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A REVIEW STUDY ON MODERN METHODS OF CLINICAL MEDICINE EDUCATION

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ABSTRACT

Background and Purpose: Introducing new methods of education special in teaching medical sciences have raised several challenges. Every single method has its own applications, drawbacks and privileges. Accordingly, the present study is a systemic review aiming at measuring effectiveness of new methods of medical education. **Method:** We used all databases and searched in Magiran, SID, Iranmedex, Irandoc, Scopus and Web of Sciences using keywords of modern education, medicine and clinical. **Findings:** After reviewing the databases, we found the outcomes of new teaching methods as follows: Increased rate of learning and satisfaction; Extended interpersonal relationships; Increased interaction among students; Information retention; Extended co operation and participation; Receiving feedbacks and students' self-regulation; Growing rate of students' learning and satisfaction; Popularity and acceptance; Mediation and reflection on the problems; Increased self-concept and intrinsic motivation; Interest and joy in learning; Development of critical thinking; Study skills; Increased quality of study and, Durable learning. On the other hand, the findings revealed that using new methods of medical education would not be efficient unless an eclectic approach, modern and traditional methods, are applied simultaneously.

Keywords: *Teaching, New Methods of Teaching, Multimedia, Wiki, Simulation, Medical Sciences, Systemic Review*

INTRODUCTION

The chief purpose of medical education in each county is required to be educating student's different teaching methods, personality development, increase of confidence, and social development as medicine is a social and human profession.

Additionally, medical education must train students so that they help humans out as much possible as they can. In this regard, several different factors affect effectiveness of teaching and quality of learning through those teaching methods. One of such significant factor is teaching methods used by professors.

As a matter of fact, professors all around the world are engaged in educating students by their exclusive procedures. While, the point matters here is that professors are demanded for reflection upon their teaching experiences and to focus their teaching purpose on quality of students' learning. That is, if professors find a second chance of teaching ask them what they could do to improve quality of teaching and also to hold classes more differently.

Teaching style defines as a specific pattern of ideas and manners the instructor presents and so it puts an emphasis on facilitating role of instructors. Yet, emergence of new methods of teaching particularly in medical sciences education has stimulated challenges. Each of these techniques has some advantages, disadvantages and implications.

In this regard, unfamiliarity with medical sciences instructors with the new teaching methods has led to sometimes inappropriate or in other times excessive application of the method. Accordingly, the present study is an attempt to conduct a comprehensive and practical review of the new methods of medical education. Therefore, the current study aims to answer these questions that:

- Q1: are the new methods of teaching effective on increase of medical students' learning and empowerment?
- Q2: what is the status of new methods of medical sciences education particularly clinical medicine education?

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Beme Education

In order to improve educational system and quality of students' learning, the medical education needs to be changed from an individual opinions medical education to best evidence medical education (BEME). In the recent decades, BEME has been developed as an international institution through systemic review studies; do attempt to promote medical education with respect to best evidence. After expansion of the notion of evidence based medicine (EBM), use of evidence has become widespread as for strengthening of scientific principles of medical interventions. So, development of best evidence medical education (BEME) was the next step for growth of medical education and the public health. In the early 1990s, the EBM paradigm rapidly overwhelmed global medical education. Yet, few years later, a new paradigm of medical education began to appear. It argued that reviewing several different studies performed in the field of education and analyzing effectiveness of happened interventions reduces the probability of errors and consequently adds to the quality of education. Accordingly, best evidence medical education was proposed. Ian Hart and Ronald Harden (1999) developed programs and highlighted the significance of BEME.

At the same year, Dauphinee and Dauphinee (2004) held some sessions on medical education conference in Sweden in order to discuss about employing BEME. In December 1999, a strategic group in London provided a modified definition for BEME. The new description thus emphasized on the point that selection and use of educational methods and approaches must take place by means of the best available evidences (Hamdy, 2003).

