

## Comparison of learning approaches in successful and unsuccessful students in Arak University of Medical Sciences, 2010

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### Abstract

**Background:** The ability of students to utilize learning approaches is one of the most important and key factors in their academic achievement. This study aimed to determine and compare the learning approaches between two groups of students of Arak University of Medical Sciences.

**Methods:** This is cross-sectional analytic study conducted in Arak University of Medical Sciences in 2010. Participants in this study included 110 students with Grade Point Average above 17 (as successful) and 123 students with GPA below 14 (as unsuccessful) that were selected through census. All participants completed the demographic information questionnaire and the two-part questionnaire of study process (to determine deep and surface learning). Data was analyzed by SPSS software using independent t test.

**Results:** Deep learning approach in students' academic success compared to unsuccessful students was significantly higher ( $01/0p =$ ). Surface learning approach of students' academic compared to unsuccessful students is significantly lower ( $01/0p =$ ). The significant correlation was seen among interest in the field of education, precision and focus in class and average of study hours in 24 hours and GPA of diploma study with academic achievement.

**Conclusion:** The findings of this study indicated that there was statistically significant difference between successful and unsuccessful students in terms of the processes that they use in regarding and learning. Students and teachers have to know more about learning approached in order to train learners with complex thinking and problem-solving ability.

**Key words:** successful students, unsuccessful students, learning approach.

### Introduction

Public access to most universities is such that the number of university students has increased. Increasing the number of students has led to a wide range of students that are different not only in terms of academic preparation, but also in terms of economic - social conditions, racial, and age do to university (Grimes SK, David KC). Today the universities provide services to a larger number of at-risk students than in the past (Jarrell CL). Thus, determining the academic preparation and ability level in this heterogeneous population is very important. One of the most important factors that determine individual's future achievement during his life refers to his academic achievement. Therefore, one of the major concerns of training set refers to providing a favorable learning process and

learning environment for learners in order to prevent them from dropping out of school and reach their academic success to the highest possible level (Jolijn Hendriks, Kuyper, Lubbers, Van der Werf). Educational researchers and psychologists in recent decades have studied the factors affecting academic success. They know effective the influence of a wide range of social, background and behavioral factors on academic achievement. These factors include individual characteristics (e.g. gender, ethnicity), goals, and organizational commitment, and academic and social factors. However, among the academic factors, characteristics such as motivation, academic self-efficiency, learning approaches and study has relationship with academic achievement. Nevertheless, more researches are needed to done on the relationship between those factors and academic achievement (Duff A). Many factors affecting on students' academic achievement that some of them includes the features of social- environment, economic- social, the market needs, and academic preparation (Komarraju, Karau, Schmeck, Jolijn Hendriks, Kuyper, Lubbers, Van der Werf). In the past decades, several studies have been done on the role of intelligence and ability tests in predicting academic performance. But in recent researches about the role of personality factors, especially at higher levels of formal education, more emphasis has been put on predicting academic performance (Shokri, Kadivar, Valiollah, Sangari). Learning approach is another factor that causes individuals' difference in their academic performance. Learning approach indicates individual's preferred way in study and learning (Shokri, Kadivar, Valiollah, Sangari). Learning approaches are mental activities that learners apply during study in order to be able to use them more effectively in receiving, organizing or recalling of information (Park, S). In the past 30 years, educational researchers have done more efforts to infer that students use what strategies or approaches during learning (Duff, Boyle, Dunleavy, Ferguson, Chamorro-Premuzic, Furnham, Lewis). Biggs presented an educational-learning model based on studies of Marton & Saljo which in that two sets of effective factors on learning are recognized. A category of factors is related to learning and including prior knowledge, abilities, and his learning approaches. The second category is related to educational background and includes goals, teaching methods, assessment methods, learning environment and organizational regulations (Biggs, Kember, Leung). Learning approaches demonstrate motivations and strategies related to them that individuals use them to meet their studying needs (Shokri, Kadivar, Valiollah, Sangari). There is a wide resource of learning approach which state that there are two basic approach for learning in higher education: 1 - Deep Learning 2 - Surface Learning (Diseth, 2004, Duff, Boyle, Dunleavy, Ferguson, 2003). Based on this approach, a deep approach is applied with the aim of actual understanding of contents and strategies associated with this approach includes communicate between ideas and utilization of evidence. The dominant idea also refers to interested in innovative ideas. In contrast, surface approach points to reproducing of contents by help of parrot learning strategies and the main motivation of this approach is fear of failure (Shokri O, Kadivar P, Valiollah F, Sangari, 2007). Biggs prepared study process questionnaire based on this model and in 2001 extracted its summarized version that measured two criteria (surface and deep approaches to learning). Results of previous studies indicated that the relationship of learning approaches with academic performance is different (Chamorro-Premuzic T, Furnham A, Lewis M, 2007). Snelgrove S, Slater J (2003) showed a significant and positive relationship between GPA and deep learning approach (in sociology). While there is a negative relationship between average and surface learning approach (in nursing field). In contrast, Duff (2004) indicated that deep and surface learning have negative relationship with course grades (Duff A.2004). Many people believe that learners can explore approaches on their own. But this belief is not based on truth. Learners obtain learning approaches through experience and learning, like other abilities (Ghavidel A,2002). There is general consensus in educational resources that not only the purpose of education is to increase students' information, but also stu-

