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Learning styles among students enrolled in an LVN to RN program in a community college setting

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LEARNING STYLES
AMONG STUDENTS ENROLLED IN AN LVN TO RN PROGRAM
IN A COMMUNITY COLLEGE SETTING

A Thesis
Presented to
The Faculty of the School of Nursing
San Jose State University

In Partial Fulfillment
of the Requirements for the Degree
Master of Science

By
Heidi L. Lopez

May 1996

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ABSTRACT

LEARNING STYLES

AMONG STUDENTS ENROLLED IN AN LVN TO RN PROGRAM

IN A COMMUNITY COLLEGE SETTING

by Heidi L. Lopez

The purpose of this study was to identify the learning styles of students enrolled in a Licensed Vocational Nurse (LVN) to Registered Nurse (RN) educational program. This study was designed as a cross-sectional survey using a self-administered questionnaire. Kolb's Learning Style Inventory (1985) was designed to identify learning styles of students.

The data from this study demonstrate that the group sampled did not indicate a strong preference for one particular learning style, but rather for a combination of styles. This research suggests individual learners have a range of preferred learning styles and learning orientations. Therefore, exposing students to a variety of teaching and learning techniques may ensure they are given every opportunity to succeed. The findings of this study could be used to enhance teaching strategies and promote student academic success.

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To my son, Joshua, for his encouragement and listening ear. You are very precious to me.

To my sons, Kevin and Matthew, may you both come to appreciate the joys, and the trials and tribulations of parenting.

And to my husband, the victim in my quest for academic achievement, through thick or thin we are one. I love you, Tony.

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Chapter 1

INTRODUCTION

Nursing education is faced with many challenges. Nurse educators advocate new approaches to preparing students to function effectively in today's rapidly changing practice environments (Laschinger, 1992). Nursing programs today are becoming more heterogeneous with increasing numbers of adult students seeking admission (Rosenfeld, 1991). Understanding how a person learns and helping people understand how to learn is a major requisite for a successful educational program (Pigg, Busch, & Lacy, 1980).

There is a need to identify preferred learning styles of nursing students. If differences do exist, then it should be determined whether learning styles actually influence a student's learning (Joyce-Nagata, 1996). By integrating teaching strategies during the learning experience, instructors can teach students who have different learning styles by reinforcing each student's preferred learning style (Bath & Blais, 1993).

Dux (1989) supports individualizing education in the following statement:

Teaching and education should meet the individual needs of each student, as well as the objectives of the course. Students and teachers might find the learning

process more challenging and rewarding if this approach were adopted, and teaching to occur using an appropriate method, and not one that is used just because it has always been used for that purpose.
(p. 190)

The Problem

Due to advancing medical technology and increasing health care needs, there is a demand for high quality nursing education. In order to improve nursing education, a basic understanding of how students learn is needed. Once an understanding of the learning style is attained, then teaching strategies can be modified, if needed, to fit the learning styles of the students.

Research indicates that adult learners demonstrate a variety of learning styles. Teachers who are knowledgeable about different learning styles have the ability to modify their teaching strategies based on the learning styles of their students. In order to promote student academic success, teachers and their students would find it beneficial if instructional strategies were based on learning styles.

The Purpose

The purpose of this study is to identify the learning styles of students enrolled in a Licensed Vocational Nurse

(LVN) to Registered Nurse (RN) educational program. The findings of this study might be used to enhance teaching strategies to promote student academic success.

Research Question

What are the learning styles of the students enrolled in the LVN to RN program at a Northern California community college?

Definition of Terms

The definitions that apply to this study include the following:

1. *Accommodator* is a style of learning by which the person enjoys carrying out plans and getting involved in new, challenging, and *hands-on* experience. The *accommodator* style person is described as relying on people for information than on one's own technical analysis.

2. *Assimilator* is a style of learning by which the person understands a wide range of information and puts it into concise and logical form. The *assimilator* style person is less focused on people and more interested in abstract ideas and concepts.

3. *Converger* is a style of learning by which the person finds practical use for ideas and theories, and would rather deal with technical tasks and problems than with social and interpersonal issues.

4. *Diverger* is a style of learning by which the person views concrete situations from many different points of view. The *diverger* style person enjoys situations that call for generating a wide range of ideas and has imaginative ability and sensitivity to feelings.

5. *Concrete Experience (CE)* is an experience-based, involved approach to learning.

