ASSESSEMENT OF LEARNING STYLES OF UNDERGRADUATE NURSING STUDENTS OF UNIVERSITY OF NIGERIA, ENUGU CAMPUS (UNEC), ENUGU STATE.

BY

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TITLE PAGE

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SUPERVISOR: DR. (MRS.) N. P. OGBONNAYA

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APPROVAL PAGE

This dissertation has been approved for the award of Masters of Science Degree for the Department of Nursing Sciences, Faculty of Health Sciences and Technology, University of Nigeria, Enugu Campus.

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CERTIFICATION

I, **Madu Obiageli T.** with Registration Number **PG/M.Sc/06/45580** certify that the original work is mine except as specified in acknowledgement and references, and that neither the thesis nor the original work contained therein has been submitted to this University or any other Institution for the award of a degree.

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DEDICATION

This work is dedicated to God Almighty who has been my source of existence over the years.

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TABLE OF CONTENTS   **PAGE**

CHAPTER THREE: **RESEARCH METHOD**

CHAPTER FOUR: PRESENTATATION AND INTERPRETATION OF DATA

**CHAPTER FIVE: DISCUSSION OF FINDINGS, SUMMARY, CONCLUSION AND
                    RECOMMENDATIONS**

LIST OF TABLES   **PAGE**

LIST OF FIGURES   **PAGE**

LIST OF APPENDICES

ABSTRACT

The present study assessed the learning styles of studentsø nurses (diverger, assimilator, converger and accommodator) as identified through Kolbøs Learning Styles Inventory and some demographic variables. A total of 310 students nurses who met the inclusion criteria were involved in this study and completed the LSI and demographic questionnaire. Descriptive statistics using frequency, percentages mean and standard deviation were computed for the demographic variable while inferential statistics ó chi- square analysis was used for testing the hypothesis at 0,05 level of significance. Statistical analysis was done using Statistical Package for Social Sciences (SSPS) version 16. The result showed that 29.0% of the respondents were identified as Divergers, 27.4% as Assimilators, 25.8% as Convergers and 17.7% as Accommodators. Thus suggesting an even spread of learning style preferences among the nursing respondents. There was statistically significant correlation between identified learning style and mode of admission as well as year of study, while there was no statistically significant correlation between learning styles and gender and age. It is therefore recommend that Educators should attempt to introduce a variety of different teaching approaches and methods strategies in order to enable learning for all nursing students regardless of their learning style. Educators are not expected to completely re-do each course, however, making small modifications to the curriculum to incorporate learning style information may provide a more effective learning environment for students.

CHAPTER ONE
INTRODUCTION

Background to the Study

Learning is a complex and multi - dimensional process. Individuals learn through a variety of techniques and methods including but not limited to, lecture, reading, direct experience, and cognitive processes. Researchers suggest that individuals often have a preferred style of learning. This preferred style of learning may vary depending on the type of learning task, the subject matter being studied, age, gender, the training methods and/or the learning environment or setting. Past research also suggest that preferred learning styles while relatively stable can change over time (Dunn, 2000; Kolb, 2005)

Learning styles are defined as individual differences in the way information is perceived, processed and communicated (Haar, Hall, Schoepp, & Smith, 2002). Slavin (2000) noted that learning styles appear to occur in three areas: *cognitive*, *psychological*, and *affective*. Cognitive styles have been defined in terms of the way a person perceives, remembers, thinks, and solves problems. Psychological styles are biological and include reactions to the physical environment that may affect learning (e.g., being a õnight personö or preferring to study in a warm or a cold room). Affective styles include personality and emotional characteristics such as persistence, preferring to work with others or alone, and rejecting or accepting external reinforcement.

As the student demographic variables on todayøs college and university campuses change, approaches to teaching and learning are challenged in an ever increasing way. The heterogeneous nursing populations in the university (from the secondary school graduate to the post basic óregistered nurse, registered midwife ó generic versus direct entry nurses) bring a range of learning styles to the educational milieu (Frankel, 2009). Understanding the multiple learning styles that individual students bring to the classroom helps nurse educators

adapt their teaching techniques to meet students' needs and also assist students in developing new learning styles they will require in their professional careers (Frankel, 2009).

Nursing is a profession where knowledge and practice do not remain static but are ever changing. It can be argued that nursing education should enable students to become effective lifelong learners equipped with the learning skills required for their profession. This can be achieved in different ways which include knowing the students' learning style preferences and applying this knowledge in the selection and utilization of teaching, learning and assessment strategies to enable them to develop beyond their learning style comfort zone and become more flexible in their learning range (Fleming, 2010).

Academics are challenged to ensure that teaching strategies reflect the diverse nature of the student population and prepare nursing students with the knowledge to be safe and competent practitioners who are ready to work (Meehan-Andrews,2009). Assessment of different learning styles among the student population is important in designing curricula, and adopting teaching methods that promote student learning, which is a crucial part of ensuring that students engage positively with content and develop the deep learning skills needed for lifelong learning (Mikol, 2006).

A studentøs learning style determines how that person comprehends and retains information and is important for the students and the educator (Rassool & Rawaf, 2008). DiBartola (2006) noted that educator can gain a better framework for incorporating various delivery methods into his/her teaching. By creating environments diverse in teaching methodologies, teachers can support all types of learning styles. This creates a more welcoming and rewarding experience for all students and educators involved (Arthurs, 2007). It is believed that the student partaking in certain learning activities can have a direct outcome on the quality of learning (Marambe, Athuraliya, Vermunt & Boshuizen, 2007).

Students only retain 10-20% of what they hear in a lecture, but by adding visual aids to the presentation (i.e., pictures, posters, presentations) studentøs recall doubles to about 50%, by adding speaking parts and active roles, a teacher can increase their studentsø retention to 90+ % (Arthurs, 2007). All of these various tools (i.e., lecture, visual aid, speaking, and active roles) activate various learning styles that each student may hold. These tools can also add a fun aspect to what may have become a dull process over the course of the semester.

The learning styles of the people are like a circle in Kolbøs Experiential Learning Style Theory (ELT) which was developed by (Kolb, 2000). This circle contains four learning stages/modes. These are: Concrete Experience (CE), Reflective Observation (RO), Abstract Conceptualization (AC) and Active Experimentation (AE). That is, the students might be able to open themselves to new experiences without prejudice (CE), might reflect and observe life from many points (RO), put the observations into strong theories logically (AC), use these theories in the stage of problem solving and making decisions (AE).

These stages of learning are usually displayed in a dimensional grid. The horizontal axis (AE/RO) focuses on actions and how they are performed. The vertical axis (CE/AC) focuses on thought and emotional processes. The top of the vertical axis represents feelings (CE), and the bottom of the axis represents thinking (AC) while right end of the horizontal axis represents watching (RO) and the left represents doing (AE). The intersection of the axes creates four quadrants with each quadrant describing a particular learning style (Kolb, 2005). These learning styles are diverger**,** assimilator, converger and accommodator.

Divergers perceive information concretely (CE) and process it Reflectively (RO). They draw upon their imaginative aptitude and their ability to view complex situations from many perspectives. They prefer to watch rather than do. They are called divergers because they excel at viewing an event or idea from many perspectives and at generating many

different ideas, *Assimilators* perceive information abstractly (AC) and process it Reflectively (RO). They are rational and logical thinkers. They follow directions well and like to thoroughly understand concepts before they act. They are called assimilators because they do not emphasize practical application, rather they focus on the development of theories, often discarding facts if they do not fit the theory while *Convergers* perceive reality through abstract conceptualization (AC) and process it through active experimentation (AE). They organize information through hypothetical deductive reasoning. They prefer technical tasks, and are less concerned with people and interpersonal aspects. They are called convergers because they move (converge) quickly to reach a conclusion or find a single, correct answer. The Accommodators, on the other hand perceive reality through concrete experience (CE) and process it through active experimentation (AE). They learn by concrete information from their senses (feelings) and from doing. They use intuition and trial-and-error situations. They are called accommodators because they adapt well to new circumstances and applying knowledge in new ways (Kolb, 2005).The present study will focus on these four learning styles.

Regardless of the style of learning, most educators utilize only a small number of teaching styles in the teaching learning process to the detriment of some students (Rassool & Rawaf, 2008). The content of educational programmes that cater for a single learning style fails to meet the expectations of many of their learners (Rutz, 2003). Having numerous styles of teaching at your disposal could increase comprehension and retention of materials. Therefore problems could be minimized and quality enhanced if teaching styles were modified to accommodate all the learning styles by addressing each side of the learning style dimension at least some of the time and thus creating lifelong learners that are capable of learning and working in diverse settings (McClanaghan, 2000).

This study therefore, wants to assess the learning styles of nursing students across their degree program; from second year to graduating/final year and to assess the association between the learning preference and selected variables.

Statement of the Problem

Teachers all over the world are interested in improving learning in their students. Nursing and Midwifery teachers in Nigeria face the same dilemma and challenge to motivate their students to learn hence, It is imperative that teachers, who have the responsibility of facilitating the learning process, need to analyze their studentsø predominant learning styles with the purpose of developing a teaching methodological strategy in accordance with the way in which their students learn.

The lecture discussion is the most recommended teaching method for nursing education in Nigeria (N&MCN, 2003). Mikol (2005) found that lecturing emphasizes content and cognitive gain and can create passivity in students, whereas in addressing different learning style, the instructor uses alternative teaching methodologies that address the studentsø experiences, beliefs, and understanding of the nursing literature. These strategies encourage inquiry and guide learning beyond the textbook. They also reduce the amount of content to be memorized.

Moreover, the researcher observed that some instructors adapt their instructional techniques to õfit" the learning preferences of individual students. The basis for these adaptations are usually informal and quite intuitive. Intuition alone seems both insufficient to the magnitude of the present demands (of education) and poorly suited to building cumulative knowledge about instruction. What is required is a more systematic method of assessing the learning preferences that can supplement teacher's intuitive understanding of the students. Based on this, evidence-based research on studentsø learning style preference should be a

high priority for nursing programmes looking to promote successful academic achievement. This study therefore aimed at assessing and identifying the learning styles of the nursing students in order to optimize the educational outcome and also add to the existing literature on learning styles.

Purpose of the study

The purpose of the study is to assess the predominant learning styles of nursing students, across their program, from second year to graduating year, and to show any differences between these groups.

Specifically, the objectives of the study are to:

1   Ascertain the nursing studentsø learning styles in relation to the four type of learning styles theorized by Kolb (2005).

2   Determine any gender differences in the learning styles of nursing students

3   Determine age differences in the learning style of nursing students

4   Determine the nursing studentsø learning styles in relation to their mode of admission (direct versus UME mode of admission)

5   Determine the nursing studentsø learning style across class levels (year of study) second, third, fourth and fifth/final year

Research Questions

The study was guided by the following research questions:

1.   What are the learning style preferences of the nursing students in relation to the four types of learning styles suggested by Kolb (2005).

2.   What are the differences in learning styles of the nursing student by gender

3.   What are the differences in learning styles of the nursing student by age

4. What are the differences in learning styles of the nursing student in relation to their mode of admission (direct versus UME)

5. What are the differences in learning styles of the nursing student across their class levels (second, third, fourth and fifth/final year).