dents should increase learning capacity coincided with obtaining skills and abilities in order to be able to conclude independently in deal with the new data (Kember D,2001).This subject in current situation particularly seem important more than before because growing extension of science and its various branches is so fast that its education is not possible by institutions such as ministry of science, research and technology. The main responsibility of universities in this era, due to the complexity and variety of science is not "what to learn", but it is "how to learn". In other words, college should teach students "learning methods" and "how to learn". Due to the importance of these strategies, it is necessary to consider and examine the various learning strategies in students' academic achievement (Ghavidel A, 2002). Studies' results have shown that students, who don't effectively acquire these strategies in high school, may experience academic failure at university. Therefore, understanding these strategies in students is essential step for appropriate educational interventions (Saif AA, 2004). It seems that due to the increasing growth of medical knowledge, students should be familiar with learning approaches more than before and be able to conform themselves with fast growing of data. Therefore, due to the different results of previous studies and the importance of learning approaches in medical students and with regard to that most of performed studies on this subject were on non-medical students and the way of lsoa samples choosing was in the form that all students of a field or a college have been studied. This study aimed to compare successful and unsuccessful students in terms of learning approaches in all academic fields in Arak University of Medical Sciences in 2003.

### Method

This is a cross-sectional analytical study that aimed to compare successful and unsuccessful students in terms of learning approaches in Arak University of Medical Sciences in 2003. In this study, all successful and unsuccessful students in Arak University of Medical Sciences were selected by census method. The criteria of entering to study include: being student of Arak University of Medical Sciences, or subsidiary units. –studying in the second semester of the academic year of 2002-2003. - having a GPA higher than 17 (as successful) or less than 14 (unsuccessful). – educated at university at least about two semesters. The criteria of exiting from study include: deterred from cooperating in study for any reason, having disciplinary problems, according to the supervisor's idea, students that have family or special problems so that facing academic failure only for one semester, foreign students. After extracting the list of eligible students, and if they desire to participate in research, informed consent form was completed by them. Then demographic information and the two-part questionnaire of study process were given to students by collage training experts. The necessary coordination was made among training experts for collecting information. The students were assured that their information is completely confidential, and there is no need to insert the name and surname and information will be used only for research purposes. Demographic information questionnaire including age, sex, number of passed units, history of education, field of study, year of entry to university, total average of college, average of diplomas, year of obtaining diploma, residence, parental occupation and their level of education, capita income, and some questions based on 5-point Likert scale, about 24 hours of study, previous familiarity with the study approaches, interest in educational field, the accuracy and focus rate in class and referring rate to the supervisor. Two-part questionnaire of reading process: Revised Study Process Questionnaire two-Factor, Deep and superficial approach is assessed by using 20 questions with 5-point Likert scale. Each of the approaches to learning has ten questions. Score of 1 means "never" and score of 5 means "always". Total scores for each of the two approaches fluctuate from 10 to 50. Getting a high score on the deep approach means that person has internal motivation for learning and uses appropriate strategies for

meaningful learning. While getting a high score on the surface approach indicates that person has external motivation for learning and uses its appropriate strategies like memorization This questionnaire has been reviewed and approved through reliability assessment method and confirmatory factor analysis in Iran (Shokri, Kadivar, Valiollah Sangari, 2007). The results after coding and entering to computer were analyzed through SPSS. In results' descriptive analysis, indicators of mean, median, standard deviation and frequencies were used. In results' analytical analysis, independent t-test was used.

