Learning styles of nursing students in Iran using Kolb's theory: A review study

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Abstract

Introduction: Learning style of students is one of the most important factors which influence their learning. Some negative effects can be observed on nursing student learning as a result of imbalance between the learning and teaching methods. Using appropriate methods of teaching and determination of student learning styles can facilitate their leaning. Hence, this study aims to identify the most common learning styles of nursing students in Iran.

Materials and methods: The Iranian databanks including Magiran, SID, Medlib and Iran Medex were searched for relevant published articles from March 21, 1991 to July 2012. In searching international databases, English transcriptions of Iran were used. The Persian search terms that were equivalent to their English words included Learning styles, nursing students and the Kolb learning styles. It should be noted that this review research included only studies that are based on the Kolb's theory and research that discusses other learning styles were excluded from the review process.

Results: Research articles that were based on Kolb's theory of learning styles in entire Iran have been collected and investigated. In all studies, the researchers searched for the learning styles of nursing students in several cities to determine the four styles of the Kolb's theory (Accommodating, Absorbent, Divergent and Convergent). The Convergent and Absorbing styles were dominant ones in the nursing students. These styles ranged from 28.9% to 54.2% and 29.9% to 53.8%, restrictively.

Conclusion: More attention should be paid to different learning styles in order to enhance students' learning. It is recommended that teachers also pay more attention to students' learning style and use appropriate teaching methods in this regard.

Keywords: Learning styles, nursing students, Kolb's theory

Introduction

Learning styles affect the learning process (1), and is the way that information is organized and processed and experiences are refreshed in the minds of the people (2). One of the most important results of educational system is improving the learning of individuals and community. So, Identifying factors that affect learning and providing appropri-

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ate conditions for upbringing and education of people is essential (3). There are several factors that influence learning such as motivation (4), attitude toward time, time management (5), self-esteem (6) and teaching methods (7). Another important factor which influences students learning is their learning styles. Gaining more knowledge about it and using appropriate teaching methods may leads to providing conditions for better learning (2). Learning styles describe how to understand, manage and respond to the learning environment (8) Learning style is an important factor in the process of teaching and learning (9). In a successful educational system, there is a major parameter that is related to learning and academic achievement (10). Teachers can use different assessment methods, learning approaches and thinking styles to identify different students. This style can be reflected in assessment methods, multiple choice tests to measure the performance of learners, and students may learn to adopt a surface approach. A deeper approach of learning can be obtained with the help of a project evaluation team (11).

One of the models discussing learning styles is Kolb's theory. Kolb's learning styles encompasses four major factors of Convergent, Divergent, Absorbing and Accommodating (9). This model integrates the cognitive and behavioral changes and includes four stages that represent four different kinds of abilities that students need for effective learning. Students must be able to involve themselves in new and concrete experiences (CEs); Then, they must be able to make reflective observations (ROs) on these experiences and ~~to~~ integrate their observations into abstract concepts (ACs) formed from logically sound theories that must be actively used or experimented (active experimentation; AE) to create new experiences (see Figure 1) (12).

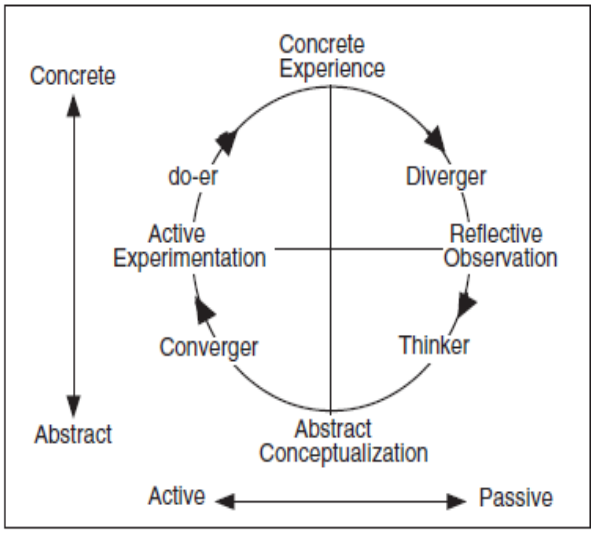


Figure 1. The Experiential Learning Model of David Kolb (Adopted from Smolders).

