



A Study on Health Science Students' Perception of Active Teaching and Learning Methodologies for Creating Excitement in Basic Science Classrooms

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Authors' contributions

This work was carried out in collaboration between both authors. Author AA designed the study, performed the statistical analysis, wrote the protocol and wrote the first draft of the manuscript. Author SAMR managed the analyses of the study and literature searches. Both authors read and approved the final manuscript.

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ABSTRACT

Background: The aim of our study was to assess the conventional approach of education as well as to propose other suitable education means that can be endeavored in conveying facts to the students. Fundamentally, giving education must comprise two chief sections, which is sending and receiving information. Eventually, an educator attempts his best to convey information as the way he comprehended it. The practice of novel approach in scholastic organizations has the possibility not only to advance teaching, but also to embolden individuals, build up supremacy and insights the endeavor to accomplish the human improvement goal for the nation. Teaching practices in advanced tutoring are progressively under the limelight and it is indeterminate in certain shares, if conventional approach is in fact as effectual as they are supposed to be. Since the excellence of teaching is essential to a career accomplishment, it is significant to probe an integer of approaches and procedures. The purpose of novel instruction and teaching approach is crucial if we are to influence and stimulate an outlook of education as well as keenness on the part of students, for

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education while at colleges and undeniably for life -time knowledge.

Aim and Objectives: To analyze the perception of students regarding active learning methodologies (Case-based learning (CBL) /group seminars/role play/teaching using flash cards & interactive CD-ROMs) in basic science courses in Medical and Health University.

Results: A survey based studied was done in medical and health sciences university in UAE involving medical, dental, nursing and pharmacy students.60 % of the students in all University felt that the didactic lectures are their preferred methodology to learn.30% of the students stated that they like the best teaching methodology to be the 'Case based learning'. Others preferred (15 %) Problem Based learning while 10% ,8% and 6% liked best teaching methodology to be the group seminars, teaching using flash cards & interactive CD-ROMs, and role play respectively. Rest had no preference for any specific teaching methodology.

Keywords: *Problem based learning; case-based learning; group seminar; role play; flash cards; interactive CD-ROMs.*

1. INTRODUCTION

According to Bloom's cognitive taxonomy, higher orders of learning, above those of knowledge and comprehension, are crucial for clinical training in any health science. Providing students with more opportunities to apply their knowledge during their didactic training may accelerate or expand the learning in the foundation years. The challenge is using classroom time not for content delivery but for discussion of the application of concepts using real life examples. The learning designs process, as its name suggests, is about creating an educational setting with sessions that are learners centered (rather than teacher centered). The content and the resources should not be the organizing elements as they would be, for example, in many traditional lectures. Instead, they are using to support the learning activities and the student's independent learning. The learning designs process is very useful in providing teachers with an opportunity to create a constructive alignment between learning activities, assessments, and learning outcomes [1]. Case-based learning (CBL)/group seminars/role play/teaching using flash cards & interactive CD-ROMs) are an active-learning strategy, involving small groups in which the group focuses on solving a presented problem. This structured method may be better used to prepare younger learners for unstructured learning activities like problem-based learning (PBL) or in becoming better self-learners. In addition, proponents of CBL argue that this method helps focus the learners on the key points of a clinical case, and encourages a structured approach to clinical problem solving while allowing facilitators to correct any incorrect assumptions of the learner, which does not always happen in PBL. This approach has several advantages over traditional lectures.

CBL seems to be a noble strategy of education and that it could alleviate in acquiring an effectual studying milieu, with the practice of explicit learning items [2-3]. It can prove to be an interesting concept and can help the students in improving their academic performances [4]. It can make the topic simpler to understand and can set their grasp of the topic. It can help them in acquiring analytical thinking, clinical discussing and analytical elucidation [5-6]. The use of case studies in the basic sciences have shown a positive effect on the learning outcomes [7-9]. Books are available that have clinical cases, but much of this material does not appear to have been specifically written to strengthen the student's comprehending of the topic [10-11]. It seems that CBL might confirm to be an alluring task and it can help the students in improving their academic performance. The results of the current study and the feedback of the students can encourage faculty in using CBL as a method of teaching, as it had a lot of positive impact on the students. Problem-based Learning (PBL) involves students being challenged to solve genuine problems from their discipline. In addition to developing general abilities such as analytical thinking and conceptual debating, It is an perfect way for students to employ their speculative intelligence in an reliable way. Problem-based Learning (PBL) involves students being challenged to solve genuine problems from their discipline. In addition to developing general abilities such as analytic thinking and conceptual debating, It is a perfect way for students to employ their speculative intelligence in a reliable way. PBL is frequently used as a method for students to acquire proficiency in the course of resolving a problem, rather than just looking for a 'precise' clarification. PBL is a versatile approach that can be applied in most disciplines, from the practically-focused to the more theoretical. The approach works well as an activity for individuals,

