicates that by intentionally linking academic standards to the real world of their communities, CBSL nursing programmes are narrowing the gap between knowledge and action, and between what students learnt and what they can contribute to the communities.

5.8 CONCLUSION

This chapter discussed significant findings about how knowledge is constructed in CBSL programmes in basic nursing education in South Africa. What emerged during the discussion of the results was that knowledge is contextually constructed based on the experiences of students and the needs of the communities. The knowledge constructed is organised in real life experiences that provide authentic context for the information. The role of teachers is to facilitate the learning experiences of the students. Upon completion of each learning experience, students have improved their knowledge and the ability to apply it in differing community situations. This study highlighted that knowledge is constructed by students as a result of their interaction with the natural world in socio-cultural contexts and is also mediated by their prior knowledge. A number of important concepts were illuminated in this chapter. These concepts contributed to the building of a middle range theoretical model on knowledge construction in CBSL programmes and will be further analysed in chapter 6.

CHAPTER SIX

A MIDDLE RANGE CONCEPTUAL MODEL FOR KNOWLEDGE CONSTRUCTION IN COMMUNITY BASED SERVICE-LEARNING PROGRAMMES IN BASIC NURSING EDUCATION

6.1 INTRODUCTION

The purpose of this study was to explore how knowledge is constructed in community based service-learning (CBSL) programmes in basic nursing education in South African nursing education institutions (NEIs). The aim was to develop a middle-range theory and/or model. Strauss and Corbin (1999) define a theory and/or model as a set of well developed categories. For example, themes and concepts are systematically interrelated through statements of relationship to form a theoretical framework or model that explains the phenomenon. Literature reveals that theories differ in their level of generality. A grand theory or macro-theory purports to describe and explain large segments of the human experience, whereas a middle-range theory and/or model is made up of limited concepts and propositions, written in a more concrete manner and specific to the phenomena under study (Polit & Beck, 2006). This chapter presents a middle-range model of knowledge construction in CBSL programmes for basic nursing education in South Africa. The model presented in this chapter builds on the conceptual schema provided in the two previous chapters.

Chinn and Jacobs (1987) state that *"not all things labeled 'theory' qualify as theory by any reasonable definition, and what is accepted as a theory in one discipline may not be considered as a theory and/or model in another"* (p. 115). According to these authors, it is therefore important to provide a definition of the

term ‘theory’ in relation to the context within which it is used. In the context of this study, the researcher used Chinn and Jacobs’s definition which states that *“…a theoretical model is a set of definitions, concepts, and propositions that project a systematic view of a phenomenon by designating specific interrelationships among concepts for the purpose of describing, explaining and predicting”* (1987, p. 115).

Chinn and Kramer (2008) identify six components for developing a theory/model which include: (a) goals of a theory and/or model that specifies the context and situation in which the theory applies; (b) concepts which are described as group of words and symbolic representation of reality that serve as building blocks of a theory; (c) definition of concepts to clarify the meaning for concepts within the theory and/or model; (d) nature of relationships which describe how concepts are linked together to give structure to the theory and/or model; (e) structure of the theory and/or model which gives the overall form to the conceptual relationships within it; and (f) assumptions which are basic givens or accepted truths that are fundamental to theoretic or conceptual reasoning.

According to Chinn and Jacobs (1987) and Fawcett (2005), the six components for developing a theory and/or model (goals, concepts, definitions, relationships, structure, assumptions) form the categories that can be used to describe the theory and/or model. These categories are also useful in the analysis of the existing theories as they are embedded within a theory and/or model when it is being developed. This means that when these concepts are used for analysis purposes, a theory and/or model is broken down looking for these components. In this chapter,

the researcher attempts to present a conceptual model for knowledge construction in CBSL programmes in an understandable manner. Struebert and Carpenter (1995) assert that *"a good report reflects a theory and/or model in ways that allows the outsider to grasp its meaning and its concepts"* (p. 159).

6.2 THE GOALS OF KNOWLEDGE CONSTRUCTION CONCEPTUAL MODEL

The knowledge construction conceptual model, in the context of this study, is an explanatory theory aimed at providing a framework to guide the process of knowledge construction in CBSL programmes for basic nursing education. This conceptual model can also be used to guide the efforts of those NEIs that are planning to implement CBSL curricula. According to the findings of this study, most of the higher education institutions (HEIs) are expected to transform to CBSL programmes as part of their community engagement endeavor. This conceptual model can also be used to evaluate existing CBSL curricula in basic nursing education programmes. Furthermore, this model can contribute to the limited theoretical or scientific body of knowledge for knowledge construction in CBSL, as reported by many authors (Giles & Eyler, 1994; Bringle & Hatcher, 1996; Lisman, 1998; Magzoub & Scmidt, 2000; Marcus 2004; Lazarus, 2005b).

6.3 THE CONCEPTS OF A KNOWLEDGE CONSTRUCTION MODEL

It has been mentioned in this study that concepts are the building blocks of a theory and/or model. The description of concepts is crucial because their quantity and character form the understanding of the purpose of the theory and/or model, the structure and nature of the theoretic or conceptual relationships, and the

definitions and assumptions (Chinn & Kramer, 2008). According to Chinn and Jacob (1987), some theorists define words or concepts by how they are utilized within a theory (relatively associative definition) and others define terms specifically by what they mean (relatively specific definition).

The phenomenon of interest in this study is knowledge construction and it is defined in a relatively associative manner in order to bring an understanding of how it is conceptualized in this particular theory. Knowledge construction is treated as the main concept in this theory and its characteristic elements were observed both in the community and in classroom settings. Schellens and Valcke (2006) assert that knowledge construction relates to the extent to which teachers help students to understand, investigate and determine how the implicit issues, assumptions and perspectives within a discipline influence each other. The concept of knowledge construction in this model entails the following notions.

Firstly, to acquire and develop knowledge, students have to be involved in active learning processes. Secondly, there is a coherent link between the construction processes of an individual student and the construction processes of other students through collaborative interactions of communities of learners. Thirdly, there is reciprocity between and amongst students as they participate in the construction of knowledge through academic discourse-dialogue. The other major concepts which are directly linked to the process of knowledge construction include cognitive coaching (scaffolding); and continuous, reflective and inquiry-based learning.

6.4 DEFINITION OF THE THEORY CONCEPTS

Knowledge construction: Knowledge is the product of an interaction between our ideas about the world and our experiences of the world. There is growing awareness today of the value of learning environments in higher education that foster knowledge construction. During the process of knowledge construction, the teachers facilitate student learning towards understanding, investigation and determination of how the implicit cultural assumptions, frames of references, perspectives and biases within a discipline influence the ways in which knowledge is generated within it. Thus, it is acknowledged that the active role of students in the personal creation of knowledge, the importance of experience (both individual and social) in this knowledge generation process and the realization that the knowledge generated will vary in its degree of validity, is an accurate representation of reality.

Knowledge is constructed as students actively engage in social discourse with one another and with the teachers, and is also supported by multiple authentic learning perspectives within meaningful contexts. The social interactions among students and communities are seen to play a critical role in knowledge construction and cognition if students are exposed to authentic real situations. In real community settings, the process of knowledge construction is viewed as a social act within a particular community context and learning activity. According to Hammett and Collins (2002), individuals create understanding of a phenomenon in relation to what they already know and believe, and in accordance to what they are experiencing at that particular given moment. Students are expected to actively construct their own knowledge and meaning rather than passively receive

information from their teachers and textbooks. Knowledge is, therefore, constructed when students interact and engage in meaningful lived activities, activities that are authentic in real community contexts.

Authentic health-related problems: Authentic learning contexts typically focus on real-world, complex problems and their solutions, using problem-solving activities and participating in communities as practice. An authentic learning environment is similar to the real world application or discipline and it automatically brings into play multiple health disciplines, multiple individual, family and/or community perspectives, ways of thinking, ways of working and ways of learning both with and in the community.

Authentic health related problems comprise complex learning tasks to be investigated by students over a sustained period of time in the identified communities. The identified health problems serve as a drive behind the whole process of knowledge construction. Knowledge construction, including all other learning activities both in the classroom and the community settings, revolves around solving authentic community identified problems and experienced needs. Students dealing with real problems experienced by the community are encouraged to make meaningful connections between the content in the classroom and real-life experiences, as manifested by the communities.

Academic discourse-dialogue: The process of knowledge construction is characterized by the exchange of ideas and viewpoints through arguments and debates on health related issues, until a consensus is reached amongst the students

within a group. Students and teachers co-create experiences and think through discussions to arrive at insight into diverse cultural community contexts. The students' dialogue should be based on scientific or research-based literature to ensure that the end product of the knowledge constructed is academically sound and that it is informed by context-driven evidence. Dialogue is effective if it is nurtured and not forced, hence, the role of the facilitator is crucial in ensuring that the process of knowledge construction is not manipulated to reach an agreement on an issue. Questions are asked by the group members and by the facilitator to clarify meaning until the viewpoint is accurately understood and accepted by all members of the group, all viewpoints are considered, not only the views of dominant members. Student participation in dialogue is very critical and each student should participate equally. By providing equal opportunities, all students develop a sense of ownership and of knowledge creation. Dialogue leads to flexibility and openness to students' ideas, and creates opportunities to share personal stories and experiences. The students reveal the social contexts of their personal knowledge and understanding to others.

Cognitive coaching (scaffolding): Cognitive scaffolding is purposeful guidance, support and coaching of students so that they can cope with the identified community problems or learning issues at hand. Through scaffolding, students are guided through the process of knowledge construction until they reach the stage when they are well developed enough to manage the group process by themselves. The support is then gradually removed as students develop some degree of autonomy having progressively developed their own cognitive learning skills. Cognitive coaching aims to assist students in the development of cognitive

attributes and other skills required to enhance meaningful learning. Scaffolding enables students to do what they could not have done without the support that directed their discussions.

Interactive communities of learners: Since the process of knowledge construction is characterised by the exchange of information amongst students (student to student), between students and facilitators as well as students, facilitators and community members, all the stakeholders (students, facilitators, community members) form part of a learning team as communities of learners. The community members have a lot to offer to students in terms of their experiences. On the other hand, facilitators, because they are better informed about health related issues and problems prevailing in the community settings, are better equipped to judge the solutions that may work more effectively in addressing those community challenges. Students share, negotiate and engage jointly in solving the health related problems or learning issues of each community.

The sharing of learning experiences is an interactive learning experience done in communities of learners. Interaction among communities of learners enables the students to engage in the process of constructing knowledge from varied community-based clinical experiences as well as the reflections of others through sharing and the exchange of knowledge. The reciprocal nature of interaction in communities of learners is necessary for meaningful knowledge construction to take place.

Active learning: Active knowledge construction involves the process of providing opportunities for students to meaningfully talk and listen, write, read, and reflect on the content, ideas, issues and concerns of communities to cover the learning content of the curriculum. The students actively engage in discussions of community-based health related issues and in tasks that involve them physically and intellectually through community intervention projects. Knowledge is directly experienced, constructed, acted upon, tested, and/or revised by the students to satisfy the identified learning need(s). Students take an active and leading role in their learning by discussing and interacting in the classroom and in the communities to which they have been allocated, and make use of different resources such as libraries and the internet to form a concise knowledge grounding about the learning issues. Students actively interact and deliberate on learning issues and should make their own representations of action in selected learning issues.

Continuous reflective learning: During the process of knowledge construction, students are provided opportunities to apply prior learning by reflecting on their experiences and drawing significance and meaning from such reflections. Students construct knowledge as they attempt to make good sense of their concrete learning experiences and construct their ideas or understandings from and in relation to their existing networks of concepts. Community learning experiences are initiated by real-life health-related issue(s) and/or problem(s) and occur mainly through reflections which incorporate all the experiences students bring to class from the communities. Reflective learning promotes knowledge construction, whereby the identification of community health problems and/or issues and its interrogation in

the classroom facilitate correlation of theory and practice. In the classroom, students explore what they encountered in the community environment, thereby promoting deeper learning as they make connections between community learning experiences and the theoretical grounding of the learned experiences in the real world through active experimentation and application to community settings. By reflecting on their experiences, students construct their own knowledge. By reflecting on their everyday experiences, they create a worldview or lens, which determines their future behaviour and strategies for community-based interventions.

Collaborative learning: The process of knowledge construction is discursive in nature and requires that students learn collaboratively with and through one another. Collaborative learning experiences are those experiences in which students discover solutions and create knowledge together with other students, community members and the facilitator. In community settings, the students need to work in groups to debate, discuss and solve health problems identified in community. Students should be given opportunities to engage with each other through the active give-and take of ideas and should learn from the experiences of each other. Through collaborative learning experiences, the students discover solutions and create knowledge in groups by solving problems.

Inquiry-based learning: Inquiry provides a framework for knowledge construction because through it, students become independent and are able to independently transfer knowledge gained. Inquiry-based learning is grounded in the belief that education begins with the curiosity of the students as they focus and

question each other, thereby stimulating critical thinking and problem solving skills. The process of knowledge construction begins with a question and is followed by the investigation of solutions. New knowledge is created as information is gathered and understood, discoveries and experiences in the communities are discussed and newly-found knowledge is reflected upon. The problems identified in the community settings act as the stimulus and focus for student learning activities and, in this way, knowledge constructed is purposeful and self-motivating as students learn while seeking solutions to the problems. Inquiry encourages a student-led and hands-on approach because students become involved in questioning and solving the real-life issues in the communities.

