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# The Differences in Learning Styles between Generic and Adult Nursing Students

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# THE DIFFERENCES IN LEARNING STYLES BETWEEN GENERIC AND ADULT NURSING STUDENTS

by

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THE DIFFERENCES IN LEARNING STYLES

BETWEEN GENERIC AND ADULT

NURSING STUDENTS

This thesis is approved as a creditable and independent investigation by a candidate for the degree, Master of Science, and is acceptable for meeting the thesis requirements for this degree. Acceptance of this thesis does not imply that the conclussions reached by the candidate are necessarily the conclusions of the major department.

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Abstract (approximately 150 words)

The focus of this study was to describe the learning styles of generic and adult nursing students enrolled in a two-year Associate Degree program. Differences in learning styles between the two groups and variables associated with these differences were also addressed.

The sample consisted for forty-eight freshmen nursing students; fourteen students in the sample were generic and thirty-four students in the sample were adult according to the definitions given in the study. The Chi-squire statistic and descriptive analysis were utilized.

The results of the study indicated all four learning styles, described by Kolb, were present in the sample. The primary learning style of the generic sample was Diverger. The primary learning style of the adult sample was Diverger and secondarily, Assimilator.

I give my permission to The College of Nursing, SDSU to publish this abstract in a collection of abstracts from master's projects and theses.

Signature

Date July 23, 1986

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# CHAPTER 1

## INTRODUCTION

Over the past two decades much attention has been focused on the varying needs and characteristics of the learner. Looking at these needs and characteristics has become an expected step in the educational process: "In fact, the concept of 'individualized instruction' has become one of the cornerstones of modern educational practice" (Smith, 1984, p. 44).

Individualizing or personalizing instruction focuses the instruction on each student by adapting the instruction to each student's ability, problem-solving skill, motivation, goal, and interest. These aspects of the student are the components of learning styles. Assessing learning styles provides teachers with a new direction to take in developing a more personalized form of instruction (Dunn, 1972).

Despite the awareness of individual differences and various learning style theories, methods used in nursing education remain highly traditional. There continues to be a regular use of lecture; assignments are typically the same for all students. Rarely are students tested for the purpose of determining which teaching style would be best for them. Rarely are different media resources available for students to select those they prefer. Rarely are

students allowed to take a different route to meet the requirements of a course. In an attempt to "individualize instruction," methods such as independent study or learning modules have been instituted. These, too, fall short of being responsive to individual needs of students since all students are still required to do the same thing at the same time or rate (De Tornyay and Thompson, 1982).

In addition to the growing awareness and interest in individualized differences, the student population has changed, resulting in a more significant need for individualized instruction. The median age of the population has risen in the United States: in 1975, the median age was 28.8; in 1980, the median age was 30.0; and the median age is predicted to be 33.0 by 1990. The student population enrolled in nursing programs has followed the trend and has become increasingly older (Malarkey, 1977). De Tornyay and Thompson (1982), say "traditional lockstep methods, in which all students in a class are expected to study the same thing at the same time, are no longer adequate to meet the needs of such a heterogeneous group" (p. 125). Clearly more than awareness of individual differences is needed if all students are to be given equal opportunities to learn.

## STATEMENT OF THE PROBLEM

The problem under investigation in this study is: How do the Learning Styles of Adult Nursing Students differ from the Learning Styles of Generic Nursing Students enrolled in an Associate Degree Program? If a difference exists, what variables are associated with the difference?

## IMPORTANCE OF THE PROBLEM

Traditional teaching methods are being challenged as the awareness of student's individual differences increases. Research supports the theory that each person learns in a unique way, different from every other person. These inherent learning differences or styles become compounded with the experience and maturation of the adult student. The adult student brings to the classroom a different perspective than the generic student, with typically more experience, maturity and clearer goals (Wise, 1980).

Nursing education, similar to other disciplines, has continued to teach with principles of pedagogy, that is, the art or science of teaching children, despite the influx of more adult students into nursing programs (Rosendahl, 1974). The internal process of learning must be researched and defined along with the strategies/methods which involve the learner more fully in self-directed inquiry (De Tornyay and Thompson, 1982). De Tornyay and Thompson believe the challenge confronts nursing educators to adequately respond to the unique needs and characteristics of individuals while

providing an education relevant to the needs of society and an education adequate to meet the standards of the profession of nursing (De Tornyay and Thompson, 1982).

## OBJECTIVES OF THE STUDY

The objectives of this study were:

1. To identify the learning style of generic nursing students enrolled in a midwestern Associate Degree Nursing Program,

2. To identify the learning style of adult nursing students enrolled in a midwestern Associate Degree Nursing Program,

3. To identify differences in learning styles between generic and adult nursing students enrolled in a midwestern Associate Degree Nursing Program,

4. To identify variables associated with learning style in generic and adult nursing students enrolled in a midwestern Associate Degree Nursing Program.

## DEFINITION OF TERMS

### Learning Style

A Learning Style is a person's characteristic manner of organizing information both for processing ideas and/or solving problems (Researcher, 1986). For the purpose of this study, Kolb's Learning Style Inventory (LSI) was used. Kolb's Inventory defines four predominant learning styles: Converger, Diverger, Assimilator, and Accommodator.

Learning Preference

A Learning Preference is a choice of learning situation or condition. The learning style influences the learning preference (Garity, 1985).

Generic Nursing Student

A Generic Nursing Student is an individual 20 years of age or younger who enrolled directly in a college following high school and has had no interruption in schooling except for scheduled and/or summer vacations. For the purpose of this study, this individual is female and presently a freshman in a midwestern Associate Degree Nursing Program (Researcher, 1986).

Adult Nursing Student

An Adult Nursing Student is an individual 21 years of age or older who did not go directly to college from high school or who later interrupted this college education to fulfill social or work roles. For the purpose of this study, this individual is female and presently a freshman in a midwestern Associate Degree Nursing Program (Researcher, 1986).

Associate Degree Nursing Program

An Associate Degree Nursing Program is a two-year formal education process based in a college setting which prepares a student to write the N-CLEX for Registered Nurse

Licensure. For the purpose of this study the college is a two-year, junior college in a midwestern community of 28,000 (Researcher, 1986).

## ORGANIZATION OF THE THESIS

The remaining portions of this thesis are organized in the following manner:

1. Chapter 2 is a discussion of selected literature pertinent to the study, the theoretical perspective, and the research hypothesis;

2. Chapter 3 presents the research design and methodology;

3. Chapter 4 reports on the analysis of the research data;

4. Chapter 5 includes a summary of the thesis, conclusions and implications of the findings, limitations of this study, and recommendations for further research.