Hypothesis to the Study

The following hypothesis will guide the study:

1. There is no significant difference in the learning style of the male and female nursing students.

2. There is no significant difference in the learning style of age groups of the student nurses.

3. There is no significant difference in the learning style of direct and generic nursing student.

4. There is no significant difference in the learning style of the learning style of 2nd 3rd 4th and 5th year students.

Significance of the Study

The findings from this study will profit the students themselves, the educators and the administrators in the following ways:

The findings will reveal the studentsø learning styles which can benefit the students in that it would help them to understand their own strengths and weaknesses in learning, and can consequently learn more effectively and take responsibility for their own learning. The knowledge will also empower individual students to use their learning style preference information to achieve positive outcomes - improve study habits, doing their homework with

strategies responsive to their individual styles and select courses or work environments compatible with their learning style preferences.

For educators, their awareness of studentsø learning styles would help them in making informed choices in course material, design and learning processes to extend the opportunity for effective learning in their courses. Such knowledge will equally help them to adapt their mode of teaching to meet the needs of the students and also enhance their learning process by providing an environment that fosters these preferences.

Finally, from an administrative perspective, learning style preference information may provide assistance in scheduling theory and clinical courses for students, improve the planning, production and implementation of educational experiences to be more appropriately compatible with students desire, in order to enhance their retention and retrieval. The study may equally be beneficial for the curriculum designers while suggesting curriculum for different subjects as different subjects demand different learning style of students.

Scope of the Study

This study is primarily concerned with the investigation of learning styles of nursing students of University of Nigeria Enugu Campus using the four learning styles as identified by Kolb (2005). They include **diverger** (concrete experience and reflective observation), **assimilator** (reflective observation and abstract conceptualization), **converger** (abstract conceptualization and active experimentation) and lastly **accommodator** (active observation and concrete experience). Some personal characteristics which may influence learning styles (age, gender, year of study) will be examined too.

Definition of Terms

For the purpose of this study, the following operational definitions were used.

- **Learning: -** It is a process that comes from concrete experience to reflective observation; from abstract conceptualizing to active practice. Knowledge results from the combination of grasping and transforming experience (Kolb, 2005).

- **Learning Style**: - As identified by Kolb in his Learning Style Inventory, learning style is a measure of an individualøs relative emphasis on the four learning modes (Concrete Experience-CE; Reflective Observation-RO; Abstract Conceptualization-AC and Active Experimentation-AE).

  It is equally, the particular way in which an individual organizes experience to acquire and retains knowledge as measured by Kolbøs basic learning styles namely; diverger (CE and RO), assimilator (RO and AC), converger (AC and AE) and accommodator (AE and CE).

- **diverger** (combines the learning stage of concrete experience (CE) and reflective observation (RO), A diverger view concrete situations from a range of perspectives through observations, with a preference for group work in learning situations.

- **assimilator** (combines the learning stages of reflective observation (RO) and abstract conceptualization (AC),An assimilator is likely to have preference for abstract ideas and theory, favoring lecture and exploring models in learning situations.

- **converger** (combines abstract conceptualization (AC) and active experimentation AE).This learning style profile prefers practical problem solving rather than dealing with social issues in learning situations.

- **accommodator** (combines learning stages of active experimentation (AE) and concrete experience (CE), Prefers hand on experience, with strengths in using others to solve problems than individual logic.

- **Learning stages**: Four different approaches to learning in the Experiential Learning Cycle/Theory. These stages combine to give rise to the learning styles. The stages are:

- **Concrete Experiencing (CE)**: Individuals at this stage learn by strong feelings and reactions, likes to deal with feelings, learn best trusting hunches and feelings, open to new experiences, intuitive, learn best from personal relationships and feel personally involved in things, receptive and open-minded.

- **Reflective Observation (RO)**: Individuals at this stage learn by watching, observation and reflecting, likes to watch and listen; quiet and reserved, look at all sides of issues and takes time before acting.

- **Abstract Conceptualization (AC)**: Individuals at this stage learn by thinking, likes to think about ideas and rely on logical thinking and tend to reason things out, break them down into their parts, rational and learn best from rational theories, likes ideas and theories, relies on his/her ideas and analyze ideas.

- **Active Experimentation (AE)** ó A learner in this stage learn by doing and works hard to get things done, responsible about things, likes to try things out, an active person, likes to see results from his/her work and is practical.

- **Generic nursing mode of entry:** Nursing students who enter bachelor of nursing science (BNSC) degree programme (5years) from secondary schools and are admitted through University Matriculation Examination (UME).

- **Direct nursing mode of entry**: Nursing students who enter bachelor of nursing science (BNSC) degree programme having been nurses registered with Nursing and Midwifery Council of Nigeria. They start from second year of the five year standard programme BNSC degree.

CHAPTER TWO
LITERATURE REVIEW

A careful review of a literature indicated that studies conducted on learning styles are relatively available but more concentrated in developed countries.

This chapter presents review of related literature under the following headings:-

1. Conceptual review
2. Review of related theories
3. Empirical review
4. Summary of reviewed literature

The Concept of Learning Style

Several definitions of learning style currently exist in literature. Bayraka and Altuna (2009) see learning styles as the ways on how to learn; solve a problem; study; play a role in different activities and communicate with others. While Pashler, McDaniel, Rohrer, and Bjork (2009) interpreted learning styles to mean the view that different people learn information in different ways and also refer to the concept that individuals differ with regard to what mode of instruction or study is most effective for them. Dunn and Griggs (2000) affirmed that learning style involves behaviors which are distinguishable and observable or which provides understanding about every people. Learning style according to them emerges from the features that come from creation or inborn. These authors describe learning style as the way an individual begins to concentrate on, process, internalize, and remember new information and skills. They reported that learning style is an individual's reaction to several factors that include the following: the environment, such as room temperature or lighting; emotions, such as motivation and persistence; sociological factors, such as individual or group learning; and physiological factors, such as sensory preferences and variable energy levels.

Silver, Strong and Perini (2000) in their own submission stated that learning styles are concerned with differences in the process of learning and the theory centers on the content and products of learning. They are not fixed throughout life, but develop as a person learns and grows. McDonough and Osterbrink (2005) hold, that learning style is the unique ways that individuals analyze, comprehend, and apply concepts. Learning style concepts seek to shift to a focus on the learner, rather than on the subject matter and to develop the necessary attitudes and skills for lifelong learning (Hall & Moseley, 2005).

Comprehensively, Keefe cited in Larkin-Hein (2000) described learning style as being characteristic of the cognitive, affective, and physiological behaviors that serve as relatively stable indicators of how learners perceive, interact with, and respond to the learning environment. He explained that the term cognitive referred to how an individual perceives, thinks and remembers, the term physiological are of two types; environmental factors that impinge on learning and biological factors in the make-up of individual that have an impact on the learning situations and the term affective referred to values, interest and motivation that are personality features. Slavin (2000) in the same noted that Learning styles appear to occur in three areas: *cognitive*, *psychological*, and *affective*. Cognitive styles have been defined in terms of the way a person perceives, remembers, thinks, and solves problems. Psychological styles are biological and include reactions to the physical environment that may affect learning (e.g., being a õnight personö or preferring to study in a warm or a cold room). Affective styles include personality and emotional characteristics such as persistence, preferring to work with others or alone, and rejecting or accepting external reinforcement. These elements determine the way of perceiving, interacting with, and responding to the learning environment. They decide on how one particular individual will react to a specific situation and how he or she will behave in a unique or common learning situation. The

unique integration of these elements paves a path for perception of the individual in a unique style. This leads to a different interaction with the same learning environment by different people.

Dunn and Griggs (2000) further stated that Learning style is an external phenomenon that has its roots in environment and that environment paves the way for particular patterned way of acquiring and processing knowledge. Along with that learning style is a matter of biological uniqueness and the resultant developmental changes. This biological uniqueness and the changes related to development leads one individual to learn in a way different to other persons (Dunn & Griggs, 2000). Learning style not only has its connections with environment but always focus on the needs of the learner. Different people have different needs and these needs prompt the individual; to interact and deal with environment in such a way that best satisfy the needs. As learning style consists of different cognitive, psychological and affective behaviors, they make it relatively permanent and consistent to perceive and relate with environment with a unique way (Dunn & Griggs, 2000).

Kolb (2005) characterized learning style by the degree of a learner's emphasis on abstractness over concreteness while perceiving information and of a learner's emphasizes on action over reflection while processing information in a learning environment. His definition encompasses not only individual cognitive mechanisms but also affective and behavioral functions; and it therefore can be linked with the totality of human activities (Yamazaki, 2005). Kolb's Learning styles are composed of four key components as learning abilities or stages: concrete experience (CE), abstract conceptualization (AC), reflective observation (RO), and active experimentation (AE).

The CE ability involves grasping immediate experience through sensing and feelings (Boyatzis and Mainemelis, 2001; Kolb and Kolb, 2005). In contrast, the AC ability, which is a dialectical relationship with the CE ability, entails generating concepts and ideas through logical thinking and analytical reasoning. The RO abilities require reflecting on immediate

experience by observing it from various perspectives within the self. In contrast, the AE abilities, which are dialectically opposite to the RO abilities, learner tries to plan how to test a model or theory or plans for a forthcoming experience.

Consequently, various combinations among the four key learning abilities within one of these two dialectical dimensions makes four basic learning styles (Kolb & Kolb, 2005). They are *diverging, assimilating,* converging and finally, the *accommodating* learning style. Each style has a set of characteristics (Kolb & Kolb 2005).

The diverger's dominant abilities are CE and RO; this person's strength lies in ability to generate ideas, see concrete situation from many perspective, and work with people. The Assimilator's dominant abilities are AC and RO; this person excels in inductive reasoning and assimilating disparate observation into integrated explanation such as theories and models. The converger dominant learning abilities are AC and AE; this person would do best in situation using data and things and where there is only one correct answer to a problem. Lastly the accommodator's dominant abilities are CE and AE; this person is task oriented and relies heavily on others than on his or her own analytic ability to gather information (Kolb & Kolb, 2005). Although most learners have one preferred style, an effective learner is one who can apply different styles to different learning situations.

Kolb (2005) believed that no one learns in one exclusive style and no learning style is better or worse than another.

To sum up, learning style can be defined as learners' pattern of behaviour that will help them to learn better and yet determine and affect learners' ways of gaining, perceiving and processing information. It will then affect and determine learners' understanding of what they learn.

Factors that Influence Learning Styles

Learning styles and preferences of the learners may be influenced by several factors in their life. Their preferences are influenced by their genetic make-up, their previous learning experiences, and their culture and as well as the society they live in. Learnersø learning styles can also be determined by their physical, behavioral, thinking styles, interaction styles, method of learning, rate of learning, and also the cognitive styles that the students choose when receiving new knowledge (Keefe cited in Larkin-Hein, 2000).

