Learning Styles of Nursing Students: A 3-Year Cohort Longitudinal Study

MARY RAKOCZY, PhD, RN,* AND SHEILA MONEY, MEd, RN†

The theoretical framework of this study was based on Kolb's model of experiential learning which proposes four phases: concrete experience, reflective observation, abstract conceptualization, and active experimentation. Kolb's Learning Style Inventory was used to assess preferences for these four learning modes. A freshman questionnaire developed by Peter Dietsche was used to determine basic demographic and background information, education goals, goal of obtaining a diploma, and goals in attending college.

This study was conducted over a 3-year period (1990-1992). One hundred seventy-six female nursing students were tested in year 1. In the second year 138 of the original cohort were tested and in the third year 144 were tested. First year nursing students on the average selected as their cycle of learning: active experimentation "doing," reflective observation "watching," abstract conceptualization "thinking," and concrete experience "feeling." Little difference was noted in the learning style selected in year 2 and 3. In years 1, 2, and 3 nursing students' dominant learning style was that of Assimilator which combines the learning steps of abstract conceptualization (thinking) and reflective observation (watching). (Index words: Learning Styles of Nursing Students) J Prof Nurs 11:170-174, 1995. Copyright © 1995 by W.B. Saunders Company

EXPERIENTIAL LEARNING theory provides a model of learning that is consistent with cognition, growth, and development, identifies differences in individual learning styles and emphasizes the important role that experience plays in learning (Kolb, 1976). Kolb's (1971, 1976) theory is based on a model of learning that is active, cyclical, and involves the stages of concrete experience (CE) "feeling," reflective observation (RO) "watching," and abstract conceptualization (AC) "thinking," and active experimentation (AE) "doing." Learning can begin at any stage and Kolb (1981) suggests that there are three stages of human growth and development. During childhood and in late adolescence specialization is completed and formal education, career or job training, and work or career entry are acquired. The final stage is that of integration. Adaptation to the chaotic pressures associated with midlife carries with it the potential for integration of the modes of learning rather than preference for a single mode on each dimension. With integration comes true effectiveness as a learner.

Kolb explains that learners must be open and receptive to external stimuli to learn effectively. He further proposes that the learner must be able to consider new observations in light of old perceptions. The learner must be able to conceptualize in an abstract schema and must be able to test implications of concepts and hypotheses.

Kolb's theoretical construct of learning suggests that it is a reconciliation between orthogonal dimensions: on one dimension, the learner must be both concrete and abstract; on the second dimension, the learner must be both active and reflective.

Literature Review

The learning style literature abounds with an enormous analysis of research methodology and instrumentation. The research suggests that a particular learning style characterizes the way in which an individual learner acquires information. However, there was a multitude of opinion about styles and how this information could be implemented. This article will address the more pertinent research.

Kolb's theory of experiential learning and learning styles seemed to emerge as the most salient. Kolb (1976) conceives learning as a four-stage cycle. He states that concrete experience is the basis for observation and reflection and that the observations are assimilated in a "theory." The theory forms the basis for new implications for action.
Bonham (1988), Friesen, Kruzick, and Van Saest (1986), and Sugarman (1985) concluded that Kolb's theory was well defined and had support in counseling.

Huch (1981) reported the greatest percentage of registered nursing (RN) students were identified as having an accommodator learning style, whereas the greatest percentage of generic students was identified as preferring the diverger style. Accommodators were more satisfied with the program of study and the divergers less satisfied. The greatest proportion of learners preferred a learning style that included the mode of concrete experience.

King (1984) reported the majority of both RN and generic students preferred the diverger and accommodator style. Laschinger and Boss (1989) found diploma students had a higher incidence of preference for concrete learning styles than baccalaureate students. This finding was only significant at the 0.1 level.

Laschinger (1992) found that baccalaureate nursing students' learning styles were found to be predominantly concrete (64 per cent) (accommodator and diverger). Significantly fewer (35 per cent) had abstract learning (converger and assimilator).

De Coux (1990) studied the relationship between learning style and achievement, teacher style, student level, learning preference, and clinical specialty. She found little support for the validity or use of Kolb's theory and found no significant relationship between learning style inventory (LSI) scored and achievement and learning variables. Fox (1984) found that there was no relationship between learning style scores and instructional preferences.