but is especially effective when used with groups because it encourages the students to develop the interpersonal, team-working, creativity and influencing skills.

Group seminars are used as an education method in many colleges all over the world and have been used in our University in various undergraduate programs. The subject selected for seminars, are mostly those that are not incorporated throughout disciplines. These subjects are not learned in any other layout during the course and have specific learning objectives associated with them. They suggest chances for the students to not only incorporate hypothesis through the distinctive medical disciplines but also to search beyond the books and the health sciences field. While the learning outcomes provided to the students for the group seminars are related to the knowledge content of the presentation, the evaluation includes elements of communication skills and teamwork as well.

Role-play is a method that permits students to search credible circumstances by interrelating with other students. Depending on the intent of the activity, students learn the subject by doing a role- play. In earlier studies it is found that role-play is more likely to foster active learning among the students than a conventional lecture and that it has been used commendably in many disciplines [12].

Flash cards and Interactive CD-ROMs as teaching media can allure to diverse intelligence's, enable to transfer abstract information to real settings, provide prospects to students to study on their own pace, increase students' motivation for learning endeavors, make learning fun and appealing, enable effective involvement to education activity, support information transfer with multimedia services such as graphic, picture, video/sound/animation [13].

In our University the curriculum was a discipline based curriculum so the classroom environment was basically based on didactic lectures. A new integrated modular based student-centered curriculum is being introduced in our university for the students taking basic sciences courses and new teaching methodology like case-based learning, problem based learning, role play, teaching by flash cards and CD ROM's is also being introduced. The aim of this study was to evaluate the opinion of students about them and

also to assess and discuss the usefulness of inclusion of Case-based learning (CBL) / group seminars /role play/ teaching using flash cards & interactive CD-ROMs into basic science courses in a medical and health sciences University.

2. AIM AND OBJECTIVES

To analyze the perception of students regarding active learning methodologies (Case-based learning (CBL), Problem based learning (PB), Group seminars, Role play. teaching using flash cards & interactive CD-ROMs in basic science courses in Medical and Health University.

3. MATERIALS AND METHODS

This is a cross sectional questionnaire based study which included students from medical, dental, pharmacy and nursing students from the University in UAE. All students who volunteered to participate were included in the study. The number of students participated were 200 and a random selection of the students were done. Students selected for participation were placed in different centers based on their rotatory postings. A pre-validated self-designed questionnaire was given designed based on the previous literature. A survey was done to analyze about preferences for different teaching and learning methodology, overall feelings of learning, and competency in the topic areas. The survey instrument also included questions related to students' perception of their role as learners and during doing a group work. The format of the survey instruments was a combination of 5-point Likert scale (e g, strongly agree to strongly disagree) items. Descriptive statistics was used to describe demographics and other details regarding perception of students regarding different teaching and learning methodologies.

4. RESULTS

Descriptive analysis of student's responses collected through survey questionnaire was performed and the results are as follows.

Regarding case-based learning 69% agreed that the group seminar was enjoyable, interesting and had potentially a profound effect on them as a learner, but felt that the learning objectives were too many to be included in one active learning