According to Palloff and Pratt (2003) Learning style preferences change with age, experience, and maturity. Therefore, it made sense that the activities designed to engage various learning styles in a traditional undergraduate course would be different from those designed for graduate courses. Learning styles may change as individuals grow older (Dunn & Griggs, 2000). Some individuals change uniquely and then some do not change at all as they get older. Individualsø sociological, emotional, and physiological preferences change as a person gets older. Sociological preferences could be whether an individual chooses to learn alone or with a group. Emotional preferences include the need for breaks for interaction or intake versus the need for persistence. Older adults may require less structure. Physiological preferences can include tactual learning, kinesthetic learning, and/or visual learning. It can also include time preferences, length of time preferences, and mobility preferences. Emotional preferences can include motivation which fluctuates from day to day, class to class, and teacher to teacher. If a student is interested in a topic and the presenterøs teaching style matches the studentøs learning style, then the studentøs motivation will be greater. Sound preferences, temperature preferences, and seating preferences also change as individuals get older (Dunn & Griggs, 2000).

Differences in gender also affect learning styles. Males and females learn differently from each other. Males also need more mobility in a more informal environment than females

(Dunn & Griggs, 2000). They are more nonconforming and peer motivated than females. Females tend to be relatively conforming and either self-, parent-, or teacher-motivated (Dunn & Griggs, 2000). Females, more than males, tend to be auditory, authority-oriented, and better able to sit passively in conventional classroom desks and chairs. Females also tend to need significantly more quietness while learning and are more self-motivated, and conform more than males. Reese and Dunn (2007) observed that males indicated a stronger need for learning with an authority figure, were more visual learners and required structure and mobility. Men preferred afternoon learning. Female students preferred bright light, warm temperatures, formal seating, motivation, learning alone or with peers, eating while concentrating, and a variety of instructional approaches. Females preferred late morning learning. Morton-Rias et al. (2007) reported that women more than men preferred warm learning environments, learning with an authority figure present, learning independently or in pairs as opposed to men who preferred learning in small groups.

Furthermore Kolb (2005) believes that learning style is influenced by personality type, educational majors, or the subject choices, career choices, nature of job, roles and duties one has to perform in the profession. It means that people learn differently as they are different in terms of the above mentioned variables. Our individual learning style is influenced throughout our lives by these different factors. For example, early educational experiences shape our learning style by instilling positive attitudes toward specific sets of learning skills and by teaching us how to learn (Kolb, Bayatzis & Mainemeis 2001). College education also has been shown to shape studentsø learning style preferences (Kolb, 2005). As we progress through educational experiences, the level of specialization increases, resulting in additional influence of our orientation toward learning. Learning styles have been investigated from psychological, social, physiological and educational perspectives. Due to

these diverse perspectives many learning and cognitive styles models/inventories have been produced (Fritz, 2002).

Models of Learning Style

There are many theoretical models explaining the diverse styles of learning. Claxton and Murrell (1987) have evaluated a plethora of learning style models and categorized them into four models: (1) Models relating to personality (2) Models relating to information processing, (3) Models relating to social interaction, and (4) Models relating to instructional preferences. For each model, there are numerous instruments for measuring traits in each of them.

Claxton and Murrell (1987) conceptualised these different models using the analogy of an onion. At the core is personality, which focuses on stable individual characteristics. These models emphasise how the role of personal tendencies such as introversion versus extroversion, and thinking and feeling influence the learnerøs preferred style of learning (Anderson & Bucher, 1994). Claxton and Murrell (1987) have identified five learning style models in this category: field-dependence and field-independence model, the Myers-Briggs Type Indicator (MBTI), the reflection -versus-impulsivity model, the Omnibus Personality inventory, and the Holland typology of personality.

The second layer is the information-processing model, which describes how people receive and process information. This model focuses on the individualøs preferences in the acquisition of experience and the subsequent restructuring of that experience as knowledge on an active versus reflective continuum (Anderson & Bucher, 1994). Again five learning style models have been identified by Claxton and Murrell (1987) as being in this category: the Pask model, the Siegel and Siegel model, the Schmeck model, Kolb's model, and Gregorc's model. Kolbøs experiential learning model is a four stage circular process where for effective learning to occur, the learner must experience the entire cycle. Most students

favor one part of the cycle over other parts hence their learning style preference. However, learning styles are not fixed and can change (Kolb, 2005).

The third layer, the social interaction model, deals with how students tend to interact and behave in the classroom, and it considers the collaborative learning styles and the dimensions of dependence and independence. The following models have been identified by Claxton and Murrell (1987) for this category: Mann's model, Grasha and Reichmann's model, Fuhrmaim and Jacobs' model, and Eison's model.The outer fourth layer is the instructional preference model, which focuses on the sensory channel most important to the learner (Anderson & Bucher, 1994), and identifies various characteristics such as light and temperature; motivation and persistence; individual or group preference, perception and intake and right brain or left brain preference (Fritz, 2002). Here, Claxton and Murrell (1987) identified the Hill model and the Canfield model as important. The traits of these models are not discrete and have an influence on each other. At the core, the traits are most stable and least subject to change. As one moves outward the traits are less stable and more susceptible to change (Claxton & Murrell, 1987).

These different learning models have their strengths and weaknesses and no one instrument captures all of the richness of the phenomenon of learning style. According to Felder and Brent (2005) these instruments evaluate the same general information, but look at the results from different perspectives for this study, the Kolb Model (the information-processing category) has been selected to identify the learning style preference of the nursing students. The Kolb Model was chosen for this study because the Learning Style Inventory was based on his experiential learning theory and has been tested extensively in the literature as stated by Marriot (2002). Moreover, its experiential basis is particularly relevant to the apprenticeship model of nursing training.

Theoretical Framework: Experiential Learning Theory (ELT).

Experiential Learning Theory (ELT) has its roots in the experiential works of Dewey, Lewin, and Piaget (Kolb, 2005). Unlike cognitive learning theories, which tend to emphasize cognition over affect, and behavioral learning theories, which do not allow any role for consciousness and subjective experience in the learning process, experience plays a central role in ELTøs process. ELT is intended to be a holistic adaptive process on learning that merges experience, perception, cognition, and behavior (Kolb, 1984, Kolb and Kolb, 2005). Chapman (2008) pointed out that experiential learning cycles/models help in understanding the process of learning and how it works. All experiential learning models are based on experiential education principles. These experiential learning cyclesø help in designing experience based training and educational programs. On One hand these experiential learning cycles help in understanding the learning process and on the other hand they make it easy to understand its different components and better use of its different parts. Kolb believes it is important to have the experiential learning theory identified as a "holistic integrative perspective on learning that combines experience, perception, cognition, and behavior" He identifies six characteristics of experiential learning. These characteristics define experiential learning and set it apart from other theories. They include:

- Learning is best conceived as a process, not in terms of outcomes

- Learning is a continuous process grounded in experience

- The process of learning requires the resolution of conflicts between dialectically opposed modes of adaptation to the world

- Learning is an holistic process of adaptation to the world

- Learning involves transactions between the person and the environment

- Learning is the process of creating knowledge (Kolb, 2005).

Kolb's Theory of Experiential learning and Learning Styles Model

Kolb states that Experiential Learning Theory, which defends that learning, is a combination of experience, cognition, perception and behavior, lays the foundation of Learning Style Model (Kolb, 2005). The four-stage cycle of learning is a central principle to Kolb's experiential learning theory. Kolb (2005) first introduced his theory in the 1960's and has continued to revise it over the years. He believes that learning is a continuous process, which is cyclical in nature. He has characterized four different learning skills/stages. The sequence in which individuals move through the four stages is shown in Figure 1. Kolb indicates that learning begins with concrete experiences ó CE (feeling) that provide the foundation for reflection and observation ó RO (watching). Based on the reflection/observation process, an individual will formulate abstract concepts ó AC (thinking) and then proceed to test the formulated material of AC in the active experimentation - AE (doing) stage. Individuals progress through this learning process cycle repeatedly, eventually finding a preference among one of the four stages. However, to be a truly effective and versatile learner, individuals need to be able to function in various stages of the learning process (Smith & Kolb, 1986).
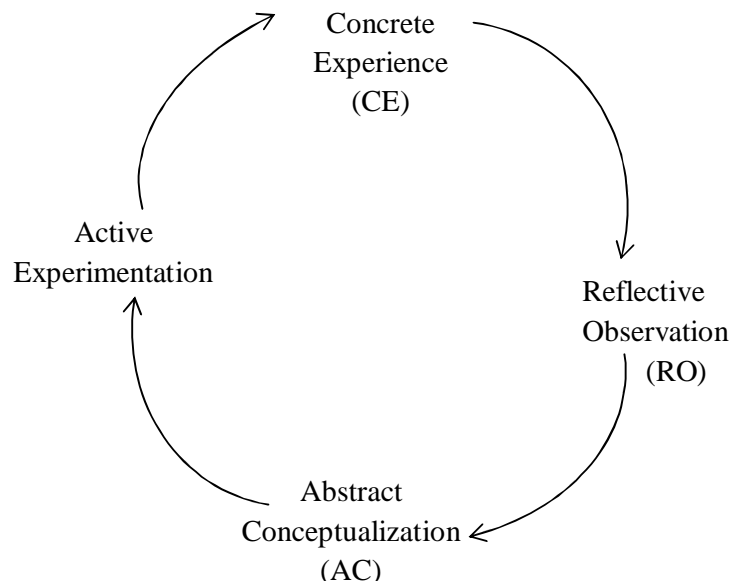
Figure 1:   Experiential Learning Model (Kolb, 2005).

These stages are explained thus:

Concrete Experience (CE):- Effective learners involve themselves fully, openly and without bias in new experiences. The learner tends to focus on personal involvement in experiences concerning immediate situations, concentrating on feeling as opposed to thinking, on the uniqueness and complexity of reality as opposed to theories and generalizations, and on an intuitive approach as opposed to a scientific approach to problem-solving. Activities such as fieldwork, interviews, viewing films and participating in role-plays or simulations are examples of concrete experience (Smith and Kolb, 1986; Kolb 2005).

Reflective Observation (RO):- This learner prefers to focus on the understanding of the meaning of ideas and situations by carefully observing and describing them. The emphasis here is on reflection as opposed to action and understanding as opposed to practical application. Examples of reflective observation are writing a reflective paper, keeping a journal or sharing their perspectives with other learners in small groups (Smith and Kolb, 1986; Kolb 2005).

Abstract Conceptualization (AC):- Learners with this orientation focus on the use of ideas and concepts. Thinking as opposed to feeling is emphasized in this mode along with theory-building. Learners utilizing this mode tend to take a more scientific approach to problem-solving. Abstract Conceptualization includes learners taking in information such as in a lecture, or engages in research and developing hypotheses or theories of their own (Smith and Kolb, 1986; Kolb 2005).

Active Experimentation (AC):- Learners oriented to this mode tend to seek practical application as opposed to finding absolute truth. The emphasis is on the practical application of idea and situation. With active experimentation learners apply principles or theories through laboratory or practical work (Smith and Kolb, 1986; Kolb 2005).