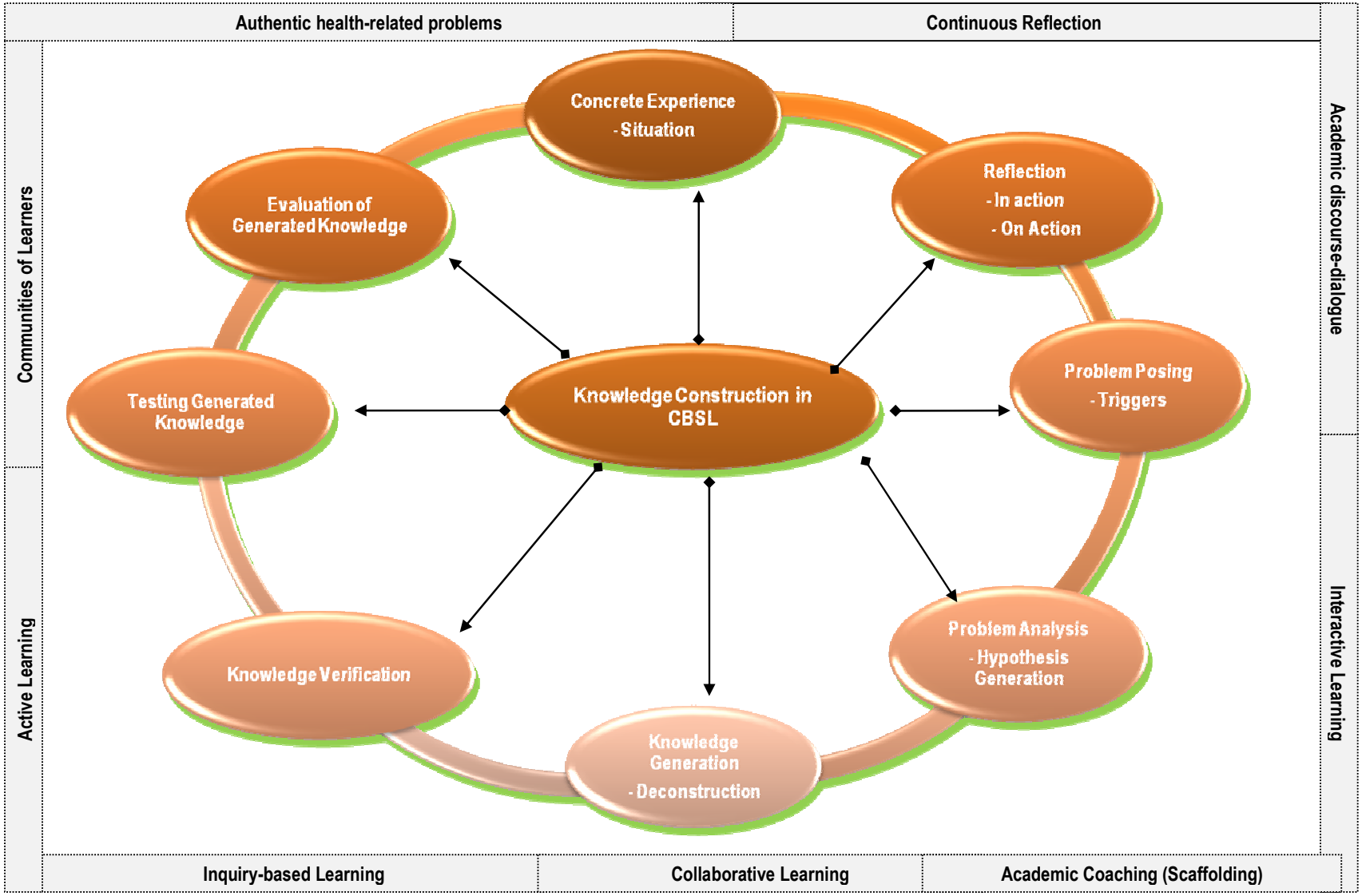
6.5 THE NATURE OF THE RELATIONSHIP AND THE STRUCTURAL DESCRIPTION OF THE MODEL

Conceptual models and theories are basically sets of relational rules and they contain many concepts and specify how concepts relate to one another (Strauss & Corbin, 1999; Chinn & Kramer, 2008). Chinn and Jacobs (1987) describe relational statements, which are sometimes referred to as propositional statements, as statements that suggest a specific relationship between two or more concepts or constructs. The relational statements of the knowledge construction are inherent within the definitions of the key and their related concepts. Chinn and Kramer (2008) suggest that concepts should be given a structural form so as to clarify their relationship by means of a symbolic representation. To make it possible to follow the reasoning of the development of this theoretical model, the nature of its structure and the process description of this model and all the central and related

conceptual relationships are included within a single structure and presented simultaneously because of the nature of their relatedness.

The theoretical model that has been developed in this study reveals that knowledge construction is manifested in terms of the characteristic activities that the students engaged with, both in community settings and in class. Knowledge construction enhances academic discourse dialogue and it requires cognitive coaching (scaffolding) for it to be effective. Furthermore, knowledge construction is facilitated in interactive learning environments that take place in communities of learners. Communities of learners are characteristically collaborative learning efforts that are based on authentic health related community issues as learning content. In these learning contexts, students are actively engaged in inquiry-based academic discourse-dialogue and through experiential reflection. The knowledge construction model in CBSL programmes for basic nursing education in South Africa is depicted in Figure 5.

Figure 5: A Conceptual Model for Knowledge Construction in Community Based Service-Learning Programmes



6.6 BASIC ASSUMPTIONS OF THE CONCEPTUAL MODEL

A theoretical or conceptual model is based on a number of assumptions. In this model, some assumptions have been taken from the paradigm guiding the research and some have been derived from the identified concepts. The assumptions that formed the basis of the presented model of knowledge construction in CBSL programmes for basic nursing education are: (a) concrete learning experiences; (b) reflection; (c) problem posing; (d) problem analysis and hypothesis generation; (e) abstract conceptualization; (f) knowledge verification; (g) testing of generated knowledge; and (h) evaluation of generated knowledge.

***Concrete learning experiences or situation (in the community)*:** The teaching and learning process begins by exposing students to a situation or concrete experience(s), where students immerse themselves fully and openly in new experiences in the community learning settings. Students interact with the presenting situations to create individual experiences. In CBSL, students are placed in groups and allocated to different under-served communities which can be urban, suburban, peri-urban or rural communities, or informal settlements. Placing students in various communities helps them to understand and experience the large diversity of problems in the different communities. The students learn more about the values, beliefs, health and cultural practices, as well as the health needs of these communities.

Concrete learning experiences in CBSL involves learning through the senses (look, listen and learn exercise). Learning through the senses is an occurrence where the

facilitator(s) takes the students to the identified communities in the form of field trips. These field trips give the students a concrete experience by giving them the opportunity of viewing the community sites and introducing them to the key stakeholders in the community with whom they will have to work closely. Learning through the senses becomes a trial run of how information obtained from the community settings will be used in the classroom during the knowledge construction processes and serves as an introduction to CBSL. Learning through the senses approach lends itself to observing and gathering information in the context of everyday living and gives the students the opportunity to become responsive to the needs of the communities. This initial learning experience becomes part of the learning process as students are able to reflect on their experiences in future group sessions in the classroom. The community settings thus serve as the source of information for the student in his/her daily experiential learning. In turn, the content of the group discussion in the classroom is then derived from these experiences.

Reflection on community learning experiences (in the classroom): Through reflection, the students' community-based learning experiences are translated into meanings. In order to assign personal meanings to a specific situation or concrete experience, the focus is, thus, on examining, analyzing, interpreting and reflecting on the experience from different points of view. While students are observing the communities and identifying health-related problems in the community, they are expected to reflect on various aspects of this environment which are then later discussed and debated in the classroom. The process begins by reflecting in-action,

whereby the community-based learning experiences are presented to establish what has been learned, to identify gaps in students' knowledge and to plan on how the identified gaps will be addressed. According to Schön (1987), *"the practitioner reflects on the phenomenon before him, and on the prior understandings which have been implicit in his behaviour. He carries out an experiment which serves to generate both a new understanding of the phenomenon and a change in the situation."* (p. 68). Reflection-in action occurs at a time when you can still make a difference to the particular situation on the spot. Reflection-in action has a critical function for students to question the assumptions that underpin their knowledge and this gives rise to the awareness and observation of new phenomena or things that occur in community settings. The students identify learning issues in relation to the community problems or case scenario at hand. The learning issues are then presented in class through the process of reflection on-action.

Reflection-on action is done after the event has been observed. In the classroom students think back on their observations in the community and go back to their reflective diaries. The group then decides on how to deal with the problem and begins strategizing. Time is taken to clarify the problems or needs, terms used and other concepts that had not readily been understood.

Problem posing (in the community): Problem posing involves the trigger or stimulus for knowledge generation. In Dewey's (1938) terms, it is the 'problematic' situation or puzzlement that leads to and is the organizer for knowledge generation. Students

could be allocated for two to three days in a community to identify key community figures and make the necessary arrangements to meet them. The purpose of such meetings is to develop in the students the ability to negotiate community entry, and to be able to access the communities for the identification of health-related needs. The students interview key community figures and/or conduct community meetings to learn more about the community values, beliefs, health and cultural practices as well as its health needs. Identification of community needs is an authentic exercise in the case of PBL, where students identify such learning problems or needs themselves. CBL differs, however, in that although the curriculum is based on authentic problems, it is presented in the classroom in the form of case studies.

In CBL, the curriculum content is based on paper problems that serve as triggers to problem-solving activities. These problems are identified by the students in their previous year of study when they spend time in communities and compile reports on community surveys, epidemiology reports and family studies. These true reflections of individuals, families and community problems are presented on paper in the form of short scenarios developed by facilitators for learning purposes. These short scenarios or learning issues are analyzed by groups of students to trigger their critical thinking and to the initiate discussions in class. Authentic triggers are capable of immersing students in a problem, and of creating a mindset that allows students to approach a problem as if it were a real life situation. Each problem or issue that is developed for the case-study is placed in its proper social and biomedical context. The case studies, which are usually presented in the form of problems that need

solving, provide the student with a background of an individual, family and/or community or other clinical situation. They are created and/or selected by the facilitators to represent the most pressing health problems within the communities in that particular geographic community region as well as prototypical situations and nursing related-knowledge domains in the clinical area.

The cases collected from the communities are compiled and modified to cover the required content for class. While the format of the problem in paper case-studies simulates realistic professional practice and real life situations, this method allows facilitators to adjust selected problems or issues to cover the expected learning outcomes as specified by the programme. Cases are developed from real clinical scenarios that are relevant, current, thoroughly researched and possible to track. The cases are constructed in such a way that as students explore what they know, it becomes evident to them that they do not have enough information to formulate a hypothesis and will need to seek additional information.

Problem analysis and hypotheses generation (in the classroom): At this stage, the identified community health problem or case scenario is presented in class as the learning issue. The learning issue is reviewed by the whole group through interactive class discussions. Time is taken to clarify the problem or issue, terms used and other concepts not readily understood by the group with regard to the presented learning issue. The students identify learning needs or outcomes in relation to the learning issue and also analyse the situation to identify what needs to be resolved. Prior

knowledge of the issue is retrieved with the aid of brainstorming in an attempt to explain the situation. At this stage, students interact with one another as well as with the facilitator to produce ideas which relate to the learning issue and to seek further information regarding the learning issue. Scaffolding is applied throughout this group process as the facilitator asks questions to link the community learning experiences with the classroom discussions and, through guided class dialogue, students' views and issues are discussed and debated, compared and contrasted until consensus is reached. By reaching consensus and formulating hypotheses students come to recognize the gaps in their knowledge and identify their individual learning needs. It is important that all students devote a substantial amount of time to generating facts, hypotheses and solutions on the learning issues.

This process of elaboration of information contributes to construction and retention of knowledge. As students engage in dialogue and as arguments and dissonance emerge during the discussion, the sharing of sources becomes pertinent. Students explore additional reading resources to seek further information and share the resources they have researched to make recommendations on the learning issues at hand. All the ideas and questions generated should be noted by the scribers (board and paper scribers).

Knowledge deconstruction and knowledge generation (in the classroom): In the classrooms, students are given the opportunity to relate their experiences and observations from the community to formal concepts, models and theories specific to

the academic discipline, in order to build an idea or make a generalization that is logically sound. Students remain in groups to analyse the data obtained through the initial group processes and the results of the community survey, and the family and epidemiological studies. During this stage, students make use of known models and theories in conceptualizing the community learning experiences and derive general rules to describe and explain why those experiences happened as they did. In this manner, the formation of abstract concepts and generalizations are facilitated and the discourse of the discipline is gradually constructed. The students conduct thorough literature reviews of the identified learning issues to render a scientific or theoretical basis to the classroom discussions. Activities during this phase entail giving meaning to discoveries by relating them to other discoveries, drawing logical conclusions, explaining and integrating. The final product of these deliberations will be a planned course of action; knowledge is therefore deconstructed and generated to inform plans for community intervention projects.

