The Influence of Curriculum Format on Learning Preference and Learning Style

(cognitive processes, education, occupational therapy, research)

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Undergraduate occupational therapy students were given the Resler-French Learning Preference and the Kolb Learning Style Inventories at the introduction of professional course work (pretest) and upon completion of junior year course work and Level I fieldwork (posttest) 1 year later. The students’ course work was a guided-study, modified competency-based program that included guided independent study, laboratory work, small group study, and one-to-one tutorials in preference to, but not excluding, the more traditional lecture method.

After experiencing different modes of instruction, the students indicated no significant difference in their preferences for ways of learning or in processing information. Implications of these findings for the teaching-learning process are discussed.

Teachers have known for some time that students learn in different ways. The cognitive processes used vary from student to student. Students also have preferred ways of learning.

Elements of learning style appeared in the research literature as early as 1892. Prior to 1940, research efforts were concerned mainly with the relationship between memory and oral and visual teaching methods (1). Allport (2) described attitude, interest, aim, concept, and ideal as forms of mental organization that result in and affect learning. “Concrete” and “abstract” styles of cognitive operation were described by Goldstein and Scheerer (3). Thurstone (4), and later Guilford (5), recognized individual perceptual abilities and flexibility as important factors in the teaching-learning process. At the end of World War II, Witkin and Asch (6) postulated the bipolar trait of the individual to discriminate figure against a background relief as the manner in which the person relates to the world. Individuals who characteristically hold tight to their categories of perception and judgment (levelers) and those who seem to be more adventurous in coping with environmental data (sharpeners) were discovered by Klein (7).

Analytic styles and nonanalytic modes were researched by Kagan (8), which led to the identification of a “reflection-impulsivity” dimension to the study of learning.

Currently there are two schools of research that identify the underlying processes of learning style and teaching. One school is represented by Hunt, Hill, and Nunney (9, 10), and Dunn and Dunn (11). Their work has been with applied models of learning style and the multidimensional implications. This group is concerned mainly with improving and individualizing instruction. Interviewing techniques or self-report questionnaires are used to allow students to identify perceptions of their character traits. The other school of research is represented by Mckinney and associates at the Harvard Business School (12) and has a strong preference for the cognitive style dimension. The two factors identified for human information processing are information gathering (perceptive vs. receptive) and information evaluating (systematic vs. intuitive). This group believes the learner has ways of perceiving, organizing, and retaining that are not only preferred but are also distinctive and consistent.

The learning styles of health
preferences have been examined by instruments developed by Kolb (13) and Friedman and Stritter (14). A preliminary study that compared learning styles with student achievement in academic and clinical course work in occupational therapy failed to find significant correlations between any of the four learning styles and course work (15).

A review of the literature has shown an increased concern by allied health faculty over the past decade for students’ learning styles and learning preferences. According to Rezler and Rezmovic (16), the terms learning preference and learning style have been used synonymously in the literature. They contend, however, that “...learning preference is the choice the individual makes for one learning situation or condition over another, whereas learning style is the manner in which an individual perceives and processes information in the learning situation” (p 28).

Although some educators claim that individually paced and programmed instruction are viable alternatives to the lecture method, Llorens and Adams (17) were reluctant to accept these as the most preferred modes of instruction by all students. Use of the Canfield-Lafferty Learning Style Inventory on undergraduate and graduate occupational therapy students at the University of Florida showed student preference for teaching conditions that permitted a more personal relationship with instructors. In addition to having opportunities to set their own objectives and to work alone and independently, the students showed a high preference for working with people and for direct experience in their learning modes.

In a study of graduate and undergraduate students in occupational therapy at the University of Southern California (USC), the Rogers and Hill data (18) supported previous findings that students (at both levels) preferred concrete, interpersonal, and teacher-structured learning experiences. These researchers concluded that students’ learning needs would be best served by well-organized and sequenced experiences having clear objectives and goals. Students preferred learning experiences that are planned and supervised by faculty, course offerings that allow frequent interaction among peers and faculty, and courses that incorporate experiential learning. Results of this study demonstrated a change between the pretest and the posttest for one learning preference. This prompted us to suggest that an instructional program can influence students’ learning preferences.

