The Impact of Academic Libraries on Students' Academic Achievement: The Relationship between Learning Styles and Information Seeking Anxiety

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Information seeking anxiety is a type of anxiety that affects academic performance. The present study was aimed at investigating the relationship between learning styles and information seeking anxiety in relation to the academic achievement of students. This was a descriptive-analytic research, and the study population consisted of students who had passed at least one semester in Behbahan University, Iran. The sample size was calculated 181 from the Morgan table. The results of this study showed that most of the students used the 'assimilating' learning style. It was concluded that there was no significant difference between anxiety levels and the field of study. Also, there was no relationship between learning styles and age and gender. Moreover, there was no relationship of gender, academic semester, and age with academic achievement. Even though, there was no relationship between information seeking anxiety and learning styles vis a vis academic achievement, the assimilating learning style was preferred by the majority of the students. The comparison of learning styles with information seeking anxiety was a distinctive feature of this study, indicating that different aspects of learning did not have much effect on the anxiety levels of individuals, which could be the basis for further research on personality dimensions such as self-concept and intrinsic motivation in relation to information seeking anxiety and academic achievement.

Keywords: Learning Styles; Information Seeking Anxiety; Academic Achievement; Students

INTRODUCTION

Academic achievement has always been a matter of special attention and consideration for educational systems; and the degree of academic achievement has been a criterion for evaluation and efficiency of educational systems. An investigation of the factors influencing the academic achievement of students is a major research topic. Several factors affect the academic achievement of students, including, teaching methods, age, gender, professors, socio-economic factors, etc. In this regard, learning styles and information seeking anxiety are among the factors that have a significant effect on academic achievement. Increasing student satisfaction with the curriculum and teaching is a serious challenge for university professors. Bertolami believes that the contradiction between learning content and teaching forms is a main reason for students' frustration with the curriculum. That some learners are not well taught in spite of having good teachers might be the best reason to argue that different learners have diverse learning preferences (McLeod, 2006). This indicates information acquisition according to personal differences in a variety of ways: looking, lessening, reflecting, acting, thinking, imagining, and visualizing (Cassidy, 2004). In fact, learning styles express different methods for learning when processing information in learning situations (Cassidy, 2004). According to systematic studies, 71 models have been introduced for learning (Coffield, Moseley, Hall, & Ecclestone, 2004). However, Kolb's experiential learning theory (ELT) is presented as one of the most popular learning styles (Kolb, 1984). According to Kolb's theory, learning is a process that is created through the evolution of experience, and his model describes four steps: 1) Concrete Experience (CE) that supports experimental learning; 2) Reflective Observation (RO) that pays much attention to action before performing it; 3) Abstract Conceptualization (AC), in which a person conceptualizes and analyzes to understand the subject; 4) Active Experimentation (AE), in which a person prefers to test and learn through trial and error. By combining the four above-mentioned steps, four different learning styles can be identified as diverging, assimilating, converging, and accommodating (Kolb, David, Boyatzis, Richard & Mainemelis, 2000). Anxiety is one of the most common psychological problems affecting everyday life of humans. In a majority of individuals in the community, anxiety is limited to specific times and situations, which is defined by Spielberger (1983) as situational anxiety or anxiety state (Spielberger, Gorsuch, & Lushene, 1970). Anxiety is a common psychological

impediment causing psychological, emotional, and behavioral problems (Abusin & Zainab, 2010), and is among the most important barriers in academic milieus as a stressful, unpleasant, and disappointing feeling (Ahadi, Fathi, & Abdol-Mohamadi, 2014). Accordingly, there are a number of anxieties in a university milieu referred to as academic anxiety (Chua, Chen, & Wong, 1999), including computer and Internet, exam, library, and research anxiety (Erfanmanesh, 2011).

