Journal of Medical Education Development, 2018, Vol 11, No 31,63 - 74
http://zums.ac.ir/edujournal/

Zanjan University of Medical Sciences

Comparison of Effect of Two Education Management and Traditional Education Methods on Academic Motivation of Medical Students

Zeinab Sadeghi[1], Ali Arab[2], Reza Mohtashami[3*]

[1] Department of Educational science, Faculty of Humman science, Shahid Rajaee Teacher Training University, Tehran, Iran.
[2] Department of Psychology, Faculty of Psychology & Educational science, Sistan & Baluchestan University, Zahedan, Iran.
[3] Department of internal medicine, Baqiyatallah University, Tehran, Iran.

Article Info

Article Type:
Original Article

Article history:
Received 21 Jan 2018
Accepted 04 Oct 2018
Published 20 Dec 2018

Keywords:
Education Management
Academic Motivation
Medical Students

Abstract

Background & Objective: Motivation and interest play a major role in the learning process, and the student's academic motivation depends on teaching style to some extent. In fact, a student-oriented and flexible learning method can increase the activities of learners. This study aimed to describe the effects of education management on the academic motivation of medical students in education management pattern, compared to the traditional method in the morning report topic.

Materials and Methods: This quasi-experimental study had a pretest-posttest design and was conducted on 30 medical students of Baqiyatallah University of Medical Sciences, Tehran, Iran, randomly divided into two test and control groups. Data were collected using Harter's Holding School questionnaire. Data analysis was performed using descriptive (mean and standard deviation) and inferential (independent t-test and univariate intergroup covariance) statistics.

Results: In this study, the mean and standard deviation of academic motivation in the two groups of education management and traditional method were 92.53±10.126 and 12.68±116.66, respectively. Comparison of d mean score of satisfaction of students in two groups and univariate intergroup covariance (F=6.816 and P=0.015) showed a significant difference between the satisfaction scores of students in the two research groups (α‹0.05).

Conclusion: According to the results of the study, the academic motivation of medical students was higher with the education management method, compared to traditional education. The model of education management led to better education and increased the academic motivation of students in the field of medicine by increasing motivation and reinforcing participatory spirit in these individuals.

Corresponding author:** Reza mohtashami, ***Email: reza_mohtashami1979@bmsu.ac.ir

This article is referenced as follows: Sadeghi Z, Arab A, Mohtashami R. Comparison of Effect of Two Education Management and Traditional Education Methods on Academic Motivation of Medical Students. J Med Educ Dev. 2018; 11 (31) :63-74

[DOR: 20.1001.1.22519521.1397.11.31.4.5]

[DOI: 10.29252/edcj.11.31.63]

Introduction

Motivation is necessary for performing any task by humans, and none of the voluntary activities of humans occurs without motivation (1). In other words, motivation is defined as the desire or willingness to succeed and engage in activities, success in which depends on individual effort and ability (2). One of these activities is learning, the main role of which is motivation. Higher and deeper motivation makes learning more durable (3). Academic motivation is significantly important for students and knowledge seekers. In general, academic motivation is recognized as the internal desire of a learner that guides his behavior toward learning and academic achievement. With academic motivation, students find the mobility required to complete a task or achieve a degree of competence in their work to ultimately be able to succeed in learning and academic achievement (4).

Academic motivation is one of the most important internal motivations, which is different in various people in terms of intensity and level, in a way that people with high motivation put extensive efforts and dedication to achieving their goals, do not become disappointed when failing and select activities that are neither difficult nor easy (5). According to the literature, there is a significant relationship between learning and motivation, which is known by professors. When the learners have adequate motivation to learn, the communication process becomes easy, the comprehension of content gets better, the stress is reduced, and learning is achieved (6).

Various individual and environmental factors affect motivation and learning, which include teaching method, setting realistic goals, choosing the right homework for learning, interaction method of teacher and learner, and level of participation of learners. Many of these factors can be modified and changed through planning, organizing appropriate activities and contributing to teaching and learning (7). One of the resources for motivation and enhancing learning is teaching method (8). The use of traditional teaching and learning methods will no longer be responsive to the present and future generational needs. On the other hand, inactive teaching methods lead to parrot learning and lead to accumulation of irrelevant content in students' minds, depriving them of comprehensible teaching content and resulting in no efforts toward

challenging responses, thereby reducing the motivation of students gradually (9).