Following to establishment of an international institution, BEME selects the members from all around the world. Members are responsible for evaluation of different strategies in medical education benefiting from a systemic review in order to facilitate the process of using the best evidence. The ultimate goal of this foundation is to create and promote the culture of using the best evidence instead of referring to personal opinions in the process of educational decision-making. Moreover, by generation and supporting systemic review studies needed by users globally, BEME institution endeavors to manage best evidence education (Harden, 1999); Hammick *et al.*, 2010).

The decisive emphasis of BEME institution is on taking advantage from the results. In this regard, it provides the results of studies so that professors, curriculum designers and students could benefit from (Hamdy, 2003). BEME experts believe that utilizing the best evidence ascends the quality of students' learning as well as the medial team's capabilities (Hammick and Haig, 2007). Evidence are prepared by BEME could be utilized for designing guidelines for professors to play their educational roles more efficiently and so move towards the best evidence education instead of individual opinions education (Mennin, 2000).

Steps to Application of Beme

- Designing key questions
- Searching resources
- Critical evaluation of evidence

To judge about evidence, a series of criteria have been suggested for a medical instructor.

They consist of study extent, study quality, study strength, and target (Harden, 1999). Table 1 shows the criteria.

Table 1: Used criteria for assessment of evidence

Scoring of evidence is performed through the continuum below.

Evidence based on professional judgment and personal beliefs

Evidence based on educational principles

Evidence based on experience and case study

Evidence based on non-experimental study

Evidence based on quasi-experimental study

Evidence based on controlled experimental study

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Implementation of Evidence, Change and Assessment

Although systemic review of medical education has not significantly developed, using this evidence must be initiated first by instructors. When instructors experience a situation in which they can make decisions for educational interventions, through systemic review of papers using the BEME home page or searching relevant evidence and criticism in other databases, perform according to the best evidence.

Although, critics on papers via criteria of quality, extent, strength and target of study make contributions on selection of the best evidence, various environmental factors affecting the intervention results must also be taken into serious consideration. Establishing the culture and the background for modifications are of two conditions for intervention success.

Multimedia Training

In the recent years, taking advantage from modern technologies like multimedia has opened new horizons against psychology education (World Health Organization: Mental Health: New Understanding, New Hope, 2001). In a cross-cultural study in Germany, Austria and Switzerland, the results revealed that the most common form of teaching methods of psychology to medical students are lecture, and case presentation. Moreover, the optional periods in which courses were presented through E-learning and multimedia training like video seminar (Gray, 1974). Utilizing multimedia techniques encouraged students to further learning as well as simulating them to actively participate in the process of learning. This therefore helps them to have more accurate clinical judgment (Reiner Frank, Florian Frank, Teaching child and adolescent psychiatry to undergraduate medical students, 2010).

The concept of educational course in this method achieves its top quality using voice, image and text transfer technologies making an interactive class among instructor and students. The E-learning has proved to increase up to 25% of learning compared with their traditionally held classes (Senn, 2008). As a matter of fact, multimedia technologies have made considerable contributions to spread of knowledge in the information age. In this regard, the multimedia market is expanding. Taking advantage from multimedia in educational courses bring several different advantages as : benefiting from multiple sense for learning, practice to achieve mastery, facilitating participation in linking concepts together, and facilitating repetition of courses for second application.

Being cost –effective and flexibility of the program according to students’ needs (Razavi, 1990). The main purpose of this technique is to assist students to acquire skills in their highest levels (Engum *et al.*, 2003). In their study, Smith *et al.*, (2011) investigated instructors’ and students’ attitudes as well as students’ behavior in relation to multimedia performance.

The results revealed that there exists no difference among instructors’ and students’ attitudes, but students who received multimedia training needed only more time for learning. Perfeito *et al.*, (2008) conducted a quasi-experimental research about teaching pleural drainage techniques technique to 35 medical students by two classical and multimedia methods. The findings showed no significant difference among the two methods. While, descriptive analyses indicated that computer programs have developed the concept of drainage technique. Examining the mean scores variance of two transitional and artificial training groups, Wu and colleagues found out that a statistically meaningful difference exists among test scores of the theory course.