6. *Abstract Conceptualization (AC)* is a conceptually-based, analytic approach to learning.

7. *Active Experimentation (AE)* is an action-based, active approach to learning.

8. *Reflective Observation (RO)* is an observation-based, impartial approach to learning.

Research Design

This study was designed as a cross-sectional survey in that it involved collecting data at one point in time, using a self-administered questionnaire. The tool was designed to identify learning styles of students.

Chapter 2

LITERATURE REVIEW

History

Learning styles have been defined differently by various experts in the field of learning. Keefe (1987) writes, "Learning styles are characteristic cognitive, affective, physiological traits that serve as relatively stable indicators of how learners perceive, interact with and respond to learning environments" (p. 16). Lemlech (1984) states, "Learning styles emanate from natural, inborn inclinations. The individual's learning style manifests itself through preferred senses and personality characteristics" (p. 42), whereas Kolb's (1984) concept of learning style is broader than most learning style definitions. In his view, all life situations are learning situations and all environments are types of learning environments. Learning styles affect how individuals respond to life situations. Kolb has also proposed a corresponding typology of four learning environments classified according to the kind of demands placed on learners for successful functioning in each environment. These learning environments are labeled *divergent* (affective), *assimilative* (perceptual), *convergent* (symbolic), and *accommodative* (behavioral) (p. 216). Person-environment interactions

reinforce the use of particular types of competencies related to each learning mode, and repeated exposure to particular types of learning environments results in differential development of specific competencies.

Prior to 1985, little had been written on learning styles within the field of nursing. The literature at that time discussed learning styles employed in experimental research to describe those dimensions of learning such as thinking, perceiving, and remembering (Garity, 1985). Other researchers have utilized themes such as *cognitive styles*, *cognitive maps*, and *learning modalities* to indicate still different dimensions of the learning process (Garity, 1985). However, since 1985, much has been written about the implications of learning styles on the teaching/learning process (Thompson & Crutchlow, 1993). As a result, several articles related to learning styles can be found in the more recent nursing literature.

Background

Lovell (1986) suggests that when students encounter a learning situation that suits their learning style, they are more likely to learn from it. The style of the teacher is important and has an impact upon the learners' performance (Child, 1986). Learning style influences how students learn and how teachers teach (Garity, 1985).

Lange (1972) identified that when teachers and students were matched on learning style, the failure/withdrawal rate in specific nursing courses was less among the matched than the mismatched students. Smith (1974) and Frazier (1982) have also reported that learning and achievement were enhanced when instructional methods were compatible with learning style. Teachers tend to use teaching techniques that fit into their own preferred learning style, so a better understanding of those preferences will enable teachers to design varied activities to match or mismatch their students' learning style (Campbell, 1991).

Two of the most valuable components in the learning process are the individuality of the teachers and the individuality of each student. Yet those individual differences often interfere with academic achievement unless teachers attempt to understand the implications of learning style research and incorporate students' learning style preferences into their lesson planning (Campbell, 1991).

Recent literature suggests employing learning style assessments in educational environments, including schools and places of employment. According to Heislett, Hughes, Atkinson, and Williams (1993), learning style assessment should be done in all student academic experiences to sensitize the student to the strengths and weaknesses of

their particular style. Knowledge of individual differences could enable teachers to adapt their teaching style to whatever learning style or approach was dominant in their students (Beckwith, 1991). Beckwith (1991) also points out that students could be counseled as to the ideal approach they could adopt. Others have gone further and suggested that these measures should be used as indicators of quality, under the assumption that some approaches are more appropriate to higher education than others (Sheppard & Gilbert, 1991).

Instrumentation

Since issues of quality and academic audit are very much on the current agenda in education, such claims deserve serious consideration (Newstead, 1992). However, despite the potential for practical application that these measures have, they have not, by and large, come into regular use. One of the main reasons for this is that the tests are typically quite long and rather time-consuming to use, making it problematic for busy teachers to adopt them (Newstead, 1992). Some require special training to administer and interpret (Campbell, 1991). Therefore, when choosing a learning style instrument, the following criteria should be considered: (a) cost of the instrument, (b) time required to administer the instrument, (c) ease of

interpretation of the instrument, and (d) validity of the instrument (Campbell, 1991).