Knowledge verification (in the community): When students return to the community settings, they will be empowered by new knowledge and attitudes, enabling them to experiment with new skills. At this point, the students validate the information they initially obtained from the community with more insight, and the cycle of experience and reflection begins again. The community problem list that is compiled by students is subjected to the scrutiny of the community members while they are present in the community. The communities must be involved in the process of problem validation to confirm if the prevalent problems identified by the students are indeed the

problems they experience and that they have been prioritized appropriately. The involvement of the community members in the validation process is important because they give genuine and critical input regarding their health related issues or problems. Community meetings, interviews or structured questionnaires could be used to obtain data from the community. Once the prioritisation and validation has been done, the community and students come to a mutual decision regarding which problem should be addressed first and the feasibility of the proposed intervention(s). Students re-evaluate, re-prioritize and/or add to the learning issues in the light of new information and further explore their understanding and knowledge of relevant mechanisms that may help explain the problem. At every step along the way, students are prompted by the facilitator and by each other to explore what they know and to come to the edge of their knowledge, where curiosity is transformed into exploration and then inquiry. Information is explored and transformed into knowledge. Students are then required to make recommendations based on the assumptions which have been agreed upon. The final product of these deliberations will be a planned community intervention.

While planning these community interventions the group makes use of a variety of resources as they search for information in books and journals. They also consult discipline experts and reflect on their own community and clinical learning experiences. The students study the relevant health promotion strategies and may invite experts from other disciplines or sectors, if needed, to share their expertise with them. Community interventions may range from clean-up campaigns, health

awareness campaigns, skills development and/or income generating projects which also includes the selling of the products that the community members might have made. Only one health promotion strategy is selected and a proposal is developed. The students prepare a budget and start raising funds by seeking sponsorship for the project. This process of solution development leads to the testing of newly constructed classroom knowledge in the community.

Testing generated knowledge (in the community): Knowledge testing refers to the application of new knowledge learnt by implementing community intervention projects. The community members play an active role during the implementation of the project and the students facilitate the process. The transfer of learning occurs as students get actively involved in the planning and implementation of the project. Involvement of other disciplines such as social workers, psychologists, non-governmental organisations, community health nurses, agricultural department or any other department is encouraged. Knowledge constructed during this process is also tested through written, practical or clinical examinations.

Evaluation of generated knowledge (in the community): Once the data has been collected for evaluation of the intervention project, it is analyzed and communicated through an evaluation report compiled by the students. The students are withdrawn from the community and the project is handed over to the community members or to a community organization that will sustain the project by working with the community. The students return to the classroom and evaluate the projects that they

have been involved with. The students research various project evaluation strategies and select the most appropriate strategy. Students may choose to write an article for publication to share their learning experiences with the larger public. A special "expo" day may be organized by the NEI in which students may publicly share their community learning experiences with the other members of the NEI, invited community members, parents, new recruits to the NEI and the university community at large.

6.7 USABILITY OF THE MODEL

According to Chenitz and Swanson (1986) any grounded theory should lend new insight into the phenomenon under study and should suggest new directions for future inquiry. As already mentioned in this chapter, this conceptual model could be used to guide the process of knowledge construction in CBSL programmes for basic nursing education in South Africa. It can also be used to implement and guide curriculum development and further research in the practice of nursing education.

6.8 QUALITY AND EVALUATION OF THE THEORY AND/OR MODEL

Evaluating the theory or model in itself is the most important step in the evaluation and critique of grounded theory research (Chenitz & Swanson, 1986). This present study was supervised by an expert in theoretical/conceptual model (schematic representation of the practice of nursing education) development. Another point to consider in evaluating grounded theory research refers to data collection techniques used in the study. According to Chenitz and Swanson (1986), the reliability and

validity checks in this process depend on the use of more than one type of data and the careful selection of subjects or participants. During data collection in this study, document analysis, observation and participant interviews were conducted to do cross checking, filling of gaps and verification of categories and concepts that emerged from the data. Only participants that were involved in CBSL programmes for basic nursing education were chosen for participation in the study. To ensure the quality of an emergent conceptual model, the researcher strived to make certain that the developed model meets Strauss and Corbin's (1990) four central criteria for good theory (fit, understanding, generality and control).

According to Strauss and Corbin (1990), the theory/model should: (a) fit the area of study, provided it has been carefully derived from diverse data and is faithful to the everyday reality of the area; (b) provide understanding and can be comprehensive to both the persons studied and others involved in the area; (c) provide generality, given that the data is comprehensive, the interpretation is conceptual and broad, the theory includes extensive variation and is abstract enough to be applicable to a wide variety of contexts in the area; and (d) provide control, in the sense of stating the conditions under which the theory applies and providing a basis for action in the area.

6.9 CONCLUSION

This study was conducted to explore the processes involved in knowledge construction in basic nursing programmes that are involved in CBSL and the conditions under which this phenomenon (process of knowledge construction)

occurred, and to generate a middle range model to guide the process of knowledge construction in basic nursing education programmes that are involved in CBSL in South Africa. It is indicated in this study that knowledge is generated in real-life experiences that provide authentic raw content for the students. Cognitive coaching strategies are necessary for effective group process. Students engage in interactive learning discourse as communities of learners. Upon completion of an experience students create and test generated knowledge in differing contextual health settings. It is highlighted that knowledge is constructed by students as a result of students' interaction with the communities in their socio-cultural context and is also mediated by their prior concrete experiences.

The model developed indicated that the process of knowledge construction is manifested in terms of the characteristic activities that the students engaged with, both in community settings and in class. Knowledge construction in CBSL programmes takes place in an environment characterized by exposure to authentic health-related community problems. It enhances academic discourse dialogue and requires cognitive coaching (scaffolding) for the process to be effective. Furthermore, knowledge construction is facilitated in interactive learning environments that take place in communities of learners. In these learning contexts, students are actively engaged in inquiry-based academic discourse-dialogue and through continuous reflective learning processes.

6.10 RECOMMENDATIONS

6.10.1 Education and Training of Nurse Educationalists

The results of this study revealed that there was a lack of capacity building initiatives for facilitators in CBSL which was viewed as crucial for effective group process. New academic staff members need to be orientated and inducted into the facilitation approaches for the CBSL programme. Continuous support and capacity building for the facilitators needs to be planned by the school and should extend across sufficient time until new members of academia are well vested in the approach, especially when the approach is introduced or newly implemented by the NEI.

6.10.2 Application of the Model

As a groundbreaking study on knowledge construction in CBSL programmes for basic nursing education in South Africa, it is acknowledged that it provides possibilities for further research. This study developed a new tentative conceptual model which requires testing to ensure its validity. As the purpose of this study was to develop a model to guide the process of knowledge construction in CBSL programmes for basic nursing in South Africa, and to contribute to the body of knowledge in this area, both nationally and internationally, testing this tentative model might create an opportunity for it to move to a substantive theory where it may be used and recognized by nursing education institutions.

The conceptual model developed in this study may be useful in guiding curriculum development in nursing education specifically where CBSL is considered as a

curriculum approach, furthermore, findings may be used to evaluate student performance in CBSL as well as curriculum evaluation.

6.10.3 Further Research

Some important issues regarding assessment and quality measurement systems of CBSL programmes in basic nursing education were not addresses by this study. An investigation on how the quality of education is assured and how learning is assessed in CBSL programmes is recommended because academic institutions have an obligation and a responsibility to provide quality education to the students.

In this study, the researcher used Strauss and Corbin's grounded theory approach. As there is another different grounded theory approach by Glaser that has outstanding differences from that of Strauss and Corbin, a study using the Glasserian grounded theory approach might contribute significantly in the area of CBSL programmes for basic nursing education in South Africa.

Only certain selected participants from two nursing education institutions participated in this study. Policy makers, community members, CBSL graduates and students were not involved. A future study incorporating all the above mentioned stakeholders in nurse education practice is suggested. With more funding, more time and a collaborative team of researchers, it could be possible to provide richer findings and suggestions for future directions in CBSL programmes which take into account the views of the other stakeholders within the fraternity of nursing education.

From the findings of this study, it becomes clear that CBSL programmes are a direct imperative from the government and from the nursing professional body (SANC). However, the role of the government is not well defined when it comes to the implementation of the CBSL programme. A small-scale study that focuses on the roles of different stakeholders, such as the government, the professional body and the communities, might assist in the implementation of CBSL.

This study was undertaken in only two NEIs, which were both university departments, in two different provinces in South Africa. Since basic nursing education programmes are also implemented in nursing colleges which are not regarded as higher education institutions, a comparable study is, therefore, recommended that will highlight evidence of what has proved best practice in all the different nursing education institutions across South Africa.

6.11 LIMITATIONS OF THE STUDY

Limitations of any study refer to the restrictions that might decrease the generalizability of the study findings (Burns & Grove, 2007). These restrictions may be either theoretical or methodological. In this report limitations are categorized into limitations with regard to (a) methodology; (b) relevant literature; and (c) data collection.

Limitations with regard to the methodology: There are a limited number of experts in the area of grounded theory research in South Africa. Accessing available experts for varied opinions became a problem because of their unavailability of time due to other work commitments.

Limitations with regard to relevant literature: Obtaining relevant empirical literature on the phenomenon knowledge construction presented a huge problem because the knowledge construction process is not well researched, either locally or internationally. There was scanty literature with in-depth knowledge on the topic, yet such was required to provide a broad background and understanding of the phenomenon of interest in the study. Most of the literature provided views on synchronous and asynchronous processes of knowledge construction in on-line learning programmes or courses. Current literature on some of the main themes of the study was also limited.

Limitations with regard to data collection: Placement of the groups of students in communities for their learning experiences varied in the institutions used. For reasons of their own, the institutions made major adjustments to their schedules from time to time. As a result, the researcher could not stick to the planned schedule for group observations, but had to visit the groups at other times more suitable to them. Some participants had problems in honouring their appointments because of their busy work schedules. Others managed to accommodate the researcher when they had time, but were sometimes interrupted during the interviews to attend to other matters. In such

instances, the researcher had to re-schedule the appointments. In one of the institutions, some of the participants were new members of staff involved in the programme and, thus, had only limited information on the phenomenon of interest. In such circumstances, the CBSL curriculum documents were used to verify the information provided by the newer members of academic staff who participated in the study.

Albanese, M.A.; & Mitchell, S. (1993). Problem-based learning: A review of literature on its outcomes and implementation issues. *Academic Medicine*, 68, 52-81.

Anderson, G. (1990). *Fundamentals of educational research*. New York: Palmer.

Applefield, J.M.; Huber, R.; & Moallem, M. (2001). Constructivism in theory and practice: towards a better understanding. *The High School Journal,* 84(2), 35-53.

Arjun, P. (2000). An evaluation of the proposed new curricula for schools in relation to Kuhn's conception of paradigms and paradigm shifts. *South African Journal of Higher Education*, 12(1), 20-26.

Ausubel, D.P.; Novak, J.D.; & Hanesian, H. (1986). *Educational psychology: a cognitive approach.* St Louis: CV Mosby Co.

Aziz, A.; Kazi, A.; Jahangeer, A.; & Fatmi, Z. (2006). Knowledge and Skills in Community Oriented Medical Education Self-ratings of Medical Undergraduates in Karachi. *Journal of Pakistan Medical Association*, 56(7), 313-316.

Babbie, E.; & Mouton, J. (2001). *The practice of social research*. South African Edition. Cape Town: Oxford University Press.

Babchuk, W.A. (2004). Glaser or Strauss? Grounded Theory and Adult Education. In R.L. Gabriel (Ed.), *Search for Shared Meanings* (pp. 89-100). University of the Philippines, Lumos Publishing House, Los Baños, Philippines.

Bailey, F. (1996). The role of collaborative dialogue in teacher education. In L. Freeman & J. Richards (Eds.), *Teacher learning in language teaching* (pp. 260-280). New York: Cambridge University Press.

Barrows, H.S. (1986). A taxonomy of problem-based learning methods. *Medical Education*, 20, 481-86.

Barrows, H.S. (2003). *Generic problem-based learning essentials.* Retrieved March 12, 2009 from http://www.pbli.org.

Bassey, M. (1999). *Case study research in education*. Philadelphia: Open. University Press.

Behr, A.L. (1983). *Empirical research methods for the human sciences. An introductory text for students of education, psychology and social sciences*. Pretoria: Butterworths.

Bender, C.J.G. (2006a). How academic staff can be change agents for community engagement at higher education institutions in South Africa by implementing service-learning. Paper presented at the University of Denver university of Bologna International Centre for civic engagement conference on the university and civil society: autonomy and responsibility, Bologna, Italy.

Bennett, S.; Harper, B.; & Hedberg, J. (2002). Designing real-life cases to support authentic design activities. *Australian Journal of Educational Technology,* 18(1), 1-12.

Bertrand, Y. (1995). *Contemporary theories and practice in education.* Madison: Magna Publications.

Betts, G. (1985). *The autonomous learner model.* Autonomous learning publication specialists: Greely, CO.

Biley, F.C.; & Smith, K.L. (1999). Making sense of problem-based earning: the perception and experiences of undergraduate nursing students. *Journal of Advanced Nursing,* 30(5), 1205-1212.

Bostrom, R.P.; Anson, R.; & Clawson, V.K. (2007). Group process: facilitation and support systems. In L.M. Jessup & J.S. Valacich (Eds.), *Group Support Systems: New Perspectives,* McMillan, New York, NY.

Boud, D.; & Feletti, G. (2001). *The challenge of problem-based learning*. London: Kogan Page.