The findings suggest that in artificial teaching method and use of interactive animations, leave a more considerable impact on the process of learning and deeper understanding of concepts due to making students involved and active (Wu *et al.*, 2006). Paul (1998) states that in the recent decades some modern educational techniques like multimedia tapes and audio tapes have been successfully applied in training of clinical skills. Rouzbehi *et al.*, (2000) worked on a study comparing the effect of educational intermediary and computer CD in teaching anatomy courses to medical studies. They realized a difference in scores of practical and theoretical courses obtained by students who received multimedia trainings of body anatomy, and molage in addition to the theory courses. In fact, the students in anatomy of abdomen and pelvis courses took higher scores than students in control group. But, no statistically meaningful difference was found among the groups. A large pool of research has been conducted on examining different domains multimedia could be used in education. These investigations have reported the

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effectiveness of using multimedia instruments to instructor's and educational policy makers. However, agreements on usefulness of multimedia education vary case by case.

Web Quest Training

Web quest enjoys from innovative, learner-based and learning attempts which utilizes computer technology. By making learners involved and stimulated through computer technologies, Web quest assists learners to look for, analyze and synthesize data in order to generate new knowledge or meaning individually or in group. Actually, web quests are some sort of learner-based approach enhance or/and improve advanced cognitive skilled like analysis, integration, assessment and judgment, critical thinking, searching for problem and solving problem. Web quests engage learners in the process of participatory and group projects learning with the respect to enquiry and construction theory. In addition, there exists a strong association between web quests and multimedia which create critical opportunities for using the internet in teaching and learning processes. However, some scholars believe that their professional trainings lacked necessary quality (Sanford, 2010); Alavi and Abedi, 2008); (Jacobsanford *et al.*, 2007); (Zamanzadeh *et al.*, 2008); (Valizadeh *et al.*, 2008). web quest was invented by Dodge *et al.*, (2007) at University of California, San Diego , provided a constructivist inquiry framework for leaning. The constructivist theory discusses that learners learn through “constructing” an understanding and knowledge of the world through reflection. According to the constructivist theory, the earner need scrutinize potential problems, pose question, review background knowledge and present a strategy for interventions (Concept to Classroom-What is Constructivism 2004). Therefore, learners are active creator of their own knowledge. Web quests in fact encourage learning in advanced levels with regard to the Bloom's taxonomy and give the change of learning through numerous innovative method, and individualized learning opportunity (Sanford, 2010).

Dodge (2007) describes we quests as learning activities on the basis of quest in which whole or a major part of required information by learners are extracted by the internet (Lahaie, 2008); (Dodge, 2007); (Lahaie, 2007). March (2006) defines web quest as a scaffolded learning structure which benefit from connections for access to necessary resources in the internet. They provide an authentic task for stimulating the learners' right for responding an open and main question, development of individual and participatory skills in a group work process. So, it aims to shape the new knowledge for a much deeper understanding. The best web quests do this through encouraging learner to observe deeper conceptual connection, simplifying participation in the real world of learning and reflection over metacognitive processes. In another definition, web quest is seen as an innovative and learner-based approach as well as attempts associated to quest for learning. This approach utilizes computer technologies to involve and motivate learners individually or in group to search, analyze, and synthesize data in order to create new knowledge or meaning (Lahaie, 2008).

Different Types of Web Quest

The time required for implementation of web quests depends upon to expansion of domain and the intended purposes, accordingly two short-term and long-term types of web quests are identified.

Elements of web quests: web quests are not educational theories, while they are an educational model or instrument (Concept to Classroom-What is Constructivism 2004). Successful web quests consist of six elements as:

- Introduction,
- Task
- Process,
- Resources,
- evaluation/assessment and,
- Conclusion.

Task is the most important and challenging part of web quest. This section consists of giving a detailed explanation of a real activity is feasible and interesting. In this part, the learner's interests are included in order to help him/her to manage time and energy for this activity. March (2006) stresses on use of practical and authentic assignment in web quests in order to motivate learners. so, designing a real

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learning environment matters as it reflects complexities of real life in which learners are assumed to take their roles (Lahaie, 2007; Schweiser and Kossow, 2007; Jacobs, 2006). So far, 12 different forms of web quest practices have been identified as shown in Table 2 (Dodge, 2012).