For the purpose of this study, the following instruments were examined:

1. The Group Embedded Figures Test (GEFT) is a form for testing the *field-dependence* or *field-independence* dimension (Oltman, Raskin, & Witkin, 1971). Subjects who score above the group mean are considered to be independent learners. In contrast, subjects who score below the group mean are considered to be dependent learners. This instrument is usually employed in research studies and requires some training and supervision to administer (Cano, Garton, & Raven, 1992).

2. The Honey and Mumford Learning Style Inventory (1986) is an instrument developed in the United Kingdom to assess learning styles and has been used with some success with nursing students (Dux, 1989). The model put forward by Honey and Mumford is essentially a model of learning behavior directed towards the training of managers (Cavanagh, Hogan, & Ramgopal, 1994). Honey and Mumford attempted to explain why a particular training program can serve some managers well, adding to their stock of knowledge and/or behavioral competencies, while other managers

experiencing the same course derive little or no benefit from the exercise (Cavanagh, Hogan, & Ramgopal, 1994).

3. David Kolb's *Learning Style Inventory* (LSI) was created and used in 1976. According to Garity (1985), it is more readily available and easy to administer. The LSI is pre-eminent of the LSI instruments at large (Cavanaugh, Hogan, & Ramgopal, 1994). Kolb's LSI was designed to help individuals assess their ability to learn from experience (Kolb, 1976). In its revision in 1985 (Kolb, 1985), Kolb was able to identify differences among individual learning environments.

Laschinger (1986) and others found the LSI to be a predictor of expected learning styles in the nursing population. Laschinger and Boss (1989) also found support for a hypothesized relationship between learning style and type of influence on choice of nursing as a career. As predicted, concrete learners were more influenced by personal factors, such as advice from family and friends or personal relationships with other nurses. Whereas, abstract learners were more influenced by readings or interest in the subject matter of nursing. These findings support the construct validity of the LSI in nursing populations (Laschinger, 1992). The LSI also demonstrated good internal reliability by the following Cronbach's alpha coefficients:

.82 (CE); .73 (RO); .83 (AC); .78 (AE); .88 (AC - CE); and .81 (AE - RO) (Kolb & Smith, 1986).

Newstead (1992) cautions teachers that it would be unwise to jump to the conclusion and immediately adopt a learning style instrument for classroom use. Drummond and Stoddard (1992) concluded that learning style instruments need to be validated through observation as well as through construct and criterion-referenced validity studies.

Conceptual Framework

The conceptual framework utilized for this research proposal is Kolb's (1984) Learning Style model. This model is based on the idea that learners use the following four learning modes: (a) *concrete experience* (feeling), (b) *reflective observation* (watching), (c) *abstract conceptualization* (thinking), and (d) *active experimentation* (doing). Figure 1 illustrates the Learning-Style Type Grid and shows the four learning modes as making up two dimensions that are *polar opposites* (Kolb, 1984). One dimension on the Learning-Style Type Grid is represented at one end by *concrete experience* (CE) (feeling) and at the other end by *abstract conceptualization* (AC) (thinking). The other dimension is made up of *active experimentation* (AE) (doing) on one end and *reflective observation* (RO) (watching) at the other end. The two dimensions of

Figure 1. Learning-Style Type Grid

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concrete/abstract (involvement) and active/reflective (participation) can be combined to produce the four quadrant learning style model. The four quadrants represent the four learning styles: (a) *diverger*, (b) *assimilator*, (c) *converger*, and (d) *accommodator*.

The *diverger* style of learning views concrete situations from many different points of view. The *diverger* style person enjoys situations that call for generating a wide range of ideas and has imaginative ability and sensitivity to feelings.

The *assimilator* style of learning understands a wide range of information and puts it into concise and logical form. The *assimilator* style person is less focused on people and more interested in abstract ideas and concepts.

The *converger* style of learning finds practical use for ideas and theories. The *converger* style person would rather deal with technical tasks and problems than with social and interpersonal issues.

The *accommodator* style of learning enjoys carrying out plans and getting involved in new, challenging, and *hands-on* experience. The *accommodator* style person is described as relying more on people for information than on one's own technical analysis.

Summary

The literature review for this study substantiates that learning styles have been defined differently by various experts in the field. Their common thread is a quest for determining learning style in an effort to develop interventions aimed at improving student academic performance. Attending to how students learn will help students and instructors alike. Students can develop the skills they need to adapt to the changing environmental press that moves in the nursing profession from the theoretical to the applied (Haislett, Hughes, Atkinson, & Williams, 1993).