Boyer, E.L. (1990). *Scholarship reconsidered: priorities of the professoriate*. Princeton, NJ: Carnegie Foundation for the Advancement of Teaching.

Boyer, E.L. (1998). Commission on educating undergraduates in the research university. Reinventing undergraduate education: a blueprint for America's research universities. Stony Brook, NY: State University of New York at Stony Brook. Retrieved September 9, 2009 from http://naples.cc.sunysb.edu/Pres/boyer.nsf.

Booyens, S.W. (2004). *Dimensions of nursing management*. Pretoria: Juta.

Bradshaw, M.; & Lowenstein, A. (2007). *Innovative teaching strategies in nursing and related health professions*. Sudbury, MA: Jones and Bartlett Publishers.

Bringle, R.G.; & Hatcher, J.A. (1996). Implementing service learning in Higher Education. *Journal of Higher Education*, 67(2), 221-239.

Bringle, R.G.; & Hatcher, J.A. (2000). Institutionalization of service learning in higher Education. *Journal of Higher Education,* 71(3), 273-290.

Brooks, J.G.; & Brooks, M.G. (1999). *In search of understanding: The case for constructivist classrooms*. Alexandria, VA: Association for Supervision and Curriculum.

Brown, J. S.; Collins, A.; & Duguid, P. (1989). Situated cognition and the culture of learning. *Educational Researcher*, 18, 32-42.

Bruner, J.S. (1967). *On knowing: Essays for the left hand*. Cambridge, Mass: Harvard University Press.

Burns, N.; & Grove, S.K. (2007). *The practice of nursing research: conduct, critique and utilization*. Philadelphia: WB Saunders.

Callister, L.C.; & Hobbins-Garbett, D. (2000). Enter to learn, go forth to serve: service learning in nursing education. *Journal of Professional Nursing,* 16(3), 177-83.

Carr, M.; Barker, M.; Bell, B.; Biddulph F.; Jones, A.; Kirkwood, V.; Pearson, J.; Carter, K.; Fournier, M.; Grover, S.; Kiehl, E.; & Sims, K. (2005). Innovations in community-based nursing education: transitioning faculty. *Journal of Professional Nursing*, 21(3), 167-174.

Cavanagh**,** S. J.; Hogan, K.; & Ramgopal, T. (1995). The assessment of student nurse learning styles using the Kolb Learning Styles Inventory. *Nurse Education Today, 15,* 177-183.

Chenitz, W.C.; & Swanson, J.M. (1986). *From grounded theory to practice.* Menlo Park: Addisons Wesley.

Chin, C.; & Chia, L. (2004). *Problem-based learning: using students' questions to drive knowledge construction*. Wiley InterScience.

Chinn, P.L.; & Kramer, M.K. (2008). *Integrated theory and knowledge development in nursing.* St. Louis: Mosby-Elsevier.

Chinn, P.L.; & Jacobs, M.K. (1987). *Theory and nursing: a systematic approach*. St. Loius: CV Mosby.

Clark, L.C.; & Hobbins-Garbett, D. (2000). Enter to learn, go forth to serve: service learning in nursing education. *Journal of Professional Nursing,* 16(3), 177-183.

Cobb, P. (1994). Where is the mind? Constructivist and sociocultural perspectives on mathematical development. *Educational Researcher,* 23(7), 13-20.

Cohen, L.M. (1999). Philosophical perspectives in education. Retrieved November 25, 2009 from http://oregonstate.edu/instruct/ed416/PP4.html.

Cole, M.; & Engestrom, Y. (1993). A cultural-historical approach to distributed cognition. In G. Salomon (Ed.), *Distributed cognitions: Psychological and educational considerations*. NY: Cambridge University Press.

Collins, A.; & Bielaczyc, K. (2007). *Learning communities in classrooms: a reconceptualization of educational practice in instructional design theories and models*. Mahwah NJ: Lawrence Erlbaum Associates.

Collins, A.; Brown, J. S.; & Newman, S. E. (1990). Cognitive apprenticeship: teaching the crafts of reading, writing, and mathematics. In L. B. Resnick (Ed.), *Knowing, learning and instruction: essays in honour of Robert Glaser*. Hillsdale, NJ: Lawrence Erlbaum.

Confrey, J. (1992). What constructivism implies for teaching. In R.B. Davis; C.A. Maher; & N. Noddings (Eds.), Constructivist views on the teaching and learning of mathematics. *Journal for Research in Mathematics Education Monograph,* 107-122.

Creswell, J.W. (2007). *Research design: Qualitative and quantitative approaches*. London: Sage.

Damon, W. (1984). Peer education: the untapped potential. *Journal of Applied Developmental Psychology, 5*(4), 331-343.

Davenport, T.; & Prusak, L. (1998). *Working knowledge: how organisations manage what they know?* Harvard Business School Press, Boston, MA.

Della-Dora, D.; & Wells, D. (2001). Teaching for self-directed learning. *Theory into practice*, 19(2), 134-140.

Dennen, V.P. (2008). Cognitive apprenticeship in educational practice: research on scaffolding, modelling, mentoring and coaching as instructional strategies. *Educational Technology and Society;* 3(3), 813-828.

Denscombe, M. (2007). *The good research guide for small-scale social research projects*. Buckingham: Open University Press.

Denzin, N. (1989). *The search act:a theoretical introduction to sociological methods*. New York: McGraw Hill.

Department of Education (DoE). (1997). *Education White Paper 3. A programme for Higher Education transformation.* Government Gazette No. 18207, 15 August 1997. Pretoria: Ministry of Education.

Department of Education. (1996). *Green Paper on Higher Education Transformation.* Pretoria: Ministry of Education.

Department of Health. (2000). Health Sector Strategic Framework. Pretoria: Ministry of Health.

Department of Health. (1997). White Paper for the Transformation of the Health System in South Africa. Pretoria: Ministry of Health.

Des Marchais, J.E.; & Chamberland, M. (2000). Faculty development for new roles in health professions education. In H. Schmidt; M. Magzoub; G. Feleti; Z. Nooman; & P. Vluggen. Handbook of CBE: theory and practices, (pp. 251-274). Mastricht: Network Publications.

De Vos, A.S. (1998). *Research at grass roots: a primer for the caring professions*. Pretoria: Van Schaik.

Dewey, J. (1913). *Interest and effort in education*. Boston: Houghton Mifflin Co.

Dewey, J. (1916). *Democracy and education*. New York: The Free Press.

Dewey, J. (1933). *How we think: a restatement of the relation of reflective thinking to the educative process*. Lexington, Masslach Heath.

Dewey, J. (1938). *Experience and education*. New York: MacMillan.

Dolmans, D.H.J.M.; De Grave, W.S.; Wolfhagen, H.A.P.; & Van der Vleuten, C.P.M. (2005). Education by design. *Education, 39*, 732-741.

Dooley, K. (2009). Intercultural conversation: building understanding together. *Journal of adolescent and adult literacy*, 52, 497-506.

Doolittle, P.E. (1999). *Constructivism and online education*. Virginia Polytechnic Institute and State University Press.

Duffy, T.; & Cunningham, D. (1996). Constructivism: implications for the design and delivery of instruction. *Handbook of research for educational telecommunications and technology*. New York: MacMillan.

Duffy, T.M.; & Cunningham, D. J. (1997). Constructivism: implications for the design and delivery of instruction. In D. Jonassen (Ed.), *Handbook of research in education, communication, and technology*. New York: Macmillan.

Elias, J.L. (1975). A critique of Paulo Freire's revolutionary theory. *Cutting Edge*, 6, 12-21.

Ewell, P. (1997). Organizing for learning: a new imperative. *American Association for Higher Education Bulletin*. Washington, DC.

Eyler, J.; & Giles, D.E. (2002). Beyond surveys: using problem solving interviews to assess the impact of service-learning on understanding and critical thinking. In S. Billig & A. Furco, *Service-learning: the essence of the pedagogy* (pp. 147-160). Information Age Publishing.

Favish, J. (2003). A new contract between higher education and society. *South African Journal of Higher Education*, 17(1), 24-29.

Fawcett, J. (2005). *Contemporary nursing knowledge: analysis and evaluation of nursing models and theories*. F.A. Davies: Philadelphia.

Felder, R.M.; & Brent, R. (2005). Understanding Student Differences. *Journal of Education,* 94(1), 57-72.

Fichardt, A.E.; & du Rand, P.P. (2003). Facilitators' perceptions of problem-based learning and community-based education. *Health SA Gesondheid*, 5(2), 3-10.

Fichardt, A.E.; Viljoen, M.J; Botma, Y.; & du Rand, P.P. (2000). Adapting to and implementing problem and community-based approach to nursing education. *Curationis*, 3, 86-91.

Fielding, N.; & Schreier, M. (2001). Introduction: On the compatibility between qualitative and quantitative research methods. Retrieved June 12, 2009 from http://www.quantitativeresearch.net/fqs-texte/1-01/1-hrsg-e.htm.

Fischer, D. (1997). *A theory of presentation and implications for the design of online technical documentation*. Retrieved April, 15, 2008 from infosys.kingston.ac.uk/SSchool/research/d.fischer/overview.html.

Fisher, D.; & Taylor, P. (1997). A questionnaire for monitoring social constructivist reform in university teaching. In R. Pospisil & L. Willcoxson (Eds.) (pp. 100-105), *Learning Through Teaching*.

Fletcher, A. (2005). *Meaningful student involvement: students as partners in school change*. Olympia, WA: Human Links Foundation.

Fosnot, C. T. (1996). Constructivism: A psychological theory of learning. In C.T. Fosnot (Ed.), *Constructivism: Theory, Perspectives, and Practice,* (pp. 8-33). New York: Teachers College Press.

Fox, R. L.; & Ronkowski S.A. (1997). Learning styles of political science students. *Political Science and Politics,* 30(12), 732-737.

Freire, P. (1970). *Pedagogy of the oppressed.* New York: Continuum.

Freire, P. (1972). *Pedagogy of the oppressed*. Harmondsworth: Penguin.

Freire, P. (1973). *Education for critical consciousness.* New York: Seabury Press.

Freire, P. (1995). *Pedagogy of hope.* New York: Continuum.

Gadotti, M. (1997). The political-pedagogical praxis of Paulo Freire: dreaming of a world of equality and justice. Retrieved April, 4, 2010 from www.mainindexmediadevelopmentindex.

Gagné, E.D. (1985). *The cognitive psychology of school learning*. Boston: Little, Brown.

Garrison, R.; Anderson, T.; & Archer, W. (2000). Critical Inquiry in a text-based environment: Computer conferencing in higher education. *The Internet and Higher Education,* 2(23), 87-105.

Garrison, R.; Anderson, T.; & Archer, W. (2003). A theory of critical inquiry in online distance education. In M.G. Moore; & W.G. Anderson (Eds.), *Handbook for Distance Education* (pp. 113-127). Mahwah, NJ: Ebrlbaum.

George,W.; Gagnon, J.; & Collay, M. (2004). Constructivist learning theory. *Centre for Educational and Information Resources Publications,* (1), 35-43.

Gephart, R. (1999). Paradigms and research methods. *Research Methods Forum*, 2(4).

Gibbons, M.; Limoges, C.; Nowotny, H.; Schwartzman, S.; Scott, P.; & Trow, M. (1994). *The new production of knowledge: the dynamics of science and research in contemporary societies*. Sage: London.

Giles, D.E.; & Eyler, J; (1994). The theoretical roots of service-learning in John Dewey: towards a theory of service-learning. *Michigan Journal of Community Service, 4, 34-45.*

Glaser, B.G.; & Strauss, A. (1967). *Discovery of Grounded Theory*. Chicago: Aldine.

Glaser, B.G. (1978). *Theoretical sensitivity: Advances in the methodology of grounded theory*. San Francisco: University of California.

Glaser, B.G. (1992). *Emergence versus forcing: basics of grounded theory analysis*. San Francisco: Sociology Press.

Glaser, B.G. (1998). *Doing the grounded theory: issues and discussions*. San Francisco: Sociology Press.

Glense, C.; & Peshkin, A. (1992). *Becoming qualitative researchers: an introduction*. New York: Longman.

Grabinger, R.S.; & Dunlap, J.C. (1995). Rich environments for active learning: a definition. *Association for Learning Technology Journal*, 3, 5-34.

Guba, E.G. (1981). Criteria for assessing the trustworthiness of naturalistic inquiries. *Educational Technology Research and Development*, 29(2), 75-82.

Guba, E. G.; & Lincoln, Y. S. (1994). Competing paradigms in qualitative research. In N. K. Denzin & Y. S. Lincoln (Eds.), *Handbook of qualitative research* (pp. 105-117). London: Sage.

Gunawardena, C. N.; Lowe, C. A.; & Anderson, T. (1997). Analysis of a global online debate and the development of an interaction analysis model for examining social construction of knowledge in computer conferencing. *Journal of Educational Computing Research, 17(*4), 397-431.

Gwele, N.S.; McInerney, P.A.; van Rhyn, L.; Uys, L.R.; & Tanga, T. (2003). Selected outcomes of community-oriented, problem-based nursing programmes in South Africa. *Curationis*, 26(3), 21-31.

Haith-Cooper, M. (2003). An exploration of tutors' experiences of facilitating PBL Part 2: implications for facilitation of problem based learning. *Nurse Education Today,* 23(1), 65-75.