Table 2: Different tasks used in Web quests

consensus building tasks	7	retelling tasks	1
persuasion tasks	8	compilation task	2
self-knowledge tasks	9	mystery tasks	3
analytic tasks	10	journalistic tasks	4
judgmental tasks	11	designing tasks	5
scientific tasks	12	creative product tasks	6

Web quests comprise cognitive activities and learning principles including cooperative learning, scaffolding, problem solving, transformational learning and thinking. Also, they contain principles of authentic assessment, social and cognitive learning, active learning and increased motivation. In this model, learning-teaching, and advanced thinking skills such as content thinking, critical thinking and innovative thinking are also enhanced. Using web quests for teaching accompanies with Bloom’s taxonomy and so they present learner-based methods which essentially are on the basis of constructivist approach. Dodge believes that thinking skills may be employed in using web quests include comparisons, classification, deduction, induction, analyzing errors, constructing support, abstraction, and perspective analyzing. Clearly, after reviewing the Internet resources, in Iran the concept of web quest as remain unknown in Iran and it is an ambiguous notion either in public education or in academic level.

Wiki Trainings

In 2005, Tangient invented Wiki spaces in San Francisco. Today, they are among the most giant hosts for creation of Wiki in the world. The use of Wiki has been developed since 2008. in a way that in 2009 , approximately 2.2 million users had 900,000 registered Wiki out of which 100,000 Wiki belonged to higher education . Also, in 2010, Wiki spaces cooperated with educational platform 2.0 and so the services provided by this platform were added to Wiki spaces. Recently, certain new technologies also named as Web 8.7 have been emerged, which their use in education is increasing. Wiki is one of Web 8.7 tools in which E-learning is very popular. Wikis have simple spaces with easy editing capabilities as well as an interactive context using them enhances learning. the Web2.0 technology or social software aiming at facilitating communication, ensuring knowledge sharing as well as functional-based designing through its tools augments cooperation and participation among users Bosch, 2009, Tripathi and Kumar, 2010). The Web2.0 tools include weblogs, Wikis, social networks, Podcasts, social bookmarking sites, video sharing websites and rich site summary (RSS). Moreover, new technologies of Web8.7 is emerging (Parscal, 2010; Sanders, 2007). Downes was the first one who used Web 2.0 in E-learning (cited in Minocha, 2009). Using Web 2.0 in education in fact increases learners’ participation and interaction (Parscal, 2010). So far, several different studies have examined the application of Web 2.0 in E-learning. Duffy and Bruns (2013) introduced application of weblogs, Wikis, and RSS in education and reported advantages of these tools and their educational applications. Harris *et al.*, (2009) worked on using Web 2.0 in teaching information systems courses. They reported the privileges as participation of students in the learning process, expansion of online classes all around the world, enhanced learning through students’ interaction and competition besides unlimited access to educational materials of Web 2.0 and its tools. However, Harris *et al.*, (2009) believe that utilizing Web 2.0 as an educational instrument could have certain potential shortages such as access to the internet and educational resources, loss of data in the Web, plagiarism and visibility of contents exchanged between students and professors for others.

But if the Web 2.0 technology is appropriately employed, it leads to enhanced learning. Furthermore, Harris *et al.*, (2009) argue that instructors need to be acquainted with using these tools and apply them in teaching of information systems courses if they wish to increase students’ learning. Patasi *et al.*, (2009) confirmed use of podcasts in teaching anatomy principles. Fischer and colleagues (2011) compared use of

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weblogs with traditional education and observed that both methods had identical impact on final performance of students, yet instructors prefer weblogs due to their easiness in education. Clifton and Mann (2011) examined the use of YouTube as a video sharing website. They concluded that application of YouTube enhances students' interaction, improve awareness and facilitate their deep learning. Additionally, training videos are available in every time and place. Though, the experienced limitations consist of unmanageable, falsifying and incorrect training content. Facebook is one of the most well-know social networks have been extensively applied in education. Bosch (2009) investigated on applications of Facebook in education. He reported positive advantages of FB for development and increase of learning. While, it still has certain limitations like inability to send group notification, failure to remove or classify materials and providing limited facilities for classification of materials.