## Results

**Table 1. Comparison of successful and unsuccessful students in terms of demographics and academic information**

Amount of P	Academic failure		Academic achievement			Personal Information
	%	number	%	number		
>0/05	9/75	12	9/09	10	yes	History of familiarity or participation in courses of study and learning
	90/25	111	90/91	100	no	
>0/05	12/19	15	11/81	13	native	Residence
	87/81	108	88/19	97	dormitory	
>0/05	32/52	40	34/54	38	male	Gender
	67/47	83	65/45	72	female	
>0/05	4/87	6	4/54	5	yes	Serious problem that obstacle study
	95/12	117	95/45	100	no	
<0/05*	16/26	20	36/58	45	much	Interested in field of study
	42/27	52	36/58	45	Average	
	13/82	17	13/63	15	less	
	27/64	34	4/54	5	uninterested	
<0/05*	14/63	18	44/54	49	much	Attention and focus during class
	32/50	40	37/27	41	Average	
	20/32	25	45/45	17	less	
	32/52	40	2/72	3	no	
<0/05*	0/42		1/52		Mean	Mean of study hours in 24 hours
	0/35		0/9		SD	
<0/05*	14/13		16/81		mean	Diploma average

A total of 298 eligible students, 233 students completed the questionnaire. Thus the response rate was (78/18%). 110 persons have placed in successful group and 123 persons in unsuccessful

group. From total of students 5/66 percent (155 persons) was female. Participants aged between 19 and 30 years (mean age,  $0/91 \pm 23/43$  years). Students' static in terms of field of study of students included 30 persons (12/88%) Laboratory Medicine, 20 persons (8/59%), Anesthesiology, 14 person (6/01%), health professionals, 11person (4/72) environmental Health, 19 person (8/15%) family Health, 76 person (32/62%) nursing students, 31person (13/3%) midwifery students, 32 person (13/73%) medical students. The high number of nursing students compared to other fields was due to the existence of two subsidiary units (Khomeini and Save) and also accepting students in the two semesters (October-February), in Nursing and Midwifery collage. The average GPA of successful students was  $0/89 \pm 17/89$  and in the academic unsuccessful students was  $0/98 \pm 13/33$ . A significant relationship was observed among interest in the academic major, precision and focus in the classroom, average of study hours in 24 hours and average of diploma with academic achievement.

Outcomes of comparison of successful and unsuccessful learning approach in the two groups are shown in Table 1. Independent t-tests revealed that mean score of deep approach at successful academic students compared to unsuccessful academic students is significantly higher ( $p = 0/01$ ,  $t = 2/85$ ). It also indicated that the surface approach of unsuccessful academic students compared to successful students is significantly higher ( $p = 0/01$ ,  $t=2/66$ ). As shown in the table score mean of deep approach in successful students is ( $29 \pm 6/7$ ) which is higher than mean score of deep approach in unsuccessful students ( $5/3 \pm 23/8$ ).

**Table 2. Mean and standard deviation scores of learning approach in successful and unsuccessful students**

Academic failure		Academic achievement		Students Learning approach
Mean	SD	Mean	SD	
23/89	5/39	29/08	6/74	Deep approach
28/77	5/71	24/31	5/67	Surface approach

### Discussion

This study was conducted to compare successful and unsuccessful academic students in terms of learning approach in Arak University of Medical Sciences. Results showed that the mean score of deep approach in successful students is significantly more than unsuccessful students ( $p= 0/01$ ,  $t = 2/85$ ). Also mean score of surface approach in successful students is significantly less than unsuccessful students ( $p = 0/01$ ,  $t =2/66$ ). Students who were interested in their field, those who had more focus and precision in class and their average of study was more in 24 hours and students who their average of diploma was higher, use deep approach much more than other students ( $p<0/05$ ).

Studies on the relationship between demographic characteristics and academic achievement have shown conflicting results. In this study was not seen any correlation between gender and academic achievement, in this regard is consistent with the results study of Moniri and colleagues (Moniri, Ghalebтарash, Mussavi). But in the study of Khadivzadeh and colleagues and also Falahchay that was done in relation to reasons of academic failure, academic failure of male students was significantly more than female students (Khadiv Zadeh, Seif, Valaie, 1999- Haghdoost, Esmaeili, 2008). In the study of Haghdoost and Esmaili was shown that female students in medical courses were more successful than male students (Haghdoost, Esmaeili, 2008). In this study as studies that was conducted by Saber Firozi and Monir became clear that academic achievement in college has