## CHAPTER 2

## Review of Literature

This chapter will be divided into four sections. The first section contains the review of literature pertinent to learning styles and nursing; the second section contains the review of literature pertinent to Kolb's Learning-Style Inventory; the third section contains the review of literature on the generic nursing student; the fourth section contains the review of literature on the adult nursing student.

### LEARNING STYLES AND NURSING

Learning is an internal process; this means learning can only be observed when there is a change in learner behavior. Individuals learn in different ways; no two people think, process, synthesize, or perceive alike. Over the past two decades much progress has been made toward recognizing the varying needs and characteristics of learners. Learning evolves from experience, "learning how to learn." Smith (1983) states, "The preferences and tendencies that accrue from this personal experience bring about one's learning style - one's characteristic ways of processing information, feeling, and behaving in a learning situation" (p. 50). James Keefe (1979) states learning

styles, like learning itself, can be recognized only by observing overt behavior.

Learning style, according to Keefe, is a consistent way of functioning that reflects the underlying causes of learning behavior. Learning style is the "why" to the process of learning the individual experiences. Anthony Gregorc (1979) states people "tell us" how their minds relate to the world by their characteristic sets of behavior. He believes everyone has mind-quality dualities such as abstract and concrete perceptions, sequential and random ordering, and deductive and inductive processing; most people have innate tendencies, however, that "tip" the person toward one or the other quality. It is these dominant qualities that are reflected in the learning process.

Keefe (1979) researched references to learning style back to 1892, but found it was not until the 1940's that learning style took on its broad meaning. Today, learning style is said to include three elements: the cognitive, the affective, and the physiological.

Cognitive Style. Most of the research on learning styles has been in areas of cognitive style, a term often considered synonymous with learning style. Cognitive style includes the preferred ways of perception, problem solving, thinking, and remembering. Cognitive style is the more

intellectual side of learning style, where knowledge and synthesis are predominant (Knopke, 1978).

Affective Style. This second element of learning style has to do with the aspects of the personality that deal with attention and valuing. Affective learning styles are the motivation processes that arouse, direct, and sustain behavior. Affective styles are the emotion and the feeling of the individual (Keefe, 1979).

Physiological Style. The third element of learning style deals with biologically based attributes, such as sex-related preferences and the interaction between the individual and the environment (Keefe, 1979).

Although much has been written about the concept of learning styles, little has been written on learning styles within nursing. Ferrell (1978) investigated the learning style preference of adult learners returning to an Associate Degree Nursing Program by use of the Learning Style Inventory by Renzulli and Smith. Results of the study indicated students preferred peer teaching to all other methods. In another study, Laschinger and Boss (1984) compared learning characteristics of 166 incoming and 102 more advanced nursing students by administering Kolb's Learning Style Inventory. Results indicated nursing students were represented in all learning style categories. The most common learning style in the first year was diverger. Laschinger and Boss found significantly more

concrete learning styles (diverger or accomodator) than abstract learning styles (converger or assimilator) in first year students. The proportion of students with accommodative learning styles was greater for the advanced group when compared with the first year students. The results of this study were consistent with a study with medical students by Plovnick (1975) which showed that individuals with concrete learning styles chose people-oriented careers. Studies done by Laschinger and Boss and Plovnick found that individuals with concrete learning styles were more influenced by personal factors, such as role models, than were individuals with abstract learning styles who were influenced by non-personal factors such as curriculum. Christensen, Lee, and Bugg (1979) examined motivation, learning style, and locus of control in fifty-three graduates of a Nurse Clinician program and found 70 percent to be either accommodators or divergers. Literature supports the idea that there is a strong clinical frame of reference for these concrete learners available in nursing education. Concrete learners learn best in environments which involve direct experience, such as clinicals in client settings and clinical conferences.

The change in the student population in nursing programs, that of increasing numbers of ethnic minority students, men, and older women, emphasize the need for individualized instruction. De Tornyay and Thompson (1982)

believe focusing on individual needs and style allows the highest level of achievement by each student. Individualized instruction, DeTornyay and Thompson believe, is the right of the student, and therefore becomes the responsibility of nursing faculty to research such instruction (De Tornyay and Thompson, 1982).

Crystal Marie Lang (1972) found that nursing students whose learning style matched the nursing instructor's learning style achieved higher mean scores in final course grades than those nursing students whose learning style did not match the nursing instructor's learning style. Lang also described a decrease in the withdrawal rate of matched students when compared with the non-matched students. Identification of learning styles made a difference in the process and end result of the educational program.

De Tornyay and Thompson (1982) cite the following four tools as appropriate for determining learning styles of nursing students:

1. Learning Style Inventory by Renzulli and Smith. This is an instrument that is used to determine the student's feelings in nine specific learning methods: projects, simulation, drill, peer teaching, discussion, teaching games, independent study, programmed instruction and lecture.

2. Productivity Environmental Preference Survey by Price. This instrument requires approximately fifteen minutes to identify individual adult preferences of conditions in a learning/working environment.

3. "Cognitive Mapping" by Joseph Hill. This instrument is actually a battery of tests designed to yield a profile of 84 traits that would describe the student's learning style.

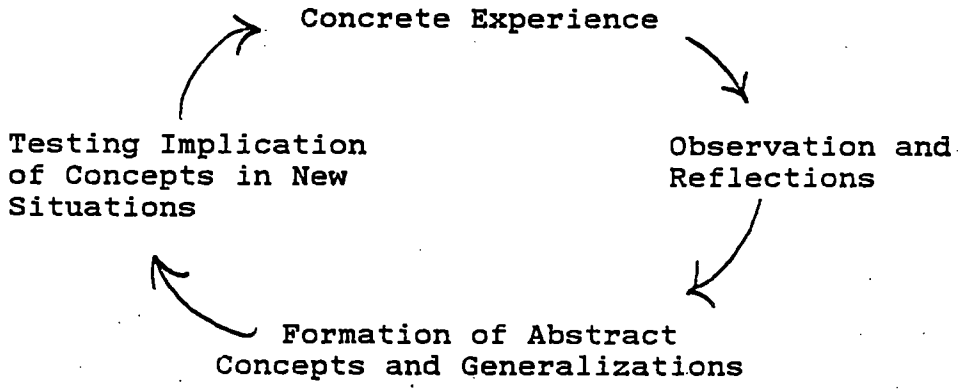
4. Learning-Style Inventory by Kolb. This instrument is a nine-item questionairre taking approximately five minutes. The respondent is asked to place four words in the order that best describes personal learning style. Four learning modes are represented: concrete experience, reflective observation, abstract conceptualization, and active experimentation.

KOLB'S LEARNING STYLE INVENTORY

Experiential Learning Theory forms the basis for David A Kolb's Learning Style Inventory (1976). It is called experiential learning in part for the significant role experience plays in the learning process. The emphasis of experience differentiates this approach from other cognitive theories of learning. The following figure simply describes the learning cycle of how experience leads to concepts which lead to new experiences (Kolb, 1976).

