RDME

**Res Dev Med Educ, 2013,** 2(1), 35-39

doi:10.5681/rdme.2013.008
http://journals.tbzmed.ac.ir/rdme

# Identifying Students' learning Styles as a Way to Promote Learning Quality

**Jafar Sadegh Tabrizi[1,2*], Omeleilan Alizadeh[2] , Hossein Koshavar[3]**

[1]*Medical Education Research Center, Tabriz University of Medical Sciences, Tabriz, Iran*
[2]*Department of Health Services Management, Faculty of Management and Medical Informatics, Tabriz University of Medical Sciences, Tabriz, Iran*
[3]*Department of Statistics and Epidemiology, Faculty of Health, Tabriz University of Medical Sciences, Tabriz, Iran*

**ARTICLE INFO**

***Article Type***:

Original Research

***Article History***:
Received: 12 Dec. 2012
Revised: 25 Jan. 2013
Accepted: 28 Feb. 2013
ePublished: 30 May 2013

***Keywords***:
Learning style
Kolb
Health care services management

**ABSTRACT**

***Introduction:*** The major part of people's knowledge, skills and abilities are achieved during the complex process called learning. Learning is not simply the product of mere intelligence and capabilities of individual; it also depends on other factors such as personality traits, personal interests, and type of duty and different methods and styles. The understanding of each individual fits with his/her learning style. The aim of this study was to determine the learning styles of Health Care Management students in Tabriz University of Medical Sciences. ***Methods:*** Learning styles of 55 Health Services Management students in Tabriz Health and Nutrition Faculty were evaluated in 2009 using a twelve-question Kolb questionnaire in a descriptive study. The data was analyzed using SPSS. And the frequency of students' learning styles was identified by their ages and averages. ***Results:*** In this study, 69% of the students were female and the dominant learning method was Assimilator (42%). Other styles with a regard to their frequency were Diverge (24%), Coverage (22%) and Accommodator (12%). In the present study, no statistically significant relationship was found in learning styles between the gender ($p = 0.644$) and average ($p = 0.676$) of the students. ***Conclusion:*** Assimilator and Diverge methods were the most common ones among the management students. Hence, to improve the quality of learning in this group of students, it is proposed that the teachers use interactive and creative teaching methods such as small and large group discussion, brain storming, problem solving, debate-based learning, self-learning and lecturing.

## Introduction

Learning is a complex process that most people acquire their knowledge, skills and competences through it. But the fund a mental question is that of how better tolearn.[1] Today learning is the essential issue in training and strong lever in dealing with the social challenges considered the product of learning and enhancing knowledge and skills.[2] Hence, due to social differences and diversity in the workplace, the need for efficient and effective learning increases.[3] Learning is not simply the product of mere intelligence and capabilities of individual, it also depends on other factors such as personality traits, personal interests, and type of duty and different methods and styles. So one of the important and effective factors of the learning is the learning style.

Learning style is not intelligence level or personality trait of the individual but the association of intelligence with personality.[4] Learning styles are beliefs, preferences, and behaviors that can be used by people to help their learning in unique position. In other words, learning styles are not individual's abilities but the preference of a person in receiving information. Learning methods and styles are not instinctive and people must gain them through experience and training like other abilities.5 The understanding of each individual fits with his/her learning style, that is, people have different ways of processing information. Thus, the learning level of the people can be changed with a regard to learning styles, In other words, with particular attention to learning styles and adapting them with teaching and learning process, possibility of further success, higher learning and teaching efficiency, learning satisfaction and confidence of the learners will be higher.[2,5]

According to David Kolb learning styles indicate the individual's preference in using and emphasizing on some learning abilities to the other ones. He believes that learning styles are formed under the influence of heredity factors, prior experiences of life and the environment needs

***Corresponding authors:** Jafar Sadegh Tabrizi, E-mail:js.tabrizi@gmail.com

rooted in the neural and personality structure. Kolb thinks that the learners have two main tasks that they do during learning by separate interactive methods. Their first task is acquiring experiences or understanding information which is done through two methods of Concrete Experience: CE or Abstract Conceptualization: AC. Their second task is Information processing or conversion done by Reflective Observation: RO or Active Experimentation: AE.[4] In general, Kolb believes that there are four key methods of learning:

1. The learner does the practical work at the beginning, Concrete Experience: CE, 2. Then think about its doing, Reflective Observation: RO, 3. After that he makes the theory, Abstract Conceptualization: AC, 4. finally, a test is done about, Active Experimentation: AE.[1,4,6]