David Kolb's (1984) *Learning Style Inventory* was one of three instruments examined for this study. Kolb's (1984) LSI was pre-eminent of the LSI instruments at large (Cavanaugh, Hogan, & Ramgopal, 1994), and a predictor of expected learning styles in the nursing population (Laschinger, 1986).

The Kolb (1984) *Learning Style Model* supports the assumption that learners use four learning modes: (a) *concrete experience* (CE) (feeling), (b) *reflective observation* (RO) (watching), (c) *abstract conceptualization* (AC) (thinking), and (d) *active experimentation* (AE) (doing). In order to be an effective learner, an individual

would have to shift from getting involved (CE), to listening (RO), to creating an idea (AC), and then to making decisions (AE). Some people tend to rely on some skills and steps in the learning process more than others. As a result, an individual style is developed (Kolb, 1985).

Chapter 3

METHODOLOGY

This chapter discusses the methodology used in this study. The research design, the sample, setting, data collection, and analysis procedures will also be discussed.

Research Design

This study was designed as a cross-sectional survey in that it involves collecting data at one point in time, using a self-administered questionnaire. The purpose was to identify learning styles of students enrolled in an LVN to RN program to determine learning style differences.

Human Subjects Approval

Approval for this study was received by the San Jose State University Human Subjects-Institutional Review Board (see Appendix A). In order to receive permission from the community college, a letter requesting permission to conduct the study was addressed to the Director of Allied Health Programs at that college. After an explanation of the methodology to be utilized, permission to conduct the study was granted.

The consent letter (see Appendix B) was composed using San Jose State University Human Subjects-Institutional Review Board requirements. The letter informed the subjects of the purpose of the study and the confidentiality of their

participation. The consent letter stated that, by completing and returning the questionnaire, the consent of the subject was implied.

Sample

Questionnaires were given to all 15 nursing students attending class the day of the study. All of the participants were volunteers. No attempt was made to select a random sample. The Northern California community college participating in this study admits a class of approximately 20 licensed vocational nurses every year into the RN program. Of these students, all were invited to participate in the study.

Setting

The setting for the study was a community college in Northern California. The data were collected during a regular nursing theory class in the RN program at the community college in the month of November 1995.

Instrument

Kolb's *Learning Style Inventory* (1985), a self-administered, paper and pencil questionnaire, was used as the data collection instrument (see Appendix C). Permission to use the instrument was requested from the Hay McBer Company. A letter of approval was received for its use (see Appendix D).

Kolb's *Learning Style Inventory* (1985) is a self-administered instrument designed by David A. Kolb to assess an individual's preferred learning style, how that person deals with ideas and day-to-day situations. The instrument helps learners identify their learning style and how they absorb and deal with new information. It assesses strengths and weaknesses in accomplishing tasks; strengths and weaknesses in solving problems; strengths and weaknesses in relating to and managing others; and natural preferences that lead to *natural* career choices (Kolb 1985).

Kolb's LSI (1985) is a 12-item questionnaire that asks the respondents to rank-order four sentence endings in a way that best describes their learning style (see Appendix C). One ending in each item corresponds to one of the four learning orientations: *Concrete Experience* (CE); *Abstract Conceptualization* (AC); *Active Experimentation* (AE); and *Reflective Observation* (RO). The LSI measures an individual's relative emphasis on these orientations, in addition to the combination scores that indicate the extent to which an individual's preferred style is abstract (versus concrete), and active (versus reflective) (Kolb 1985).

These two combination scores, Abstract-Concrete (AC-CE) and Active-Reflective (AE-RO), place the individual into

four categories and/or quadrants that predict a person's dominant learning style:

1. *Accommodator*
2. *Assimilator*
3. *Converger*
4. *Diverger* ,

The four basic scales (CE, RO, AC, AE) and the two combination scores (AC-CE and AE-RO) have internal reliability as measured by Cronbach's alpha (.81) (Kolb, 1986). The combination scores show almost perfect additivity (1.0) as measured by Tukey's test.

In addition to Kolb's LSI (1985), a 10-item demographic questionnaire was included. The questionnaire was composed of 10 questions asking for data such as: age, sex, ethnicity, marital status, level of education, goals, and employment status (see Appendix E).