Figure 1

The Experiential Learning Model




(Kolb, 1976, p. 2)

Experiential Learning evolves as a four stage cycle. Kolb (1976) states, "Immediate concrete experience is the basis for observation and reflection. These observations are assimilated into a 'theory' from which new implications for action can be deduced" (p. 2). These implications can be called hypotheses and serve as guides in creating new experiences. To be effective, Kolb continues, the learner needs four different kinds of abilities: Concrete Experience abilities (CE), Reflective Observation abilities (RO), Abstract Conceptualization abilities (AC), and Active Experimentation abilities (AE). Kolb explains that immediate concrete experiences serve as a basis for observation and reflection. The person must involve themselves fully and openly in new situations, without bias. This is Reflective Observation. To create concepts that

integrate observations into logically sound theories is Abstract Conceptualization. When these theories are used to make decisions and solve problems, Active Experimentation is occurring. Ideally, all four stages are achieved by the individual (Kolb, 1976).

Kolb also believes that in the learning process there are two opposing dimensions. The first dimension is concrete experiencing with abstract conceptualization; the second dimension is active experimentation and reflective observation. Kolb (1976) supports the theory that over time "accentuation forces operate on individuals in such a way that the dialectic tensions between these dimensions are consistently resolved in a characteristic fashion" (p. 4). In other words, heredity, past experience, and the demands of our present environment affect the development of learning styles that emphasize some learning abilities over others. Kolb's four learning styles are:

1. Converger. The Converger's dominant learning abilities are Abstract Conceptualization (AC) and Active Experimentation (AE).

2. Diverger. The Diverger with strengths opposite of the Converger is best at Concrete Experience (CE) and Reflective Observation (RO).

3. Assimilator. The Assimilator's dominant learning abilities are Abstract Conceptualization (AC) and Reflective Observation (RO).

4. Accommodator. The Accommodator with strengths opposite of the Assimilator is best at Concrete Experience (CE) and Active Experimentation (AE) (Kolb, 1976).

Kolb's Learning Style Inventory has been used by two teams of researchers studying learning styles of nursing students. Laschinger and Boss (1984) emphasize their belief that the philosophical foundation supporting the profession of nursing is congruent with Kolb's Learning-Style Inventory. Laschinger and Boss cite the congruent areas as being the holistic view of man, learning as a life-long process, and learning as person-environment interaction. Just as these areas are inherent in any nursing philosophy, Laschinger and Boss believe they entwined in Kolb's application of Experiential Learning Theory.

Dorsey and Pierson (1984) used Kolb's Learning Style Inventory on 513 participants enrolled as adults in occupational education programs. They found that age and prior work experience influence learning style and that the Accommodator Style to be predominant at about the age of thirty-three. The student with the Accommodator Style learns best through trial, error, and experience; learning for this student is at its peak when the student is actively involved. Adults also move from merely assimilating facts as their younger counterparts do, to understanding and interrelating information.

GENERIC NURSING STUDENT

Despite the numbers of generic students historically enrolled in nursing careers, little literature is actually available describing their learning styles.

Elizabeth Jean Pugh (1976) talks about the generic student as a late adolescent learner. She sees this learner as a dynamic, growing organism, striving for self-fulfillment and striving to identify a role within society. The generic student is in a period of experimenting and integrating methods of relating to other people. Pugh believes the generic student wants to learn what has personal meaning and what would make the student a more adequate adult.

Malcolm Knowles (1984) believes education had been based on the pedagogical model. He states five assumptions about learners inherent in the pedagogical model:

1. Concept of the Learner: The learner is a dependent personality; the teacher has full responsibility for decision on how, what, and when to learn.

2. Role of the Learner's Experience: Learners enter into the education system with little experience that is much of value as a reason for learning.

3. Readiness to Learn: Students learn what they are told they need to know in order to progress/advance grade levels.

4. Orientation to Learning: Learning is seen as a process of acquiring pre-determined knowledge. The curriculum is organized according to the logic of the subject matter.

5. Motivation to Learn: Students are motivated to learn by external processes such as family, teachers, competition for grades (Knowles, 1984).

Despite the inherent similarities among generic nursing students, the literature on learning style supports the need for more personalizing of education. Nursing education has continued to be highly traditional in its teaching method (DeTornyay and Thompson, 1982). Rarely are students tested to determine which teaching strategy would be best for their learning strengths and weaknesses. Rarely are students allowed to take alternative routes to learning. De Tornyay and Thompson emphasize, "The challenge before all education is no longer equality of educational opportunity, but, rather, equality of educational outcome" (p. 128).

## ADULT NURSING STUDENT

Patricia Cross (1981) notes that the United States is quickly becoming a nation of adults. For much of this century, the United States has been numerically dominated by young people; predictions for the year 2000, however, indicate the largest age group will be 30-44 years old. This change in population affects education. Adults approach

education differently. Cross summarizes the characteristics of adult learning as:

> Adult learning is motivated primarily by a desire to solve immediate and practical problems and adults are less tolerant of the system than are children and youth.
>
> Adult learners have a reservoir of life experiences affecting their participation in learning activities that should be taken into account and built upon by planners of educational programs (p. 240).

Carol Kasworm (1980) has outlined characteristics of older and younger undergraduate students. The following is a partial listing:

| Younger Undergraduates | Older Undergraduates |
|---|---|
| 1. Quasi-dependent being | 1. Independent being |
| 2. Limited emotional financial support for significant others | 2. Major emotional/financial support from significant others |
| 3. Major time focus on academic and related extracurricular activities | 3. Competing time focus on job, family, community, personal responsibilities in relation to academic activities |
| 4. High identification with student role | 4. Composite identification with many roles |
| 5. Seeking out a self-identity | 5. Renewing self-identity |
| 6. Limited awareness of own capabilities | 6. Continuing growth of awareness of own capabilities |
| 7. Minimal exposure to life/career role models | 7. Significant exposure to life/career role models |

| | |
|---|---|
| 8. Minimal self-confidence and developing sense of maturity | 8. Developed and diversified self-confidence and maturity |
| 9. Introspective orientation | 9. Varied self/others orientation |
| 10. Impulse (short term) decision-making | 10. Capacity for delayed gratification (long-term) decision-making |
| 11. Limited exposure to strategies for learning | 11. Varied strategies to learning |
| 12. Passive learner role (unknown readiness to learn) | 12. Active learner role (active readiness to learn) |
| 13. Limited history of self-directed learning | 13. Diversified opportunities for prior development of self-directed learning |
| 14. Minimal analytical/critical problem solving skills | 14. Developed analytical/critical problem-solving skills |

(Kasworm,1980, p. 32).