For the first time in 1994, Wikis were developed (Prensky, 2012) and were employed in higher edition in the late 1990s (Martin, 2012). Wikis in fact are a system of content management function actively. So that, users are allowed to create, edit and share materials. Content which are recorded in Wikis could be edited every time and place and users also can get familiar with these changes rapidly (Ioannou, 2011). Using Wikis in E-learning results in increased participation and interaction among students besides developing their knowledge in the process of education (Sandars, 2007). Park *et al.*, (2012) reported using Wikis effective on medical sciences trainings thanks to creation of a participatory environment of teaching and learning.

Jalali and colleagues (2009) investigated on use of Wikis in medical education. They specifically studied use of Medswiki by medical students. The results suggested that Wiki is a helpful tool in medical education if accompanies with some web-transformations, it makes considerable contribution to increase of content and converting them target content. However, the type of Jalali *et al.*, (2009) studied on could not satisfy students' needs and as a result students lacked required confidence to participate in Chen (2008) found out that Wikis as an educational environment could be regarded as a good educational instrument due to possibility of using diverse educational materials.

Hughes *et al.*, (2009) in their research realized that medical students and instructors utilized Wikis more considerably (80%) than other technologies . after Podcasts (25%) and social networks (22%) were most commonly used . another study showed that medical students and graduates were remarkably familiar with the Web 2.0 technology, yet they did not used it frequently. compared to medical graduates, medical students applied the Web2.0 most often. further results indicated that instant messaging service and social networking were more popular (65%) than other technologies . the highest rate of familiarity was reported with social networks like Facebook (45%). additionally, 35% and 34% of participants were familiar with Wikis and weblogs, respectively. Meanwhile, 7% of participants claimed that they were active in development of Wikis (Sandars and Schroter, 2007). In a study at Medical University of Kerman, Khovati *et al.*, (2012) investigated the rate of students' use and familiarity with Web 2.0 tools. The researchers understood that 64% of students were acquainted with Web 2.0 and its technologies and 59% of students had applied at least one of its services. the most frequently used of these services were weblogs (32%) and Wikis (29%). after , social networks (27%) were the mostly common used services. the findings also showed that students were not sufficient familiar with these technologies. as Web 2.0 technologies have potential could be significantly assist enhancement of medical education and better services. Considering the results obtained from application of Web 2.0 and its technologies, we conclude that using these tools could leave positive effect on education and augments learning and students' satisfaction. In case, the preliminary conditions are prepared for using these technologies in academic environment, we may apply Web 2.0 technologies for improving students' learning. It could even be used as supplementary instrument in traditional trainings. Meanwhile, using Wikis as a proper and effective instrument is recommended for enhanced interaction and participation among students as well as transition from teacher-based to learner-based teaching methods.

Mobile Learning

As a new period of E-learning development, mobile learning seeks to offer opportunities for transfer of knowledge, improvement and reinforcement of life-long learning of medical students. Actually, mobile

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learning is one prototype of interactive technologies like other communicative instruments has penetrated into education domain. So, it is generally knowledge as portable or mobile learning. As a matter of fact, mobile phones have enabled learning every time and place and have overlooked restrictions of current traditional and face-to-face education (Geser, 2004). Mobile learning could be regarded as a combination of distance learning and E-learning (Kadirire, 2012). Employing new methods of education, mobile learning enables learning whenever and wherever.