positive and significant relationship with average of high school (Saber-Firozi, Panjeh-ShahinMousavinasab, Ayatollahi, Rahmani, abbasnia,1990). Students who have been successful in high school, in university also showed more success, and those who had lower grade point averages, had also lower average in the universities and were unsuccessful. (Moniri, Ghalebтарash, Mussavi, 2006, Saber-Firozi, Panjeh-Shahin Mousavinasab, Ayatollahi, Rahmani, abbasnia, 1990). In explaining this subject, studies results have shown that high school students, who are not achieving effective learning and studying strategies, may confront to academic failure in college. (Saif, AA, 2004). Therefore academic achievement of students, who use deep approaches and had higher average grade in high school, seems natural. In this study, students who had more focus and precision in class like study results of Monir and colleagues had academic achievement. They state that with increase of classrooms quality and how teachers teach and use educational aids materials, we can increase accuracy of students (Moniri, Ghalebтарash, Mussavi,2006). One of the major academic achievement factors is interest in field of study. King and Katrlid believed that entrance of interested students to university and their benefit of logical program and human and physical resources such as master, libraries and laboratories are factors that can explain the quality of each educational institution. Among these factors, the presence of interested students is the most effective factor, so that by their interest and tendency to learning, they improve and tolerate other factors and will be learning as well (Hedjazi Y, 2006). In this study, no difference was found between the native and non native students while in some studies, non native students have fewer academic achievements because of several shortcomings in dormitory (Moniri, Ghalebтарash, Mussavi,2006. Aliyari Shoredeli,1990. Dehbozorgi, Mooseli, 2003). Different conclusions about the relationship between demographic characteristics and academic achievement may be due to the effect of more important factors such as learning approaches. Results of present study are consistent with research results of Sadlr - Smith (1998) about comparing the learning approach in students of Hong Kong and English (Sadler-Smith, Tsang,1998), and a survey by Watkins in 1988 on Australian students (Watkins, Hattie,1988) and also a survey by Biggs in 1988 about role of meta-cognition in learning approaches (Biggs,1988). Furthermore, it is consistent with two studies which were done by Shukri (2006) and Ghavidel (2002) in Iran by means of this tool (Shokri, Kadivar, Valiollah, Sangari, 2007. Ghavidel, 2002). However, in all these studies, the relationship between learning approaches and academic achievement is measured in all students of a course or a college. While, in the present study, students were in two groups of successful and unsuccessful ones and were compared in terms of learning approaches with each other. Another difference of this research with other researches is that, in this study employed students who studying in the fields of medical have been studied. While in mentioned researches, non-medical students have been studied. Many researchers believe that it is better instead of rely on assumptions and reports that have been obtained from the experiences of others, planning based on the empirical evidence that comes from the research in educational centers and subsequently perform actions to resolve problems and improve the conditions. He also says that most of studies that was done in this area (Approaches to learning) refer to lack of academic achievement factors and a smaller number of factors that are related to successfulness have been studied and comparison of successful and unsuccessful students have rarely been made (Libutti DD,2005). Most of researchers and experts consider effective the existence of two groups of factors in the use of surface or deep approach; one group of these factors refers to student variables and the next group is related to the effects of teaching environment variables. Factors that are related to student include knowledge and recognition of learning approaches, motivation, culture, age and gender. In addition to these, other factors such as the type Karikolom, masters' confirmation on learning objectives, type of educational assessment, excessive content of course or excessive workload of stu-

dents and management perspectives in selection of learning approach are effective. Latter factors are related to the educational environment (Biggs, Kember, Leung, 2001; Kember, 2001. Asghar-nejad, Khodapanahi, Haidari, 2004). This means that students' learning approach can be effected by change of environmental factors, thereby increasing their academic achievement. Influence of teaching methods and educational techniques (August-Brady, 2005. Diseth, 2003), educational atmosphere effect (Wilson, Fowler, 2005. Trigwell, Prosser, 1991) evaluation methods effect (Leung Mok, Wong D, 2008) and the effect of concept mapping (August-Brady, 2005.) on learning approaches have the positive results. Educational environmental conditions of country and especially medical education are such a way that facilitates the use of surface approach that most of them are as follows: Enormous amounts of educational content in the fields of medical science, masters' teaching methods which was mainly teacher-centered and traditional methods like lecture was used and caused students to become inactive, The evaluation type is mostly multiple choice and the questions are designed in such a way that have evaluated the surface memory and scientific facts, and masters mainly teach based on pre-determined learning objectives and there is no flexibility in training that its main reason refers to educational instructions that is announced from planners. In other words, educational planners and masters should provide conditions for students to tend to deep learning approach. Learning approaches are effective in the achievement of students in Arak University of Medical Sciences. Unfortunately, these strategies are not scientifically and effectively taught to students in any of the educational stages. May be some of students acquire these strategies in strengthening classroom. According to their importance and the role that can have on academic achievement, it is necessary to conduct interventional researches on the impact of these strategies on student learning and academic achievement and through teaching those facilitate their learning.

### **Conclusion**

There was a significant difference in learning approaches in a group of Arak University of Medical Sciences with a grade point average above 17 and who had less than 14. Students with high GPA used deep learning approach. While, unsuccessful students with an average less than 14 used surface approach more. According to that learning approaches and strategies has not been taught to students so far, it is necessary to teach these skills to students through training Workshop. Currently, that the academic failure is less due to the enter of students that their entrance exam grade is higher than past and may be able to increase student success and prevent the waste of human and financial resources.

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