Kasworm states that American colleges and universities have historically focused curriculum program and teaching approaches to the post-high school student. With this generic student no longer the overwhelming majority, educational systems must focus on the increasing numbers of older students who are enrolled in college programs. Changing career and leisure expectations, spiralling technological advances, and increased awareness of quality of life have "fueled the interest" and desire for adults to seek undergraduate programs.

Malcolm Knowles reintroduced "Andragogy, the art and science of helping adults learn" in 1970 with his book entitled The Modern Practice of Adult Education - Andragogy

versus Pedagogy. Davenport (1985) supports Malcolm Knowles' belief that the purpose of andragogy is to help people achieve their full potential by encouraging life-long learning.

Andragogical theory is based on four assumptions that are different from assumptions of pedagogy. Knowles (1970) describes the assumptions as follows:

1.) Changes in Self-Concept: This assumption is that as a people mature their self-concept moves from total dependency to increasing self-directedness. Andragogy assumes that the point at which an individual achieves a self-concept of self-direction is when the individual is psychologically an adult. If the individual is in a situation not allowing for self-direction, tension between the situation and the self-concept develops.

2.) The Role of Experience: This assumption supports the belief that as individuals mature they acquire a reservoir of experience that makes them a rich resource for learning and at the same time provides them with a broad base for relating new learning. In andragogy, there is a decrease in the traditional teaching methods and an increase in experiential techniques.

3.) Readiness to Learn: This assumption supports the belief that as individuals mature their readiness is less the product of their biological development and more the product of the developmental tasks required for the

performance of emerging social roles. Andragogy assumes learners are ready to learn what they "need" to know to prepare them for their role as workers, spouses, and parents. Therefore, the timing of learning experiences becomes crucial.

4.) Orientation to Learning: The assumption supports the belief that children are conditioned to have a subject-centered orientation to learning and adults are conditioned to have a problem-centered approach to learning. Knowles believes that children learn a subject to move on to the next level of a subject. Adults, on the other hand, enter the educational system, knowing they will need to apply the information in their evolving roles (Knowles, 1979).

Pearl Rosendahl (1974) has adapted the above four adult assumptions to nursing education by pointing out implications for each:

1. Instructors influence the learning climate significantly by their attitude and behavior. According to Rosendahl, studies have found that students who see the teacher/student relationship as warm, truthful, caring, and student-centered have higher gain scores in self-actualization. These studies have found that students who see the teacher/student relationship as authoritarian, cold, strict, and faculty-centered have the lowest gain scores in self-actualization. A second point reinforces the

belief that when students have a part in planning and conducting their learning experience, they are more successful in learning and more enthusiastic.

2. Adults see their identity as their experience. If a student's experience is ignored or minimized, the student feels rejected. With the different experiences and backgrounds of nursing students, these students could easily be utilized as resources through discussion groups, role-playing, simulation, games, and other teaching methods. Another implication to this second assumption is that methods should build on the experience of the students to produce more meaningful learning. Despite the traditional approaches, some nursing curricula are allowing students to proceed at their own pace through innovative experiences. Post-education surveys find students who participated in such a program have made successful adjustments as staff nurses.

3. Students in nursing must be taught the problem-solving technique rather than the "cookbook format." With emphasis on the skills of problem-solving rather than on the skill of just doing it, the students learn how to automatically think. This focuses attention on nursing actions, rationales, and action consequences and away from rote-memory and task orientation.

4. Adults have developmental tasks, and learning experiences must be sequenced with them. One developmental

task of an adult is getting started in an occupation; for a student nurse the developmental task would be becoming a practitioner. For this developmental task, student nurses could be counseled in job seeking, mastery of the skills, and methods of interacting with fellow workers.

## SUMMARY OF LITERATURE

The literature review has focused on learning styles and nursing, Kolb's Learning Style Inventory, the generic nursing student and the adult nursing student. The literature review revealed a growing awareness in education of the need to individualize instruction. Individualized instruction begins with identification of learning styles; little research, however, has been done in nursing on learning style identification. Studies done are consistent in their findings of concrete learning styles prevalent in people-oriented professions like nursing. Kolb's Learning Style Inventory is a respected, practical instrument used by several disciplines including nursing. Based on Experiential Learning Theory, Kolb's LSI examines the process of learning and the role of experience in learning.

As the average age of students entering college increases, the process of identifying learning styles and using this information to influence the individualized instruction becomes more crucial. Generic and adult students, and nursing students specifically, come to college

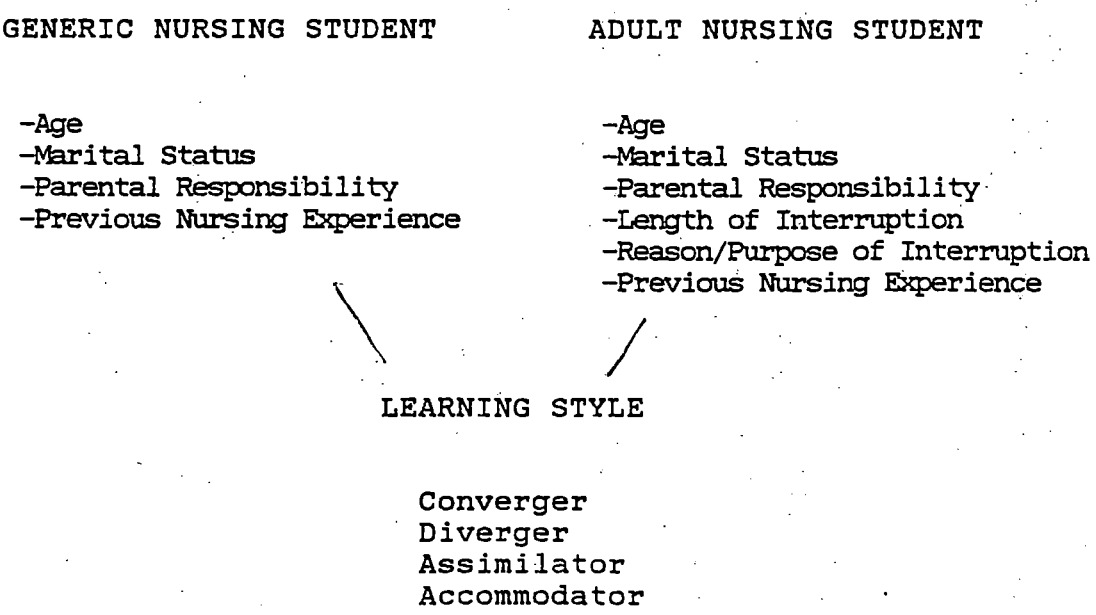
with various experiences and perceptions; these variables affect how students learn.