These new techniques include short message system (SMS), advanced messaging system (sending and receiving audio and videos as well as live chat). also, mobile learning take advantages from using online managing of personal information, presenting the right information, and resources and online publications, multimedia messaging system (sending and receiving multimedia files such as images, audio and video files), learning management systems for mobile learning, electronic support systems, performance and implementation in mobile environment through mobile devices like mobile phones, smart phones, manual and smart computers (e.g. personal digital assistants, PDF ad so forth) and media players (Zawacki *et al.*, 2007; Foroushani *et al.*, 2012). In mobile learning students are able to learn from globally different resources. Moreover, students can change the learning environment and benefit from diverse learning experiences. Also, students who use mobile learning can set the pace and time of education, personally (Horton, 2012). The very first investigations on mobile learning were initiated in 2000. However, over a 4 year period, from 2002 to 2006, the pertinent studies expanded, highlighting the development of this type of training besides its spread in most of educational environments (Brown, 2012). Attewell's (2009) study showed that 62% of learners were interested in mobile devices keeping them connected and interactive. Another study by Valova (2005) indicated that mobile learning stimulates such outcomes as more interaction, learners' passion, and cooperation and interaction in educational environment. A few other investigations also advocated the positive impact of mobile learning on students' learning (Mccontha *et al.*, 2008; Kumar and Vigil, 2011). However, few studies have considered the advantages of mobile learning in Iran. Popzan (2010) conducted a quasi-experimental study aiming at identification of the impact of mobile learning on agriculture students' learning. He compared this method with lecture method in Kermanshah province. The findings revealed that mobile learning has more considerable impact on students' learning than lecture method. However, despite abundant advantages of mobile learning, this method still is facing with several challenges in Iran. They include scarcity of experts of designing educational programs especially mobile instruments, unfamiliarity with privileges of learning through this method. Also, negative attitudes organizations hold towards this method worsen the conditions. On the other hand, learning through mobile devices exert further challenges such as smaller mobile screen displays, charging limitations, restriction of SMS length, as well as limitation in providing practical exercises (Popzan, 2010).

Studies performed by Valova and Attewell have shown that by emergence of new technologies in education, learners also have resisted against these new devices. In other words, getting accustomed to traditional trainings is as the main cause of resistance against these technologies. So, Vavola and Attewell (2005) recommend using motivational policies for stimulating students. In a similar study, Sobhaninejad (2009) investigated on strategies for development and use of ICT at high schools in Gilan province. Educational, administrative, recreational, motivational, and managerial were effective according to teachers and students' points of view. Vigil and Kumar (2011) reported that most of countries are pioneers of using mobile education , have applied educational, culturalization and informing strategies in order to encourage students and instructors to use the new technologies. A group of scholars believe that instructors should acquaint students with information management strategies and pertinent technical skills for mobile learning. Thus, they would be able to apply these technologies at home or in work place successfully and in a short time. To do this, planning for development of this technology, positive attitudes managers hold in this regard as well as equipping educational workshops and establishing proper spaces for storing these technologies are mandatory (Horton, 2012; Kon, 2009; Tyan, 2003). Considering this point that medical students hardly employ the new mobile learning devices (as evidence show), besides lack of independent studies in this filed, we aimed to review previously performed studies all

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around the world. Thus, we could identify strategies affect development and efficiency of mobile learning globally.

Assessments Tools of Medical Education Environments

Having lots of different components and interaction among inputs, process and outputs, medical environments have been regarded as an integral part of development of educational programs. Therefore, to assess these environments, scholars have adopted numerous techniques. Due to difference in medical education environments, using techniques specific to these environments is necessary. Because applying inappropriate devices leads to ambiguity in application and so mistakes in interpreting results. There have been frequent instruments for assessment of educational environments. These instruments include Science laboratory environment inventory (SLEI), Constructivist learning environment survey (CLES), Constructivist learning environment survey (ICEQ), what is Happening in this class? (WIHIC), and Questionnaire of teacher interaction (QTI) (Myint, 2001). The results of studies in which the above instruments were used showed the relationship between learning environment, students’ attitude and learning outcomes. Moreover, we should note here that thanks to differences among medical education environments, applying specific instrument for that environment appears critical. Because adoption of inappropriate instrument leads to ambiguity in using the instrument as well as wrong interpretation of results (Soemantri *et al.*, 2010, Miles *et al.*, 2012).