Hamad, B. (2000). What is community-based education? Evolution, definition and rationale. In H. Schmidt; J. Magzoub; G. Feletti; Z. Nooman; & P. Vluggen (Eds.), *Handbook of community-based education: theory and practices*. Maastricht. The Netherlands: Network Publications.

Hammersley, M.; & Atkinson, P. (2007). *Ethnography: Principles in practice*. London: Routledge.

Hammett, R.; & Collins, A. (2002). Knowledge construction and dissemination in graduate education. *Canadian Journal of Education,* 27(4), 439-453.

Hansen, W.; Ferguson, K.; & Sipe, C. (2005). Attitudes of faculty and students toward case-based learning in the third-year obstetrics and gynecology clerkship. *American Journal of Obstetrics and Gynecology,* 192(2), 644-647.

Hardy, M.D.; & Taylor, P.C. (1996). Von Glasersfeld's radical constructivism: a critical review. *Science and Education,* 6,135–150.

Harwood, I. (2002). *Developing scenarios for post merger and acquisition integration: a grounded theory of risk bartering*. School of Management. Southampton, University of Southampton.

Hein, G E. (1995). The constructivist museum. *Journal for Education in Museums*, 16, 21-23.

Henning, E.; Van Rensburg, W.; & Smit, B. (2004). *Finding your way in qualitative research*. Pretoria: Van Schaik.

Higher Education Quality Committee. (2001). *Founding Document.* Pretoria: Council on Council on Higher Education.

Higher Education Quality Committee. (2004a). *Criteria for institutional audits.* Pretoria: Council on Higher Education.

Higher Education Quality Committee/JET Education Services. (2006). *A good practice guide and self-evaluation instruments for managing the quality of service-learning.* Pretoria: Council on Higher Education.

Hlebowitsh, P. (1992). Critical theory versus curriculum theory: reconsidering the dialogue on Dewey. *Educational Theory*, 42 (1).

Hmelo-Silver, C.E. (2004). Problem-based learning: what and how do students learn? *Educational Psychology Review,*16, 235-266.

Hmelo-Silver, C. E.; & Barrows, H. S. (2006). Goals and strategies of a problem-based learning facilitator. *The Interdisciplinary Journal of Problem-based Learning,* 1(1), 21-39.

Hollis, S. (2000). Capturing the experience: transforming community service into service. In D. Hopkins (Ed.), *A teacher's guide to classroom research*. Buckingham, UK: Open University.

Hospital & Nursing Yearbook for Southern Africa (2005/2006). Young, S. (Ed.). Pretoria: Pharmaceutical Printers and Publishers.

Houle, C. (1980). *Continuing Learning in the professions*, San Francisco: Jossey-Bass.

Howe, K.; & Eisenhart, M. (1990). Standards for qualitative and quantitative research: a prolegomenon. *Educational Researcher*, 19(4), 2-9.

Hunter, K.; Hari, S.; Egbu, C.; & Kelly, J. (2005). Grounded theory: its diversification and application through two examples from research studies on knowledge and value management. *The Electronic Journal of Business Research Methodology,* 3(1) 57-68.

Hutchison, S.A. (1993). Grounded theory: the method. In P.L. Munhall; & Boyd, C.O. (Eds.), *Nursing research: a qualitative perspectives*. New York: Nursing League for Nursing Press.

Ironsides, P.M. (2001). Creating research base for nursing education: an interpretive review of conventional critical, feminist, postmodernism and phenomenological pedagogies. *Advances in Nursing Science,*23(3), 72-87.

Jakovljevic, M. (2002). An instructional model for teaching complex thinking through web page design. Unpublished doctoral thesis, Rand Afrikaans University: Johannesburg.

Jarvis, P. (1995). *Adult and continuing education. Theory and practice*. London: Routledge.

Jinadu, M.K. (1992). Model of experiential community-based education for health care professionals: implications for developing countries. *Annals of Community-Oriented Education*, 5, 19-25.

Johnson, D. W.; Johnson, R. T.; & Smith, K. A. (1991). *Cooperative learning: increasing college faculty instructional productivity*. Washington, DC: George Washington University.

Joint Education Trust. (1998). *Community Higher Education Service Partnerships (CHESP): Project Description*. Pretoria.

Jonassen, D. H. (1991). Objectivism versus constructivism: do we need a new philosophical paradigm? *Educational Technology Research and Development,* 39(3), 5-14.

Jonassen, D.H. (2000). Toward a design theory of problem solving. *Educational Technology Research and Technology,* 48(4), 63-85.

Jonassen, D.H; & Hernandez-Serrano, J. (2002). Case-based reasoning and instructional design: Using stories to support problem solving. *Educational Technology: Research and Development, 50*(2), 65-77.

Jonassen, D. H.; Peck, K. L.; & Wilson, B. G. (1999). *Learning with technology: a constructivist perspective*. Upper Saddle, NY: Prentice Hall.

Julie, H.; Daniels, P.; & Adonis, T. (2005). Service-learning in nursing: integrating student learning and community-based service experience through reflective practice. *Health SA Gesondheid*, 10(4), 41-55.

Kanuka, H.; & Anderson, T. (1998). Online social interchange, discord and knowledge. In D. Kassebaum; R. Averbach; & G. Fryer. Student preference for a case-based versus lecture instructional format. *Journal of Dental Education,* 55 (12), 781-784.

Kelly, C. (1997). David Kolb: the theory of experiential learning and ESL. *The Internet TESL Journal*, *3* (9).

Kendall, J. (1999). Axial coding and the grounded theory controversy. *Western Journal of Nursing Research*, (6)21, 743-757.

Khalifa, M. (1993). Inducing the quality of home health care theory through the use of grounded theory methodology. *International Journal of Nursing Studies*, 39(3), 269-286.

Klein, M. (1997). Looking again at the supportive environment of constructivist pedagogy: an example from pre-service teacher education in mathematics. *Journal of education for teaching,* 23(3), 277-292.

Knill, G. (1991). Towards the green paradigm. *South African Geographical Journal*, 73(2), 52 -59.

Kock, T. (1994). Establishing rigour in qualitative research: the decision trail. *The Journal for Advanced Nursing*, 19(5), 976-986.

Koh, G.C.; Khoo, H.E.; & Wong, M.L. (2008). The effects of PBL during medical school on physician competency: a systemic review. *Canadian Medical Association Journal,* 178(1), 34-41.

Kolb, A.D.; Boyatzis, R.E.; & Mainemelis, C. (1999). *Experiential learning theory: previous research and new directions*. Department of Organizational Behaviour, Weatherhead School of Management, Case Western Reserve University. Retrieved May 22, 2009 from http://www.learningfromexperience.com/ELt_review_paper.pdf.

Kolb, D.A. (1984). *Experiential learning: experience as a source of learning and development*. Englewood Cliffs, NJ: Prentice Hall.

Kolb, D.A. (1985). *Learning-style inventory: self- scoring inventory and interpretation booklet*. Boston: McBer.

Krefting, L. (1991). Rigor in qualitative research. The assessment of trustworthiness. *An American Journal of Occupational Therapy*, 45(3), 214-222.

Krueger, R.A. (1988). *Focus groups: a practical guide for applied research*. London: Sage.

Kuhn, E.; & Martorama, S.V. (1982). Qualitative methods for institutional research. London: Jossey Bass.

Kuhn, T.S. (1970). *The structure of scientific revolutions*. Chicago: University of Chicago Press.

Kvales, S. (1983). The qualitative research interview: A phenomenological and a hermeneutical mode of understanding. *Journal of Phenomenological Psychology*, 14(2), 171-196.

Lankard, B.A. (1996). Acquiring self-knowledge for career development. ERIC Digest.

Lave, J.; & Wenger, E. (1991). *Situated learning: Legitimate peripheral participation*. Massachusetts: Cambridge University Press.

Lazarus, J. (2007). Embedding service learning in South African higher education: the catalytic role of the CHESP initiative. *Education as Change*, 11(3), 91-108.

Lazarus, J. (2005b). Community engagement and service learning in South African higher education. *Paper delivered at the SAARDHE Conference in Durban*. National Qualification Framework.

Lazarus, J.; Erasmus, M.; Hendricks, D.; Nduna, J.; & Slamat, J. (2008). Embedding community engagement in South African higher education. *Education, Citizenship and Social Justice*, 3(1), 57-83.

Lebow, D. (1993). Constructivist values for instructional system design: Five principles towards a new mindset. *Educational Technology Research and Development*, 41(3), 4-16.

Lecompte, M.D.; & Preissle, J. (1993). *Ethnography and qualitative design in educational research*. New York: Academic Press.

Lee, W.M.; Wong, F.K.Y.; & Mok, E.S.M. (2003). Ancient Chinese educational philosophy reflected in a modern educational methodology. *Nurse Education Today,* 24(2), 136-144.

Leedy, P.D. (1997). *Practical research: Planning and design*. New York: Prentice Hall.

Lekalakala-Mokgale, L.; & du Randt, P. (2005). The experiences of nursing students. *Curationis*, 28(4), 5-11.

Levett-Jones, T.L. (2005). Self-directed learning: implications for undergraduate nursing students. *Nurse Education Today,* 25(5), 363-368.

Lincoln, Y.S.; & Guba, E.G. (1985). *Naturalistic inquiry*. Newbury Park, CA, London: Sage Publications.

Lisman, D.C. (1998). Ethics and service learning. *Communiqué. Campus Compact for Community Colleges* 6(3).

Locke, K. (1996). Rewriting the discovery of grounded theory after 25 years. *Journal of Management Inquiry*, 5(3), 239.

Lofland, J.; & Lofland, L.H. (1995). *Analyzing social settings. A guide to qualitative observation and analysis*. Belmont: Wadsworth.

Lombardi, M.M. (2007). Authentic learning for the 21st century: an overview. *Educause Learning Initiative*. Retrieved October 13, 2009 from http://net.educause.edu/ir/library/pdf/ELI3009.pdf.

Lowenstein, A.J.; & Bradshaw, M.J. (2004). *Fuzzart innovative teaching strategies in nursing*. Ontario: Jones & Barlett.

Lublin, J. (2008). *Lifelong learning and self-directed learning.* Centre for teaching and learning. Dublin: UCD.

Lu, L.L.; & Jeng, I. (2006). Knowledge construction in inservice teacher online discourse: impacts of instructor roles and facilitative strategies, *Journal of Research on Technology in Education*, 39(2), 183-202.

MacIntosh, J. (1993). Focus groups in distance nursing education. *Journal of Advanced Nursing,* 18, 1981-1985.

Magzoub, M.; & Schmidt, H. (2000). Some principles involved in community-based education. In: H. Schmidt; J. Magzoub; G. Feleti; Z. Nooman; & P. Vluggen (Eds.), *Handbook of community-based education: theory and practices*. Maastricht. The Netherlands: Network Publications.

Mandl, H.; Gruber, H.; & Renkl, A. (1996). Communities of practice toward expertise: social foundation of university instruction. In P.B. Baltes; & U. Staudinger (Eds.), *Interactive Minds: Life-span Perspectives on the Social Foundation of Cognition.* Cambridge University Press, Cambridge.

Manus, A.L. (1996). Procedural versus constructiveness education: a lesson from history. *Education Forum*, 60(4), 312-316.

Maor, D. (2007). The cognitive and social processes of how university students experience online learning. In *ICT: Providing choices for learners and learning.* Proceedings of Ascilite: Singapore.

Maree, C.; van der Walt, C.; & van Rensburg , G. (2009). Model for the education of neonatal nurses as reflective practitioners. *Acta Academica*, 41(3), 61-85.

Margonis, F. (1999). Relational pedagogy without foundations: Reconstructing the work of Paulo Freire. Philosophy of Education. Retrieved May, 18, 2008 from http://www.ed.uiuc.edu/EPS/PES-Yearbook/1999/margonis-body.asp.

Markus, G.; Howard, J.; & King, D. (1993). Integrating community service and classroom instruction enhances learning: results from an experiment. *Educational Evaluation and Policy Analysis,* 15, 410 - 419.

Marshall, C.; & Rossman, G.B. (1994). *Designing qualitative research*. Cambridge, MA: Harvard University Press.

Mattock, N.M.; & Abeykoon, P. (1993). Innovative program of medical education in South East Asia. *Regional Publication SEARO*, 21, 29-40.

Maxwell, J.A. (1998). Designing a qualitative study. *Handbook of applied social research methods*. Thousand Oaks: Sage.

Maykut, P.; & Morehouse, R. (1994). *Beginning qualitative research: A philosophical and practical guide*. London: Falmer.

McLoughlin, M.; & Darvill, A. (2007). Peeling back the layers of learning: A classroom model for problem-based learning. *Nurse Education Today,* 27(4), 271-277.

McLoughlin, C.; & Luca, J. (2001). Assessment methodologies in transition: changing practices in web-based learning. In L. Richardson; & J. Lidstone (Eds.), *Flexible learning for a flexible society*, (pp. 516-526).

McMillian, J.H. (1992). *Educational research: fundamentals for the consumer*. New York: Collins.

Merriam, S.B. (1998). *Case study in education: a qualitative approach*. San Francisco: Jossey Bass.

Merton, R. (1967). On sociological theories of the middle-range. *Theoretical sociology: five essays old and new*. New York: Free Press.