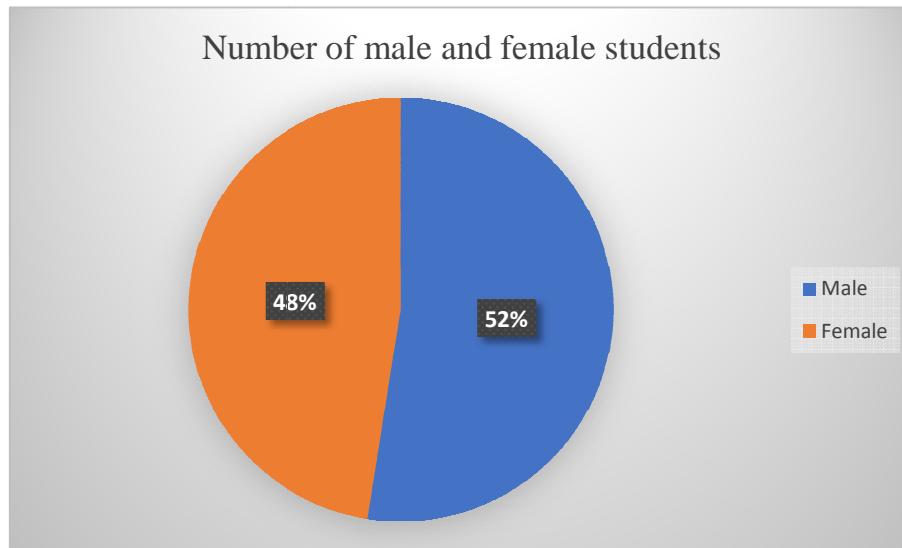


Fig. 1. Number of male and female students

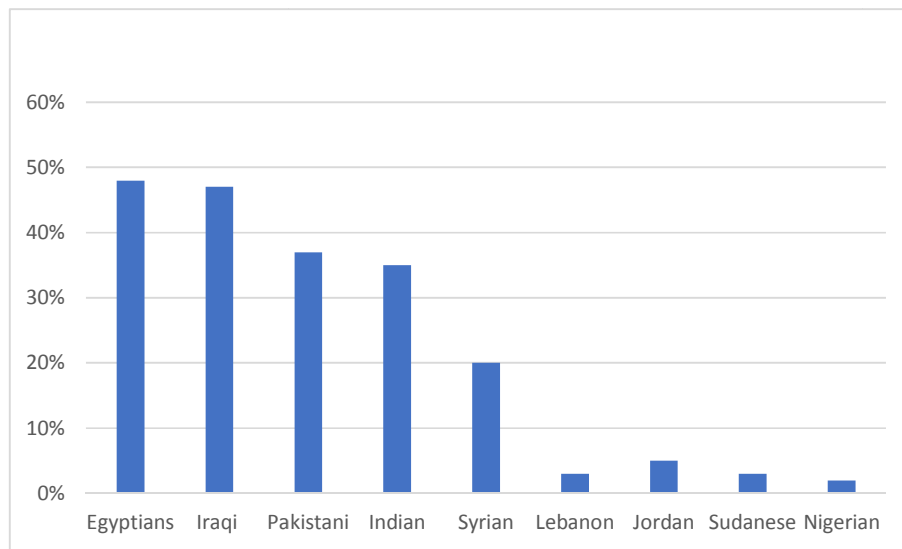


Fig. 2. Different nationalities of students

session. 52% of them found such sessions to be stressful. 78% stated that these learning methodologies will make them an active self-directed learner. 74% thought that such activities will help improve their skills of giving presentations. Overall 76% found such learning activities in pathology to be very good.

61% agreed that the problem based learning was very informative and motivating to the students in their learning. 88% of them mentioned that such type of group activities will help them in learning basic concepts better.

85% thinks that the basic knowledge gained with these learning methodologies will be useful for the clinical practice. 63% thinks that these learning methodologies will enhance their communication skills and critical thinking. 72% mentioned that such activities will improve their skills of interaction with the peers and faculty.

63% strongly agreed that the learning activities like group seminars, role-play, teaching using flash cards & interactive CD ROM's were very informative and motivating to the students in the

learning. 60% of the students in all Universities still feels that didactic lectures are their preferred methodology to learn. 30% of the students from the University taking medical course in UAE stated that they like the best teaching methodology to be the 'Case based learning'. From the students in other colleges, 15% preferred Problem Based learning while 10% ,8% and 6% liked best teaching methodology to be

the group seminars, teaching using flash cards& interactive CD-ROM's, and role- play respectively. Rest had no preference for any specific teaching methodology.