Individuals with Convergent style have the following characteristics of manipulating objects, planning, and learning ways of thinking, logical analysis and opinions, but people enjoying Divergent characteristics consider different aspects of the subject and observed interaction. Besides, they learn abstract concepts easily; think in solitude and their interests are determined as basic and applied. They also like to have discussion with peers and are interested in buying and selling, trading and marketing (9). The educational system is dynamic. Teachers' knowledge of students' learning styles and educational diversity is impressive (13-15). Different methods of teaching and learning lead to various learning style. No matching learning styles and teaching methods will lead to a decline in learning of students. The purpose of this review study is to determine the dominant learning style of nursing students in Iran, using Kolb's theory.

Materials and methods

Kolb's theory was employed to investigate learning styles of nursing students. The data bases of Magiran, SID, Medlib and Iran Medex were used to find related papers on

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the subject of Kolb's theory published during March 21, 1991 to July 2012 using keywords of Iranian nursing students, learning styles, and Kolb's theory. Although more than 30 studies were found on learning styles, only 10 papers has used Kolb's theory to investigate nursing learning styles. Thus, the ten papers were selected for further investigation (The number of references provided in tables 1 and 2). The research questions of this review study were to investigate learning styles of nursing students based on Kolb's theory.

Results

Literature review showed that students have different learning styles not only in Iran but also in other countries (1, 2, 8, 9, 13, 16-19). In this study, Learning styles of nursing students were reviewed in different universities of the country. Findings showed that Absorptive and Converging styles had the highest percentage among all the learning styles in Qazvin with the contributions of 53.8% and 28.9%, respectively (2). The Convergent style was the dominant learning style between graduate and undergraduate students. Absorbing style had the highest rates in Kerman (48.5%) (2008) (19). The results are presented in Table 1. In Tabriz, 54.2% and 32.1% of nursing students had the Converging and Absorptive style, respectively (8). Converging (38.3%) and Absorptive (29.9%) are the main learning styles of medical students in Fasa (9). In Isfahan, the dominant learning style among students was the Accommodating style (30.9%), as shown in Table 1 (20).

Table 1. Percentage of the different learning styles in Iran

	Learning Style			
City (References)	**Convergent**	**Divergent**	**Absorbent**	**Accommodation**
Qazvin (2)	%28.9	%11.2	%53.8	%6.1
Kerman (19)	%23.1	%17.7	%48.5	%10.8
Tabriz (8)	%54.2	%6.2	%32.1	%7.5
Fasa (9)	%38.3	%18.6	%29.9	%13.2
Arak (24)	%46.3	%16.7	%13	%24.1
Esfahan (20)	%29.2	%26.4	%13.5	%30.9
Semnan (1)	%23.6	%27.1	%22.6	%26.6
Torbat Heidarieh (16)	%11.8	%17.6	%3.5	%67.1
Tehran (13)	%9.56	%42.3	% 4.34	%19.13*

*It is noted that 26.95% of these students has been used combined form of these styles**.**

In Semnan, 27.1% and 26.6% of students had Diverging and Accommodating styles respectively. Also, the most common learning style among nursing student was Converging (31.9%). In Qazvin, no significant association was observed between the variables of age, sex, educational level, learning style and average grade. In addition, a significant correlation was found between learning style and academic successes of nursing students (2). Abbaszadeh found that there was a significant correlation between degree and students' learning styles as shown in Table2, but gender, interest in field of study and educational course (daily or evening courses) had no significant relationship with learning styles (19). In this regard, Najafikelian found the preferred teaching method as the most important factor. Also, there was a statistically significant relationship between learning styles and field of study (9).

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Table 2. Characteristics and comparison of the reviewed studies