Kolb (2005) further describes his experiential learning theory/model (Figure 2) by identifying two sets of abilities that are a combination of polar opposite qualities. Kolb describes the vertical line as the concrete-abstract dimension of learning, and the horizontal line is the active-reflective dimension of learning.
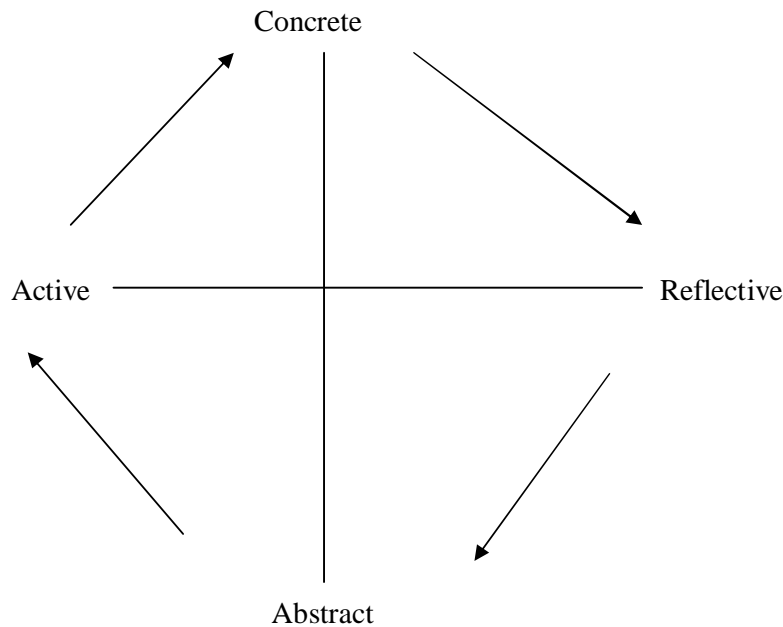
Figure 2:   **Concrete-Abstract and Active-Reflective Dimensions (Kolb, 2005).**

The cyclical process of learning described by Kolb (2005) has four modes. Any learner will utilize each of these four modes; however, Kolb maintains that over time, a learner will develop a preferred mode of learning. After an individual has obtained their AE-RO and AC-CE scores, they can plot the scores on the grid to determine their learning style preference (Figure 3).
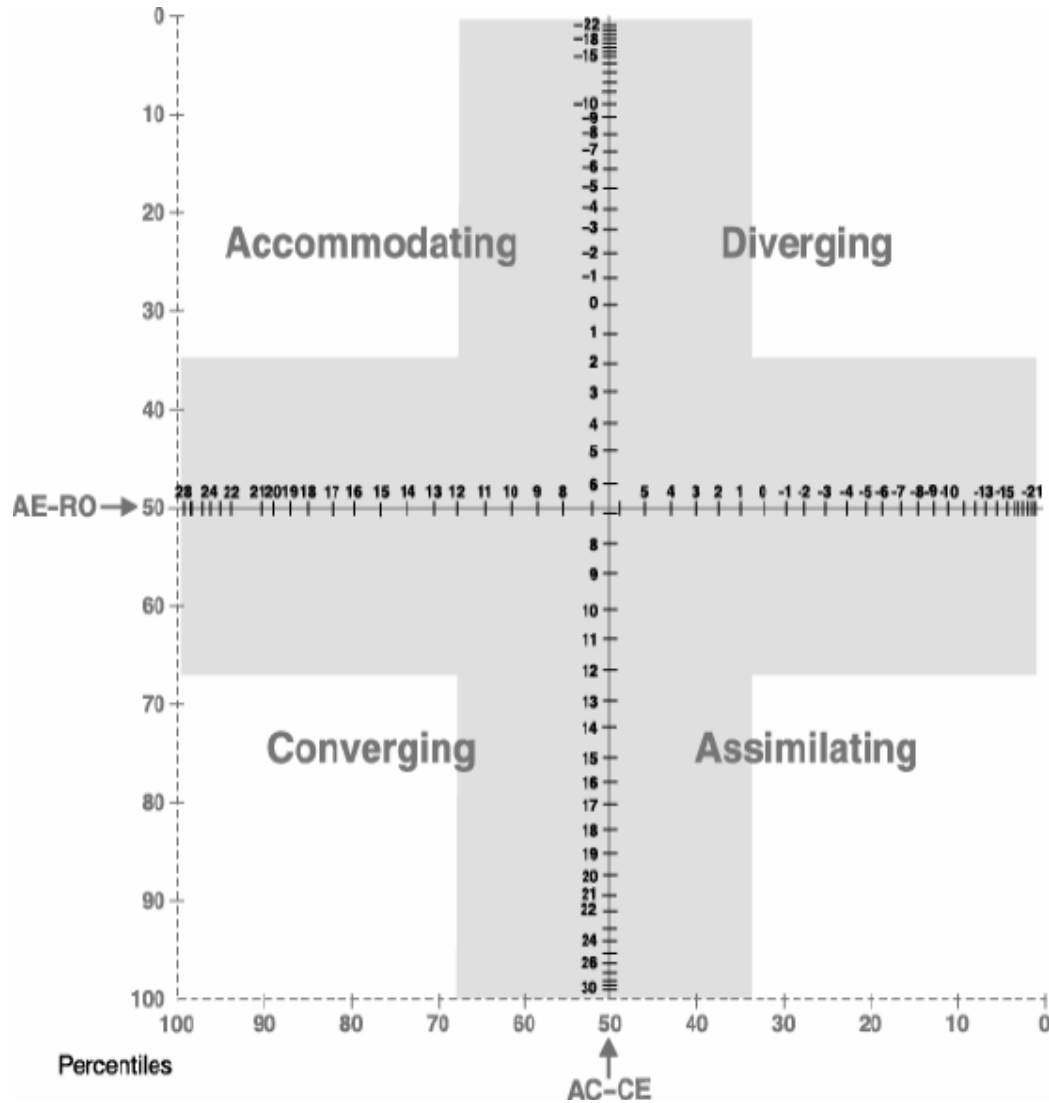
Figure 3:   Kolb's Learning Style Type Grid (Kolb, 2005)

To facilitate and help educators understand a student's learning preference, Kolb (2007) developed the Learning Style inventory to measure a learner's commitment to each of the four modes of learning: Concrete Experience (CE), Reflective Observation (RO), Abstract Conceptualization (AC), and Active Experimentation (AE). One can determine the learning style preference that is most representative of his/her learning style preference by combining the scores from each of the four modes. The learning styles are Diverger,

Converger, Assimilator, Accommodator. Each learning style as defined by Kolb (2005) is characterized thus:

The Diverger falls into the concrete experience and the reflective observation modes. They tend to be people-oriented and feeling-oriented. They have imagination and are aware of meaning and values; they are good at generating and analyzing alternatives. These students are capable of viewing concrete situations from multiple viewpoints. They want to know why and where they will use the course material, and they are only interested in practical knowledge that will benefit them in their future careers (Kolb, 2005; Muro and Terry, 2007).

The Assimilator falls into the abstract conceptualization and the reflective observation modes. They emphasized ideas rather than people. They are good at inductive reasoning, creating theoretical models, and integrating observations. These students can learn a great deal of information if the information is presented in an organized fashion. Assimilators are not concerned about the practical value of course information, but want to understand what is being taught (Kolb, 2005; Muro and Terry, 2007).

Converger falls into the abstract conceptualization and the active experimentation modes. They prefer technical tasks over social or interpersonal settings. They excel at problem solving, decision making, and practical applications. These students like well-defined tasks and learn best through trial and error in an environment that allows them to fail safely. Convergers excel at finding practical uses for course material and want to know how they can apply course material in their future careers (Kolb, 1984; Muro and Terry, 2007)

Finally, the Accommodator falls into the concrete experience and the active experimentation modes. They tend to be action-oriented and at ease with people and like to solve problems through the trial and error method. They are good at carrying out plans, open to new experiences, and adapt easily to change. These students enjoy learning through hands-on experiences. They enjoy new and challenging situations and tend to follow their instincts

over logical analyses. Accommodators favor problem-based learning and practical problems (Kolb, 2005; Muro and Terry, 2007).

Kolbøs model, as well as those developed by others, suggests two approaches to using learning styles. Learning styles can be matched to teaching strategies to maximize studentsø comfort in the learning situation, or teaching strategies can be deliberately mismatched to studentsø learning styles to increase their repertoire of learning skills.

The four phases of the learning cycle (CE, RO, AC, and AE) and the four learning style types (converging, diverging, assimilating, accommodating) offer a practical tool for comparing individual. Since Kolbøs model/theory describes two dimensions of learning and the four learning orientations and styles used within the learning process it comprises of two models in one. This model shows how people gain knowledge through a learning model using experiences. The core of the model is based on the learning cycle that starts with the real experience and then undergoes a procedure that transforms that experience in learning.

Kolbøs theory of experiential learning suggest that no one style is superior to another, but rather, higher levels of learning are obtained through the process of using each of the modes and moving from one mode to the next during the learning experience. He stated that in actual learning situations, learners tend to rely on one of these modes more than on the others. Kolb (2005) also contends that it is the opposition of these modes and effort to resolve the conflicts between opposing abilities that allows for higher learning to be achieved, as learners sifts, in varying degrees from one mode to another. Although most learners have one preferred style, an effective learner is one who can apply different styles to different learning situations.

Kolbøs theory provides a rationale for a variety of learning methods including: independent learning; learning by doing; work-based learning; and problem-based learning. These methods are all necessary if learning is to be consolidated and implemented in practice

According to Henke (2001), Kolb's learning cycle is useful for conceptualizing how people learn and for developing courses and training programs. Cano (2005) believed that, Kolb developed the most established model of experiential learning.

Healey and Jenkins (2000) maintain that although there are other ELT, these other theories have used Kolb's framework with some changed names whilst maintaining the same meaning. This cycle has provided a baseline for many other experiential learning theorists who had added a lot in this regard. This theory according to (Chapman, 2005) has been through many revisions and is widely known and accepted as the fundamental concept with regard to our understanding and explaining of human learning behaviour and our helping others to learn.

To relate this theory to this study, Kolb's (2005) model of experiential learning allows students to learn the course content in the way that best suits their learning style. The four-component model allows students to learn through experience (concrete experience), reflection (reflective observation), application (active experimentation), and abstraction (abstract conceptualization). Depending on an individual student's learning style, he or she may learn the course content better at a different point in the experiential learning cycle.

To give substance to this proposed study, a brief review of literature pertaining to learning style research will be discussed next.

Empirical Review

Adesunloye, Aladesanmi, Henriques-Forsythe, and Ivonye (2008) carried out a study to determine the preferred learning style, as defined by Kolb, and predictors of the different learning styles among residents and faculty members at an internal medicine residency program at Morehouse School of Medicine, Atlanta in USA. The result showed that forty-two out of 59 questionnaires that were given out to residents and attending physicians were

properly completed and returned. Assimilating style was the predominant learning style among residents (42%) and attending physicians (55%). There was no significant association between age, gender or medical education status, and learning styles. The researchers then concluded that understanding of residentsø learning styles may facilitate instructional rapport between residents and attending physicians, thereby improving residentsø academic performance.

Massey, Kim, and Mitchell (2011) examined the learning styles of students in social work classes at Norfolk State University in USA. Kolb's Learning Style Inventory was administered to identify each student's dominate learning style. The theoretical underpinning is experiential learning, which supports the concept that learning styles are developed through experiences. The results indicated that diverging and accommodating learning styles occurred most often. They concluded that knowledge of learning styles can enhance the ability of faculty to build on student experiences and construct new learning opportunities.