Stewart (1990), Cranston (1983), Friesen, Kruzick, and Van Saest (1986), and Heikkinen, Pettigrew, and Zakrjsek (1985) believed that one should match learning style to teaching strategy and that a curriculum should be developed to emphasize style assessment.

Flojtasek (1988) hypothesized baccalaureate students would prefer RO and AC and diploma students would prefer CE and AE. Her hypothesis was not supported by her results.

**Purpose**

The purpose of this study was to identify the learning style of nursing students over the 3 years of a diploma program. A study of this type would assist educators in their understanding of nursing students, learning style and subsequently will benefit in the type of teaching strategies used.

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**Methodology**

The population of nursing students in the first year of a nursing program were tested using Kolb's LSI. Subsequently this instrument was used to test the same cohort group in years 2 and 3 of their program. One hundred and seventy-six nursing students in year 1 were tested. In the second year 138 of the original cohort were tested and in the third year 144. Faculty members were instructed to distribute the questionnaires to the students and to collect them on completion.

The freshman questionnaire developed by Peter Dietsche (1988) was used to obtain information about basic demographic and background information, educational goals, goal of obtaining a diploma, and goals in attending college.

**More than half of the population reported that they would benefit from special help to improve reading, mathematical skills, test taking, and use of library resources.**

Kolb's LSI measured the strength of the respondent's preference for learning abstractly or concretely and preference for learning actively and reflectively. It describes the way that individuals learn and how they deal with ideas and day-to-day situations. Kolb's inventory assists in understanding how individuals make career choices, solve problems, set goals, manage others, and deal with new situations.

**Sample**

Subjects ranged in age from 17 to 48. Educational level ranged from 5% below grade 12 to 8% with university-level education. Fifteen per cent had a grade point average of 60 to 70, and 85% had a grade point average of more than 70.

Seventy-one percent believed that they would complete the program. More than half of the population reported that they would benefit from special help to improve reading, mathematical skills, test taking, and use of library resources. Overwhelmingly students reported that obtaining a diploma was important to them.
Results

Data were analyzed using Statistical Analysis Software (SAS). Means, standard deviations, and analysis of variance (ANOVA) were used to examine scale score data for subjects groups by year in the program. Means and standard deviations for students in years 1, 2, and 3 are presented in Table 1 for each of the four subscale scores (AE, RO, AC, CE) and the two derived scores (AC-CE, AE-RO).

An ANOVA using program year as a group factor noted no significant differences between students in years 1, 2, and 3 on any of the scales.

The four columns CE, RO, AC, and AE were totaled. These scores relate to the four stages in the Cycle of Learning from Experience. In this cycle are the following four learning modes: CE, RO, AC, and AE. The mean scores for years 1, 2, and 3 are shown in Table 1.

As can be seen from Table 1, the means of each group vary little from year 1 to year 3. A one-way ANOVA was performed to test for differences between the years. The F value for the test (0.04) was very small verifying that the differences between the years are not statistically significant.

The means for each stage in the cycle were plotted. The kite-like shape (see Fig 1) which emerged illustrates the learning modes which are most preferred and least preferred by the students. All four different learning modes that are part of a four-stage cycle of learning were represented. Effective learners likely use all style of learning; however, trends in the data did suggest that in year 1 nursing students on the average selected as their cycle of learning: AE “doing” (33.0 per cent), RO “watching” (32.5 per cent), AC “thinking” (29.9 per cent), and CE “feeling” (25.4 per cent). Similarly, the cycles were repeated in years 2 and 3. AE remained the most frequently reported learning style.

The two combination scores vary little from year 1 to 3 (Table 2). A one-way ANOVA was performed to test for differences between the years. The F value (0.3) again is very small, verifying that the differences between the years are not significant.