Data Collection

The subjects were initially informed of the study during a previous nursing class. A packet that consisted of the consent letter, Kolb's LSI (1985) questionnaire, and demographic data questionnaire was enclosed in an individual envelope and was distributed to each student in the class. Respondent's consent was implied if a completed questionnaire was returned. There were 15 students in the

class and all 15 subjects completed and returned the questionnaires. Each questionnaire was identified with a code number. Completed questionnaires were personally handed to this researcher upon completion. Confidentiality of all information was maintained. This researcher kept the returned packets in a locked file drawer in a separate office. The 15 respondents represent 100% of the nursing students attending class on the day of the study.

Data Analysis Procedures

The data were analyzed by first obtaining an individual score for each of the four columns on the questionnaire which represent the four learning styles:

Column 1 = *Concrete Experience*

Column 2 = *Reflective Observation*

Column 3 = *Abstract Conceptualization*

Column 4 = *Active Experimentation*

(see Appendix C). The resulting raw scores can range from 12 to 48.

Next, the combination scores were obtained by subtracting *Abstract Conceptualization (AC)* minus *Concrete Experimentation (CE)*; *Active Experimentation (AE)* minus *Reflective Observation (RO)*. These scores can range from +36 to -36. Once the combination scores were obtained they were plotted on the two lines of the learning-style type grid.

The grid is divided into four sections representing the four dominant learning styles. The point of interception, or data point on the plotted grid, indicates one of the four dominate learning styles: *Accommodator*, *Assimilator*, *Converger*, and *Diverger*. Figure 2, in Chapter 4, illustrates plotted data on the learning-style type grid.

During data analysis, and up to one year after the onset of the study, all data will be kept in a locked file drawer for safe and confidential keeping. After one year's time, the data will be destroyed.

Chapter 4

ANALYSIS AND INTERPRETATION OF DATA

This chapter discusses the findings of this study. The purpose of this study was to identify the learning styles of students enrolled in a Licensed Vocational Nurse to Registered Nurse educational program. Kolb's LSI (1985) will be interpreted using the *Learning-Style Type Grid* (Kolb, 1985).

Findings

Demographics

Fifteen students completed the questionnaire. Of the 15 questionnaires, data from 13 were used for this study. Two students completed the questionnaire incorrectly and were removed from the study. Table 1 displays the demographic data for the participants. Eleven of the 13 (85%) respondents were female. The participants ranged in age from 20 to 45 years, with the largest group being from 26 to 30 years (31%).

Sixty-two percent of the participants work 20 to 40 hours per week and 77% of the participants have been employed as an LVN less than 1 year. Fifty-four percent of the participants have a non-nursing associate degree. Sixty-one percent aspire to obtaining a higher degree.

Table 1

Demographic Data of LVN to RN Students (N = 13)

Variables	n	% (*)
<u>Age</u>		
20 - 25	2	15.4
26 - 30	4	30.8
31 - 35	2	15.4
36 - 40	3	23.1
41 - 45	2	15.4
<u>Sex</u>		
male	2	15.4
female	11	84.6
<u>Marital status</u>		
married	6	46.1
single	4	30.8
divorced	3	23.1
<u>Hours employed/week</u>		
not employed	4	30.8
< 20 hr/week	1	7.7
20-30 hr/week	4	30.8
31-40 hr/week	4	30.8
<u>Time employed as an LVN</u>		
13 years	1	7.7
5 years	1	7.7
4 years	1	7.7
0 years	10	76.9
<u>Non-nursing educational level</u>		
G.E.D.	1	7.7
high school diploma	4	30.8
associate degree	7	53.8
did not state	1	7.7
<u>Nursing educational goals</u>		
associate degree	5	38.5
baccalaureate degree	7	53.8
masters degree	1	7.7
<u>English as a second language</u>		
	4	30.8

* Due to rounding, percentages may not total 100.

Thirty-one percent of the participants spoke English as a second language.

Interpretation of Data

Fifteen students completed the questionnaire. Of the 15 questionnaires, data from 13 were used for this study. Two students completed the questionnaire incorrectly and were removed from the study. Descriptive data for the learning styles of nursing students in a LVN to RN program are summarized in Tables 2 and 3.

The questionnaire was divided into four sets with 12 questions in each set. A sample of a question was: When I learn: ___ I like to deal with my feelings; ___ I like to watch and listen; ___ I like to think about ideas; ___ I like to be doing things. Subjects rank-ordered (4 through 1) the four sentence endings in each set of 12 questions to describe the way they learn best (depicted as a number 4), to the least likely way they would learn (depicted as a number 1).