Engels and Gara (2010) administered the Kolb Learning Style Inventory, which divides individual learning styles into Accommodating, Diverging, Converging, and Assimilating categories, to the second year undergraduate medical students, general surgery resident body, and general surgery faculty at the University of Alberta in Canada (USA). A total of 241 faculty, residents, and students were surveyed with an overall response rate of 73%. The predominant learning styles of the residents and faculty were convergent and accommodative, with no statistically significant differences between the residents and the faculty. They concluded that medical students have a significantly different learning style from general surgical trainees and general surgeons.

Austin (2004) of Faculty of Pharmacy, University of Toronto, Ontario, Canada in USA, examined possible associations between learning styles of pharmacists (as identified through Kolbøs Learning Styles Inventory (LSI) and the Pharmacistsø Inventory of Learning Styles (PILS)) and career decisions, practice patterns and teaching method preferences. A total of 166 pharmacists were involved in this study and completed either the LSI or the PILS, and a supplemental questionnaire. Of them, 33.7% of the respondents were identified

as Assimilators, 32.5% as Convergers, 21.1% as Divergers and 12.1% as Accommodators. Results suggest that there is a statistically significant correlation between identified learning style and teaching method preferences as well as years since graduation. The study there showed no statistically significant correlation between learning styles and gender, career decisions or practice patterns.

Rassool and Rawal (2008) examined the predominant learning style preferences of undergraduate nursing students at University of Sao Paulo Brazil (USA). Honey and Mumford's learning styles questionnaire were administered to a purposive sample of 136 students. A response rate of 81% (110) was obtained. The reflector (Kolb's diverger) is the preferred learning style of undergraduate nursing students. They concluded that a mismatch between teaching style and the learning styles of students has been found to have serious consequences. A variety of modes of teaching and learning should be used to meet the learning needs of students.

Smith (2010) in a descriptive, cross-sectional design described the learning styles of registered nurses (RNs) enrolled in an online master's nursing program or RNóbachelor of science in nursing (BSN) program. Kolb's learning style inventory (Version 3.1) was completed by 217 RNs enrolled in online courses at a Southeastern university in USA. 31% percent of the nurses were accommodators, 20% were assimilators, 19% were convergers, and 20% were divergers. They concluded that learning styles of the RNs were similar to the BSN students in traditional classroom settings. Despite their learning style, nurses felt that the online program met their needs.

Li, Chen and Tsai (2008) carried out a study to identify the relationship between learning styles and age among nursing students in a two-year, a five-year associate degree of nursing (ADN) program, and a two-year bachelor of science in nursing (BSN) program in

Taiwan. The author used the Myers-Briggs Type Indicator (MBTI) (personality model), The study sample included 331 nursing students. The analysis of the data revealed that the most common learning styles were introversion, sensing, thinking, and judging (ISTJ) and introversion, sensing, feeling, and judging (ISFJ). However, the ages of nursing students were not significantly related to their learning styles. The findings suggested that the participating nursing students were homogeneous. The researchers then noted that the awareness and understanding of individual differences is of great importance in tailoring each learning style to benefit educators and learners, thereby enhancing nursing education.

Slater, Lujan and Dicarlo (2011) carried a study in Michigan (USA) on 250 first-year medical students learning preference. Both male and female preferred multiple modes of information presentation and the numbers and types of modality combination were not significantly different between genders. The researchers stated that, although not significantly different, the female student population tended to be more diverse than the male population, encompassing a broad range of sensory modality combination within their preference profile.

Russian (2005) carried out a study on preferred learning styles of the respiratory care students at Texas State University (USA). Sample was 82 students (freshman, sophomore, junior and senior). The juniors preferred Converger learning style and the senior students are in the abstract conceptualization cycle of learning. There was no relationship demonstrated between other groups in the study. The author now suggested that when a group of students demonstrated a preference for a particular learning style then educators can develop their curriculum along a similar path.

Caglayan (2011) carried out a study, with the purpose of determining the academiciansø learning styles in Department of Sports Management, School of Physical Education and Sports, Konya, Selcuk University, Turkey (Europe) and whether there was a relationship between their learning styles and gender, age, appellation and the department

they worked or not. The sample of the study consisted of 206 academicians who were working in public Schools of Physical Education and Sports (n=183) and Schools of Sport Science and Technology (n=23). The Kolb Learning Styles Inventory was used as data collection tool. The results revealed that, the academicians in the School of Physical Education and Sports had 47.6% converging, 30.1% assimilating, 11.7% diverging, 10.7% accommodating learning styles and there was no significant difference between their learning styles and gender, age, appellation and the department they worked (P>0.05).

Kaya, Ozabaci and Tezel (2009) carried a study on the Primary School Second Grade Studentsø Learning Styles according to the Kolb Learning Style Model in terms of Demographic Variables. The study was carried out by the participation of 687 primary school second grade students who were chosen as a sample from the cities of Inegol and Bursa in Turkey (Europe). Kolb Learning Style Inventory was used as a data collection tool. The result showed that, the studentsø learning forms, components and learning styles did not show any differences according to the gender, and yet it varies according to the class and success level. Furthermore, it has been found that the students have most Diverging Learning Style and least Accommodating Learning Style.

Nursing Students at Isfahan Medical Sciences Khorasgan Islamic Azad University in Asia completed Kolbøs learning style inventory to assess their learning styles (Salehi, 2007). Analysis of variance was used to investigate the possible relationship between learning cycle and studentøs grades in the curriculum (i.e. freshman, sophomore, junior, or senior). 294 students received the Kolb LSI questionnaire. The data demonstrated that juniors preferred a converger learning style and the senior students were in the abstract conceptualization cycle of learning. There were no relationships demonstrated between other groups in the study. This study suggests that the junior and senior students appear to prefer the stage of learning

involving thinking and problem analysis. When a group of students demonstrate a preference for particular learning style teachers can develop their curriculum along their learning style.

Vahid; Leila; Eskandar and Nasim (2008) carried a study on the Nursing and Midwifery Studentøs Learning Styles in Tabriz Medical University Iran in Asia using Kolbøs Learning Style inventory, 250 nursing and midwifery students were selected by census sampling method. According to the study, the majority of nursing students were convergers (54.2%). Also 32.1%, 7.5% and 6.2% of them were assimilators, accommodators and divergers, respectively.

Williams, Brown and Winship (2013) in cross-sectional study noted the distribution of learning styles of the undergraduate paramedic students. Kolb Learning Style Inventory (K-LSI) was administered to a cohort of students enrolled in an undergraduate paramedic degree at an Australian university. There were 170 paramedic students eligible for inclusion in the study and 57 students (response rate of 33.5%) that participated in the study, of which 70% (n=40) were female. The results indicated that undergraduate paramedic students have a preference for two learning styles: the Diverger style of learning (31%) and the Accommodator style of learning (26.5%). It is recommended that educators take into consideration the learning style preferences of undergraduate students when developing curriculum and evaluating teaching approaches, especially when planning, implementing and evaluating education initiatives in order to create an effective learning environment for their students.

In Nigeria, Shuaibu (2010) investigated the effects of learning styles on career preferences of senior secondary school students in Jigawa State, Nigeria. A total of six hundred students, three hundred and sixty male, and two hundred and forty female were randomly selected from ten senior secondary schools across the state for the study. Two different data collection instruments were used to gather data for the research'. These are

Kazembe Sorting Test (KST) and Vocational Interest Inventory (VII) to test learning styles, and career preferences respectively. His findings revealed that there is significant sex difference in learning styles of the students. The male students were more field ó independent (that is, they are better able to discern individual components and learn well in formalized setting) while the female students were more of field-dependant (that is, they tend to be more social, have a more global perspective and learn more effectively in non formal environment. This study used the Group Embedded Figure Test (GEFT).

Summary

From literature reviewed, the concepts of learning styles have been divergent. Different opinions, conclusions and findings or researchers show that students learn in different ways and these ways are called the learning styles. Learning style models were highlighted and more specifically an overview of Kolbøs theory of experiential learning and learning styles. Kolbøs theory, which entails four learning abilities are: Concrete Experience (CE), Reflective Observation (RO), Abstract Conceptualization (AC) and Active Experimentation (AE). While we all possess all four learning abilities, each individual differs in regards to their strengths and weaknesses that can be assessed on the two dimensions. This is then characterised into the four learning styles namely; Diverger (CE preferred to AC and RO preferred to AE), Assimilator (AC preferred to CE and RO preferred to AE), Converger (AC preferred to CE and AE preferred to RO) and Accommodator (CE preferred to AC and AE preferred to RO).

Empirical study indicates that several studies in the past have been carried out on learning styles. However, many of the studies carried out in this topic are relatively from developed countries. Unfortunately, there is little published literature on the learning preferences of students in Nigeria. Specifically none was noted in nursing in Nigeria. The research reported

in the literature concerning learning style has been limited to secondary school students in Nigeria; therefore, a study of the learning styles of undergraduate nursing students would fill the gap in knowledge in Nigeria and also expand previous research knowledge related to this important topic. Moreover, with this information, this study attempted to examine the learning styles of nursing students in order to help instructors to be aware and recognize the learning styles students bring into the class.

CHAPTER THREE

RESEARCH METHOD

This chapter presents methods adopted for the study under the following: research design, area of study, the population, subject for the study, instrument for data collection, validity and reliability of instrument, and so forth.

Research Design

This is a descriptive cross- sectional design aimed at examining the learning styles of undergraduate nursing students. This design is appropriate because descriptive studies provide an accurate portrayal of characteristics of a group by discovering a description of what characteristic exist and determining the frequency with which they exist (Polit and Beck 2010).This method was considered suitable for the phenomena being investigated because it provides information from population regarding the characteristics, frequency and interrelations of variable within the population.

Area of Study

This study was conducted in Nursing Science Department of the Faculty of Health Sciences and technology, University of Nigeria Enugu Campus (UNEC). Enugu Campus is an off-shot of the main Campus, University of Nigeria Nsukka (UNN). The school is located at the center of Enugu Metropolis, in the east it is bounded by ESUTH/IMT Enugu, while in the west it is bounded by Kenyatta Market, Mary Land Layout at the northern side and college road at the southern side. Nursing Sciences department came into existence in the 1982/1983 academic session and started with 3year post basic nursing programme which awarded B.sc Nursing in three major areas ó Public Health Nursing, Nursing Education and Nursing Administration. This programme has gradually been replaced by the NUC and Nursing and Midwifery Council of Nigeria with the approved 5year generic degree

programme and four years direct entry degree for registered nurses which commenced in the 2004/2005 Academic session in the department. The department is one of the five departments that make up the Faculty of Health Sciences and Technology. The Faculty is under college of Medicine, University of Nigeria, Enugu Campus (UNEC).

Population of Study

The population of this study is all undergraduate nursing students in the Department of Nursing Sciences UNEC. According to the departmental office record, the nursing students comprised of 133 students from 2nd year, 114 students from 3rd year, 150 students from 4th year and 123 students from 5th year (the final year) at the time of study. Thus, a total population of five hundred and twenty (520) nursing students (male and female) constituted the population of the study.