Table 3: Evaluation instruments of clinical educational environments

Full name	year	The name of program	Acronym
Questionnaire from Rotem, Godwin and Du	1995	Rotem <i>et al.</i> ,	SLHS
Learning environment assessment	2006	Roth <i>et al.</i> ,	LEA
Dundee ready education environment measure	2003	Bassaw <i>et al.</i> ,	DREEM
	2005	Filho and Schonhorst	For residents
Operating theatre educational environment measure	2006	Kanashiro <i>et al.</i> ,	OREEM
Surgical theatre educational environment measure	2004	Cassar	STEEM
Anesthetic theatre educational environment measure	2004	Holt and Roff	ATEEM
Practice-based educational environment measure	2005	Mulrooney	PEEM
Postgraduate hospital educational environment measure	2004	Jayashree	PHEEM
	2005	Roff <i>et al.</i> ,	
Ambulatory care learning education environment measure	2012	Riquelme <i>et al.</i> ,	ACLEEM
The dutch residents educational climate test	2011	Boor	D-RECT
Organizational environment assessment	2006	Roth <i>et al.</i> ,	OEA

Quantitative measurements of educational environment in terms of students’ attitude play a considerable role. Since these assessments significantly influence improvement and/or modification of ideal educational environment in clinical scale in general and at medical departments, in specific. Learning environment stands as one salient dimension of medical education programs special attention must be given to in the sciences, pre-clinical and clinical stages. In this regard, two reliable DREEM and PHEEM assessment instruments have been widely utilized for evaluation of medical education environments. So, a large proportion of medical departments have benefited from DREEM and PHEEM for assessment of educational environments as an annual assessment process (Zawawi and Elzubeir, 2012, Miles *et al.*, 2012). Actually, in annual evaluation process, some important aspects of physical educational environment are considered. The aspects comprise emotional environment, psychological security, sense of attachment, interrelationships, sense of confidence, intrinsic and extrinsic motivations and intellectual atmosphere of the environment. What students perceive from educational environments and the dominant

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atmosphere in the early years of studying general medicine seems critical. Additionally, medical students' understanding from hospital units (clinical domain) in the coming years, make remarkable contribution to anticipation of educational behavior and educational outcomes. Therefore, as an important indicator, evaluation of educational environment could be taken into account in the process of quality management. This assessment is practical for determination of educational effectiveness, students' success and satisfaction in the sciences, pre-clinical and clinical as well as medical technical trainings stages.

CONCLUSION

In an attempt to compensate for traditional educations deficiencies, certain new approaches have been emerged either in teaching or learning. Most of these approaches have been proposed by well-known education scholars. To name some which have adopted deductive approach, are problem-solving learning, computer-assisted learning, peer-learning, project-assisted learning, and exploratory learning. The common point here is that almost all of these methods have endeavored to provide original and different methods of education. These methods stress on enhancing learning and its duration as well as increase of confidence among learners (March, 2006).

Considering advances in medical sciences, the need for learning through new methods and applying these methods for enhancement of knowledge and skills for patient care appears crucial. Furthermore, we need to take this point into consideration that long-time learning has known to be a fundamental requirement for gaining clinical skills and/or capabilities. Additionally, as a flexible learning method, E-learning offers access to learning contents every time and place for medical staff. Thus, we recommend that besides using traditional and face-to face methods of education, E-learning methods are used as supplementary resources to traditional methods.

Meanwhile, Wiki teaching methods can function as one of highly contributive techniques. They develop students' creative thinking for identification and solving problems in different educational, research, management and clinical environments of medical sciences. Other modern methods like simulation techniques are able to augment students' learning and satisfaction from teaching methods as well as greater students' participation and learning duration. However, we should bear in mind that no educational method solely is able to solve learning and teaching problems. Therefore, we suggest an eclectic procedure, traditional besides modern methods, as the remedy.

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