Since teachers play a central role in the teaching and learning process, they must be equipped with new teaching patterns to provide good teaching based on the learners' ability (10). One of the new active teaching methods evaluated in the present study in terms of its effectiveness in academic motivation students is education management, defined as ordering, sequencing and directing of the execution stages of curriculum concepts attributes (in the form of categories and scope of learning subjects) in order to improve the learning of students (11).

In fact, education management is an active learning technique that is carried out collaboratively with learners, and the instructor plays the role of learning facilitator. By employing this participatory and team approach, the educational goals of the medical discipline are achieved properly through the development of superior mental skills (13). Participatory work is one of the most important strategies in medical education that can create and strengthen the spirit of cooperation, social skills, and professional skills of medical students (14). The American Medical Institute has emphasized the importance of teamwork in medical education and has prepared special training programs for team education to develop effective treatment teams (15). The poor performance of students in academic subjects and the low level of students' learning motivation negatively affect medical education (16, 17). Therefore, professors should design appropriate strategies for improving the quality of education and academic motivation in students (18). In general, it should be stated that in order to improve the quality of teaching and learning processes, methods should be selected to stimulate learners' motivation and to help them acquire professional capabilities (19).

Most studies support the view that, if the learning method of students fits the teaching style, the motivation for learning and academic achievement will be better (20). Efforts to more involve learners in the teaching-learning process through collaborative learning can be effective in academic motivation (21). Several studies have shown that students prefer using modern teaching methods to learning via traditional teaching methods (22, 24, 23). In a study by Cudney & Ezzell, entitled "evaluation of the impact of teaching methods on student motivation", it was indicated that among the various methods of teaching, the group

[DOR: 20.1001.1.22519521.1397.11.31.4.5]
[DOI: 10.29252/edcj.11.31.63]

project method played a greater role in students' academic motivation (25).

In a research by Gardner on 631 students, a significant relationship was found between the teacher's use of new teaching strategies and the increase in students' motivation for learning a second language (26). On the other hand, results obtained by Haghani et al. demonstrated the high impact of the team and collaborative learning on the learning of students (27). Dynamism in the classroom and the learning environment positively affects the increase of student motivation (28). It was stated in a research that the use of innovation in teaching method by the instructor is effective in increasing the level of learning motivation in students (29).

Considering the fact that the studies performed on teaching methods and their comparison with each other regarding the degree of academic motivation of students in non-medical sciences and other educational levels and educational methods were different and yielded conflicting results, and with regard to the role of physicians in ensuring the health of individuals and the effect of educating motivated and more efficient physicians to improve the community health, this study aimed to describe the academic motivation of medical students (internal department), determine the role of education management (active teaching method) in academic motivation of medical students and compare it to the traditional method (inactive technique) and provide the results to the authorities of the education system of the University of Medical Sciences to be exploited in this regard.

Materials and Methods

This quasi-experimental research had a pretest-posttest design and a control group. Research population included all medical students (interns) of the department of internal surgery of aqiyatallah University of Medical Sciences, Tehran, Iran. In total, 30 subjects were selected and randomly divided into two test and control groups. The 15 subjects in the test group were trained by the teaching management method using the ten orders of the management model of teaching science and education topics, and 15 participants in the control group were trained based on the traditional method of morning report. In addition, the education management model of scientific content was used as 10 steps for the academic motivation of students, as follows:

First step: students were asked to evaluate the chart of the link between titles and sub-titles

[DOR: 20.1001.1.22519521.1397.11.31.4.5]
[DOI: 10.29252/edcj.11.31.63]

[DOR: 20.1001.1.22519521.1397.11.31.4.5]

[DOI: 10.29252/edcj.11.31.63]

of the course topics prepared by themselves at the beginning of the lesson and at the time of roll-call (the first stage of formative evaluation).

Second step: students prepared images from key notes and their contents to draw a desirable map.

Third step: students were scored based on data performed in the first and second orders. A for complete work and B for incomplete work.

Fourth step: we dealt with the students' complaints.

Fifth step: students drew the titles and subtitles of the course content.

Sixth step: students were asked to compare the diagram drew by themselves to the prepared diagram and complete it.

Seventh step: the desirable diagram provided became the basis for compiling the learning curriculum scenario.

Eighth step: the teaching scenario was based on the lesson curriculum, the use of technology and appropriate teaching patterns and the time taken to teach this subject.

Ninth step: the scenario was implemented with the coordination of teaching elements and the use of all teaching patterns.