Study(City)	Characteristic		N (%)	P value
Rezaie, K. Arak(24)	Sex	Male	99(%41.2)	
		Female	142(%58.8)	
	Age	Mean ± SD	18.73±0.93	
Ranjbar, H. Torbat(16)	Sex	Male	0(%0)	
		Female	85(%100)	
	Age	Mean ± SD	20.7±1.21	
		Difference between learning styles		p <0.001
		Learning style and field of study		p <0.001
Najafi Kalyani, M. Fasa(9)	Sex	Male	81(%48.5)	
		Female	89(%51.5)	
	Age	Mean ± SD	21.16±8.0	
		Learning styles and field of study		p=0.011
		Degree with Learning style		p=0.006
Safavi, M. Isfahan(20)	Sex	Male	144(%80)	
		Female	34(%19.1)	
	Age	Mean ± SD	23.17±3.56	
	Degree	Bachelor	158(%88.8)	
		Master	14(%7.9)	
		PhD	6(%3.4)	
Abbaszadeh, A. Kerman(19)	Age	Mean ± SD	21.8±3.1	
	Marital status	Married	26(%17.6)	
		single	122(%82.4)	
	Degree	Bachelor	130(%87.8)	P <0.05
		Master	18(%12.2)	
Ahadi, F. Semnan(1).		Learning styles and field of study		p=0.006
		Marital status and learning styles		P=0.004
		Average points of general lessons and learning styles		P=0.031
Geranmayeh, M. Tehran(13)	Sex	Male	33(%16.9)	
		Female	162(%83.1)	
	Marital status	Married	42(%21.1)	
		single	153(%78.9)	

There was no significant relationship between gender and learning styles of nursing students. But there were significant relationships between the field of education, marital status, average, and student learning styles (1). There was no significant relationship between learning styles and academic achievement of students (13). In Tabriz, convergence and assimilation of learning styles were high among nursing students. Authors suggest educators to use lecture methods, diagrams and self-applied reading in this regard (8). The dominant learning styles of nursing students were Converging and Absorbed (In table 1, we had a comparison between these styles). Literature review showed that there were several factors that influence learning including motivation (4), attitude toward time and time management (5), self-esteem (6) and teaching methods (7,

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21). Another important factor is students' learning styles.

Discussion

Most ~~of~~ educators believe that quality of teaching greatly influences the quality of learning. Effective learning depends on the learner whether he/she is active, highly motivated and having the right knowledge strategy. In order to help college or higher institution students to learn effectively, instructors need to know and adapt them to different learning styles (22). Kolb's learning style inventory differs from other tests of learning style and personality. It is used in education since it is based on a comprehensive theory of learning. Experiential learning theory (ELT) is based on the work of prominent twentieth century scholars (23).

Stiernborg, Zaldivar, and Santiago (1996) conducted a pre-test post-test quasi-experimental design study to assess the comparative effectiveness of didactic teaching and experiential learning in a HIV/AIDS training program for nursing students in the Philippines. The authors hypothesized that experiential learning would yield significantly higher knowledge levels and favorable attitude changes in the students than didactic teaching. Three groups of nursing students participated in the study. The didactic and experiential groups covered the same content. Knowledge post-test scores indicated that both didactic and experiential learning approach produced a significant increase in the students' knowledge levels. However, the experiential learning group achieved a significantly higher knowledge level than the didactic group. The authors concluded that the experiential learning approach is more effective than the didactic approach in knowledge acquisition (23). According to this learning pattern, Kolb's four learning styles of Diverging, Converging, Accommodating and Absorbent were specified (2). Nursing students used a variety of learning styles. Factors such as time of teaching, academic consulting for student initiative and creativity flourishing, individual differences, and diversity in learning styles should be considered (13). It is better that nursing teacher's pay more attention to learning styles of students. Nursing teachers should be aware of the learning styles which are the dominant learning style in nursing students to achieve better results, more effective training, and suitable teaching (16). Considering graduate nursing students, teachers should use appropriate teaching methods based on students' learning styles (19). For students with Convergent and Divergent styles, teachers should use teaching methods based on learning problem, grouping discussions, brainstorm, role playing, computer simulations and demonstration in theory, education, clinical, and center clinical expertise. In new and concrete situations, using imagination and ways of acquiring knowledge and professional skills can have a higher and better usage for students (1). Nursing students have different learning styles and teachers should use a variety of teaching methods to create a learning experience for all students in the classrooms. The dissatisfaction and withdrawal from work or school increases if individual learning styles with appropriate professional field are not used (2). Everyone learns better in a special way. Teachers are recommended to pay more attention to learning style of students while less attention is devoted to this issue in most classrooms which leads to reduction in quality and efficiency of education (17). Studies that have been performed in various cities of Iran showed that nursing students use all learning styles of Kolb's theory, but Convergent and Absorbing learning styles were prominent and ranged from 28.9 to 54.2% and 29.9 to 53.8 %, respectively.

It is essential for teachers to pay more attention to learning styles, and they are required to be aware of learning styles of students

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(16). The results of this study could be used in education systems, based on the literature. It is suggested that teachers use appropriate above-mentioned methods of learning styles in Iran.

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