Kolb learning methods, acquired from the combination of learning styles and based on preferred models of receiving and processing data of the individual, are classified into four categories:

1. Diverge
2. Accommodator
3. Converge
4. Assimilator[4,6-7]

Diverge style is the combination of Concrete Experience and Reflective Observation learning methods. The people who follow this style have the highest ability to look at the situations objectively from different perspectives and they often learn through observation. The best method for these people is large and small group discussion and brain storming. Accommodator style is the combination of Active Experimentation and Concrete Experience. The people who follow this style have the highest ability to learn first-hand experiences. These people enjoy the implementation of the projects that engage them with the new and challenging experiences and they solve the problems intuitively. The best teaching methods for these people are role playing and computer simulation. Converge style is the combination of Active Experimentation and Abstract Conceptualization. The people who follow this style have the highest ability in the practical application of ideas and theories and prefer complex technical issues. The best teaching method for these people is problem-based learning (PBL). Assimilator style is the combination of Abstract Conceptualization and Reflective Observation. The people who follow this style have the highest ability in combination of great information in the form of the concise and logical one and emphasize on theoretical modeling and abstractions. The best teaching methods for these people is self-studied method of lecturing.[2,4,8-9]

Thus, considering the differences in learning styles, it is recommended that the teaching process be adapted to different styles of teaching to increase the academic performance, learning motivation and satisfaction of learners from learning process. This study was done to identify the learning styles of Health Care Management students in Health and Nutrition Faculty of Tabriz University of Medical Sciences in 2008-2009 to pave the way for next interventions to improve the students' educational quality.

## Method

This descriptive study was done among 55 Health Services Management students in Health and Nutrition Faculty of Tabriz University of Medical Sciences in 2008-2009 (2 and 4 semesters).Kolb-Learning style Inventory questionnaire was used for collecting data. Content validity and reliability of the original questionnaire by David Kolb was translated and examined by Hosseini Lorgany and Razzagh Karami in 1997 in Faculty of Educational Sciences of Tabriz University.2,10 Internal consistency reliability of the 20 students was reviewed using Cronbach's alpha and the correlation coefficient for the axes and modes ranged from 0.7 to 0.9.

This questionnaire contains 12 questions and an instruction for how to answer questions. The way of answering to the questions is that the participants in the study should score the four options on the scale of 1(lowest conformity) to 4(highest conformity) in terms of the conformity of the option with their learning condition. They can assign the same score to one or more options. Each option indicates a teaching method, that is the options are Concrete Experience: CE, Reflective Observation: RO, Abstract Conceptualization: AC and Active Experimentation: AE respectively. Four scores are obtained from the four options of each question, which indicate the four modes of learning as follows:

1. Feeling (CE)
2. Watching (RO)
3. Thinking (AC)
4. Doing (AE)

Two scores are obtained from the subtraction between the two methods or learning modes, that is AC-CE and AE-RO. The two scores are placed on the coordinate axes special for learning styles with different divisions. The vertical axis represents CE and AC learning styles and horizontal axis shows AE and RO learning styles. A point based on the two scores obtained by the subtraction between the two styles is created on the axis. The individual's learning style is determined by the quarter on which the desired point is centered. The first quarter shows Diverge style, the second one Accommodator, the third one Converge and fourth one Assimilator.[1,2,4,7,11] The data were analyzed using SPSS and regarding the questionnaire guide. The students have been provided with the results of the research and researches' suggested methods to know and apply the correct learning styles.

## Results

All students participating in the study completed the questionnaire, of whom 17 were male. Thirty students were in the second semester of their study (54.5%) and 25 of them were in the fourth one (45.5%). Dominant learning style among students was Assimilator (42%) and other styles, based on their frequency, were Diverge (24%), Converge (22%) and Accommodator (12%) respectively (table 1).

As shown in Table 1, there was no statistically significant relationship between the sex and learning styles of students (P=0.644).

As shown in Table 2, the average of about half of the students participating in the study was between 16 and 17.99 and the average of the 15% of them was over 18 and 9% under 14.

In Table 3, the frequency of the learning styles of the students has been shown in terms of their averages and in this study, no statistically significant relationship was found between learning styles and students' averages (P=0.676).