Tenth step: final assessment was made in completing the formative evaluations (12). It should be noted that both groups were trained by a teacher using a unit course topic, and the subjects of the two groups had no significant difference in terms of age and gender to match the participants of the test and control groups, which showed the homogeneity of the two groups regarding the mentioned variables. The mean GPAs of students from the beginning of the academic semester to its end was 16.1±14.10. Research tools included the Harter's academic motivation questionnaire. It should be pointed out that the modified form of the questionnaire was applied by Lapper et al., which has 33 items and is scored based on a five-point Likert scale (from almost always=5 to never=1) measuring the academic motivation of students. In this respect, the minimum and maximum scores obtained for this questionnaire are 33 and 165, respectively.

The validity and reliability of Harter's scale were confirmed by Borhani and Moghimian in Iran (30, 31). In the present study, the reliability of this tool was estimated at the Cronbach's alpha of 0.79. After conducting the necessary coordination with the education managers and professors and by adhering to the ethical notes (anonymous filling of the questionnaire, obtaining a written informed consent from the subjects, explaining the

objectives of the research to the subjects, and permitting the subjects to withdraw from the study at any time), a justification guide for the relevant teacher was written to use the training management approach and briefing sessions were held and, ambiguities were addressed if required. At the end of the course, another justification guide was written for attracting the cooperation of students, which included the titles and general characteristics of the research and method of use of its results.

Data analysis was performed in SPSS version 16 using statistical tests, mean, standard deviation, independent t-test, and multivariate intragroup covariance. However, the subjects were assessed in terms of normal distribution (lack of significance of Kolmogorov-Smirnov test, P=0.982), homogeneity of regression slope (P=0.80), and homogeneity of variances (lack of significance of F statistic in Levene's test (P=0.545) before the independent t-test and covariance test.

Results

Evaluation of the demographic characteristics of the subjects revealed the homogeneity of the participants of both groups in terms of age (mean age of 23.13 years in age group of 22-25 years with t=0.00 and P=1.00) and gender (2 female and 13 male students in both groups with x2=0.00 and P=1.00) and there was no significant difference in this regard. The independent t-test was applied for comparative evaluation of the effect of each of the education methods, including education management technique in the test group and traditional method in the control group. According to the pretest scores observed in Table 1, the F test was not significant for the variable of academic motivation (P>0.05). Therefore, the hypothesis of homogeneity of variances was confirmed. Results of t-test (t=-0.266, and sig above 0.05) showed a lack of significant difference in mean pretest scores of two methods of education management and traditional (morning report) (P>0.05).

In the evaluation of posttest scores, the F test was significant for the variable of academic motivation (P<0.05). Therefore, while the homogeneity hypothesis of variances was rejected, since the size of both samples was equal, t-test was not sensitive to non-homogeneity of variances and observing this assumption did not affect the calculation of the t-test. Results of t-test (t=2.283 and sig below 0.05) showed a significant difference in mean posttest scores of the two methods of “education management” and “traditional

[DOR: 20.1001.1.22519521.1397.11.31.4.5]
[DOI: 10.29252/edcj.11.31.63]

technique" of morning report. With a confidence interval of 0.95, the mean posttest scores of the education management approach were higher, compared to the posttest scores of the traditional approach (Table 1).

Table 1: Scores of pre- posttest on medical Students' academic motivation

sig	T	df	sig	F	Standard Error of the mean	Standard Deviation	N	Mean		group
0.79	-0.26	28	0.38	1.78	1.12	4.35	15	103.86	**Control group**	**Pre-test**
					1.34	5.21	15	104.33	**Experimental group**	
0.03	2.28	28	0.49	0.48	2.81	10.92	15	126.53	**Control group**	**Post-test**
					3.27	12.68	15	116.66	**Experimental group**	

Considering the moderated mean of both education management and traditional method (126.78 and 116.41, respectively) and results of Table 2, there was a significant difference between the groups in posttest (F=6.81, P=0.015). In other words,thelevel of the figure of significance was below 0.05, which showed a significant difference between the groups after eliminating the effect of posttest (impact of intervention=0.202). It means that 20.2% of thevariance of posttestscores was related to theeffect of the intervention(Table 2).