LITERATURE REVIEW

Information seeking anxiety is a type of anxiety that affects academic performance. Marsh believes that anxiety starts as a sensation during the information seeking process from the start-up step (beginning the work, selecting a topic, discovering before focusing, collecting information, and closing the subject) and that students experience the highest level of stress at the beginning of the search process (Marsh, 2004). According to Christopherson's study, information anxiety is frequently observed among PhD students who use databases for search, and has been defined as the fear and stress when conducting library search, using readily available system information, and even thinking about searching (Christopherson & Weatherly, 2006). Norman in his study stated there have been contradictory results about learning styles and academic achievement (Norman, 2009). However, based on Cassidy's study, in general, it has been accepted that people's learning styles influence their performance and learning outcomes (Cassidy, 2004). The university is also a remarkable learning environment for students. In the meantime, medical students are faced with a variety of stressors, so that they progress through a competitive program with an occupational and often tedious orientation. However, learning in this milieu is associated with challenges that cause anxiety and stress in students. A high level of anxiety can affect students' academic performance and cause obvious threats to the success of the educational and clinical cycle. Moreover, some contradictions of results, as well as, deficiencies in the design of studies have revealed the gap in the knowledge available in this field. Therefore, the present study was aimed at investigating the relationship between learning styles and information seeking anxiety with the academic achievement of students in Behbahan University of Medical Sciences. Based on literature review, the following research hypotheses were introduced:

Hypothesis

1. There is a relation between convergent learning style and academic advancement
2. There is a relation between divergent learning style and information seeking anxiety
3. There is a relation between assimilating learning style and academic advancement
4. There is a relation between accommodating learning style and academic advancement
5. There is a relation between learning styles and information seeking anxiety
6. There is a relation between information seeking anxiety and academic advancement
7. There is a relation between information seeking anxiety and gender; and
8. There is a relation between learning styles and gender

METHODOLOGY

This was a descriptive-analytic research carried out in Iran's Khousirtan province in 2017-2018 period. The study population consisted of students who had passed at least one semester in Behbahan, Iran. The number of faculty members was 382, and the sample size was calculated 181 from the Morgan table (Krejcie & Morgan, 1970). Simple random sampling method was used to give all students an equal chance of participation. The return rate was 100%. The data were collected using Kolb's questionnaire on learning styles and Information Seeking Anxiety Scale (ISAS) by Erfanmanesh, Abdullah, & Karim (2014). The validity and reliability of it have been confirmed in various texts. Cronbach's alpha has been equal to 0.73-0.78. Several versions of the questionnaire have been used over the past few years, and their validity and reliability have been verified (Ghasemi, 2012). Moreover, in Iranian sources, Kalbasi et al. research calculated Cronbach's alpha in various learning areas equal to 0.7-0.9 (Kalbasi, Naseri, Sharifzadeh, & Poursafar, 2008).

Kolb's questionnaire on learning styles includes 12 items with four choices which can distinguish between four learning styles including, concrete experience, reflective observation, abstract conceptualization and active experimentation. The first choice in any question relates to concrete experience learning style, the second choice to reflective observation style, the third choice to abstract conceptualization style and the fourth and final choice relates to active experimentation style.

People gave each choice a score between 1 to 4 based on the similarity of the learning style with their own learning style.

- If the suggested answer is similar to preferred learning style the score is 4
- If the suggested answer is somewhat similar to preferred learning style the score is 3
- If the suggested answer is remotely similar to preferred learning style the score is 2
- If the suggested answer is nearly dissimilar to preferred learning style the score is 1

The sum of the scores for these four choices is the item's score which shows all four learning styles.

The difference between the scores for abstract conceptualization and concrete experience and the difference between reflective observation and active experimentation styles results in two distinct scores. These two scores are plotted on a coordination system (based on their positive or negative sign). The vertical axis has the concrete experience at the top and abstract conceptualization at the bottom. Similarly, the horizontal axis had reflective observation at the right (positive) side and active examination at the left (negative) side. These axes create four quartets and each of the different learning styles including, Converging, Diverging, Assimilating and Accommodating are placed in one of these quartets.

