

Original Article**Nursing Students' Preferred Learning Style***Shayesteh Salehi**, *Ehteram Shahnooshi*****Abstract**

Background: Academic success depends on curriculum planning and goals- setting, choosing suitable teaching methods, considering students' learning style and the teacher and the manner in which material is presented and effective time management. Learning style is the processing of information and comprehension. If teachers present contents in a style that matches a student's preferred learning style, academic performance and success will improve and promote.

Assessing learning styles will benefit the student and the teacher as well as the educational system. If content retention improves it will result in an increase in the test scores. It is also important to determine if students, as a group, fit into a particular style or a particular cycle as they move through an educational program.

Methods: The study is a descriptive analytical research. Nursing Students at Isfahan Medical Sciences University completed a questionnaire formulated to assess learning styles. Analysis of variance was used to investigate the possible relationship between learning cycle and student's grades in the curriculum (i.e. freshman, sophomore, junior, or senior). Cross tabulation was used to test for a relationship between learning style and student academic year of study in the curriculum.

Results: 294 students received the Kolb LSI questionnaire. The data demonstrated that juniors preferred a converger learning style and the senior students were in the abstract conceptualization cycle of learning. There were no relationships demonstrated between other groups in the study.

Conclusion: The junior and senior students appear to prefer the stage of learning involving thinking and problem analysis. When a group of students demonstrate a preference for particular learning style teachers can develop their curriculum along their learning style.

Key words: Learning styles, nursing students, freshman, sophomore, junior, senior

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Knowledge is created through the transformation of experience (1). With every new experience, learners earn the ability to learn something new and increase their knowledge base. It is the teachers who increase knowledge base when educating students. Academic success for the student may be considered with setting-goal, choosing effective teaching methods, time management, study skills and proper assignments, and student's preferences for a particular style of learning (2).

A student's learning style determines how he/she will comprehend and process information and is important for the student and the teacher (3). Various theories have been forwarded so far concerning learning styles. Field dependence and field independence, creative and fast learning, holistic and atomistic learning, deep and shallow learning, theoretical and applied learning, active and thoughtful learning are just some examples to be cited. One of these theories, which have been vastly utilized

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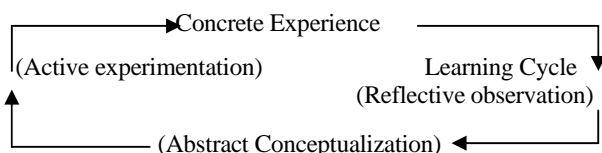
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in learning about the learning styles in students of nursing, is David Kolb taxonomy. Kolb, the founder of the experiential learning theory, believes that experience is a vital factor in learning (4).

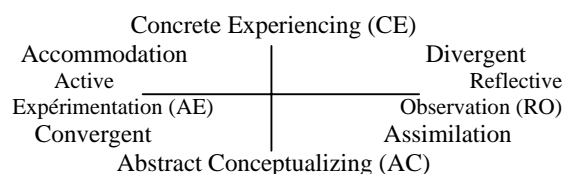
According to this theory, learning is the active process of the individual's interaction with his environment and life occasions (5). The way in which information is presented will affect the student's ability to learn. Students learn in many different ways; some individuals grasp new material when it is presented using a kinesthetic style and others prefer an audio/visual style (6). Some individuals learn new subject with role playing or using a problem based method [regardless of the style of learning, most teachers use only a small number of teaching styles].

For example, lecture is presented and followed weeks later with an exam at the end; though student's performance will be evaluated. Teaching methods also varies greatly. Teachers must understand that students differ in their learning style and it is imperative to implement a variety of teaching styles to teach those (7). Incorporating diverse styles of teaching in the lesson plan would enhance comprehension and retention of its content (8). Employing strategies to improve teaching effectiveness will occur if teachers match their teaching styles with students learning style (9). There are a number of tests used to assess learning styles. One of the most common tests used today is the Kolb Learning Style Inventory (10).



According to him people are eventually placed at the end of either of the two extremes; thinking and feeling, observing and acting. Assimilators prefer to learn using Reflective Observation and Abstract Conceptualization. The learner integrates observations into the world of existing concepts. Convergers learn using Active Experimentation and Abstract Conceptualization. Kolb describes it as someone who

learns by thinking and doing. Accommodators learn using Active Experimentation and Concrete Experience. The learner takes new concepts/experiences and adjusts them with the real world. These students are motivated by being actively involved in the learning process. Divergers learn using Concrete Experience and Reflective Observation. These students prefer specific information presented in a detailed, systematic and reasoned manner (11). Divergers need time to reflect on the information presented. Although these types of learners incorporate Concrete Experience into their style, they prefer to watch before getting involved (12).