Table 1. Stages in the Cycle of Learning

<table>
<thead>
<tr>
<th></th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
<th>Overall Mean</th>
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<tbody>
<tr>
<td>AE</td>
<td>33.8</td>
<td>32.9</td>
<td>32.8</td>
<td>33.2</td>
</tr>
<tr>
<td>RO</td>
<td>32.4</td>
<td>32.6</td>
<td>32.4</td>
<td>32.5</td>
</tr>
<tr>
<td>AC</td>
<td>29.8</td>
<td>30.4</td>
<td>29.4</td>
<td>29.9</td>
</tr>
<tr>
<td>CE</td>
<td>25.3</td>
<td>26.4</td>
<td>24.6</td>
<td>25.4</td>
</tr>
</tbody>
</table>

Table 2. Dominant Learning Style

<table>
<thead>
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<th></th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>AC-CE</td>
<td>4.5</td>
<td>4.2</td>
<td>4.8</td>
</tr>
<tr>
<td>AE-RO</td>
<td>1.4</td>
<td>0.3</td>
<td>0.4</td>
</tr>
</tbody>
</table>

Discussion

The results of this exploratory, cohort, longitudinal study shed some light on the learning styles of students in a diploma nursing program. Kolb’s LSI seems to be a valid tool to measure learning styles of nursing students.

This study was motivated by the need to understand the learning styles of nursing students. As nursing becomes more complex in a changing society it is an advantage that nurses develop both convergent and divergent skills.
In a study of baccalaureate nursing students Laschinger and Boss (1989) found that students with abstract learning styles had more positive attitudes toward practice based on explicit nursing theories. The researchers suggest that abstract learning experiences promote the use of theory-based nursing practice.

**Figure 2.** Dominant Learning Styles. ———, year 1; ----, year 2; ---, year 3.

The highest percentage of learners scored in the assimilator mode which combines the learning steps of AC “thinking” and RO “watching.” Individuals with assimilator learning styles excel in constructing theoretical explanations of concrete events according to Kolb. The goal of nursing education is to provide the student with an opportunity to experience a variety of learning styles. Learning is a lifelong process and does not end with the professional educational program. Adaptive learning competencies assist the nursing student to continue learning in a variety of life situations. Educational nursing programs that provide balanced learning styles are more congruent with changing job demands.

**Limitations**

Because a single nursing program was used for the study the results must be treated with caution. Replication of the study would be useful in validating theoretical findings. In this population of nursing students the accommodator and diverger styles were noted least frequently, therefore, it would be appropriate to incorporate more of these learning styles into the nursing curricula. Further research is necessary to foster the developments of all learning competencies. Additional studies to track the learning preferences of students over a 3-year program would add to the knowledge base.

**Conclusions and Implications**

In years 1, 2, 3 and overall nursing students chose as their cycle of learning: AE “doing,” RO “watching,” AC “thinking,” and CE “feeling.” Nursing students test implications of concepts in new situations, they make observations and reflections, form abstract concepts and generalizations and select the concrete experience. Given this finding, there is evidence of support for implementing teaching this mode of learning particularly as they learn skills. Teachers need to incorporate concrete experience throughout the nursing program to meet learning needs.

The goal of nursing education is to provide the student with an opportunity to experience a variety of learning styles.

Teachers should implement teaching strategies that promote inductive reasoning and organize disparate observation into an integrated explanation.

In years 1, 2, and 3 nursing students were primarily assimilators. Their dominant learning abilities combine the learning steps of AC “doing” and RO “watching.” Persons with this learning style are best at viewing concrete situations from different points of view. Their greatest strength lies in their ability to create theoretical models. They are best at understanding a wide range of information and putting it into concise, logical form. They are less focused on people and more interested in abstract ideas and concepts. Generally, they find it more important that a theory have logical soundness than a practical value. This learning style is important for effectiveness in information and science careers. Teachers should im-
plement teaching strategies that promote inductive reasoning and organize disparate observation into an integrated explanation.

Knowledge of the cycles of learning and dominant learning styles are useful for teachers in nursing programs. Effective teaching strategies should be implemented to acknowledge the findings. Furthermore, educators should be willing to change their thinking and methods to design appropriate teaching strategies and/or individualization in teaching could mean that each student would have optional approaches.

This study suggests that curricula in nursing programs should be developed so that students acquire a variety of learning styles that will assist them in the complex working situations they find themselves. Individuals who may have some insight as to why these results were obtained may wish to communicate with the researchers.

References