Table 2: The results of covariance analysis between the experimental and control groups

Partial Eta Squared	sig	F	(Mean square)	(df)	(sum of square)	Covariate analysis
0.188	0.019	6.253	737.347	1	737.347	Pretest
0.202	0.015	6.816	803.693	1	803.693	group
			117.916	27	3183.720	Error

Discussion

In the present study, application of education management significantly increased the academic motivation of students, meaning that the benefits of this method in this regard cannot be denied. Comparison of mean posttest scores demonstrated that the education management method more increased the academic motivation of students. In a research entitled "academic motivation and its association with some factors in medical students of Golestan

[DOR: 20.1001.1.22519521.1397.11.31.4.5]
[DOI: 10.29252/edcj.11.31.63]

[DOR: 20.1001.1.22519521.1397.11.31.4.5]

[DOI: 10.29252/edcj.11.31.63]

Province", there was a higher correlation between various factors involved in academic motivation and educational agent of schools (32). In another study by Yardimci et al. entitled "evaluation of the relationship between study process, motivational resources and motivation problems of nursing students in various educational methods", it was declared that the educational process and resources and motivation problems were affected by the education method. In the mentioned research, it was shown that collaborative and problem-oriented education methods effectively increased the motivation of learners, helping them acquire learning skills (33).

Various other studies have yielded similar results. For instance, Hosseini et al. conducted a research entitled "the effect of collaborative learning on academic motivation" and concluded that the collaborative learning had a significant effect on the academic motivation of students (34). In addition, our findings are in line with the results obtained by Mohammadi et al., who demonstrated that collaborative learning positively affected the academic motivation of students (35). Collaborative learning leads to better learning and higher motivation for the education of learners. Education experts believe that the learners, who active learning, not only learn better but also enjoy learning more than other individuals. One of the most important strategies for enabling learners in the learning process is using study groups, providing an opportunity for discussion, and sharing. Participatory learning actually provides such an opportunity for learners (36). Results of various studies have demonstrated that collaborative learning leads to the spirit of cooperation and joy in learning (19, 23). Therefore, it is suggested that education management pattern, which is collaborative and student-centered, be used to create academic motivation in learners in this and other similar classes.

It can be concluded that the traditional and teacher-centered curriculum, which is the dominant method in most Iranian medical universities, is not responsive to turning learners into students with a high level of motivation. In addition, there is no proper learning environment to turn learners into high-spirit students. In other words, teacher-centered teaching methods in the traditional curriculum have made students less likely to have the choice of resources and learning activities, resulting in less participation in their learning activities. Student immersion in the role of a professional and a sense of

[DOR: 20.1001.1.22519521.1397.11.31.4.5]

[DOI: 10.29252/edcj.11.31.63]

adequacy in performing tasks increase their internal motivation (37). If learners feel that they are able to perform their tasks, they are more motivated to learn and enjoy it (38). Learners, who believe that assignments are interesting, important and valuable, are more involved in cognitive activities and use cognitive strategies and oversight efforts and have a generally higher academic achievement. In the present study, the education management model was used to engage students in the learning process so that they could field that they can finish the job and have higher satisfaction with the learning process. In fact, strengthening the attitude of learners' participation in learning should be considered as the result of interaction between learners and their environment.

Collaborative learning produces the opportunity for learners to discuss issues, ask each other questions, and receive feedback from their teammates. This enables learners to learn more and be more active in activities, which ultimately leads to academic achievement (39). One of the key principles of learning is that if the initial understanding of learners is not shared with others, they may not be able to access new information and concepts (40). Therefore, the most important factor that can be addressed in the present study is the need to pay more attention to the learning environment in the university, which affects the motivation of students. Delegation of authority to students in the education process increases their interest and motivation to learn.

In the education management approach, which is a student-centered method and focuses on dealing with problems by students, students receive and properly process the information. Long-term learning processes are carried out better due to the interference of different brain centers with motivation and memory, and will also be better in retrieving the information learned. While we obtained considerable results which can be properly used to promote the academic motivation of medical students, there were some limitations in the present study. In this regard, one of the major drawbacks was small sample size. In addition, we were unable to control all effective factors (e.g., confounding variables), since the research was performed as a quasi-experiment. Nonetheless, our researchers dedicated efforts to control these factors, especially the effect of posttest, by using proper statistical tests (covariance analysis).

Conclusion

The results of the present study could be

exploited to make better plans to improve the quality of education and correct teaching methods by using education and curriculum management based on problem- and student-centered methods and the role of professors as a facilitator to train students with a higher academic motivation in school of medicine of medical universities. Accordingly, it is recommended that clinical professors and instructors consider the individual differences in providing suitable strategies, such as education management approach, which is the necessity of group cooperation, in a way that educational programs would not only be beneficial for students but also would be pleasant to learn, and the learning of students would be facilitated. Evidently, generalization of the results of the current study to students of other fields and universities must be carried out with caution since the research population was selected from one university. It is also suggested that more extensive studies be conducted on students of other schools to acquire more accurate information on the academic motivation of students.