CONCEPTUAL FRAMEWORK

Through the review of literature, the following conceptual framework was constructed by the researcher. This study evolves around two main concepts: the learning style variables of generic nursing students and the learning style variables of adult nursing students and the impact of the variables on learning style.

Figure 2

Conceptual Framework



HYPOTHESES

The review of literature and the conceptual framework generate the following null hypotheses:

1. There is no difference in the learning style of the adult nursing student and the generic nursing student enrolled in a midwestern Associate Degree Nursing Program;

2. There is no difference in the learning style of an adult nursing student and a generic nursing student enrolled in a midwestern Associate Degree Nursing Program related to age;

3. There is no difference in the learning style of an adult nursing student and a generic nursing student enrolled in a midwestern Associate Degree Nursing Program related to marital status;

4. There is no difference in the learning style of an adult nursing student and a generic nursing student enrolled in a midwestern Associate Degree Nursing Program related to parental resonsibility;

5. There is no difference in the learning style of an adult nursing student and a generic nursing student enrolled in a midwestern Associate Degree Nursing Program related to length of interruption;

6. There is no difference in the learning style of an adult nursing student and a generic nursing student enrolled in a midwestern Associate Degree Nursing Program related to reason/purpose of interruption;

7. There is no difference in the learning style of an adult nursing student and a generic nursing student enrolled in a midwestern Associate Degree Nursing Program related to previous nursing experience.

# CHAPTER 3

# METHODOLOGY

The research methodology used for the study is reviewed in this chapter. This includes discussion of the approach, sample, variables, research tool, and method of collecting data and procedure for the analysis of the data.

## Approach

The approach used in this study included a demographic survey and Kolb's Learning Style Inventory, both administered to female freshman nursing students enrolled in a midwestern Associate Degree Nursing Program.

## Sample

The accessible population under study was the 48 female freshman students, generic and adult, presently enrolled in an Associate Degree Nursing Program. The four accessible male freshmen students were not included in the sample due to their number not being statistically significant. The self-selected volunteer sample consisted of 48.

## Variables

The variables in this study are:

A. Dependent Variable -- differences in learning styles

B. Independent Variables -- generic nursing student
-- adult nursing student

C. Demographic Variables--

-Age
-Marital Status
-Parental Responsibility
-Length of Interruption
-Reason/Purpose for Delayed Entry into College
-Previous Nursing Experience

Research Tool

David Kolb developed in 1976 a Learning Style Inventory designed to meet the following design objectives: first, a brief, straight forward test to be used for research and to give individual students feedback on their learning style while discussing the learning process; secondly, the test was constructed in such a way that the individual would respond to it like any learning experience; thirdly, the test was to predict behavior consistent with theory on learning (Kolb, 1976). The word items used in the Learning Style Inventory were selected by a panel of four behavioral scientists familiar with experiential learning theory. Balancing of the original twelve sets of words in four learning modes led to the now accepted nine sets of words. Analysis demonstrates that the words comprising the four primary learning modes have high convergent and high

discriminant validity. Correlations between words ranged between .50 and .60. The LSI Scale Scores are congruent with experiential learning theory which predicts Concrete Experience to be negatively correlated with Abstract Conceptualization and Active Experimentation would be negatively correlated with Reflective Observation. In split-half reliability results, the combination scores of AC-CE and AE-RO are highly reliable and suitable for most research applications with ranges from .40 to .70. The basic scales CE, RO, AC, and AE show greater variability and need to be used more cautiously. Four test-retest studies were conducted from four samples over different periods of time ranging from three to seven months. These studies supported the hypothesis that test-retest correlations would decrease as discontinuity and length between testing increased. In further testing, the patterns of scores suggests that LSI scores show sufficient variability across different populations to be useful in assessing the learning styles that characterize other occupations and groups (Kolb, 1976).

Individuals tested on the LSI showed different patterns; four prevalent types of learning styles were identified by Kolb: converger, diverger, assimilator, accomodator. Characteristics of each type are as follows:

The converger's dominant learning abilities are Abstract Conceptualization (AC) and Active Experimentation

(AE). Convergers tend to do well in testing where there is a single correct answer. Convergers tend to have narrow interests and prefer to deal with things rather than people. Kolb's research has found this learning style prevalent with engineers (Kolb, 1976).

The Diverger, according to Kolb's research, has learning strengths opposite of the Converger; the Diverger is best at Concrete Experience (CE) and Reflective Observation (RO). The Diverger has an active imagination and works best in situations needing generation of ideas. Divergers are involved with people and tend to be more emotional. Counselors and personnel managers frequently have this learning style (Kolb, 1976).

Kolb's findings support the Assimilator's dominant learning abilities as Abstract Conceptualization (AC) and Reflective Observation (RO). The Assimilator's strength is in creating theoretical models, excelling in inductive reasoning. Theories, for the Assimilator, must be logically sound and precise more so than practical. Assimilators, thus, are found more frequently in basic sciences, mathematics, or research (Kolb, 1976).

The Accommodator has strengths opposite of the Assimilator; the Accommodator is best at Concrete Experience (CE) and Active Experimentation (AE). The Accommodator is a risk-taker, and adapts well to new situations. The Accommodator is a doer, solving problems in an intuitive

trial and error fashion. The Accommodator is comfortable with people but may be seen as impatient and "pushy." The Accommodator's background is typically one of a practical, technical area such as business, marketing, or sales (Kolb, 1976).

Method of Collecting Data

The data for this study were collected in the following process: 1.) Approval from the institution to conduct research was obtained. See Appendix A.

2.) At the end of a regular class period, each female student was given a manila envelope containing a letter of explanation, a demographic survey and Kolb's Learning-Style Inventory. See Appendix B. The letter included the purpose of the study, the benefit of the study, and the student's role in assisting in this study. Students who chose not to participate were told they could turn in the packet without completing them. A completed survey constituted informed consent to participate in the study. A collection box was available for all surveys. Anonymity of all participants was guaranteed because no name or student identification number was required. Coding of the demographic survey and the Learning Style Inventory was done for statistical analysis.

Procedure for Analysis of Data

The demographic survey and Learning Style Inventory were returned by 48 students. A computer using SAS programming was utilized for the statistical analysis of the data in the demographic survey. The Learning Style Inventory was individually calculated. The results from the Learning Style Inventory were then analyzed to determine whether frequencies were significantly different than expected. The Chi-Square statistic was applied to assess whether or not a relationship existed between the two variables.

# CHAPTER 4

## ANALYSIS

This chapter contains hypothesis testing and descriptive analysis of the data. The statistical test used to determine hypothesis acceptance or rejection was Chi-square. The significance level was $p<0.05$. Frequency and percentage listing of the data were obtained from the subject responses to the demographic survey. The descriptive analysis was based on that data. (N=48)

NULL HYPOTHESIS 1.