Meyer, S.M. (2007). An investigation into the affective experiences of students in an online learning environment. An unpublished master's thesis submitted at the University of Pretoria. Retrieved February15, 2010 from upetd.up.ac.za/thesis/available/etd-07292005-090343.

Miles, M.B.; & Huberman, A.M. (1994). *Qualitative data analysis*. Thousand Oaks: Sage.

Miller, J.B. (2002). Examining the interplay between constructivism and different learning styles. *ICOTS,* 6, 2-5.

Mogale, N.M.; & Botes, A.C. (2001). Problem-based case study to enhance critical thinking in student nurses. *Curationis*, 24(3), 27-35.

Moghaddam, A. (2006). Coding issues in grounded theory. *Issues in Educational Research*, 16(1), 52-66.

Moore, J. L.; & Marra, R. M. (2005). A comparative analysis of online discussion participation protocols. *Journal of Research on Technology in Education*, 38(2).

Mouton, J. (2002). *How to succeed in your master's and doctoral studies*. A South African guide and resource book. Pretoria: Van Schaik.

Mtshali, N.G. (2009). Conceptualisation of community-based education in South Africa: a grounded theory analysis. *Curationis*, 5, 5-12.

Mullins, G. (1995). The evaluation of teaching in a problem-based learning context. In S.E. Chen et al. (Eds.), *Reflections on problem-based learning*. NSW: Australian Problem Based Learning Network,

Murray, I.; & Savin-Baden, M. (2000) Staff Development in Problem-based learning. *Teaching in Higher Education,* 5(1), 107-126.

Myers, M.D. (1997). Qualitative research in information systems. Retrieved January 25, 2010 from http://www.qual.auckland.ac.nz.

Noddings, N. (1990). Constructivist views on the teaching and learning of mathematics. *National Council of Teacher of Mathematics,* 7-8.

Norman, G.; & Schmidt, H. (2000). Does problem-based learning work? A meta-analysis of evaluative research. *Academic Medicine,* (68), 557-565.

Novak, J.D. (1998). Learning science and the science of learning. *Studies in Education*, 15, 77-101.

Okasha, A. (2009). Settings for learning: the community beyond. *Medical education*, 29(1), 112-115.

Oliver, R.; Harper, B.; Hedberg, J.; Wills, S.; & Agostinho, S. (2002). Formalizing the description of learning designs. *HERDSA*. Retrieved October 26, 2009 from: http://www.learningdesigns.uow.edu.au.

Ornstein, A.; & Levine, D. U. (1997). *Foundations of Education*. New York: Haughton Mifflin Company.

Painter, D.; & Rigsy, L. (2005). Data analysis. Retrieved September 3, 2008 from http://gse.gmu.edu/research/tr/TRanalysis.shtml.

Pandit, N. R. (1996). The Creation of Theory. A Recent Application of the Grounded Theory Model. *The Qualitative Report, 2(4).*

Patton, M.Q. (1990). *Qualitative evaluation and research methods*. Newbury Park, California: Sage.

Pearson, T.; Barker, W.; & Fisher, S. (2003). Integration of the case-based series in population-orientated prevention into a problem-based medical curriculum. *American Journal of Medicine*, 24(4), 102-107.

Peterson, M. (2010). Enhance problem-based learning. *Medical Education Online*, 2(3).

Piaget, J. (1973). *To understand is to invent*. New York: Grossman.

Polit, D.F.; & Beck, C.T. (2006). *Nursing research: principles and methods*. Philadelphia: Lippincott, Williams and Wilkins.

Price, B. (2003). *Studying nursing using problem-based and enquiring-based learning.* New York: Palgrave MacMillan.

Prosser, M.; & Trigwell, K. (2006). Confirmatory factor analysis of the approaches to teaching inventory. *British Journal of Educational Psychology*, 76, 405-419.

Raschick, M.; Maypole, D.E.; & Day, P.A. (1998). Improving education through Kolb's learning theory. *Journal of Social Work Education,* 34, 31-42.

Reddy, T. (2004). *Higher education and social transformation: A South African case study*. Pretoria: Council on Higher Education.

Refaat, A.H.; Nooman, Z.M.; & Richards, R.W. (1989).A model for planning a community-based medical school curriculum. *Annals of Community-Oriented Education*, (2), 7-18.

Reichert, R. (2005). Review of T. de Jong; & W.R. van Joolingen in Scientific discovery learning with computer simulations of conceptual domains. *E-learning reviews*. Retrieved September 23, 2009 from www.elearning-reviews.org/publications/270 HTML.

Rideout, E. (2001). *Transforming nursing education through problem-based learning*. Toronto: Jones & Barlett.

Roberts, P. (1996). Critical literacy, breath perspectives and universities. Applying insights from Freire. *Studies in Higher Education*, 21(2), 149-163.

Roberts, T.G. (2003). *An interpretation of Dewey's experiential learning theory*. US ERIC. Accessed from www.http://ericfuculty.org

Roth, W.M. (1993). *Construction sites: Science labs and classrooms*. Hillside, NJ: Lawrence Erlbaum Associates Publishers.

Rovai, A.P. (2004). A constructivist approach to online college learning. *The internet and Higher Education*, 7(2), 79-93.

Rowley, J. (2000b). From learning organization to knowledge entrepreneur. *Journal of knowledge Management*, 4(1), 7-15.

Rubin, H.J.; & Babbie, E. (1993). *Research methods for social work*. Pacific Grove, CA: Brooks-Cole.

Rubin, J.H.; & Rubin, I.S. (1995). *Qualitative interviewing: the art of hearing data*. New Dehli: Sage.

Salomon, G. (1993). *Distributed cognitions: psychological and educational considerations*. New York: Cambridge University Press.

Savery, J.R. (2006). Overview of problem-based learning: definitions and distinctions. *Interdisciplinary Journal of Problem-based Learning,* 1(1).

Schellens, T.; & Valcke, M. (2006) Fostering knowledge construction in university students through asynchronous discussion groups. *Computers & Education*, 46(4), 349-370.

Schmidt H**.** (2000). Assumptions underlying self-directed learning may be false. *Medical Education*; 34(4), 243–235.

Schön, D. A. (1987). Teaching artistry through reflection-in action. E*ducating the Reflective Practitioner*. San Francisco, CA: Jossey-Bass Publishers.

Schön, D.S. (1982). *The reflective practitioner: how professionals think in action.* New York: Basic Books.

Schwandt, T.A. (1994). *Constructivist, interpretive approaches to human inquiry*. In Denzin & Lincoln, pp. 118-137

Seale, A.W.; & Erasmus M. (2005). A step up action research model for the revitalisation of service learning modules. *Acta Academia Supplementum*, 5(3), 203-229.

Seale, I. (2008). Service-Learning in nursing from service-learning in the disciplines, lessons from the field. *Community Higher Education Service Partnerships of JET Education Services in collaboration with the Higher Education Quality Committee of the Council on Higher Education.* Pretoria.

Seifer, S.D. (1998). Service-Learning: Community campus partnerships for health professions education. *Academic Medicine,* 73(3), 273-277.

Seliger, E.; & Shohamy, D. (1989). *Second language research methods.* Oxford: Oxford University Press.

Serpa, M.B.; & Serpa, C.V. (2002). Pedagogia da Automia, Paulo Freire, 1997. (Review of Book), Retrieved March 20, 2008 from http:www.iesley.edu/journals/jppp/2/review-ed.html.

Silverman, D. (2000). *Interpreting qualitative data: Methods for analysing talk, text and interaction*. London: Sage.

Smith, J. (2008). Learning styles: fashion fad or lever for change? The application of learning style theory to inclusive curriculum delivery. *Innovation in education and teaching international,* 39(10), 63-70.

Smith, B. L. (2003). Learning communities and liberal education. *Academe*, 89(1), 14-18.

Smyth, S. (2005). *Postgraduate nursing students' experiences of enquiry-based learning at NUI*. Galway: National University of Ireland.

South African Nursing Council. (1985). *Regulations relating to the approval of and the minimum requirements for the education and training of a nurse (general, psychiatric and community) and midwife leading to registration*. No. R.425 as amended.

South African Nursing Council. (1992). *Taking Transformed Nursing to the Next Millenium*: *Report on National Nursing Summit*. Pretoria: SANC.

South African Nursing Council. (2001). *Transformation in nursing education*. Pretoria: SANC.

South African Qualifications Authority. (1998). Regulations under the South African Qualifications Authority Act, 1995 (Act No 58 of 1995). *Government Gazette*, No. 18787.

Southwest Educational Development Laboratory (SEDL). (1998). *Constructivism and Technology. TAP into Learning*, 1(1). Retrieved November 2, 2009 from www.sedl.org/tap/newsletters/winter98/welcome.html.

Stake, R.E. (1995). *The art of case study research*. Thousand, Oaks CA: Sage.

Stanhope, M.; & Lancaster, J. (1996). *Community health nursing: promoting health of aggregates, families and individuals*. London: CV Mosby.

Stern, P.N. (1994). Eroding grounded theory. In Morse, J. (ed.). *Critical Issues in Qualitative Research Methods*. Thousand Oaks, CA: Sage.

Stover, D. (2001). Applying brain research in the classroom is not a brainer. *Education Digest*, 66(8), 26-29.

Stover, D. (1998). Problem-based learning: redefining self-directed instruction and learning. *The Forum,* Fall, 7(1).

Strauss, A. (1987). *Qualitative research for social scientists*. Cambridge: Cambridge University Press.

Strauss, A.; & Corbin, J. (1990). *Basics of qualitative research: grounded theory, procedures and techniques*. Newbury Park, CA: Sage.

Strauss, A.L.; & Corbin, J. (1999). *Basics of qualitative research*. London: Sage.

Streubert, J.; & Carpenter, D.R. (1998). *Qualitative research in nursing: advancing the humanistic imperative*. Philadelphia: Lippincott.

Struebing, J. (1999). Grounded theory. Retrieved June, 12, 2008 from http://www.userpage.fu-berlin.de/~ifs/struebin/welcome.html

Strydom, H. (1998). *Writing the research paper*. Research at the grass roots: A primer for the caring profession (pp. 419-429).

Tan, A. (2005). A review of effectiveness of problem-based learning. *The Korean Journal of Thinking and Problem Solving*, 15, 29-46.

Tan, O.S. (2004). Students' experiences in problem-based learning: three blind mice episode of educational innovation. *Innovations in Education and Teaching International*, 41, 169-184.

Tanner, D.; & Tanner, L.N. (2007). *Curriculum development*: *theory into practice*. New York: Macmillan.

Taylor, P.; Fisher, D.; & Fraser, B. (1996). A questionnaire for monitoring social constructivist reform in university teaching. *Different approaches: theory and practice in higher education.* Proceedings HERDSA Conference. Perth, Western Australia, 8-12 July.

Tellis, W. (1997). Application of a case study methodology. Retrieved June 23, 2008 from http://www.nova.edu/ssss/QR/QU3-3/tells2.html.

Tesch, R. (1990). Qualitative research: analysis types and software tools. New York: Falmer through asynchronous discussion groups. *Computers and Education*, 4(5), 349-370.

Thistlethwaite, J.E. (2000). Introducing community-based teaching of third year medical students: outcomes of a pilot project one year later and implications for managing change. *Education for Health,* 13(1), 53–62.

Tobin, K. (1993). *The practice of constructivism in science education.* Hillsdale, NJ: Lawrence Erlbaum.

Torp, L.; & Sage, S. (2002). *Problems as possibilities: problem-based learning for K–16 education* (2nd Ed.), Alexandria, V.A. Association of Supervision and Curriculum Development.

Trochim, W. (2002b). Research methods knowledge base. Retrieved July 24, 2008 from: http://www.socialresearchmethods.net/kb/design.htm.

Trochim, W. (2002c). Qualitative methods. Retrieved July 24, 2008 from: http://www.socialresearchmethods.net/kb/qualmeth.htm.

Trochim, W.M.K. (2002a). Ethics in research. Retrieved July 24, 2008 from http://www.socialresearchmethods.net/kb/ethics.htm.

Uys, L.R.; Gwele, N.S.; McInerney, P.A.; Tanga, T.; & van Rhyn, L. (2004). The competence of nursing graduates from problem-based programmes in South Africa. *Journal of Nursing Education*, 43(8), 352-361.

Uys, L.R.; & Gwele, S. (2005). *Curriculum development in nursing: process and innovations*. USA & Canada: Routledge.

Van Schalkwyk, S. (2005). Issues of quality when integrating outcomes in study programmes geared at career oriented education. *SAQA Bulletin* 1(1), 1-15.

Van Wyk, N.C. (1999). Health education as education of the oppressed. *Curationis*, 22(41), 29-34.

Verma, G.K.; & Mallick, K. (1999). *Researching education perspectives and techniques*. Hong Kong: Graphicraft.

Visschers-Pleijers, A.J.; Dolmans, D.H.; de Leng, B.A.; Wolfhagen, A.P.; & van der Vleuten, C.P.M. (2006). Analysis of verbal interactions in tutorial groups: A process a process study. *Medical Education,* 40, 129-137.

Von Glasersfeld, E. (1995). A constructivist approach to teaching. In L. Steffe & J. Gale (Eds.), *Constructivism in education* (pp. 3-16). Hillsdale, NJ: Lawrence Erlbaum Associates, Inc.