Effective learners are likely to use all stages of learning. Table 2 displays the data for the stage of the student in the cycle of learning orientation. The largest group (38%) were classified as *active experimentation* (AE) and the next highest (31%) was *abstract conceptualization* (AC). Table 3 displays the data for each student's learning

Table 2

Number and Percent of Nursing Students According to Learning Style Orientation (N = 13)

Learning Orientation	n	%
Active experimentation	5	38.5
Reflective observation	3	23.0
Abstract conceptualization	4	30.8
Concrete experience	1	7.7

Table 3

Number and Percent of Nursing Students According to Learning Styles (N = 13)

Learning Style	n	%
Diverger	3	23.0
Accommodator	4	30.8
Converger	2	15.4
Assimilator	4	30.8

style type. Two dominant groups emerged, these were the *accommodators* (31%) and the *assimilators* (31%).

The quadrant of the learning-style type grid identifies the preferred learning style. Kolb (1985) states the closer the data point is to the center of the grid, the more balanced the learning style. However, if the data point falls near any of the far corners of the grid, the tendency is to rely heavily on one particular learning style.

When the scores of the subjects were plotted on the grid (see Figure 2), the dominant learning styles were *accommodator* (31%) and *assimilator* (31%). The two less dominant learning styles were *diverger* (23%) and *converger* (15%). The data point of 5 subjects fell closest to the center of the learning-style type grid indicating a more balanced type of learning style. Eight subjects' data points fell closer to the perimeter of the learning-style type grid indicating a strong reliance on the dominant learning style.

Figure 2. Learning-Style Type Grid

Data points indicate the students' preferred learning style (N=13).

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Chapter 5

CONCLUSIONS AND RECOMMENDATIONS

This concluding chapter discusses the major findings of this study. Limitations to this study and recommendations for further research are also discussed.

Conclusions

Learning Style Orientation

The learning style orientation of the nursing students was predominantly *active experimentation* (38%), indicating these students learn best by doing, and have the ability to get things done. The *active experimental* learner prefers learning situations that provide opportunities to practice and to receive feedback. The teacher for the *active experimental* learner acts as a role model. For example, the clinical instructor demonstrates a nursing procedure on a patient while verbally describing, in detail, each action as the student closely observes. Upon completion of the demonstration, the student performs the same procedure, also describing each action as the instructor provides feedback.

The second largest sample (31%) preferred *abstract conceptualization* as their learning style. The *abstract conceptual* student learns best by thinking and systematically planning. Theory readings and study time alone are preferred learning situations for the *abstract*

conceptual learner. The teacher for the *abstract conceptual* learner acts as a communicator of information. For example, the instructor presents a complex patient case study in a clear, well-structured presentation to the student. Through deductive reasoning and logical analysis, the student develops a nursing care plan aimed at prioritization of patient problems and expected outcomes. The patient care plan includes a detailed description of the action to be taken, based on the student's understanding of the case study.

Reflective observation students represented 23% of the sample. These students learn best by perception and by making careful observations before making judgments. Preferred learning situations for the *reflective observer* would include: lectures, objective exams, and taking an observer role to view other perspectives. Teachers are viewed as a guide. For example, the instructor assigns the students to observe an Alcoholic's Anonymous meeting and then to discuss the experience in class. As the students report their observations, the instructor guides the student's discussion of the experience in order to gain different interpretations, while clarifying perceptions.

Concrete experience represented the smallest sample (8%). This group learns best by intuition, specific

experiences, and through sensitivity to people and feelings. The preferred learning situation for the *concrete experience* student is by role plays, games, feedback, and discussions. The teacher acts as a coach or a helper. Through role play, for example, the clinical instructor assigns two students to demonstrate communication techniques with an aphasic CVA patient. As the students perform their roles, the instructor encourages a class discussion and offers feedback. Feelings as well as thoughts and perceptions during the experience are critical to the discussion.

Learning Style Type

Sixty-two percent of the sample fell into 2 of the 4 learning styles. *Accommodators* (31%) and *assimilators* (31%) were equally predominant. The *accommodators* have the ability to adapt themselves to change. Their strength lies in doing things and carrying out plans. They often take leadership roles. Because of their strong active orientation, they are sometimes seen by others as impatient or "pushy."