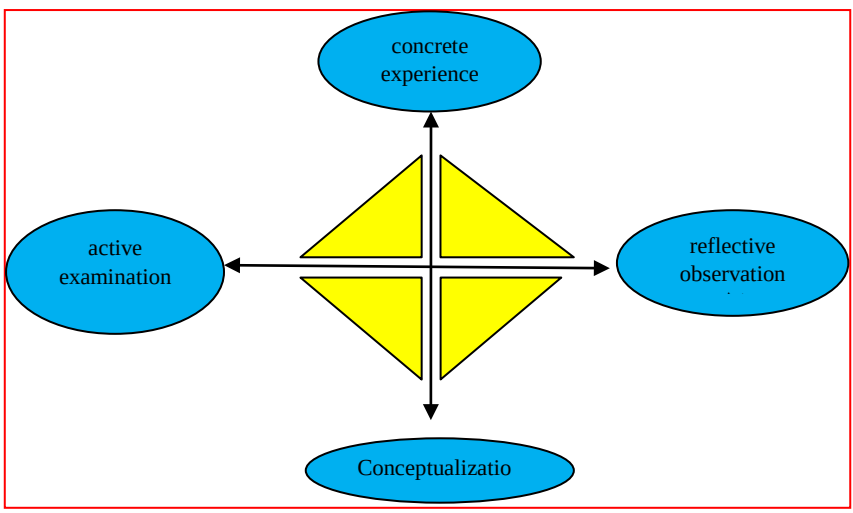

Figure 1. Kolb Learning Style

Information Seeking Anxiety Scale

ISAS was developed by Erfanmanesh, Abrizah, Harun, and Karim, 2012). The reliability of this tool in Iran was 0.9, which indicated the high reliability of it (Erfanmanesh, 2012). This scale consists of six main factors including information source barriers (14 items), computer and internet barriers (6 items), library barriers (11 items), information search barriers (5 items), technical barriers (6 items) and topic selection barriers (5 items), resulting in a total of 47 items. These items are scored based on a Likert scale from 1 to 5. This scale, similar to many psychological tests is a mixture of positive and negative items. Therefore, in order to calculate the total score of the participants, the score of the positive items are inverted and then the sum of the scores is used as the participants' total score. The scores vary in the range of 47 to 235 with higher scores showing higher information seeking anxiety (Erfanmanesh, 2012).

RESULTS

Table 1

Descriptive analysis of quantitative variables

Variable	Mean	SD	Minimum	Maximum
Age	21.19	2.2	18	29
Average	16.11	1.56	12	19
Information Seeking Anxiety	129.27	23.98	57	193

The mean and standard deviation of students' age, average academic record, and information seeking anxiety were 21.19 and 2. 2, 16.11 and 1.66, 12.27 and 23.98, respectively.

Table 2

Descriptive analysis of qualitative variables

Variable	level	Frequency	Percent
Gender	Male	67	37.6
	Female	111	62.4
Marital Status	Single	170	95.5
	Married	8	4.5
Semester	1	18	10.1

Variable	Level	Frequency	Percent
	2	24	13.5
	3	26	14.6
	4	51	28.7
	5	7	3.9
	6	39	21.9
	7	11	6.2
	8	2	1.1
Residence (Dormitory)	Yes	166	93.3
	No	12	6.7
Learning Style	Converging	56	31.5
	Diverging	31	17.4
	Assimilating	62	34.8
	Accommodating	29	16.3
Total		178	100

In terms of gender, 37.6% of participants were male and 62.4% were female. 95.5% were single and 4.5% were married. A majority of participants (28.7%) were in their fourth semester. In terms of residence, 93.3% lived in the dormitory, and only 6.7% lived with their families. In terms of learning style, they had assimilating (34.8%), converging (31.5%), diverging (17.4%), and accommodating (16.3%) styles, respectively.

Table 3

The correlation between information seeking anxiety score with age and academic achievement

		Age	Academic achievement	Information Seeking Anxiety
Age	r	1		
	p-value	0		
Academic	r	-0.068	1	
achievement	p-value	0.368	0	
Information	r	0.036	-0.108	1
Seeking Anxiety	p-value	0.641	0.160	0

Spearman correlation

The correlation between information seeking anxiety score with age and academic achievement was not statistically significant (p-value>0.05).