Subjects for the Study

All nursing students, enrolled in the Department of Nursing from four academic levels second, third, fourth and fifth year at the time of the study of the academic year 2012-2013 were included in the study. The present study excluded the first year because in this year of their undergraduate program, the students are at Nsukka Campus doing general courses with all the students in biological sciences and are therefore not available at the time of the study. Thus, the respondents (310 students) consist of all eligible nursing students from second year to the fifth year who met the inclusion criteria.

Criteria for Selection

- Willingness to participate in the study.

- Must be in second, third, fourth or fifth year student in Department of Nursing Sciences.

- Being available in the class when the questionnaire are administered.

Instrument for Data Collection

For this study, the instrument consists of two sections; the first section is a demographic questionnaire developed by the researcher, which was used to obtain information on gender, age, year of study and mode of entry. A copy of this demographic questionnaire can be found in Appendix III

The second instrument was the Kolb's Learning Style Inventory (KLSI) (Kolb, 2005). This is an instrument designed to measure the degree to which individuals display different learning stylesø which is based on Kolbøs theory of experiential learning (ELT). It is a self-descriptive, self-scoring test that aims to help an individual identify their relative emphasis on the four learning abilities within the learning cycle (CE, RO, AC, AE) and their predominant learning style (Diverger, Assimilator, Converger or Accommodator). A copy of the request for permission to use and approval letter is located in Appendix VI. A copy of the KLSI can be found in Appendix IV. This inventory first measured four basic abilities, which were concrete experience (CE), reflective observation (RO), abstract conceptualization (AC), and active experimentation (AE). Along with that it also measures learning styles i.e. diverging, assimilating, converging, and accommodating. This instrument consists of twelve sentences, with four endings per sentence. The respondents ranked the four endings for each of the sentence according to how well they think each fits with how they would go about learning something. They were asked to use the spaces provided to rank a õ4ö for the sentence ending that describes how they learn *best,* and down to a õ1ö for the sentence ending that seemed least like the way they learn. They were asked to rank all the endings for each sentence unit, and not make ties. The total scores should be 120 for four learning stages. (See Appendix V for the Learning Style Inventory scoring sheet). The four scores are plotted on a grid (figure III) to create an individualøs learning profile. The four scores produced from the

LSI are used to create two learning dimension mean scores. These scores range from +48 to -48 (Kolb, 2005). Each score s plotted on the intersecting grid of the Learning Style Type Grid (figure III). The two axes are labeled AC-CE and AE-RO. These two axes represent Kolb's belief that learning requires skills which are polar opposites. The first of these two scores is obtained by subtracting the CE score from the AC score (the total plotted on the vertical axis) which indicates one's learning style preference in the concrete-abstract dimension. The second score is obtained by subtracting the RO from the AE score (the total plotted on the horizontal axis), which indicates one's learning style preference in the active-reflective dimension (Kolb, 2005). The respondent is then identified as an accommodator, a diverger, an assimilator, or a converger.

Validity of the Instrument

Construct Validity. The Kolb Learning Style Inventory ó Version 3.1: 2005

Technical Specifications States: õJudged by the standards of construct validity, Experiential Learning Theory has been widely accepted as a useful framework for learning ócentered educational innovation, including instructional design, curriculum development, and life-long learningö (Kolb and Kolb, 2005).

External Validity: Experiential Learning Theory predicts that participation in formal education is related to abstractness in learning style. The same linear relationship between abstractness and level of education was found with the Kolb Learning Style Inventory 3.1(Kolb, 2005) normative sample ó from elementary to high school to university to graduate degree (Kolb and Kolb, 2005). Moreover, Mainemelis, Boyatzis, and Kolb (2002) stated that the LSI has strong face validity.

Furthermore, Face and content validity of the demographic questionnaire and the learning style inventory were determined through the judgment of the researcherøs supervisor

who is an educator, a professor in Education, University of Nigeria, Nsukka and an expert in measurement and evaluation. To guide them in the validation exercise, a draft copy of the questionnaire research objectives, scope and hypotheses were also given to them. This was done to validate the completeness of the instrument on the background information questionnaire, to determine the clarity of the questionnaire and its accompanying directions, as well as the amount of time required to finish the survey. Following this, the suggested revisions were considered and incorporated where possible.

Reliability of the Instrument

Internal Consistency Reliability: Cronbach's alphas for the four subscales have been published in some studies which have provided support for internal consistency of the subscales. Alphas ranged from 0.70 to 0.84 for the respective subscales. (Kayes, 2005) Wiserstra and DeJong (2002) completed a study examining the internal consistency reliability for Kolbøs LSI using modern statistical technical procedures. Their study used a sample of 101 psychology undergraduate students. Findings indicated very good reliability with regard to internal consistency determined by a Cronbach coefficient alpha, CE was 0.81, RO was 0.78, AC was 0.83, AE was 0.84, AC-CE was 0.83 and AE ó RO was 0.82. Also, Veres in Kolb and Kolb, (2005) reported that test-retest reliabilities for all four subscales of the Kolb Learning Style Inventory 3.1 to be above 0.9.

In this study, the researcher conducted a pilot study to ascertain the reliability of the instrument in the local setting. A small sample (N=20) of nursing students from another university- Madonna University Ele ó Ele Campus, Rivers State was used. The data were collected and a reliability analysis was performed. Internal reliability coefficient were calculated separately for four basic learning abilities, Findings indicated very good

reliability with regard to internal consistency determined by a Cronbach coefficient alpha ranging from 0.92- 0.97 (see appendix VIII).

Ethical Consideration

Ethical approval from the Health Research Ethics Committee of the University of Teaching Hospital Ituku-Ozalla and College of Medicine University of Nigeria Enugu Campus (Appendix VIII) was obtained. A letter of identification was collected from the head of department (Appendix I). Permission to carry out the study was obtained from the dean of the Faculty. Informed consent was obtained from the students before the administration of the questionnaire. See attached consent form in Appendix II.

Procedure for Data Collection

The data was collected in the first semester of 2012-2013 academic years. Permission was obtained from any lecturer in the classroom at the day/time of administration of the questionnaire and his/her assistance and co-operation solicited for the administration and collection of the questionnaire. The researcher then introduced herself to the students, explained the purpose of the study and what the questionnaire entails, informed consent was solicited and obtained from the students to fill the questionnaire. The questionnaire was administered by the researcher with the help of the lecturer in the class and the class representative of each class. The administration was done during twenty minute to the end of a lecture. All the students who met the inclusion criteria received the questionnaire. The questionnaire administration lasted for 20minutes. All the copies were retrieved at the end of the administration.

The data collection exercise lasted for four days, one day for each of the four classes. Then the researcher used the formula function in Excel to calculate the Concrete Experience

(CE), Reflective Observation (RO), Abstract Conceptualization (AC), and Active Experimentation (AE) values. The researcher also used the Learning Style Grid (see Figure 3.1) obtained from Hay Group to determine the preferred learning style from the Abstract Conceptualization and Concrete Experience, and Active Experimentation and Reflective Observation values.

Method for Data Analysis

Overall, the analysis that presented itself as being appropriate for this non-parametric (non-interval level) data was frequency and percentages. The relationships among variables were cross tabulated and chi square statistics calculated. Gall, Gall and Borg (2007) explained that Chi ó square test is a nonparametric test of statistical significance that is used when the research data are in the form of frequency counts for two or more categories.

The researcher used Statistical Program for Social Sciences (SPSS) 16.0 (2007) software to analyze the data from the study. A probability level of 0.05 was used to test for significance in all statistical analyses.

CHAPTER FOUR

PRESENTATATION AND INTERPRETATION OF DATA

This chapter is concerned with the presentation of results; the presentation was done following the variable questions and hypothesis directing the study.

Profile of Nursing Students/Respondents

This section is concerned with the presentation of the respondent demographic variables. The data is presented in Tables using simple percentages (%).

Table 1: Profile of nursing students/respondents
n =310

Variable	No of Respondents	Percentages (%)
Gender		
Male	42	13.5
Female	268	86.5
Age		
16 ó 20	39	12.6
21 ó 25	191	61.6
26 ó 30	51	16.5
31 ó 35	18	5.8
Above 35	11	3.5
Year of Study		
2nd year	84	27.1
3rd year	87	28.1
4th year	57	18.4
5th year	82	26.5
Mode of Entry		
Generic	94	30.3
Direct	216	69.7

Mean Age = 24.3 ± 4.39

Result on Table 1 above shows that the total number of participants were 310, According to the gender of the students who participated in the study, the majority 268 (86.5%) of the respondents were females. In terms of age, 61.5% (191) of the respondents were between 21- 25 years. The mean age of the students was 24.3 ± 4.39. With regard to the class level of the respondents, 200 level were 84 (27.1%); 300 level were 57 (28.1%); 400 level were 57 (18.4%) and the 500 level were 82 (26.5%). More than half of the students 268 (69.7%) entered into BNSC programme through generic mode of admission and the rest of the students entered through direct mode of admission.

Research Question One: What are the learning style preferences of the nursing students based on Kolb's (2005) typology of four types of learning styles.

Table 2: Learning style preferences of nursing students.

S/N	Learning Style	n = 310 Frequency	Percentages
1	Diverging	90	29.0
2	Assimilating	85	27.4
3	Converging	80	25.8
4	Accommodating	55	17.7
	Total	**310**	**100**

Table 2 shows the respondents preferred learning styles. 90(29.0%) were divergers; 85(25.8%) were assimilators: 80(25.8%) were convergers while a little over 1/6 of the respondents 55(17.7%) were accommodators.

Research question 2: What are the differences in learning styles of the nursing student by gender?

Table 3: Cross-Tabulation of Learning Style Preference by Gender

		n= 310 Gender		
S/N	Learning Styles	Male n=42	Female n=268	Total
1	**Diverging**	13(31.0%)	77(28.7%	90(29.0%)
2	Assimilating	8(19.0%)	77(28.7%)	85(27.4%)
3	Converging	15(35.7%)	65(24.3%)	80(25.8%)
4	Accommodation	6(14.3%)	49(18.3%)	55(17.7%)
	Total	**42(100%)**	**268(100%)**	**310(100%)**

Table 3 shows the cross-tabulation results of learning style preferences based on the gender variable in frequencies and percentages. The result shows that female nursing students had mostly diverging (28.7%) and assimilating (28.7%) learning style while the male nursing students had mostly converging (35.7%) and diverging (31.0%) learning style. The male students appear to be more converging and diverging than the females.

Test of significance

Hypothesis 1: There is no significant difference in the learning style of the male and female nursing student

Table 4:   Chi-Square Test between student learning style and their gender

S/N	Learning Styles	n= 310 Gender		X^2	P-value
		Male n=42	**Female n = 268**		
1	**Diverging**	13(31.0%)	77(28.7%)		
2	Assimilating	8(19.0%)	77(28.7%)	**3.083**	**0.379**
3	Converging	15(35.7%)	65(24.3%)		
4	Accommodation	6(14.3%)	49(18.3%)		

X^2 = 3.083; df = 3; P = 0.379; P>0.05.   **NS**.