Von Glasersfeld, E. (1996). *Instruction, aspects of constructivism. Constructivism:theory, perspectives and practice*. New York: Teachers College Press.

Wallerstein, N.; Sanchez-Merki, V.; & Dow, L. (1999). Freirian praxis in health education and community organizing. In M. Minkler (Ed.), *Community Organizing and Community Building for Health* (pp. 195-211). New Jersey: Rutgers University Press.

Wessel, W. (2004). Knowledge construction in high school physics: a study of student/teacher interactions. *Physics in Canada*, 56 (4), 205-210.

Wikipedia, (2010). Nurse education. Online. Retrived March 04, 2010 from http://en.wikipedia.org/wiki/NurseEducation.

Williams, B. (2004). Self-directed learning in problem-based learning programme. *Nurse Education Today,* 24(4), 277-285.

Willcoxson, L.; & Prosser, M. (1998). Kolb's learning style inventory: review and further study of validity and reliability, *British Journal of Educational Psychology,* 66, 247-257.

Wilson, B.B. (1997). Thoughts on theory in educational technology. Retrieved August 17, 2009 from http://carbon.cudernver.edu~bwilson/theory.html.

Winberg, C. (2006). Undisciplining knowledge production: development driven higher education in South Africa. *Higher Education*, 51, 159-172.

Windschitl, M. (2002). Framing constructivism in practice as the negotiation of dilemmas: An analysis of the conceptual, pedagogical, cultural, and political challenges facing teachers. *Review of Educational Research,* 72(2), 131-175.

Wolff, A. (2000). *The role of the tutor in problem-based learning: a resource guide for nursing faculty*. Vancouver: Wolff.

Wood, D. F. (2005). ABC of learning and teaching in medicine: problem based learning. *British Medical Journal*, 326; 328-330.

Woods, N.F.; & Catanzaro, M. (1998). Nursing research: theory and practice. St. Louis: C. Mosby.

World Health Organisation (1983). *Changing medical education an agenda for action*. Geneva: World Health Organisation.

World Health Organisation. (1993). Increasing the relevance of education for health professionals. *Report of WHO Study Group on problem solving education for health professionals.* WHO Technical Report Series, 838: World Health Organisation.

World Health Organisation. (1985). *Health manpower requirements for the achievements of health for all by year 2000 through primary health care*. WHO Technical Report Series, 717. Geneva: World Health Organisation.

Yin, R.K. (1994). *Case study research: design and methods*. Thousand Oaks, CA: Sage.

Yueng, K.; & Hau, K. (2006). Constructivists teaching and teacher-centred teaching: a comparison of students' learning in a university course. *Innovations in education and teaching international,* 43(3), 279-290.

Zemelman, S.; Daniels, H.; & Hyde, A. (2005). Best practice: today's standards for teaching and learning in America's schools. Portsmouth, New Hampshire: Heinemann.

Zuber-Skerritt, O. (2002). The concept of action learning. In *The Learning Organisation,* 9(3), 114-124.

APPENDIX 1: INTERVIEW GUIDE

1. What is your understanding of the concept "knowledge construction" within the context of CBSL in your institution?
2. What are the core characteristics of the knowledge construction process in CBSL in your institution?

3. Please briefly describe your school's service-learning/community-based basic nursing education programme.
4. How does learning from the community settings inform classroom teaching/learning?
5. Please explain the process that you follow when conducting classroom sessions?
6. What is your role during classroom interaction?
7. What role is played by the learners during the classroom sessions?
8. Does your group ever engage in a dialogue to such an extent that new information emerges from that process? Can you explain this process to me?
   Probing questions:
   - How do learners react when a trigger or problematic situation, or scenario is presented to them?
   - Are they able to use their previous knowledge and information from other subjects to analyse the situation and come up with a hypothesis or to generate a solution? Elaborate on how they do this.
   - Do they ever disagree on the hypothesis or proposed solution (dissonance) during the discourse?
   - How is this handled in class? (negotiation)
   - In cases of a disagreement, how does the group come up with a solution that incorporates views/opinions of those who were in disagreement?
   - How does the context influence the knowledge that is being constructed during classroom interaction (grounding knowledge into local context)?
   - Does the programme allow learners to test or apply the knowledge they have constructed from engaging in a dialogue? Please explain how this is done?
9. At what stage do you say that learning has taken place?
10. What facilitates or hinders the process of knowledge construction?

Document Analysis Guide

- Vision, mission and philosophy of the school
- Programme and level outcomes
- Teaching methodology
- Curriculum content
- Group process evaluation forms

Observations Guide

- Presentation of the content/problems/scenarios

- Interactions in the classroom
- Roles and responsibilities of the facilitator
- Roles and responsibilities of the learner
- Dialogue in the classroom
- Learning in the community setting
- Interaction with community members

APPENDIX 2a: INFORMATION SHEET (For Students)

Date:	03 April 2008
Name of research student:	Sindisiwe Mthembu
Contact number:	0723485604
E-mail:	sindim@dut.ac.za
Name of supervisor:	Professor N.G. Mtshali
Contact number:	031-2602498
Name of department:	School of Nursing
Name of institution:	University of KwaZulu-Natal

Dear Participant
I am completing a research project as part of the requirements for the Doctoral Degree through the Faculty of Health Sciences, School of Nursing.

Title of the research: Knowledge Construction in Community Service-Learning Basic Nursing Programmes in Two Selected Nursing Schools in South Africa

Purpose of the research: The purpose of the research is to explore the processes involved in constructing knowledge in basic nursing programmes in selected South African nursing schools involved in community service-learning and the conditions under which this phenomenon (knowledge construction) occurs and to generate a middle range theory to guide the process of knowledge construction in basic nursing programmes that are involved in community service-learning.

Description of the procedure:
Your participation is requested as you are representative of the population under study. As part of the research process, please note that I will be sitting-in at your classroom discussions and will also be participating in some of your community interventions.

Ethical aspects
Please note that your identity and information will be treated with the utmost confidentiality.
Please feel free to ask any questions you may have so that you are clear about what is expected of you. Please note that:

- you are free to *not* participate
- you are free to withdraw at any stage without repercussions
- your name will not be used nor will you be identified with any comment made when the data is published
- there will be no risks attached to your participation

Advantage to you as a respondent:
The findings of the study will be made available on completion.

Thank you.

APPENDIX 2b: INFORMATION SHEET (For Academic Staff)

Date:	04 April 2008
Name of research student:	Sindisiwe Mthembu
Contact number:	0723485604
E-mail:	sindim@dut.ac.za
Name of supervisor:	Professor N.G. Mtshali
Contact number:	031-2602498
Name of department:	School of Nursing
Name of institution:	University of KwaZulu-Natal

Dear Participant
I am completing a research project as part of the requirements for the Doctoral Degree through the Faculty of Health Sciences, School of Nursing.

Title of the research: Knowledge Construction in Community Service-Learning Basic Nursing Programmes in Two Selected Nursing Schools in South Africa

Purpose of the research: The purpose of the research is to explore the processes involved in constructing knowledge in basic nursing programmes in selected South African nursing schools involved in community service-learning and the conditions under which this phenomenon (knowledge construction) occurs and to generate a middle range theory to guide the process of knowledge construction in basic nursing programmes that are involved in community service-learning.

Description of the procedure:
Your participation is requested as you are representative of the population under study. As part of the research process, you will be required to provide information on the programme that you are involved at, participate in the interview and fill out a questionnaire where required.

Ethical aspects
Please note that your identity and information will be treated with the utmost confidentiality.
Please feel free to ask any questions you may have so that you are clear about what is expected of you. Please note that:

- you are free to *not* participate
- you are free to withdraw at any stage without repercussions
- your name will not be used nor will you be identified with any comment made when the data is published
- there will be no risks attached to your participation

Advantage to you as a respondent:

The findings of the study will be made available on completion.

Thank you.

APPENDIX 3: INFORMED CONSENT FORM

Title of research: Knowledge Construction in Community Service-Learning Basic Nursing Programmes in Two Selected Nursing Schools in South Africa

Name of research student: Sindisiwe Mthembu
Contact number: 0723485604
E-mail: sindim@dut.ac.za

Purpose of the research: The purpose of the research is to explore the processes involved in constructing knowledge in basic nursing programmes in selected South African nursing schools involved in community service-learning and the conditions under which this phenomenon (knowledge construction) occurs and to generate a middle range theory to guide the process of knowledge construction in basic nursing programmes that are involved in community service-learning.

Please circle the appropriate answer

1. Have you read the participant information sheet YES/ NO
2. Have you had the opportunity to ask questions regarding this study YES/ NO
3. Have you received satisfactory answers to your questions? YES/ NO
4. Have you had an opportunity to discuss this study? YES/ NO
5. Have you received enough information about this study? YES/ NO
6. Who have you spoken to? ……...
7. Do you understand the implications of your involvement in the study? YES/ NO
8. Do you understand that you are free to withdraw from the study?
   (a) At any time YES/ NO
   (b) Without having to give a reason for withdrawing YES/ NO
9. Did you agree to voluntarily participate in this study YES/ NO

Participants name (in block letters) ……..

Signature ……. Date ……...

Should you have any questions, please do not hesitate to contact my supervisor who will be able to assist you.

Supervisor: Prof N.G. Mtshali
School of Nursing
University of KwaZulu-Natal
Tel: 031-2602498
e-mail: mtshalin3@ukzn.ac.za

Research student: ……..... Signature: ……

APPENDIX 4: LETTERS REQUESTING PERMISSION TO CONDUCT RESEARCH PROJECT

UNIVERSITY OF KWAZULU-NATAL

School of Nursing
Durban
4041
Tel: 031-260 2498/9
Fax: 031-260 1543

PERMISSION TO CONDUCT A STUDY

10 March 2008

The Head of School
Nursing Department
University of Free State
P.O. Box 339
Bloemfontein
9300

Dear Prof A.S. Van Der Merwe,

Re: Application for Permission to Conduct a Research Study in your School

I am a student at the University of KwaZulu-Natal, School of Nursing doing a Doctoral Degree in Nursing. I hereby request a permission to conduct a research study at your school. The title of the proposed study is *"Knowledge Construction in Community Service-Learning Basic Nursing Education Programmes in Two Selected Nursing Schools in South Africa"*.

In order for me to get a final ethical clearance from the research office in the university, I am required to produce a permission to conduct a study from relevant authorities. And as I have identified that your school is recognised for the community-based programme it runs, I hereby request a permission to conduct a research study.

The collection of data will involve spending a few days at your school observing the process of teaching and learning in community-based classrooms, including visit to the relevant communities with the students. I will also do document analysis (service learning/community-based programme structure or curriculum) and interviews with the programme director or head of school, level or course coordinator, facilitators or lecturers involved in the community-based programmes.

School of Nursing, Howard College Campus

Postal Address: Durban, 4041, South Africa

Telephone: +27 (0)31 260 2499 Facsimile: +27 (0)31 260 1543 Email: Website: www.ukzn.ac.za

Founding Campuses: Edgewood Howard College Medical School Pietermaritzburg Westville

Included in this mailing is an abridged research proposal and the ethics clearance from the University of KwaZulu-Natal's Research Ethics Committee. If your school grants me the permission to conduct this proposed study, I would appreciate having your school's community based service-learning programme structure, the timing of the placement of students in the community and the nature of community-based learning activities. Having such information will help me to plan when to collect data in your institution.

I guarantee that participants will be voluntary, anonymity and confidentiality will be maintained throughout.

It will be appreciated if my request receives your favourable considerations.

Yours sincerely,

Sindisiwe Z. Mthembu
Lecturer: Durban University of Technology
Tel: 0313732036
Fax: 0313732039
Cell: 0723485604
E-Mail: sindim@dut.ac.za

Professor NG Mtshali
Research Supervisor
Tel: 0312602498
E-mail: mtshalin3@ukzn.ac.za

UNIVERSITY OF KWAZULU-NATAL

School of Nursing

PERMISSION TO CONDUCT A STUDY

10 March 2008

The Head of School
School of Nursing
University of KwaZulu-Natal
Durban
4041

Dear Prof B. Bhengu,

Re: Application for Permission to Conduct a Research Study in your School

I am a student at the University of KwaZulu-Natal, School of Nursing doing a Doctoral Degree in Nursing. I hereby request a permission to conduct a research study at your school. The title of the proposed study is *"Knowledge Construction in Community Service-Learning Basic Nursing Education Programmes in Two Selected Nursing Schools in South Africa"*.

In order for me to get a final ethical clearance from the research office at the university, I am required to produce a permission to conduct a study from relevant authorities. And as I have identified that your school is recognised for the community service learning- based programme it runs, I hereby request a permission to conduct a research study.

The collection of data will involve spending a few days at your school observing the process of teaching and learning in community-based classrooms, including visit to the relevant communities with the students. I will also do document analysis (service learning/community-based programme structure or curriculum) and interviews with the programme director or head of school, level or course coordinator, facilitators or lecturers involved in the community-based programmes.

Included in this mailing is an abridged research proposal and provisional ethics clearance from the University of KwaZulu-Natal's Research Ethics Committee. If your school grants me the permission to conduct this proposed study, I would appreciate having your school's community service-learning/community-based programme structure, the timing of the placement of the

School of Nursing, Howard College Campus

Postal Address: Durban, 4041, South Africa

Telephone: +27 (0)31 260 2499 Facsimile: +27 (0)31 260 1543 Email: Website: www.ukzn.ac.za

Founding Campuses: Edgewood Howard College Medical School Pietermaritzburg Westville

students in the community and the nature of community-based learning activities. Having such information will help me to plan when to collect data in your institution.