Acknowledgments

This article was approved by the ethics committee of Baqiyatallah University of Medical Sciences. Hereby, we extend our gratitude to all subjects for assisting us in performing this research.

References

1- Pervin, I.A. Goal concepts in personality and social psychology. UK: Psychology Press.2015

2- Slavin, R.E. Educational Psychology: Theory and practice (8th Ed). New York: Pearson.2006

3- Gbolli,Charles & Keamu, Harriett Pearl. Student academic performance: The role of motivation, strategies, and perceived factors hindering Liberian junior and senior high school students learning. *Education Research International*.2017; Article ID 1789084, 11 Pages, doi: 10.1155/2017/1789084.

4- Reeve J.M.Understanding motivation and emotion. 6th Ed. USA: John Wiley & Sons. 2015

5- Deci, E.L,Ryan, R.M. Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *American Psychologist*,2000;55: 68–78

6- Bengtsson M, Ohlsson B. The nursing and medical students' motivation to attain knowledge. *Nurse Educ Today* 2010;30 (2): 150-6.

7- Kaveh M. Motivation and Learning. *Magazine of e-Learning Distribution In academy (MEDIA) Center of Excellence for Electronic Learning.* 2010;1(1):19-27.[Persian]

8- Firouznia S, Yousefi A, Ghassemi GH. The Relationship between Academic Motivation and Academic Achievement in Medical Students of Isfahan University of Medical Sciences. *Iranian Journal of Medical Education*. 2009;9(1):79-85.[Persian].

9- Aydede, M. N., Kesercioglu, T. The Effect of Active Learning Applications on Students Views about Scientific Knowledge. *Procedia social and behavioral sciences*. 2010; 2: 3783- 3786.

10- Mousaeifard M. Effect of student-centered

teaching method on students' learning, interest and retention from nursing students' point of view in Zanjan. *Journal of Zanjan University of Medical Sciences & Health Services*. 2002; 9(37): 46-51.[Persian]

11- Sadeghi, Z., Behrangi, M R. & Mohtashami, R. Comparison effects of Managing Education Strategy on self-directed learning in morning report subject in medical students. *Educational Development of Jundishapur*. 2016; 7(2): 4-16

12- Behrangi MR, Taghipour Khalflou, A, The Effect of the Model of Managing Education of the Organizational Learning Theory imensions on Empowerment of High School Students. *Managing education in organization.*2012; 11(1):105-34. [Persian]

13- Payami Bousari M, Fathi Azar E, Moosavinasab N. Comparing the Effect of Lecture Combined with Question and Answer, and Team Member Teaching Design on Nursing Students' Achievements. *Iranian Journal of Medical Education*. 2006; 6(2):45-50. [Persian]

14- Shojaii F, Rafee A, Masoumi N, Ebrahimi M. Improving the evaluation process of nursing students group activities by using self and peer assessment. Iranian Journal of Medical Education. 2010; 10(4):512-14. [Persian]

15- Xyrichis A, Ream E. Teamwork: a concept analysis. *Journal of Advanced Nursing*. 2008; 61(2):232-41.

16- Salimi T, Shahbazi L, Mojahed SH, Ahmadieh MH, Dehghanpour MH. Comparing the Effects of Lecture and Work in Small Groups on Nursing Students' Skills in Calculating Medication Dosage. *Iranian Journal of Medical Education*. 2007; 7(1):79-84. [Persian]

17- OmowunmiSola A, EzekielOjo O. Effects of project, inquiry and lecture-demonstration teaching methods on senior secondary students' achievement in separation of mixtures practical test. *Educational Research and Review*.2007; 2(6):124-32.

18- Azadbakht L, Haghighatdoost F, Esmaillzadeh A. Comparing the effect of teaching based on problem solving method versus lecturing method regarding first diet therapy course for students of nutritional science. Iranian Journal of Medical Educ;ation. 2010; 7(2):379-88[Persian]

19- FREIBERG-HOFFMANN, Agustín; Beatriz STOVER, Juliana; DONIS, Natalia. Influence of learning strategies on learning styles: Their impact on academic achievement of college students from Buenos Aires. *Problems of education in the 21st century*. 2017; 75(1):6-18

20- Brown JS, Collins A, Duguid P. Situated cognition and the culture of learning. *Educational Researcher*; 1989; 18(1): 32-42.