There is no difference in the learning style of an adult nursing student and a generic nursing student.

On the basis of the data analyzed, this hypothesis was accepted. The Chi-square value of 3df was 2.47, $p=0.07$ ($p>0.05$). See Table 1.

The results follow from descriptive analysis:

Twenty-three (47.9 percent) subjects were Divergers; seven (14.5 percent) subjects were Accommodators; twelve (25.0 percent) subjects were Assimilators; six (12.5 percent) subjects were Convergers.

Generic

Nine (64.2 percent) generic subjects were Divergers; four (28.5 percent) generic subjects were evenly distributed between Accommodators and Assimilators; one (7.1 percent) generic subject was a Converger. (N=14)

Table 1

Learning Styles of Generic and Adult Nursing Students

N = 48

| | Diverger | Accommodator | Assimilator | Converger | Total | |
|---|---|---|---|---|---|---|
| Generic | 9 | 2 | 2 | 1 | 14 | |
| Adult | 14 | 5 | 10 | 5 | 34 | $x^2$=2.47 |
| | | | | | | 3 df |
| Total | 23 | 7 | 12 | 6 | 48 | |
| | 47.9% | 14.5% | 25% | 12.5% | | p=0.07 |

Adults

Fourteen (41.1 percent) adult subjects were Divergers; ten (29.4 percent) adult subjects were Assimilators; ten (29.4 percent) adult subjects were evenly distributed between Accommodators and Convergers. (N = 34)

NULL HYPOTHESIS 2

There is no difference in the learning style of an adult nursing student and a generic nursing student related to age.

Statistical analysis of Null Hypothesis 2 was not appropriate since Null Hypothesis 1 was accepted. With no significant difference in learning style found between generic and adult nursing students, the study of association of variables with differences in learning styles was irrelevant.

The results follow from descriptive analysis:

Generic

Fourteen (29.1 percent) subjects were twenty years of age or younger and considered generic students for the purpose of this study. (N = 48)

Adult

Thirty-four (70.8 percent) of the subjects were twenty-one years of age or older and considered adult students for the purpose of this study. Twenty-two (45.8 percent) subjects were ages twenty-one to thirty; seven (14.5 percent) subjects were ages thirty-one to forty; three (6.0 percent) subjects were ages forty-one to fifty; two (4.0 percent) subjects were fifty-one years or older. (N = 48)

NULL HYPOTHESIS 3

There is no difference in the learning style of an adult nursing student and a generic nursing student related to marital status.

Statistical analysis of Null Hypothesis 3 was not appropriate since Null Hypothesis 1 was accepted. With no significant difference in learning style found between generic and adult nursing students, the study of association of variables with differences in learning styles was irrelevant.

The results follow from descriptive analysis:

Twenty-eight (58.3 percent) subjects were single. Seventeen (35.4 percent) were married and three (6.2 percent) subjects were divorced.

Generic

Thirteen (92.8 percent) generic subjects were not married; one (7.1 percent) generic subject was married. (N = 14)

Adult

Fifteen (44.1 percent) adult subjects were not married; nineteen (55.8 percent) adult subjects were married. (N = 34)

NULL HYPOTHESIS 4

There is no difference in the learning style of an adult nursing student and a generic nursing student related to parental responsibility.

Statistical analysis of Null Hypothesis 4 was not appropriate since Null Hypothesis 1 was accepted. With no significant difference in learning style found between generic and adult nursing students, the study of association of variables with differences in learning styles was irrelevant.

The results follow from descriptive analysis:

Twenty-eight (58.3 percent) subjects had no children. Six (12.5 percent) subjects had one child and fourteen (29.1 percent) subjects had two or more children.

Generic

Thirteen (92.8 percent) generic subjects had no children and one (7.1 percent) generic subject had one child. (N = 14)

Adult

Fifteen (44.1 percent) adult subjects had no children. Nineteen (55.8 percent) adult subjects had children, five (26.3 percent with one child and fourteen (73.6 percent) with two or more children. (N = 34)

NULL HYPOTHESIS 5

There is no difference in the learning style of an adult nursing student and a generic nursing student related to length of interruption of education.

Statistical analysis of Null Hypothesis 5 was not appropriate since Null Hypothesis 1 was accepted. With no significant difference in learning style found between generic and adult nursing students, the study of association of variables with difference in learning styles was irrelevant.

The results follow from descriptive analysis:

Generic

Fourteen generic subjects went directly from high school into college. Thirteen (92.8 percent) of these generic subjects had no interruption between enrollment in college and enrollment in the nursing program. One (7.1 percent) generic subject took a one to two year interruption

between enrollment in college and enrollment in the nursing program. (N = 14)

Adult

Twenty-one (61.7 percent) adult subjects enrolled in college directly after high school. Eight (38.0 percent) adult subjects had no interruption in time between college enrollment and enrollment in the nursing program. (N = 34)

Thirteen (38.4 percent) adult students did not enroll directly in college after high school. (N = 34) Ten (38.4 percent) adult students had a one to two year break; three (11.5 percent) adult students had a three to four year break; thirteen (50.0 percent) adult students had a five year or more break before entering college. (N = 26)

NULL HYPOTHESIS 6

There is no difference in the learning style of an adult nursing student and a generic nursing student related to reason or purpose of the interruption of education.

Statistical analysis of Null Hypothesis 6 was not appropriate since Null Hypothesis 1 was accepted. With no significant difference in learning style found between generic and adult nursing students, the study of association of variables with differences in learning styles was irrelevant.

The results follow from descriptive analysis:

subjects have not worked as an aide, technician or L.P.N. Two subjects did not answer this question. (N = 46)

Generic

Seven (50.0 percent) generic subjects had not worked as an aide, technician, or L.P.N. prior to entry into a nursing program. Seven (50.0 percent) generic subjects had worked as an aide, technician, or L.P.N. prior to entry into a nursing program. (N = 14)

Adult

Six (18.7 percent) adult subjects had not worked as an aide, technician, or L.P.N. prior to entry into a nursing program. Twenty-six (81.7 percent) adult subjects had worked as an aide, technician, or L.P.N. prior to enrollment in the nursing program. (N = 32)

ANALYSIS SUMMARY

The following summarizes the hypothesis testing and descriptive analysis.

Hypothesis Testing

Based on statistical testing, Null Hypothesis 1 was accepted. There is no difference in the learning style of adult nursing students and generic nursing students enrolled in a midwestern Associate Degree Nursing Program.

With the acceptance of Null Hypothesis 1, the following Null Hypothesis were inappropriate for further statistical testing:

2. There is no difference in the learning style of adult nursing students and generic nursing students enrolled in a midwestern Associate Degree Nursing Program related to age.

3. There is no difference in the learning style of adult nursing students and generic nursing students enrolled in a midwestern Associate Degree Nursing Program related to marital status.