## Discussion

The results of the present study showed that the style used by the majority of students in Health Services Management in Health and Nutrition Faculty, Tabriz were Assimilator (41.8%) and Diverge (25.4%) learning styles. Mean while, a study conducted among nursing students in Qazvin University showed that the styles used by most of the nursing students were Assimilator (53.8%) and Converge (28.9%) learning styles.[12] In another study done in Tabriz University of Medical Sciences to identify the nursing and midwifery students' learning style by Valizadeh, et al (2006), most of the students' learning styles were Converge (54.2%) and Assimilator (32.1%).[7] A separate study conducted to examine the relationship between learning styles of Humanities, Medicineand Engineering students by Hossieni Lorgani (1997), Rahmani Shams (1998) and Yarmohammadi Vasel (1999) showed that the learning styles of the majority of the Humanities, Medicine and Engineering students were Accommodator, Assimilator and Diverge respectively.[10,13-14]

Kolbals obelieves that Diverge style is more suitable for nursing students.[15] Hickson and Baltimore compared the learning style of the male and female. The results of this study showed that a difference was seen between the learning styles of the male and female.[16] In their study, Knight and Elfenbein concluded that there was a difference

**Table 1. Comparison of the Frequency Distribution of the Learning Styles among the Participants in the Study**

| Learning Style | Diverge | Converge | Assimilator | Accommodator | Total |
|---|---|---|---|---|---|
| Female | 8 (21.1%) | 10(26.3%) | 15(39.5%) | 8(13.2%) | 38(100%) |
| Male | 5(29.4%) | 2(11.8%) | 8(47.1%) | 2(11.8%) | 17(100%) |
| Total | 13(23.6%) | 12(21.8%) | 23(41.8%) | 7(12.7%) | 55(100%) |

**Table 2. Frequency Distribution of the average of the participated students in the study**

| Average | Frequency | Percentage |
|---|---|---|
| 12-13.99 | 5 | 9.1 |
| 14-15.99 | 14 | 25.5 |
| 16-17.99 | 28 | 50.9 |
| 18-19.99 | 8 | 14.5 |
| Total | 55 | 100 |

**Table 3. Comparison of the frequency distribution of the of learning styles of students participating in the study in terms of their averages**

| Learning Style | Frequency | Lowest Average | Highest average | Mean average |
|---|---|---|---|---|
| Diverge | 13 | 14.52 | 18.94 | 16.82 |
| Converge | 12 | 13.28 | 18.87 | 16.52 |
| Assimilator | 23 | 12.67 | 18.41 | 16.18 |
| Accommodator | 7 | 13.31 | 18.55 | 16.19 |
| Total | 55 | 12.67 | 18.94 | 16.41 |

between the learning styles of the male and female and it was reported that the learning style of female students focused on feeling rather than thought, that is, they gained higher scores in Concrete Experience in Kolb's Learning StylesQuestionnaire.[17]

To the best of our knowledge, no research on the learning styles of Health Services Management students has been conducted. The high proportion of Assimilator learning styles among students can be related to their getting information in different situations and different ways, such as abstract ideas, working with concepts, providing clear ideas, studying theory, individual study and observing different aspects of an issue. The greatest strength of the assimilator is creating theoretical models. They also have great ability to understand and synthesize information in a concise and logical way and the divergent have the greatest abilities in observing the objective situations from different perspectives, and often learnthroughobservation.[4]

Each learning style or method has its own special strengths and weaknesses that if it is not paid attention, it will result in loss of learning, however, it can be compensated by the use of the strengths of other styles. Evidence shows that even after gaining experience, passing training courses and graduation, learning style can be changed and cover its weaknesses by the strengths of otherstyles.[18]

Cross thinks that learning styles could affect the ability of collecting data, as it affects the interactive ability of the learner with others in a learning environment.[19]

Since management is an interactive profession and it is knowledge, skills and experience based.[6]

Considering the students' learning styles, particularly assimilator used by most of the students, is extremely important. We note that in Assimilator learning style less attention is paid to the subjects which need working with people and since management is people-centered and interactive profession, the faculty members must try to meet the students needs while teaching through considering the weaknesses of students' learning styles and using the strengths of other styles and proper teaching methods to pave the way for increasing the learners' capabilities and competencies in educational and the actual work environments in the future. Slavin argues that identifying the differences between the students and the ability to work with each of the students is the main component in a good teaching and the teachers who identify the different learning styles of students can present the concepts with different methods.[20]

Further studies are needed about teaching methods and strategies to help the University lecturers cover weaknesses of the other styles. On the other hand, enhancing the knowledge and skills of managers and professionals in doing the activities is inevitable. Improving the efficiency and effectiveness is not possible only by focusing on experiences and superficial perceptions but it requires practical work, practicing skills and analysis of conducted activities in an actual environment.[3] There must be a plan that the managers and management students take the advantage of the variety of learning experiences more effectively in their activities during the training courses and are taught how to learn scientifically. Therefore, we can certainly admit that any research and education in this field can be helpful for all students and teachers and will improve their skills and competencies.