21- Tamannaifar M. R., Gandomi Z. Correlation between achievement motivation and academic achievement in university students. *Educ Strategy Med Sci*. 2011; 4 (1):15-19

22- Deshmukh, V., Manchekar, S., & Hardikar, G.Situated Learning Design for e-B. Ed. Course of I-CONSENT: practitioners perspectives, presented in the third annual forum on e-learning.2010. Excellence bringing global Quality to local context, 3-1. February, Dubai: U.A.E.

23- Armestrong, P., Elliot, T., Ronald, J. & Paterson, R. Comparison of traditional and interactive teaching methods in UK emergency department. *Europian Journal of Emergency Medicine*.2009; 16(6): 327-9.

24- West, C., Stain, C., Sanbom, W., & Volicer, B. Computerbased simulation in blended learning curriculum for Hazardous waste site worker health and safety training. *International Journal of Information Communication Technology Education*.2009; 5(1): 62-73.

25- Cudney, Elizabeth A.; Ezzell, Julie M. Evaluating the Impact of Teaching Methods on Student Motivation. *Journal of STEM Education: Innovations and Research*, 20172017; 18(1):32-49

26- Gardner, Robert. C. Teachers motivation, classroom strategy use, students motivation and

second language achievement, 2009.31-34.

27- Haghani F, Ravanipour M. Nursing Students' Point of View on Application of Team Member Teaching Design(TMTD). *Iranian Journal of Medical Education*. 2010; 5(10):807-14. [Persian]

28- Dornyei, Z. & Csizér, K. Ten commandments for motivating language learners: an empirical study. *Language Teaching Research*, 1998; 2: 203-229.

29- Schmidt, R. & Watanabe, Y. "Motivation, strategy use and pedagogical preferences in foreign language learning". In Z. Dörnyei & R. Schmidt(eds.), Motivation and second language acquisition. Honolulu: University of Hawaii Second Language Teaching and Curriculum Center. 2001.

30- Bohrani M. Reliability and validity of the academic motivation scale Hartr. *Journal of Psychological Studies Alzahra University*. 2009;5(1):50-72. [Persian]

31- Moghimian M, Karimi T. The Relationship between Personality Traits and Academic Motivation in Nursing Students. Iran Journal of Nursing (IJN). 2012; 25(75):20-9. [Persian]

32- Rohi, Ghanbar, Hosseini, Seyed Abedin .Educational motivation and its relation with some factors in Students of Golestan University of Medical Sciences. Nursing and Midwifery Faculty.2007. [Persian]

33- Yardimci Figen, Murat Bektaş, Nilay zkütük,Gonca KarayagızMuslu,Gulçin OzalpGerçeker, ZumrutBasbakkal. A study of the relationship between the study process, motivation resources, and motivation problems of nursing students in different educational systems. Nurse Education Today. 2017; 48: 13-18.

34- Hosseini, khadijeh;Navkhasi, Jamil & Shahsavari, Hiva. The effect of cooperative learning on students' academic achievement.*European Journal of Education Studies*.2017; 3(6):.319-328

35- Mohammadi, A.;Yarmohammadi Vasel,M. ; Kord noghabi, R.Jamshidi Moghadam, J. The Effectiveness of Teaching by Participatory Learning Method and Individual Conceptual Mapping of Students' Achievement and Achievement. *Technology of instruction and learning*. 2015. 1 (2). Pp.139-158. [Persian]

36- Tarım, k. The effects of the cooperative learning method supported by multiple intelligence theory on Turkish elementary student's mathematics achievement. *Asia Pacific Educ. Rev*. 2009; 10:465–474.

37- Galea , J., Legarreta, J. L., Martí, A., & Gisbert, M On the design of learning contents for 3d virtual environments. Proceedings of ICTE. International Conference on Information and Communication Technologies in Education. Information Society and Education: Monitoring a Revolution. Spain. ISBN 84-95251-70-0. 2002

38- Hassandra, M., Goudas, M. & Chroni, S.t. Examining factors Associated with intrinsic Motivation in physical education: a qualitatioe approach. *Phychology of Sport and Exercise*. 2003; 4: 211-223.

39- Barkley, E.F, Cross, K.P.& Major, C.H. Collaborative Learning Techniques:AHandbook for college faculty. New York: Jossey-Bass. 2005.

40- National Research Conucil, *How people learn?* Brain, experience and school, Washington, DC: National Academy Press. 2000.

[DOR: 20.1001.1.22519521.1397.11.31.4.5]

[DOI: 10.29252/edcj.11.31.63]