4. There is no difference in the learning style of adult nursing students and generic nursing students enrolled in a midwestern Associate Degree Nursing Program related to parental responsibility.

5. There is no difference in the learning style of adult nursing students and generic nursing students enrolled in a midwestern Associate Degree Nursing Program related to length of interruption.

6. There is no difference in the learning style of adult nursing students and generic nursing students enrolled in a midwestern Associate Degree Nursing Program related to reason/purpose of break.

7. There is no difference in the learning style of adult nursing students and generic nursing students enrolled in a midwestern Associate Degree Nursing Program related to previous nursing experience.

Descriptive Analysis

The typical subject responding was twenty-one years of age or older, married, with no children. The results indicate 72.9 percent of the subjects went directly from high school to a college. Of these subjects, 56.2 percent had an interruption between this enrollment in college and enrollment in the nursing program. The interruption was five years or more for 48.1 percent of the subjects. Reasons for interruptions were primarily job/money and family. Results indicated 71.7 percent of the subjects had worked previously as an aide, technician, or L.P.N.; 50.0 percent of the generic subjects and 81.7 percent of the adult subjects had previous nursing experience. Generic nursing students were predominately Divergers (64.2 percent). The adult nursing students, however, were predominately Divergers (41.4 percent) and secondarily, Assimilators (29.4 percent).

# CHAPTER 5

# SUMMARY, CONCLUSIONS, IMPLICATIONS LIMITATIONS AND RECOMMENDATIONS

The purpose of this chapter is to present:

1. A summary of the research problem and design,
2. A summary of the major findings and conclusions as related to the objectives of the study,
3. A statement of implications derived from the research findings and conclusions,
4. A statement of limitations of the study,
5. Recommendations for future research.

## Summary of the Research Problem and Design

The awareness of individual differences in the process of learning has become well-known in recent years. Educational settings are adapting their teaching and delivery of information to meet the individual needs of students. In addition to the innate differences of students, ages of students enrolled in higher education are becoming increasingly more diverse. A review of the literature indicated that studies have been done identifying specific learning styles of students (Garity, 1985). With the knowledge of the learning style, specific teaching approaches can be implemented that complement the learning style. Kolb's Learning Style Inventory has become one of several instruments available for style assessment.

Researchers previously using Kolb's Learning Style Inventory believed its construct was compatible with the foundation of nursing education, thus appropriate for use in the learning style assessment of nursing students (Laschinger and Boss, 1984). In nursing education, however, little attention has been placed on different learning styles of individual students. Nursing education is now being impacted by more adult students, indicating an even more urgent need for research on individual learning styles.

For this study, a demographic survey and Kolb's Learning Style Inventory were given to forty-eight female students in their freshman year at a midwestern Associate Degree Nursing Program. The independent variables were generic and adult nursing students; the dependent variable was differences in learning styles. Demographic variables selected to be addressed in this study were age, marital status, parental responsibility, length of interruption from high school to college, reason/purpose of delayed entry into collge, and previous nursing experience. Seven null hypothesis related to the independent variables were generated.

Major Findings and Conclusions

The major findings and conclusions as related to the objectives of the study were:

Major Findings. Objective 1 of the study was to identify the learning style of generic nursing students

enrolled in a midwestern Associate Degree Nursing Program. In descriptive analysis, nine (64.2 percent) of the fourteen generic subjects were Divergers; four (28.5 percent) generic subjects were evenly distributed between Accommodators and Assimilators. One (7.1 percent) generic subject was a Converger. See Table 2.

Table 2

Learning Style of Generic Nursing Students

N = 14

| Diverger | Accommodator | Assimilator | Converger |
|---|---|---|---|
| 9 | 2 | 2 | 1 |
| (64.2%) | (14.2%) | (14.2%) | (7.1%) |

Objective 2 of the study was to identify the learning style of adult nursing students enrolled in a midwestern Associate Degree Nursing Program. In descriptive analysis, fourteen (41.1 percent) of the thirty-four adult subjects were Divergers; ten (29.4 percent) adult subjects were Assimilators; five (14.7 percent) adult subjects were Accommodators and five (14.7 percent) adult subjects were Convergers. See Table 3.

Objective 3 of the study was to identify differences in learning styles between generic and adult nursing students enrolled in a midwestern Associate Degree Nursing Program. Chi-square analysis found acceptance at 3 df,

2.47, and p = 0.07 (p>.05) of Null Hypothesis 1: There is no difference in the learning style of an adult nursing student and a generic nursing student enrolled in a midwestern Associate Degree Nursing Program.

Table 3

Learning Styles of Adult Nursing Students

N = 34

| Diverger | Accommodator | Assimilator | Converger |
|---|---|---|---|
| 14 | 5 | 10 | 5 |
| (41.4%) | (14.7%) | (29.4%) | (14.7%) |

Objective 4 of the study was to identify variables that may be associated with the learning style of a generic or adult nursing student. Statistical analysis of variables related to differences in learning styles was not appropriate when no significant difference was found between the learning style of generic and adult nursing students. In descriptive analysis, however, it was found that 50.0 percent of generic and 81.7 percent of the adult nursing subjects had previous nursing experience as an aide, technician, or L.P.N.

Conclusions. An analysis of the data indicated there was no significant difference in the learning style of the adult nursing student and the generic nursing student

enrolled in a midwestern Associate Degree Nursing Program. All learning styles were represented in both generic and adult nursing students, a finding supported by the literature. The primary learning style identified in this study was Diverger. The predominance of the Diverger learning style in first year nursing students is supported by previous studies identifying learning styles in nursing students using Kolb's Learning Style Inventory (Laschinger and Boss, 1984). This is believed to be related to the concrete learning rather than abstract learning style of students entering a people-oriented profession such as nursing. The strong clinical-based experience is congruent with the concrete learner. The second most prevalent learning style in this study was Assimilator. Assimilators emphasize abstract conceptualization and reflective observation. This learning style is not supported in the literature to be typical of first year nursing students (Laschinger and Boss, 1984). The adult subjects include thirteen L.P.N.s in addition to the other twenty generic and adult subjects who indicated on the demographic survey they had experience as aide or technician. Either formal education or practical experience may influence the learning style of the subject to move into this more abstract style. In contrast to the literature, this study did not identify the numbers of Accommodators reportedly more prevalent in people-oriented careers. Previous research indicates the

second year of nursing more students change from Diverger to Accommodator (Laschinger and Boss, 1984).

Implications of Research

Major implications of this study are:

1. Presenting material to all nursing students in the same fashion without regard to individual differences and learning style is not supported by educational theory. Each nursing class is likely to contain students representing all four learning styles. In order for the student to benefit from the educational process, the material presented must be congruent with their individual learning style.