Table 4

Relationship between learning style and academic achievement

Variable	Group	Freq.	Mean	SD	Min	Max	p-value*
Learning Style	Converging	56	16.12	1.48	12	18	0.49
	Diverging	31	15.89	1.65	13	19	
	Assimilating	62	16.3	1.66	13	19	
	Accommodating	29	15.9	1.4	13	19	

*p-value (Kruskal-Wallis Test)

Students' academic achievement is not different among learning styles (p-value> 0.05), indicating that there is no significant relationship between learning style and academic achievement.

Table 5

Relationship between learning style and information seeking anxiety

Variable	Group	Freq.	Mean	SD	Min	Max	P-value*
Learning Style	Converging	52	131.1	26.79	57	193	0.466
	Diverging	30	134	23.41	70	175	
	Assimilating	60	126.83	18.41	79	157	
	Accommodating	29	126.17	29.13	65	177	

*p-value (Oneway ANOVA)

There is no significant relationship between learning style and information seeking anxiety (p-value> 0.05).

Table 6

The field of study and information seeking anxiety

Variable	Group	Freq.	Mean	SD	Min	Max	p-value*
Field of Study	Radiology	67	132	22.65	74	175	0.375
	Operating Room	54	129.24	23.93	65	193	
	Nursing	46	126.3	25.89	57	177	
	Environmental Health	2	134.5	24.75	117	152	
	Occupational Health	2	102	16.97	90	114	

*p-value (Oneway ANOVA)

There is no significant relationship between the field of study and information seeking anxiety (p-value> 0.05).

Table 7

Relationship between marital status, gender, and residence with information seeking anxiety

Variable		Frequency	Mean	SD	p-value*
Marital Status	Single	163	129.61	24.08	0.406
	Married	8	122.38	22.05	
Gender	Male	63	128.06	23.13	0.615
	Female	108	129.98	24.53	
Residence (Dormitory)	Yes	160	128.94	23.95	0.484
	No	11	134.18	25	

*T-test

There is no significant relationship between marital status, gender, and residence with information seeking anxiety (p-value> 0.05).

Table 8

Relationship between learning style domains with any of the qualitative variables

Variable		Learning Styles							
		Converging		Diverging		Assimilating		Accommodating	
		N	%	N	%	N	%	N	%
Field of Study	Radiology	25	35.7	13	18.6	24	34.3	8	11.4
	Operating Room	14	24.6	9	15.8	22	38.6	12	21.1
	Nursing	13	27.7	9	19.1	16	34	9	19.1
	Environmental Health	2	100	0	0	0	0	0	0
	Occupational Health	2	100	0	0	0	0	0	0
Gender	Male	25	37.3	12	17.9	18	26.9	12	17.9
	Female	31	27.9	19	17.1	44	39.6	17	15.3
Marital Status	Single	56	32.9	28	16.5	58	34.1	28	16.5
	Married	0	0	3	37.5	4	50	1	12.5
Residence (Dormitory)		Yes	54	32.5	27	16.3	57	34.3	28
		No	2	16.7	4	33.3	5	41.7	1

*Results based on test

There is no significant relationship between learning style domains with any of the qualitative variables (p-value>0.05).

DISCUSSION

The validity of an educational system depends on the learning extent of its learners. Learning styles and information anxiety are two of the most important factors influencing learning. Therefore, this study was conducted to investigate the effects of learning styles and information seeking anxiety on academic achievement of students. The results of this study showed that most students in this study used the assimilating learning style, in which the dominant abilities included abstract conceptualization and reflective observation. In general, people using this style give more value to logic theory than practical value (Kolb, David, Boyatzis, Richard, Mainemelis, 2000). The result of this study was in line with the Linares (1999) and Rakoczy and Money (1995).