Chi-square test results concerning the correlation between the nursing studentsø learning styles and their gender are presented in Table 4, which shows that there is no significant (ns) correlation between the studentsø learning styles and their gender (²(3) = 3.083; P>0.05).). That is, the nursing studentsø gender is not influential in the determination of the learning style. The null hypothesis was therefore accepted.

Research question 3: What are the differences in learning styles of the nursing student by age?

Table 5: Showing the Cross-Tabulation of Learning Preference by age group

n = 310

S/N	Learning Styles	16-20 N=39		21-25 N=191		Age 26-30 N=51		31-35 N=18		Above 35 N=11		Total
		F	%	F	%	F	%	F	%	F	%	
1	Diverging	13	33.3	57	29.8	13	25.5	7	38.9	0	0	90(29.0)
2	Assimilating	11	28.2	50	26.2	14	27.5	6	33.3	4	36.4	85(27.4)
3	Converging	9	23.1	52	27.2	13	25.5	4	22.2	2	18.2	80(25.8)
4	Accommodating	6	15.4	32	16.8	11	21.6	1	5.6	5	45.5	55(17.7)
	Total	**39**	**100**	**191**	**100**	**51**	**100**	**18**	**100**	**11**	**100**	**310(100)**

Table 5 shows the result of learning style across different age groups. The results (on Table 5) show that diverging learning style was most predominant in the age group 31 ó 35years 7(38.9), followed by the assimilating learning style 4(36.4%) among students within age group of above 35 years. Converging learning style was most predominant among students within the age group of 21 ó 25 years 52(27.2%) and closely followed by students within the age group of 26 ó 30 years 13(25.5%); Accommodating learning style was predominant among students above 35years of age 5(45.5%) followed by students within the age range of 26 ó 30 years 11(21.6%).

Generally, diverging learning style was the most predominant 90(29.0%) across different age groups. This is followed by assimilating learning style 85(27.4); converging learning style 80(25.8%) and lastly by accommodating learning style 55(17.7%).

Test of significance

Hypothesis 2: There is no significant difference in the learning style of age groups of the student nurses.

Table 6 Chi-Square Test for learning styles across the nursing students' age group

Learning Styles	Age Groups n = 310					X^2	P = value
	16-20 n=39	21-25 n =191	26-30 n = 51	31-35 n = 18	Above 35 n = 11		
Diverging	13(33.3%)	57(29.8%)	13(25.5%)	7(38.9%)	0(0%)		
Assimilating	11(28.2%)	50(26.2%)	14(27.5%)	6(33.3%)	4(36.4%)	13.013	.368
Converging	9(23.1%)	52(27.2%)	13(25.5%)	4(22.2%)	2(18.2%)		
Accommodating	6(15.4%)	32(16.8%)	11(21.6%)	1(5.6%)	5(45.5%)		

X^2 =13.013, df = 12, P = .368; P>0.05.   NS

Chi-square test results concerning the correlation between the nursing students' learning styles and their age are presented in Table 6, shows that there is no significant (ns) correlation between the students' learning styles and their gender ($X^2(12) = 13.013$; P>0.05). That is, the nursing students' age is not influential in the determination of the learning style. The null hypothesis was therefore accepted.

Research 4:   What are the differences in learning styles of the nursing student in their mode of admission (direct versus UME)?

Table 7: Cross-Tabulation of Learning Preference by mode of admission

n =310

| S/N | Learning Styles | Mode of Entry | | | | Total |
| | | Direct n=94 | | UME n=216 | | |
		F	%	F	%	
1	Diverging	31	33.0	59	27.3	90(29)
2	Assimilating	31	33.0	54	25.0	85(27.4)
3	Converging	22	23.4	58	26.9	80(25.8)
4	Accommodating	10	10.6	45	20.8	55(17.7)
	Total	**94**	**100**	**216**	**100**	**310(100)**

Table 7 shows the cross-tabulation results of learning style preferences based on the mode of entry variable. The result on this table shows that all the four learning styles were fairly distributed among the students from UME mode of entry. The diverging learning style was 59(27.3%); converging learning style 58(26.9); assimilating learning style 54(25.0%) and least represented was accommodating learning style 45(20.8%). The students from direct mode of entry on the other hand had equal number of diverging 31(33.0%) and assimilating (33.0%) learning style; converging learning style 22(23.4%) and accommodating learning style was 10(10.6%).

Test of Significance

Hypothesis 3: There is no significant difference in the learning style of direct and generic nursing student

Table 8: Chi-Square Test for learning styles across the nursing students' mode of admission

S/N	Learning Styles	Mode of Entry Direct n=94	UME n=216	X^2	P value
1	Diverging	31(33.0%)	59(27.3%)		
2	Assimilating	31(33.0%)	54(25.0%)		
3	Converging	22(23.4%)	58(26.9%)	9.814	0.020
4	Accommodating	10(10.6%)	45(20.8%)		

$X^2 = 9.814$, df = 3, P = 0.020 p< 0.05

Table 8 above shows that there is a significant correlation between the nursing studentsø learning style and their mode of admission. Direct entry students are significantly different from Generic entry students in their learning styles ((X^2(3) = 9.814; P< 0.05). The null hypothesis was therefore rejected.

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Research question 5: What are the differences in learning styles of the nursing student across their class levels (200, 300,400 and 500 level students).

Table 9: Cross-Tabulation of Learning Preference by year of study

S/N	Learning Styles	**n = 310** (200 level) n= 84		(300 level) n = 87		(400 level) n = 57		(500 level) n = 82		Total
		F	**%**	**F**	**%**	**F**	**%**	**F**	**%**	
1	Diverging	30	35.7	35	40.5	11	19.3	14	17.1	90(29.0)
2	Assimilating	34	40.5	31	35.6	10	17.5	10	12.2	85(27.4)
3	Converging	15	17.9	15	17.2	22	38.6	28	24.1	80(25.8)
4	Accommodating	5	6.0	6	6.9	14	24.6	30	36.6	55(17.7)
	Total	**84**	**100**	**87**	**100**	**57**	**100**	**82**	**310**	**310(100)**

Table 9 shows the cross-tabulation results of learning style preferences based on the year of study variable in counts and percentages. The result shows that the most predominant learning style in 200 and 300 level students were assimilating and diverging learning style while converging and accommodating learning styles were least represented. In contrast converging and accommodating learning styles were predominant among the 400 and 500 level students and diverging and assimilating were least represented. The result is as follow: 200 level studentsø assimilating 34(40.5%) learning style; diverging 30(35.7%) learning style; converging 15(17.9%) learning style and accommodating 5(6.0%) learning style. 300 level students diverging 35(40.5%) learning style; assimilating 31(35.6%) learning style; converging 15(17.2%) and accommodating 6(6.9%). 400 level studentsø converging 22(38.6%) learning style; accommodating 14(24.6%) learning style; diverging 11(19.3%) learning style and assimilating 10(12.2%). 500 level students accommodating 30(36.6%); converging 28(24.1%) learning style; diverging 14(17.1%) learning style and assimilating 10(12.2%) learning style.

Test of Significance

Hypothesis 4: There is no significant difference in the learning style of the learning style of 2nd 3rd 4th and 5th year students

Table 10: Chi-Square Test for learning styles across the nursing students' year of study

S/N	Learning Styles	Year of Study				X^2	P-value
		(200L) n= 84	**(300L)** n = 87	**(400L)** n = 57	**(500L)** n = 82		
1	Diverging	30(35.7%)	35(40.5%)	11(19.3%)	14(17.1%)		
2	Assimilating	34(40.5%)	31(35.6%)	10(17.5%)	10(12.2%)		
3	Converging	15(17.9%)	15(17.2%)	22(38.6%)	28(24.1%)	**58.548**	**0.000**
4	Accommodating	5(6.0%)	6(6.9%)	14(24.6%)	30(36.6%)		

$$X^2 = 58.548, df = 9, P = .000, P < 0.05$$

Chi-square test results concerning the correlation between the nursing studentsø learning styles and their class level are presented in Table 10 above, which shows that there is a significant correlation between the nursing studentsø learning style and their class level (X^2 (9) = 58.548; P < 0.05). The null hypothesis was therefore rejected.

Summary of Findings

Across the four years of study of the students, diverging and assimilating were the most dominant learning styles. Learning styles were not differentiated across age and gender of nursing students but there is significant relationship between the nursing studentsø learning style and their mode of entry and their year of study.

CHAPTER FIVE

DISCUSSION OF FINDINGS, SUMMARY, CONCLUSION AND RECOMMENDATIONS

This chapter presents the discussion of findings, implication for Nursing, limitations, suggestion for further studies, summary, conclusion and recommendations.

Discussion of Major Findings

The major findings from this study were discussed with respect to the specific objectives and hypothesis set for the study and in relation to finding from previous related studies.

Objective One: What are the learning style preferences of the nursing students in relation to the four types of learning styles suggested by Kolb (2005).

The results demonstrated that there is a wide range of learning style preferences among undergraduate nursing students, with a relatively evenly spread learning style preference across all four learning styles, although two learning styles were more prominent. Most studies find all four learning styles to be represented even though there may be a variation of the dominant learning style (examples: Austin 2004: Smith 2010; Caglayan 2011).

The relatively even spread of the four learning styles amongst undergraduate nursing students in this study suggests that learning styles are multidimensional. In other words, students can have the capacity to adjust their learning styles to suit the learning situation and educators can attempt to accommodate the varying learning styles of undergraduate nursing students.

The most predominant learning styles are diverging (90,29%) and the assimilating 27.4% (n=87) learning style. In theory, Divergers are characterized by their ability to be creative and imaginative. The students who prefer the Diverger style of learning are interested in people; and are imaginative and emotional, and like to gather information and use their imagination to solve problems. The other learning style preferred by undergraduate nursing students was an Assimilator style. In theory also, Assimilators excel in integrating knowledge from various information sources. They prefer logic and order, and factual and accurate information, and their expert opinion also fits in well with the nursing discipline.

The finding is consistent with Kolb's suggestion that the professional career is one of the forces that shape a person's learning style. It could also be that people with similar learning styles were drawn to the same career as shown in other studies. Rassool and Rawal (2008) found that the majority of undergraduate nursing students at University of Sao Paulo Brazil (USA) share the diverging learning style. A study by Smith (2010) revealed a similar finding, with both diverging and assimilating learning style being the dominant style in nursing students. In contrast, Vahid; Leila; Eskandar and Nasim (2008) found that, the majority of nursing students were convergers and assimilators.

This is not to suggest that the other styles of learning should be ignored or neglected such as Converger and Accommodator. Ideally, educators of undergraduate nursing students should attempt to introduce a variety of different teaching approaches and methods/strategies in order to enable learning to occur for all undergraduate nursing students regardless of their learning style. Effort should be made to accommodate all learning styles of undergraduate nursing students, and not just those of a particular learning style such as Diverger or Assimilator.

Objective Two: What are the differences in learning styles of the nursing students by gender?