Assimilators excel at inductive reasoning and in the creation of models and theories. The *assimilator* is a goal setter and a systematic planner. This orientation is less focused on people and more concerned with ideas and abstract concepts.

The *divergent* learning style represented 23% of the sample. The *diverger* is a "brainstormer", a people person, and tends to be feeling-oriented. Too much reliance on *divergence* may result in difficulty recognizing problems and indecisiveness.

The smallest sample (15%) is represented by the *converger*. The *convergers'* strength lies in their ability to solve problems and make decisions. Although, the *converger* has the ability to problem solve, hasty decision making and premature definition of a problem can attribute to the *convergers'* weaknesses.

Research

In a study by Haislett, Hughes, Atkinson, and Williams (1993), *assimilators* and *divergers* made up 74% of their sample of baccalaureate nursing students. Joyce-Nagata (1996) researched baccalaureate nursing faculty and baccalaureate nursing students, and found the greatest percentage of learning styles to be *assimilators* (42%) and *accommodators* (24%). Laschinger and Boss (1989) and Laschinger (1992) reported the greatest percentage of nursing students preferred the *accommodator* and *diverger* styles of learning in their studies.

Research indicates the *accommodator* and the *divergent* learning styles ranked highest among student nursing

populations (Huch, 1981; King, 1984; Laschinger, 1992). *Assimilator* learning styles ranked highest in few of the research studies, while the *converger* style of learning ranked the lowest with this same research population.

Summary

In summary, the data demonstrated that the sample group did not indicate a strong preference for one particular learning style, but rather for a combination of styles. The review of research literature also had similar findings. *Accommodators*, *assimilators*, and *divergers* ranked highest among the nursing student population and *convergers* ranked the lowest. The *accommodators* and the *assimilators* were equally ranked the highest in this nursing student population. The *divergers* ranked third with *convergers* ranking last among the learning style types. This research suggests individual learners have a range of preferred learning styles and learning orientations.

Limitations

The major limitation of this study is the inability to generalize this information due to the small sample size ($N = 13$). These findings are not necessarily applicable to other nursing student populations.

Recommendations

Further research is indicated. A longitudinal study following students through their nursing program would be valuable in determining learning style changes. A larger sample size should be utilized in order to generalize the findings to a larger population.

Learning does not end with the completion of a professional education program; rather, it is a continuous, ongoing process (Laschinger, 1992). Therefore, continuing study of nurses' learning styles with emphasis on demonstrated strengths and limitations could provide valuable information to nursing educators and students (Garity, 1985). It is the recommendation of this researcher to expose students to a variety of teaching and learning techniques to ensure they are given every opportunity to succeed.

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APPENDIX A
Human Subjects Institutional Board
Letter of Approval

A campus of The California State University

Office of the Academic Vice President • Associate Academic Vice President • Graduate Studies and Research
One Washington Square • San Jose, California 95192-0025 • 408/924-2480

TO: Heidi L. Lopez
901 Versialles Dr.
Hollister, CA 95023

FROM: Serena W. Stanford *Serena W. Stanford*
AAVP, Graduate Studies & Research

DATE: October 20, 1995.

The Human Subjects-Institutional Review Board has approved your request to use human subjects in the study entitled:

"Learning Styles Among Students Enrolled in a LVN to
RN Option in a Community College Setting"

This approval is contingent upon the subjects participating in your research project being appropriately protected from risk. This includes the protection of the anonymity of the subjects' identity when they participate in your research project, and with regard to any and all data that may be collected from the subjects. The Board's approval includes continued monitoring of your research by the Board to assure that the subjects are being adequately and properly protected from such risks. If at any time a subject becomes injured or complains of injury, you must notify Serena Stanford, Ph.D., immediately. Injury includes but is not limited to bodily harm, psychological trauma and release of potentially damaging personal information.

Please also be advised that each subject needs to be fully informed and aware that their participation in your research project is voluntary, and that he or she may withdraw from the project at any time. Further, a subject's participation, refusal to participate, or withdrawal will not affect any services the subject is receiving or will receive at the institution in which the research is being conducted.

If you have any questions, please contact me at (408) 924-2480.