5. DISCUSSION

The tradition of novel and interactive teaching approach in educational universities has the

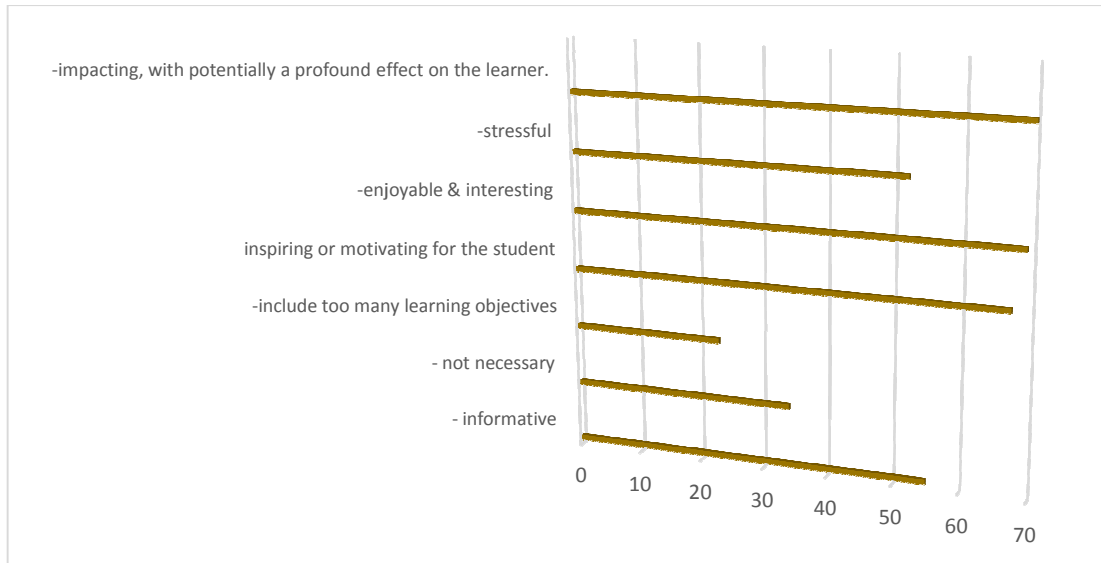


Fig. 3. Students perception regarding Case-based learning, Problem based learning, group seminars, role play and teaching using flash cards and interactive CD-ROM's)

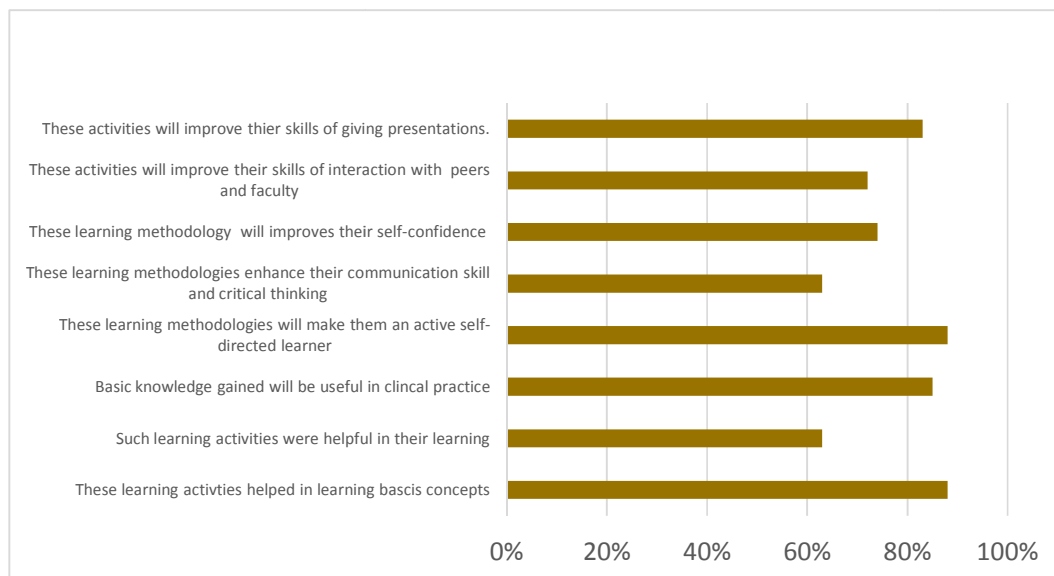


Fig. 4. Information related to of active-learning teaching methodology in pathology course