Rezler and French (19) examined the learning preferences of students in biocommunication arts, medical dietetics, medical laboratory sciences, medical record administration, and occupational and physical therapy. Findings indicated that all students with this sample preferred concrete and teacher-structured learning. The students in occupational therapy also showed a strong preference for interpersonal learning. We suggest that this higher teacher-structure score may indicate that this “preference” for learning type is based on habit rather than preference. This study prompted us to suggest the need for a longitudinal study of entering and exiting preferences to determine if there is a shift to more independent learning styles for students at the conclusion of their professional course work at the medical center.

Dunn and Dunn (20) have recommended that further research be conducted to determine if the students’ learning preferences change in relationship to how the students are taught or if learning preferences remain constant over time.

This study was designed to answer the following question: Are learning preferences and learning styles, or both, affected by program instruction or do they remain stable over time?

Methodology

Subjects. The subjects in the study were junior students from the University of Illinois occupational therapy class of 1981. Of the original 40 students in the class, 37 were females with complete inventories. The group was from a relatively diverse population: The students’ ages ranged from 19 to 50 years (mean = 23.6), their grade point averages ranged from 3.78 to 5.0 (mean = 4.12), and there were five black students. One student was a graduate of a technical occupational therapy program, eight students held baccalaureate degrees, and two students held master’s degrees.

Instruments. Instruments used were the Learning Preference Inventory (LPI) and the Learning Style Inventory (LSI).

The LPI, a self-administered instrument, requires respondents to rank order items in the cognitive and affective domains according to six dimensions of learning preference. The dimensions are described by Rezler and French (19) as the following:

Abstract: preference for learning theories and generating hypotheses,
with focus on general principles and concepts;

Concrete: preference for learning tangible, specific, practical tasks, with focus on skills;

Individual: preference for learning or working alone, with emphasis on self-reliance and tasks that are solitary, such as reading;

Interpersonal: preference for learning or working with others, with emphasis on harmonious relations between students and teacher, and among students;

Student-structured: preference for learning via student-organized tasks, with emphasis on autonomy and self-direction;

Teacher-structured: preference for learning in a well-organized teacher-directed class, with expectations, assignments, and goals clearly identified (p 21).

The six scales of the LPI have been supported by factor analysis, thus establishing content validity. Construct validity is demonstrated in studies with allied health and pharmacy students. Internal consistencies reliabilities for the six scales range from .72 to .88 (16).

The LSI, a self-descriptive inventory using nine sets of words, requires learners to rank each set of words to reflect their perceptions of their learning styles. The instrument measures the individual's relative emphasis on four learning abilities. The four single measurements are (1) concrete experience, the ability to immerse one's self in immediate experiences; (2) reflective observation, internalization of concepts and use of symbols; (3) abstract conceptualization, the formation of abstract concepts and generalization; and (4) active experimentation, testing implications of concepts in new situations (13).

Split-half reliabilities for the scales are reported as concrete experience (.55), reflective observation (.62), abstract conceptualization (.75), and active experimentation (.66) (13).

Procedure. A pretest was administered during the first week the students were on campus, and the posttest was administered at the end of four quarters of academic course work, which included preclinical and Level I fieldwork. The course work to which the students were introduced was a guided-study, modified competency-based program that included small group (8 students and 1 faculty member), one-to-one tutorial, experiential laboratories (10-14 students), and independent study methods in addition to the more traditional classroom lecture. An estimate of the percentage of time devoted to various learning modes is 10% to traditional lecture to the total class; 20% to small group, laboratories, and tutorials; and 70% to guided, independent study.