APPENDIX B
Subject Consent Letter

A campus of The California State University

College of Applied Sciences and Arts • School of Nursing • Continuing Education
One Washington Square • San José, California 95192-0057 • 408/924-3120 • FAX 408/924-3135

Dear Nursing Student:

I am conducting a study titled, *Learning Styles Among Students Enrolled in an LVN to RN Program in a Community College Setting*.

Attached is a questionnaire, please complete it and return it to me in the allotted time. It should take you approximately 15 minutes to complete.

Your participation in this study is voluntary and you are under no obligation to participate. You are free to withdraw your consent and discontinue participation in the study at any time without prejudice. I cannot and do not guarantee or promise that you will receive and benefit from this study. All data collected from you will be kept in a locked file drawer. There are no monetary benefits for completing the questionnaire. You give your consent by completing the questionnaire and returning it to me in the enclosed envelope.

I would be happy to answer any questions you have about this study. I can be reached at 408-972-7784. Should you have other concerns and wish to speak with my advisor, please contact Coleen Saylor, RN, Ph.D. at San Jose State University, School of Nursing - 408-924-1321. For questions or complaints about research subjects rights, contact Serena Stanford, Ph.D., Associate Academic Vice President for Graduate Studies and Research at 408-924-2480. Thank you in advance for participating in this study.

Sincerely,

A handwritten signature in cursive script that reads "Heidi Lopez".

Heidi L. Lopez, RN
901 Versailles Drive
Hollister, California 95023
Graduate Student, School of Nursing
San Jose State University

APPENDIX C
Data Collection Instrument

Kolb's Learning Style Inventory, (© Experienced Based Learning Systems, 1981, revised 1985), may be acquired through: McBer & Company, Inc., 116 Huntington Avenue, Boston, MA 02116-7933. Telephone: (617) 437-7080.

APPENDIX D

Approval to Use Instrument

Hay McBer
116 Huntington Avenue
Boston, MA 02116-5712
Tel: (617) 437-7933
Fax: (617) 425-0073

November 30, 1995

Heidi Lopez
901 Versailles Drive
Hollister, CA 95023

Dear Ms. Lopez:

Yes, you may have permission to include the *Learning Style Inventory* questionnaire, the Cycle of Learning and the Learning Type Grid in the appendices of your thesis. Please include our copyright, © Experience Based Learning Systems, 1981, revised 1985. Developed by David A. Kolb. Reproduced with permission from McBer & Company, Inc., 116 Huntington Avenue, Boston, MA 02116. 617-437-7080.

McBer cannot give you permission to reproduce the *Learning Style Inventory* on microfiche however. If your project reaches that point, please insert a page with our address and phone number instead of the instrument.

Also, please send us a summary of your findings so that we can stay current with research done in the field. Thank you.

Sincerely,

Tamara Friedman
Permissions Editor

APPENDIX E
Demographic Questionnaire

Demographic Data

Subject Number _____

Please fill out the following:

1. Age (Please circle one)

a. 20-25	e. 41-45
b. 26-30	f. 46-50
c. 31-35	g. 51-55
d. 36-40	h. 56 and over

2. Sex (Please circle one) Male Female

3. Marital status (Please circle one)

a. Married	d. Divorced
b. Single	e. Widowed
c. Separated	

4. Level of non-nursing education attained. (Circle one)

a. G.E.D.	e. Master's degree
b. High school diploma	f. Other (Specify)
c. Associate degree	_____.
d. Bachelor's degree	g. If c, d, e, or f
	specify major _____.

5. Nursing educational goal/aspiration (Circle one)

a. Associate degree	c. Master's degree
b. Bachelor's degree	d. Other (Specify)
	_____.

6. Employment status (Please circle one)
- a. Not presently employed
 - b. Employed < 20 hr./week
 - c. Employed 20 to 30 hr./week
 - d. Employed 31 to 40 hr./week
 - e. Other (Specify) _____
7. Is this employment as an LVN? Yes _____ No _____
8. Length of time employed as an LVN.
- a. Number of months _____ or years _____
9. Ethnicity (Please circle one)
- a. African-American
 - b. American-Indian
 - c. Asian-American
 - d. Caucasian
 - e. Chicano (Mexican-American) _____
 - f. Filipino
 - g. Hispanic (not Chicano)
 - h. Pacific Islander
 - i. Other (Specify) _____
10. Students born outside the United States:
- Country of origin _____
- Number of years in the U.S. _____
- Is English your second language? _____
- What is your first language? _____
- How many years have you spoken English on a daily basis?
- _____