In his study, Duman who examined the effectiveness of brain-based learning (BBL) in enhancing the student's academic achievement. The assimilating style was used by most students of social sciences, which was dominant over converging, diverging, and accommodating styles (Duman, 2010). However, the dominant learning styles are different in various experiments. For example, in a study on 245 nursing and midwifery students aimed at studying the learning styles based on Kolb's questionnaire, the accommodating style was dominant, followed by assimilating, diverging, and converging styles (D'Amore, James, & Mitchell, 2012). In another study of the elderly in a health center, the prevailing style was accommodating, followed by assimilating, diverging, and converging styles, respectively (Cox, Clutter, Sergakis, & Harris, 2013). In this study, it was concluded that there was no relationship between learning styles and age and gender. In a study by Decoux of nursing students, with the goal of determining learning styles, it was confirmed that there was no significant relationship between students' learning styles and their age and gender (Decoux, 1990). In a study conducted in Australia on first-year nursing students to predict their academic achievement based on learning styles, no relationship was found to exist between ages and learning style (Koch, Salamonson, Rolley, & Davidson, 2011). Also, in the study of Fleming and his colleagues on the second and fourth year nursing students, there was no relationship between learning styles and academic achievement (Fleming, Mckee, & Huntley-Moore, 2011). In some studies, researchers found a significant difference between learning style and academic achievement. For example, the study of Sarabi-Asiabaret al. showed a significant difference between gender and learning styles (Sarabi-Asiabar et al., 2015). Engels found that there was a significant difference between education level and learning style, so that the second year

medical students and general surgery students predominantly used converging and accommodating styles, respectively (Engels & De Gara, 2010). Lynch et al. found a significant relationship between learning styles and academic performance of American medical students who predominantly used converging and assimilating learning styles (Lynch, Woelfl, Steele, & Hanssen, 1998). The findings of this study showed that there was no significant difference between information seeking anxiety and gender, which was in line with Bowers' study (Bowers, 2010). In the study of Akbari-Bourang, Lu and Adkins, there was no difference in the level of anxiety between the two genders (Akbari-Bourang & Rezaian, 2008; Lu & Adkins, 2012). Towell and Lauer did not find any significant difference between males and females regarding computer anxiety (Towell & Lauer, 2001), but Todman argued that women had higher levels of mathematical anxiety and computer anxiety than men (Todman & Day, 2006). Erfanmanesh and Narmanji found that anxiety levels of males were significantly higher than females (Erfanmanesh, 2011; Narmanji & Nowkarizi, 2008). Rafek and colleagues found higher language anxiety among males, and stated that their result was not consistent with previous results (Rafek, Ramli, Iksan, Harith, & Abas, 2014).

In this study, we concluded that there was no significant difference between anxiety levels and the field of study, which was in line with the results of Narmanji and Nowkarizi, (2008); however, Rafiee Moghadam et all and Aghaei et all reached the opposite conclusion (Aghaei, Soleymani, & Rizi, 2017; Rafiee Moghadam & Jafari Mofrad Taheri, 2012). Another result of this study was a lack of a significant difference between information seeking anxiety and academic achievement. The results of various studies have indicated a negative relationship between test anxiety and academic achievement, which is consistent with previous studies (Chapell et al., 2005; Mamasseh, 2013; Farooqi, Ghani, & Spielberger, 2012). However, the results showed that there was an effect of mental stimulation mix in relationship between exam anxiety and academic achievement; in other words, for students with an intrinsic motivation, a higher level of test anxiety did not reduce the student's achievement (McEwan & Goldenberg, 1999). Thus, in confirmation of our study, it was found in a study that female nursing students had higher academic achievement than males (Wan Chik et al., 2012); however, the possible explanation has been based on variables that affect gender, including intrinsic motivation (McEwan & Goldenberg, 1999; Sikhwari, 2014).

CONCLUSION

Therefore, although there was no general relationship between information seeking anxiety and learning styles vis a vis academic achievement, assimilating learning style was preferred by the majority of the students. Moreover, there was no relationship between gender, academic semester, and age in relation to academic achievement. Comparing learning styles with information seeking anxiety was a remarkable feature in this study, indicating that different aspects of learning did not have much effect on anxiety level of individuals, which could be the basis for further research on personality dimensions such as self-concept and intrinsic motivation with information seeking anxiety and academic achievement.

Study Limitations and Further Research

The present study covered students who had passed at least one semester in Behbahan University of medical sciences. Therefore, its results may not be generalized to all public and private universities of Iran, but may be applied to some institutions and medical universities with the same teaching and learning system, strategies, and circumstances. Future research may examine the association between psychological traits and learning styles with the comparison among students of different subjects.

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Authors have no potential conflicts of interests with respect to the research, authorship, and publication of this article

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