## Conclusion

The present study shows that most of the undergraduate students of Health Services management in Tabriz Health and Nutrition Faculty use Assimilator and Diverge learning styles. Therefore, it is suggested that the trainers use interactive and creative methods such as large and small group discussion, brain storming, problem solving, self- learning, debate-based learning and problem-based learning in their teaching to increase the level learning among the students.

## Acknowledgment

We express our appreciation to all Health Services Management students in 2nd and 4th semesters in Tabriz Health and Nutrition Faculty who cooperate with us in this research.

## Competing interests

None to be declared

## References

1. Kalbasi S, Mohsen N, Sharifzadeh GHR, Poursafar A. [Medical students' learning styles in Birjand university of medical sciences]. Strides in Development of Medical Education 2008;5:10-6.
2. Karami R. [To examine the relation of learning styles with study and learning methods in pupil of Charoimagh's high school [Master thesis]]. Tabriz: Faculty of Training Sciences, Tabriz University;2003.
3. Mumford A. [Effective learning]. Safa I, translator. Tehran: Eiz Institute Publisher; 2000.
4. Emamipour S, Shams Esfandabad H. [Learning and cognitive styles: theories and tests]. Tehran: Samt Publisher; 2006.
5. Rasoulynejad SA, Rasoulynejad V. [Learning styles of paramedical students of Kashan University of Medical Sciences (2005)]. Strides in Development of Medical Education 2006;3:26-32.
6. Willcoxsin L, Prosser M. Kolb's learning styles inventory (1985): Review and further study of validity and reliability. British Journal of Educational Psychology1996;66:247-57.
7. Valizadeh L, Fathi azar S, Zamanzadeh V. [Nursing and midwifery students' learning styles in Tabriz Medical University]. Iranian Journal of Medical Education 2006; 6:136-9.
8. Kolb DA, Boyatzis RE, Mainemelis C. Experiential learning theory; previous research and new directions. Cleveland OH: Case Western Reserve University; 1999.

9. Free VAK learning style test [internet]. [cited 2009 May 23]. Available from: http://www.businessball.com/.
10. Hosseini Lorgani M, Seif AA. [Learning style's students with regard to sex, sections and educational methods]. Research and Planning in High Education 2001;7:93-114.
11. Learning style questionnaire and instrument [internet]. [cited 2007Aug 29]. Available from: http://www.RAPIDBI.com/.
12. Sarchami R, Hossaini SM. [Relationship of learning styles with educational progress of nursing students in Qazvin]. The Journal of Qazvin University of Medical Sciences 2004;8: 64-7.
13. Rahmani Shams H. [Comparison of personality types and learning styles in four fields of medicine, engineering, art and humanity sciences among male and female students [Master Thesis]]. Tehran: Faculty of Humanity and Psychology, Allame Tabatabaee University; 2008.
14. Yarmohammadi Vasel M. [Comparison of Cognitive Styles (Diverge, Coverage , Assimilator, Accommodator) in Fields of Medicine, Engineering, Art and Humanity Sciences among Male and Female students, [Master Thesis]]. Faculty of Humanity and Psychology, Allame Tabatabaee University; 1999.
15. Myrick F, Yong O. Nursing perceptorship: connecting practice and education. Philadelphia: Lippincott Wilkins;2005.
16. Hickson J, Baltimore M. Gender related learning style patterns of middle school pupils. School Psychology International 1996;17:59-70.
17. Knight KH, Elfenbein MH, Martin MB. Relationship of Connected and Separate Knowing to the Learning Styles of Kolb, Formal Reasoning, and Intelligence. Sex Roles 1997;37:401-14.
18. Sutcliffe L. An investigation into whether nurses change their learning style according to subject area studied. J Adv Nurs 1993;18:647-58.
19. Cross KP. The Adventures of Education in Wonderland: Implementing Education Reform. PDK (The Phi Delta Kappan) 1987;68:496-502.
20. Slavin RE. Student Team Learning: A Practical Guide to Cooperative Learning. Third Edition. Washington: National Education Association Professional Library;1991.