I guarantee that participants will be voluntary, anonymity and confidentiality will be maintained throughout.

It will be appreciated if my request receives your favourable considerations.

Yours sincerely,

Sindisiwe Z. Mthembu
Lecturer: Durban University of Technology
Tel: 0313732036
Fax: 0313732039
Cell: 0723485604
E-Mail: sindim@dut.ac.za

Professor NG Mtshali
Research Supervisor
Tel: 0312602498
E-mail: mtshalin3@ukzn.ac.za

APPENDIX 5: PERMISSION TO CONDUCT THE RESEARCH PROJECT

UNIVERSITEIT VAN DIE VRYSTAAT
UNIVERSITY OF THE FREE STATE
YUNIVESITHI YA FREISTATA

Fakulteit Gesondheidswetenskappe/Faculty of Health Sciences
Skool vir Verpleegkunde/School of Nursing

Prof N Mtshali

University of Kwa-Zulu Natal

Durban

28th of July, 2008.

Dear Prof Mtshali

Permission to conduct research at UFS, School of Nursing

I hereby grant permission to S Z Mthembu to conduct her PhD research at our institution as agreed and according to the research protocol.

Our best wishes accompany her.

Prof. Anita S van der Merwe

Head: School of Nursing, UFS.

12 March 2008

UNIVERSITY OF KWAZULU-NATAL

Ms S Z Mthembu
Lecturer:
Durban University of Technology
Tel: 031 373 2036
Fax: 031 373 2039
Cell: 072 3485604

Dear Ms Mthembu

Application for permission to Conduct a Research in the School of Nursing

Kindly note that the application for the above has been approved.

It would be appreciated if you could furnish us with a notification of your visits for data collection and an itinerary of your site visits.

Should there be any further queries kindly contact our offices.

Thank you

Sincerely

Professor B R Bhengu
Head
School of Nursing

School of Nursing, Howard College Campus

Postal Address: Durban, 4041, South Africa

Telephone: +27 (0)31 260 2499 Facsimile: +27 (0)31 260 1543 Email: Website: www.ukzn.ac.za

Founding Campuses: Edgewood Howard College Medical School Pietermaritzburg Westville

APPENDIX 6: CHECKLIST FOR CLASSROOM OBSERVATION

1. Promoting higher order thinking skills & self-directed learning skills.

FACILITATING LEARNING IN A NON-TRADITIONAL CLASSROOM

Group/Level of Students: _____ **Date:** _____

Observer (Completing this part is Optional): _____

Topic: _____

1. GENERAL COMPONENTS OF THE TEACHING LEARNING PROCESS.	***FREQUENCY*** *(Make a tick according to the frequency of the behaviour)*
A. DEPTH OF DISCUSSION.	
1. Sustained discussion of one or two topics.	
2. Discussion involves three or four topics.	
3. A superficial discussion of more than four topics.	
B. CONTINUITY	
1. Links between the lesson and previous work made explicit.	
2. A cursory reference to the relationship between the lesson and previous work.	
3. No link between present lesson and previous work is established.	
C. INTEGRATION AND REFLECTION.	
1. Experiences analysed in the light of relevant substantive knowledge in the area under discussion.	
2. Discussion centred on individual experiences only.	
3. No discernible basis for the discussion.	
D. STUDENT CRITIQUE.	
1. Voluntarily question and critic proposed answers and ideas (for the most part of the discussion).	
2. Critique made only when asked to do so.	
3. Students not questioning any of the ideas and proposals presented in class (by the group and/or the facilitator)	
E. STUDENT-STUDENT THOUGHTFUL DISCOURSE.	
1. >50% of the class participated in student-student dialogue.	
2. About 50% of the class engaged in dialogue amongst group members.	
3. <50% of the class involved in dialogue with each other.	
F. PROPORTION OF TIME ENGAGED IN THOUGHTFUL DISCOURSE.	
1. Most of class time spent on student-student dialogue rather than teacher-student dialogue.	
2. About 50% of class time spent on student-student dialogue	
3. Less than 50% of class time spent on student-student dialogue.	
G. CRITIQUE RESOURCES.	
1. Critique of students SDL resources (what was used, why, adequacy, planned change in strategies where necessary)	
2. A cursory reference to SDL resources.	
3. No critique or reference to SDL resources.	
Student evaluation of the session conducted (Yes or No).	
Assigns work for SDL in preparation for next session (Yes or No).	
COMMENTS:	

2. Checklist for Classroom Observation: Higher Order Thinking Skills & Self-Directed Learning Skills

3. TEACHER BEHAVIOURS/QUESTIONS	***FREQUENCY*** *(Make a tick according to the frequency of the behaviour)*
A. TYPE OF QUESTION/RESPONSE REQUIRED	
1. Academic: Requires factual information	
2. Academic: Requires demonstrations of understanding of a concept/phenomena (comprehension).	
3. Academic: Requires analytical thought • Requires a description of the distinctive attributes of a phenomena or concept • Requires an explanation as to how such attributes are related to each other • Seeks an explanation of the system or principles that hold such attributes together.	
4. Academic: Requires analytical and critical thought **All that is required for 3 above plus:** • Requires that students be skeptical and questioning of authoritative sources	
5. Non-academic: Not related to the curriculum (social, personal or housekeeping issues)	
B. TEACHER BEHAVIOUR IN DEALING WITH STUDENT RESPONSES	
1. Does not require any explanations in relation to students conclusions.	
2. Requires that conclusions be explained. Explanations not challenged.	
3. Challenges explanations and reasons given for conclusions (ie. Students asked to defend or clarify their assertions through probing and dialogue).	
C. THINK-TIME	
1. Names students before asking the question.	
2. Response expected in less than a second after asking the question (actually calls on someone)	
3. Think-time allowed but not adequate (< than 15 sec.)	
4. Allows time to think before calling on someone for an answer (> 15 sec.)	
D. RELEVANCE OF STUDENT CONTRIBUTIONS.	
1. Students contributions not related to the issue under discussion	
2. Contributions only tangential to the issue under discussion.	
3. Contributions relevant to the issue under discussion.	
E. EXPLANATIONS AND REASONS FOR CONCLUSIONS	
1. Offer no explanations nor reasons for conclusions reached	
2. Explanations and reasons offered only when solicited.	
3. Voluntarily offers explanations and reasons for conclusions reached.	
F. ALLOWING THEMSELVES THINK-TIME	
1. Responds within a second after a question has been asked	
2. A few seconds (< 15) is taken before responding to a question	
3. Adequate think time taken before answering questions (> 15 sec)	
Comments:	

APPENDIX 7: EVALUATION TOOL FOR GROUP PROGRESS

School of Nursing

Date: **Group:**

	YES	NO
A) <u>DID THE FACILITATOR:</u> i. Define student tasks clearly? ii. Explain where each contribution fitted in the whole process? iii. Have clear objectives for each presentation? iv. Include questions that stimulated discussion? v. Intervene at crucial points of the discussion? *Comments:* _____ _____ _____ _____ **B) <u>GROUP</u>** i. Was group participation constructive? If so, in what way? _____ _____ _____ _____ ii. Did all members participate? iii. Was there a sense of mutual purpose? *Comments:* _____ _____ _____ _____ **C) <u>CONTRIBUTIONS</u>** i. Were the contributions well prepared and presented? ii. Did you learn from these contributions? Explain. _____ _____ _____ _____ iii. Was there adequate opportunity for clarification of aspects that were unclear to the group? iv. Was there sufficient time-limits set? v. Was the time used constructively? *Comments:* _____ ____ _____ ____ **D) <u>WERE THE RESOURCES:</u>** i. Consulted by the presenter adequate? ii. Appropriate?		

iii. Beyond written word (human multidisciplinary resources)? iv. Up to date? *Comments:* _____ _____ _____ _____		

APPENDIX 8: SAMPLE LIST OF COMMUNITY HEALTH PROBLEMS

SCHOOL OF NURSING

Groups: _____ Year: _____

SOCIAL PROBLEMS
- Alcoholism,
- Child abuse,
- Teenage pregnancy,
- Drug abuse,
- Poverty,
- Unemployment,
- Crime,
- Illegitimacy,
- Rape.

CHRONIC DISEASES
- HPT,
- Diabetes Mellitus,
- Epilepsy.

COMMUNICABLE DISEASES
- HIV/AIDS,
- Tuberculosis,
- Dysentery,
- Bilharzia,
- Typhoid,
- Measles,
- Poliomyelitis,
- Congo Fever,
- H1N1 (Swine Flu),
- Cholera,
- Malaria,
- Ebola fever,
- Skin diseases:
    - Scabies,
    - Chicken pox,

RESPIRATORY DISEASES
- Asthma,
- Bronchitis,
- Pneumonia,
- Chronic Obstructive Airway Diseases,
- Influenza.

ENVIRONMENTAL PROBLEMS
- Poor housing,
- Overcrowding,
- Poor sanitation,
- Improper disposal of waste,
- Noise pollution,
- Home accidents, etc

OTHER DISEASES AND PROBLEMS
- Malnutrition (kwashiorkor, pellagra, marasmus),

OTHER TOPICS COVERED THAT WERE NOT IN THE STUDENT LIST:
- Epidemiology,
- Community assessment,
- Family assessment,
- Project management,
- Program planning, management, and evaluation,
- Health education
- Concepts: Primary health care, community nursing,
- Nutritional assessment,
- Road to health card,
- Breastfeeding,
- Artificial feeding,
- Immunisation,
- Family planning.

APPENDIX 9: SAMPLE DATA (CLASSROOM OBSERVATION)

Continued…..

Facilitator: We can break the assessment into History taking, Physical examination and Diagnostic tests or test performed, test that means curtains tests like an HB or uhm glucose la, peripheral, blood glucose uh or referrals to any other tests. That's all part of your assessment. History taking, if you perform a very good history in other words you get all the relevant data that you… that is uhm applicable to a patient. Full history, that means it can give you 80% of a reliable diagnosis. So if History taking is extremely important (the lecturer gives a summary in Afrikaans) uhm, right in other words the full assessment of the patient just to know that assessment will use all these smaller parts, Budget assessment
A 37 year old man visits a clinic with complaints of severe pain in his right big toe. Now imagine a big painful toe, he says he also has pain in his knee and toes. Assessment findings of your physical examination. His height, lets say he's as tall as me and he weighs 96 kilos right (laughter) boomzi, boomzi or not a boomzi?

(Class answers no)

Facilitator: Body mass index

Class: 32

Facilitator: Thirty two, oops how do you picture this guy? This 37 year old, overweight? Obese? (Papers moving) obese, obese. So he's a boomzi , he's fat okay now his right big toe, that's part of the assessment of your physical examination that means he's hot, he's red, swollen and very painful. Okay you've got the picture in front of you. The guy sitting opposite and this is his complaint. Now his vital signs, his blood pressure 160 over 110 (class talking - hypertension) possible, possible hypertension ne, will see, okay we'll think of hypertension in this case ne. its an elevated blood pressure reading. Pulse rate (too high) too high. Am I right? Temperature

(Class answers: normal)

Facilitator: Normal, do you all agree? (Coughing in the background) 37 years of age, yes still normal. Respiratory rate?

(Class answers: also normal, normal)

Facilitator: Also normal, okay now from the history of the patient name findings that will confirm gout. Now before we get there, who can tell us what is gout?

(Class pupil answers: inflammatory regenerative ahm illness of the joint)

Facilitator: Okay a bit more

(Class pupil answers: Isn't it when you have too much urine acid and it start crystallising and it goes into your Sino vial fluids)

Facilitator: Excellent, what you said is correct add it to what you were saying. Yes, anybody else with a bit more to add to

(Class pupil answers: Isn't it inflamed also)

Facilitator: Yes you said inflamed, but your right. So what clinical signs and symptoms, agh and you know parts in here…inflamed but (speaks Afrikaans)

(Class pupil speaks: It's when you have an excess urine acid in your body and your body struggles to get rid off it, so then it crystallises and it goes into tour Sino vial fluid, fliud)

Facilitator: Do you all know the anatomy of the joint?

(Class replies: yes)

Facilitator: So that's background knowledge ne, Sino vial fluid in your joint. So it crystallises there, it causes inflammation and it…where does this pain comes from…Its like foreign objects ne, so it causes pain and inflammation. Inflammation itself contributes to pain. Now tell me what clinical signs and symptoms will implicate any type of inflammation?

(Class replies: swelling)

Facilitator: Swelling

(Class gives different answers at the same time:

Facilitator: Redness, hot. How do you, how will you distinguish hot? What type is hot?

(Class replies with different answers: temperature of the surrounding skin)

Facilitator: With what ah…Yes, temperature of surrounding skin compared to that opposite side, the other side with your…which side feels best?
Temperature, (class talking in the background). This side (papers shuffling)…I do...will you remember that?
Any questions so far, gout. So you all know what is gout?
You've read it; you have a bit of a summary made; now what findings in this patient will confirm gout…remember we only here, we think off, with a differential

diagnosis. We haven't finalised it but what we…what gives you a confirmation of findings of gout

(Class talks in the background giving different answers)