Results

The statistical procedure used to compare the data from the pre- and posttest scores was a t test using paired samples at the .05 level of significance (21). No statistically significant differences between pre- and posttest scores were found on any of the 10 dimensions of the 2 instruments, LPI and LSI (see Tables 1 and 2).

Discussion

Exposure to the various types of instructional and learning modes apparently did not change the way the students learn or their opinions of their preferred modes of learning. This seems to be consistent with several studies cited in the Learning Style Inventory: Technical Manual, which showed strong relationships between LSI scores over 5 to 25 years (13). Kolb (13) surmises that this is due to personality and situational consistence and the stable patterns of interaction between the two. In cybernetic terms, behavioral stability results from a positive-feedback loop that links personal dispositions, personal choices, and the experiences that result from these choices, such that dispositions lead to choices of experiences that are consistent with and thereby reinforce the original dispositions (13).

The results differ from the

<table>
<thead>
<tr>
<th>Table 1</th>
<th>Comparison of Pre- and Posttest Scores on LPI Dimensions</th>
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<tbody>
<tr>
<td></td>
<td>Pretest</td>
</tr>
<tr>
<td>Abstract</td>
<td>46.59</td>
</tr>
<tr>
<td>±13.63</td>
<td>±12.49</td>
</tr>
<tr>
<td>Concrete</td>
<td>61.16</td>
</tr>
<tr>
<td>±11.46</td>
<td>±11.06</td>
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<tr>
<td>Individual</td>
<td>51.19</td>
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<td>±8.86</td>
<td>±10.03</td>
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<tr>
<td>Interpersonal</td>
<td>51.38</td>
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<tr>
<td>±15.43</td>
<td>±14.73</td>
</tr>
<tr>
<td>Student-structured</td>
<td>48.46</td>
</tr>
<tr>
<td>±12.71</td>
<td>±10.68</td>
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<tr>
<td>Teacher-structured</td>
<td>56.22</td>
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<tr>
<td>±14.26</td>
<td>±13.61</td>
</tr>
</tbody>
</table>

Values are means ± SD for 37 students.
Rogers and Hill reasoned that students’ initial responses to learning via this mode may have been inflated due to their high expectations at the prospect of this type of learning. However, student experience with learning in groups may have reversed this expectation, producing some disenchantment with this method of learning and thus lowering posttest scores (18).

Table 2
Comparison of Pre- and Posttest Scores on LSI Dimensions

<table>
<thead>
<tr>
<th></th>
<th>Pretest</th>
<th>Posttest</th>
<th>t</th>
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</thead>
<tbody>
<tr>
<td>Concrete-experience</td>
<td>15.78</td>
<td>15.83</td>
<td>-0.08</td>
</tr>
<tr>
<td>Reflective-observation</td>
<td>±3.43</td>
<td>±2.71</td>
<td></td>
</tr>
<tr>
<td>Abstract-conceptualization</td>
<td>12.65</td>
<td>12.73</td>
<td>-0.14</td>
</tr>
<tr>
<td>Active-experimentation</td>
<td>±3.23</td>
<td>±3.76</td>
<td>-0.64</td>
</tr>
<tr>
<td>Reflective-experimentation</td>
<td>±3.62</td>
<td>±3.80</td>
<td>1.77</td>
</tr>
<tr>
<td>Active-conceptualization</td>
<td>±3.81</td>
<td>±3.82</td>
<td></td>
</tr>
</tbody>
</table>

Values are means ± SD for 37 students.

Although some researchers have suggested that the consistency of students’ learning preferences may be attributed to lack of exposure to different methods of instruction, this study indicates that students who were involved in different modes of learning over a 1-year time period exhibited no significant change. Because this study was conducted with a modest number of students from one curriculum, a replication of this study should use a population that has experienced a more traditional format of instruction. Such a study would provide additional information relative to the consistency of learning style and preference over time.

REFERENCES