The analysis of these data showed no difference between the gender of students and learning style preference. This finding supports Kolb (2005; 1984) who never reported a difference of learning style preferences between genders. It was also seen that both males and females preferred multiple modes of information presentation and the numbers and types of modality combination were not significantly different between genders in the studies by Austin (2004), Slater, Lujan and Dicarlo (2007), Kaya, Ozabaci and Tezel (2009) and Caglayan (2011). In the literature, in spite of the fact that there have been a lot of studies supporting these findings, though there have also been studies not corresponding to the present findings. In the of ‗the effects of learning styles on career preferences of senior secondary school studentsø by Shuaibu (2010), it was seen that there had been differences between the gender of students and learning styles; in another study - the investigation of learning style preferences of medical students by Slater, Lujan and Dicarlo (2011), it was found that while there was no significant relationship between the learning styles of students and gender, the female student population tended to be more diverse than the male population, encompassing a broad range of sensory modality combination within their preference profile.

Objective Three: What are the differences in learning styles of the nursing student by age?

In this study, the findings show that majority of the nursing students irrespective of their ages had mostly diverging and assimilating learning style and their learning styles were not related to the age variable. According to these results, it has been possible to state that, the preferred learning style among all groups has been the same and also the nursing studentsø learning styles have not changed according to the subject of the age, younger or

older. It has also been thought that the preferences of nursing studentsø learning style have not been affected by the age because of the same profession they have worked in. In the study by Li, Chen and Tsai (2008), it was found that the relationship between the nursing studentsø learning styles and age was unimportant. In another study conducted with the aim of determining the academiciansølearning styles by Caglayan (2011) it was also determined that there was no difference according to the age. It had reached similar conclusions in the other studies (Kaya, Ozabaci, and Tezel (2009); Adesunloye, Aladesanmi, Henriques-Forsythe, and Ivonye, (2008), which showed parallelism with the current study findings.

Objective Four: What are the differences in learning styles of the nursing student according to their mode of admission (direct versus UME)?

The result from the data revealed that there is a significant relationship between studentsø nursing learning style and mode of entry. In literature no study was found that addressed mode of entry. The significant relationship may be attributed to a variety of factors including but not limited to mix of students and prior nursing academic knowledge of direct entry nursing students.

Objective Five: What are the differences in learning styles of the nursing students across their class levels (second, third, fourth and fifth/final year).

The result of data revealed that there is relationship between learning styles and class grade. While the studentsø grade increases they prefer mostly Converging learning style which has peculiarities such as solving problems, making decisions, putting the ideas into practice, analyzing the ideas and making systematic plan. This is seen in nursing students in the fourth and fifth year of their education, they go to the hospital more often than the previous years and encounter patient more frequently. This stage characterizes the stage when students learn by thinking or analyzing problems which show their ability to interpret has

developed. These students learn to utilize critical thinking skills when assessing and caring for patients. This class level has predominantly the converging learning style (abstract conceptualization and active experimentation) and is consistent with the level of learning they are experiencing in the curriculum. Other studies of studentsø learning style also support these results (Russsia, 2005). This is perhaps due to the similarity of the study discipline or personality characteristics of nursing students. Upper level course work should incorporate a style of teaching that focuses on critical thinking skills.

Implication for nursing

Increasing student awareness of their own learning styles may be quite helpful in increasing control of their learning habits and strategies, which should, in turn, influence their academic performance. Nurse educators can utilize the information in this study to enhance the classroom setting and provide an effective learning environment for all types of learners with a variety of different teaching method preferences. Administering the Kolb Learning Style Inventory (LSI) to students can provide educators with information that would be useful in planning educational experiences. Educators are not expected to completely re-do each course, however, making small modifications to the curriculum to incorporate learning style information may provide a more effective learning environment for students.

Educators may want to consider offering students a variety of instructional activities, thus enabling each student to find a preferred activity (e.g., learning modules, research projects, written assignments, and creative works). Additionally, educators could encourage the class to work in groups composed of students with diverse learning style preferences. Educators also may consider using a variety of instructional methods that reach different learning style preferences. Based on the number of students categorized by each learning style preference, educators can decide how material should be presented to best reach the most students in

class. Instructional techniques could, and probably should, include a variety of strategies such as lectures, discussions, role-playing, and the incorporation of technology into the classroom.

Limitations

While the results do represent the population with no more than a 5% margin of error with 95% confidence, the findings of this study are limited in a sense because: (a) they are not generalizable outside of the target population; and (b) the instrumentation format was self-reporting in nature and could have been incorrectly reported by participants. Thus, the results should be viewed as a tool to assist in better understanding the population of nursing students in UNEC. Another limitation is getting all the student in the four classes in class to fill the questionnaire.

Suggestions for Further Studies

The following were suggestions made for further studies:

1. Replicate the current study using a larger sample size and consider including other departments in the Faculty of Health Sciences and Technology

2. Research should be carried out to investigate the relationship of teaching styles and the learning styles of nursing students.

3. A comparative studies should be conducted between the nursing sciences department and other departments in the Faculty of Health Sciences and Technology

Summary

This study was carried out to assess the learning styles of undergraduate nursing student of University of Nigeria Enugu Campus. Five research questions and four hypotheses were formulated to guide the research study. The significance of the study was highlighted. There was conceptual, theoretical review and empirical review of literature. Factors that influence learning styles were also highlighted. Descriptive cross-sectional survey design

was adopted for the study because it provides information from population regarding the characteristics, frequency and interrelations of variable within the population. The subjects of the study were three hundred and ten (310) undergraduate nursing students who met the inclusion criteria. Instrument used for data collection was questionnaire.

Data collected were analyzed using a computer statistical package for Social Sciences (SPSS) software version 16.0. Results were presented using frequency Tables, percentages cross tabulations and chi-square. The major findings were outlined in conclusion from findings. Limitations, Implications, recommendations and suggestions for further study were emphasized.

Conclusion of the Study

The main purpose of the study was to assess the learning styles of undergraduate nursing student of University of Nigeria Enugu Campus. The findings of the study were:

- There was relative even spread of the four learning styles (Diverger, Assimilator, Converger and Accommodator) preference among undergraduate nursing, although diverger and assimilating learning style were the most predominant learning style among the students.
- There was no significant different between the gender and age of the students and their learning style preference.
- There was significant different between the student learning styles and their mode of admission and class levels.

Recommendations

Based on this study, the following recommendation are:

˝ Increase awareness of studentsø Learning styles
˝ Offer students variety of instructional activities
˝ More research on studentsø Learning styles

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APPENDIX II

CONSENT FORM

In signing this document, I am giving my consent to fill a questionnaire assessment of learning styles of nursing students of University of Nigeria, Enugu Campus (UNEC) by Madu Obiageli T. an M.Sc student from Department of Nursing Sciences, University of Nigeria, Enugu Campus.

This study will help to identify the learning styles of undergraduate nursing students of UNEC, which will be helpful in increasing control of their learning habits and strategies, which should, in turn, influence their academic performance.

I was made to understand that my answers will be treated with utmost confidentiality.

íííííííííííí..

Respondentøs Signature

Dateí íííííííííííí

íííííííííííí..

Researcherøs Signature

Department of Nursing Sciences,
University of Nigeria,
Enugu Campus.

21st November, 2012.

Dear Respondent,

COVER NOTE FOR THE QUESTIONNAIRE

I am a post graduate student of the above department conducting a study on students learning styles as identified by the Learning Style Inventory. The title of my study is *Assessment of learning Style of Undergraduate Nursing Science Students of UNEC.* The following are demographic questionnaire and Learning Style Inventory. I request you to fill out this survey to the best of your ability. Completion of this survey will be voluntary and confidential. Completion and return will imply your consent to participate.

Thank you for your time and participation.

Yours faithfully,

Madu O.
M.Sc Student

APPENDIX B: DEMOGRAPHIC PAGE

Please write in answer:

Age:_____ years

Please Circle One:

Sex:

A. Male

B. Female

Year of study

A. Second year

B. Third year

C. Fourth year

D. Fifth year

Mode of entry

A. Direct

B. Generic

APPENDIX C

CONDITIONAL USE AGREEMENT

For good and valuable consideration, the receipt and legal sufficiency of which are hereby acknowledged, I hereby agree that the permission granted to me by the Hay Group (õHayö) to receive and utilize, without charge, the (õ ö) is subject to the following conditions, all of which I hereby accept and acknowledge:

I.   Will utilize the for research purposes only and not for commercial gain.

2.   The , and all derivatives thereof, is and shall remain the exclusive property of Hay; Hay shall own all right, title and interest, including, without limitation, the copyright, in and to the .

3.   I will not modify or create works derivative of the or permit others to do so. Furthermore, I understand that I am not permitted to reproduce the for inclusion in my thesis/research publication.

4.   I will provide Hay with a copy of any research findings arising out of my use of   the and will cite Hay in any of my publications relating thereto.

5.   To translate the, I need specific permission from Hay. If permission is granted, I   will use the translation for my research only, and I am not permitted to include this translation in my thesis/research publication.

6.   Hay will have no obligation to provide me with any scoring services for my use of the other than the Algorithm used to score results.

7.   Hay will not be deemed to have made any representation or warranty, express or implied, in connection with the , including, but not limited to, the implied warranties of merchantability and fitness for a particular purpose.

8.   My rights under this Agreement are non-transferable and non-exclusive and will   be

limited to a period of two (2) years from the date of this Agreement.

9.   Hay may immediately terminate this Agreement by giving written notice to me in the

event I breach any of this Agreementøs terms or conditions.

10.   This Agreement will be construed in accordance with the laws of Massachusetts

without recourse to its conflict of laws principles.

11.   This Agreement may not be assigned by me without the prior written consent of Hay.

Texas Tech University, Sheyleah Harris-Plant, May 2010 123

12.   Failure by Hay to enforce any provisions of this Agreement will not be deemed a

waiver of such provision, or any subsequent violation of the Agreement by me.

13.   This is the entire agreement with Hay pertaining to my receipt and use of the, and

only a written amendment signed by an authorized representative of Hay can

modify this Agreement.

Agreed and understood:_____

Signature Print Name Date

Texas Tech University, Sheyleah Harris-Plant, May 2010 124

APPENDIX D

EMAIL CONFIRMATION WITH PERMISSION TO USE LSI

Congratulations! LSI Research Approved! *4*

Hi Oby,

Congratulations! Your request regarding use of the LSI in your research has been approved. Attached you will find the following documents:

 MCB200C - This is a copy of the LSI 3.1 test. You may print or copy this as needed for your research.

 MCB200D - The profile sheet contains the answer key for the test as well as the profiling graphs for plotting scores. This document may be produced as necessary for your research. The AC-CE score on the Learning Style Type Grid is obtained by subtracting the CE score from the AC score. Similarly, the AE-RO score is AE   minus RO.

These files are for your data collection only. This permission does not extend to include a copy of the files in your research paper. It should be sufficient to source it.

We wish you luck with your research and look forward to hearing about your findings. Please send a completed copy of your research to polly.flinch@haygroup.com or you can mail a hardcopy to:

 LSI Research Contracts

c/o Polly Flinch

Hay Group

116 Huntington Ave, 4th Floor

Boston, MA 02116

Please let me know if you have any questions or would like to translate the LSI into another language so I can send you the appropriate permission forms. Best,

APPENDIX III