Students move between learning cycles. Kolb stated that the actual process of growth in any single individual probably proceeds through successive oscillations from one stage to another. The learning process is dynamic and based on the learners' needs for different abilities at different times. Therefore, one should not assume that a student learns using only one style. Ideally, each student will possess a portion of each learning stage (13). Although students have a preference toward a particular style, most are able to comprehend contents when presented in a different style (14).

The objective of this study was to determine the learning style of nursing students at the nursing school of Isfahan University of Medical Sciences in 2005.

Methods

The studied population was nursing students in the nursing school of Isfahan University of Medical Sciences in 2005. They were selected randomly and were in different academic years (freshman, sophomore, junior, or senior).

They completed a Kolb LSI questionnaire. The Kolb LSI is a questionnaire consisting of 12 sentences which describe different learning styles. The questionnaire asks the student to

rank in likert ranking. Each statement on the questionnaire according to how well each statement describes the way she/he learns. All participants received an explanation of the study's objective and assurance of confidentiality of the results. Those students who did not want to participate in the study were excluded from the research.

The rankings from each questionnaire as well as demographic information were entered into SPSS software for data analysis. An analysis of variance was used to test possible relationship between learning cycles and student's academic year. Cross tabulation was used to test possible relationship between learning style and student's academic year. A Pearson correlation was used to test correlation between each learning cycle. P value<0.05 was considered to be significant.

Results

296 students participated in the study. Of the 296 subjects, 21.5% preferred the accommodator style, 29.44% preferred the diverger style, 23.25% preferred the converger style and 25.81% preferred the assimilator style (Table 1).

Table 1: Students' learning style

Learning Style	Number	Percent (%)
Converger	69/296	23.25
Assimilator	76/296	25.81
Diverger	87/296	29.44
Accommodator	64/296	21.50

32/296 (10.81%) students were male and 264 of them (89.19%) were female. The demographic analysis by year of study demonstrates that 25% (74/296) of the students were freshman, 21.62% (64/296) were sophomores, 26.35% (78/296) were juniors and 27.03% (80/296) were seniors (Table 2).

Table 2: Students' Academic years

Academic year	Number	Percent (%)
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Freshman	74/296	25
Sophomores	64/296	21.62
Juniors	78/296	26.35
Seniors	80/296	27.03

No significant relationship was found between the learning style and gender ($p>0.05$). There was no significant relationship between curriculum grade and the accommodator, diverger ($p>0.05$). The relationship between academic year and abstract conceptualization was found to be statistically significant as well as between academic year and active experimentation (Table 3).

Table 3: ANOVA comparison of student' academic years and Kolb's learning cycles

Dependent Variable	P value	comparisons for classification
Concrete Experiencing (CE)	0.0678	Not significant
Active Experimentation (AE)	0.0432	Significant for juniors > seniors Significant for seniors > freshman, sophomore, and juniors
Abstract Conceptualizing (AC)	0.0258	
Reflective Observation (RO)	0.5212	Not significant

Discussion

Nursing students seem to have a preference for the converger learning style. The students at the junior level seem to prefer this style of learning compared to the freshman, sophomore, and senior students. Our data demonstrated that the junior level students are at the active experimentation cycle of learning. This is consistent with the type of learning the juniors are experiencing in the curriculum. Nursing students in the third year of their education go to the hospital more often than the previous years and encounter patients more frequently. These students learn to utilize critical thinking skills when assessing and caring patients. The senior level students appear to cluster into the abstract conceptualization portion of the learning cycle. This stage characterizes the stage when students learn by thinking or analyzing

problems which shows their ability to interpret has improved. This cycle also contains the converger learning style and is consistent with the level of learning the seniors are experiencing in the curriculum. Other studies of students' learning style also confirm these results (15). This is perhaps due to the similarity of the study discipline or personality characteristics of nursing students.

The learning preferences indicate that individuals rely on a particular style to process and comprehend information in different stages (15). Nursing students, prior to their division course work do not fit into a particular learning style. This indicates that faculty must employ a variety of teaching techniques to effectively reach all students. The students must also become self-controlled in their learning process. They will need to identify the academic strengths and weaknesses they possess (16). The teachers can assist the students in this process by administering the Kolb LSI periodically

at the start of the curriculum and in the course of instruction. This will allow the students to be aware if their learning style has changed (10). It will also reveal students and faculty members where they are situated in the learning cycle. The junior and senior students seem to conform to a style or cycle of learning that involves thinking. This style of learning is very important when somebody working in a dynamic environment such as many units in the hospital. Upper level course work should incorporate a style of teaching that focuses on critical thinking skills. By matching the teaching style with the student's preferred learning style, content retention would improve, thus improving exam scores. Faculty should assess preferred learning styles throughout the students' enrollment in the curriculum and should apply a variety of teaching approaches to effectively teach all students.

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