2. Assessment of learning styles of nursing students should be part of the each program.

3. Individualized approaches to learning need to be developed to provide alternative routes to meet course objectives.

Limitations of the Study

The limitations of the study are:

1. The non-random sample leads to restricted findings and conclusions.

2. The demographic survey and Kolb's Learning Style Inventory were administered to only one group of nursing students attending a midwestern Associate Degree Nursing Program. The findings, therefore, may not be reflective of responses from a less homogenous group.

3. The meaning and interpretation of the words on Kolb's Learning Style Inventory may be confusing. It is the researcher's assumption, an assumption not discussed in the literature, that several of the words (e.g. tentative, pragmatic, conceptualization) would not typically be found in average vocabularies of nursing students in a midwestern Associate Degree Nursing Program.

4. The small sample of generic nursing students may skew the results. (N = 14)

5. Only female nursing students were studied which does not realistically reflect nursing education today.

6. Assessment of learning style was done in March of the freshman year which began in September. The students may have adapted to the style of faculty and the methods of teaching available.

Recommendations for Future Study

The research recommends the following areas for future study:

1. Replication of this study with a larger, random sample,

2. A descriptive study of the Learning Styles of male nursing students if numbers are too small for inferential statistical analysis,

3. Assessment of learning style initially upon entry into freshman year and comparison with retests in beginning of sophomore year,

4. Evaluation of teaching styles of instructors in the midwestern Associate Degree Nursing Program,

5. Matching the learning styles of the students with the teaching style of instructors to measure effects on grades and attrition,

6. Creation, implementation and evaluation of less traditional methods of teaching nursing.

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# APPENDIX A

## Permisssion

*Permission for Faculty/Graduate Students to Collect Research Information or Data at _____

For Applicant Completion:

NAME: Dianne L. Clemens DATE: January 13, 1986

APPLICANT THESIS/PROJECT ADVISOR: Dr. Marge Hegge

STUDY APPROVED BY THESIS/PROJECT ADVISOR: + YES ____ NO

STUDY APPROVED BY V.P. ACADEMIC AFFAIRS AND/OR COLLEGE ADMINISTRATIVE COUNCIL:
+ YES ____ NO

CHAIRPERSON AND FACULTY/GRADUATE STUDENT SIGNATURES:

SUMMARY OF INFORMATION TO BE COLLECTED:

Type of Data: Demographic Date Sheet and the nine-item Kolb Learning Style Inventory will be administered to all N101 Freshman Nursing Students.

Method of Collecting Data: An explanation letter will be distributed to all at the end of a regularly scheduled class. This letter will also explain the ~~students opportunity not to participate. Completed or uncompleted forms~~

Use of Data: will be turned into a central depot at the front of the classroom. The data will be used for statistical and descriptive analysis, in group form.

Timeline for Collecting Data: Data will be collected by the end of February 1986.

- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -

For Completion by the Vice President for Academic Affairs:

X Approved to Proceed as Described

____ Disapproved

____ Approved with the Following Modification

_____

_____

_____

_____

Copies: 1. Faculty/Graduate Student
2. File - V.P. Academic Affairs
3. Faculty Thesis/Project Advisor
4. President,

V.P. for Academic Affairs /Date

*Original on file with Researcher

8-28-84
V.P.-A.A.

# APPENDIX B

## Research Tool

To: N101 Nursing Students

From: Dianne Clemens, RN, S.D.S.U. Graduate Student

Date: March 1986

Re: Questionnaire on Learning Style

As part of my graduate work at South Dakota State University, I have been studying the concept of learning styles -- how people best learn. I am interested in comparing the learning styles of two groups of nursing students. The first group will consist of students who have gone directly from high school to a college and into the Nursing Program at Presentation College. The second group consists of students who did not go into college directly from high school but later entered college and the Nursing Program at Presentation College. Through the results of this study, I may be able to identify differences in learning styles between the two groups. From this information, I may be able to suggest ways the educational experience in nursing programs such as ours could become more individualized by providing a variety of teaching methods.

Presentation College Administration has given me approval to ask you today to complete the attached questionnaire. It should take 10 minutes. No name or student number is necessary since descriptions of learning style groups will be used in my research rather than the descriptions of individuals. Your willingness to participate in this study will be evident by completing this questionnaire and placing it in the box in the front of the classroom. Thank you for your time.

Upon your request, I would be happy to share the group summaries and results of the study with you when they are complete.

Again, thank you for your help in this study.

(1,2)

LEARNING STYLE QUESTIONNAIRE

Please complete the following:

1. Age:
____20 or under
____21-30
____31-40
____41-50
____50 and older

2. Marital Status:
____Single
____Married
____Widowed
____Divorced
____Separated

3. Parental Responsibility for:
____0 child
____1 child
____2 or more children

4. Following High School graduation, did you go directly to a college?
____Yes
____No

4a. Has there been any interruption between your first enrollment in college and your enrollment in the Nursing Program at Presentation College?
____Yes
____No

If no, continue with #5.
If yes:
1. How long an interruption:
____1-2 years
____3-4 years
____5 or more years

2. The reason/purpose of the interruption (check primary one):
____Job/Money
____Family responsibilities
____Unsure of future career
____Other

4b. If no to question #4:

1. How long has the interruption been between high school graduation and your enrollment in the Nursing Program at Presentation College?

____1-2 years
____3-4 years
____5 or more years

2. The reason/purpose for the interruption (check primary one):

____Job/Money
____Family responsibilities
____Unsure of future career
____Other

5. Previous Nursing Experience: ____Have worked as Aide, Technician, or LPN
____Have not worked as Aide, Technician, or LPN

# LEARNING-STYLE INVENTORY

by David A. Kolb

## Instructions

There are nine sets of four words listed below. Rank each set of four words by assigning a "4" to the word that best describes your learning style, a "3" to the word that next best describes your learning style, a "2" to the next most describing word, and a "1" to the word that least describes your learning style. There are no right or wrong answers. Be sure to assign a different rank number to each of the four words in each set. Do not make ties.

| | | | | |
|---|---|---|---|---|
| 1. | ___discriminating | ___tentative | ___involved | ___practical |
| 2. | ___receptive | ___relevant | ___analytical | ___impartial |
| 3. | ___feeling | ___watching | ___thinking | ___doing |
| 4. | ___accepting | ___risk-taker | ___evaluative | ___aware |
| 5. | ___intuitive | ___productive | ___logical | ___questioning |
| 6. | ___abstract | ___observing | ___concrete | ___active |
| 7. | ___present-oriented | ___reflecting | ___future-oriented | ___pragmatic |
| 8. | ___experience | ___observation | ___concept-ualization | ___experiment-ation |
| 9. | ___intense | ___reserved | ___rational | ___responsible |