ability not only to recuperate the excellence of tutoring, but also to embolden students by reinforcing to attain the College mission and aims. There are a number of attributes needed of the novel faculty and to transform their attention from 'chalk and talk' to how students learn and faculty need to inculcate a profound method to learning by giving students different pioneering motivating learning situations in order to create a deeper learning. Learning should be the result of faculty motivation enthusiasm and facilitation expedition and the students' learning-focused activities behavior in which they are engaged involved and for which they assume presume *ownership possession* [1]. This is why it is imperative crucial that all faculty seriously employ in reflective practice and experiment tryout with innovative methods approaches where essential. They should strive to use personalized modified strategies schemes to teach tutor and keenly employ students in course content. In order to accomplish quality excellence in teaching and learning, greater attention must be paid to teaching and learning practice. It is clear that traditional methodologies practices of 'chalk talk and talk-chalk' which are teacher centered are not adequate enough for current students and that effective teaching and learning is not taking place at the desired level. High-quality learning outcomes are achievable provided that students adopt greater control over their own learning. In our study though the traditional conventional method means of didactic lectures was preferred by the students but still they mentioned that various different novel methodology ways of teaching tutoring and learning like case based learning, problem based learning, role- play, teaching by flash cards and CD ROM's is more enjoyable and pleasurable and help assist them to learn in better way. Innovative Novel teaching and learning methodologies approaches such as role-playing, portfolio development and problem-based learning (PBL) are very useful in addressing the rapid technological advances and developing workplaces that will be necessary in the foreseeable predictable future. The role of education teaching is to ensure that while academic scholastic staff do teach what is taught should also be understandable to students emanating from traditionally and linguistically diverse backgrounds and that they rapidly become acquainted with the foreseeable standards. Faculty should relate themselves to employ novel methods so that the students' learning process is

as free-flowing as possible and that the methodology they adopt is favorable to learning.

A similar study on CBL showed that 82% of the students felt that these sessions were a useful method of providing clinical correlations [14-15]. And it was also noted that most students enjoy the active participation and consider the process to be clinically relevant & stimulating similar to our case. Studies have shown that the students in a problem-based curriculum are provided with many clues and directions that directly or indirectly play a role in their decisions on what to study, such as reference literature, course objectives, lectures and tests [16]. In addition, students become better self-directed learners over the four curriculum years. This can help them become lifelong learners. In a review of study on advantages of problem based learning, it was found that there is evidence towards increased retention of knowledge, enhancement of integration of basic science concepts into clinical problems, the development advancement of self-directed learning skills, and enhancement augmentation of students' intrinsic basic interest concern in the subject discipline matter in PBL [17]. A meta-analysis of studies showed a general usual approach methodology showing exhibiting superiority supremacy of PBL over the conventional methods. PBL also promotes interdepartmental interdisciplinary collaboration association specially between basic & clinical scientists [18-20]. It had been noticed in studies that teaching learning of students suffered because of this method approach. Although he emphasized the importance of learning occurring through this method approach, but to increase its effectiveness he proposed a hybrid method [21]. We in our study also used a hybrid method whereby we were not covering the entire syllabus in CBL but few important concepts hypothesis were taken as CBL. Another study showed that PBL and traditional conventional curricula are different concepts, and the two will gradually merge [22]. It has been established in most universities by many teachers and students that the conventional traditional lecture approach method in classroom is of restricted efficacy in both teaching and learning. In such a lecture, students assume take up a passive role and their concentration attention fades off after 15-20 minutes. Students must be endowed to be able to withstand the global challenges encounters of the 21st century. A key noteworthy performance indicator of any

teaching institution institute is the teaching quality excellence, especially teaching and learning areas. Meaningful learning only takes place once a student is engaged in using ideas and information, testing of ideas and evidence, creation of innovative ideas philosophies and evidences, facilitation of personal development and improvement of a student's aptitude to plan and manage accomplish their learning experience proficiency. Lecturing is thus a complex, exciting, challenging impudent and interactive skill whose main aim is to create a learning state in which knowledge is imparted and in which understanding and skills are developed. Students are motivated to explore the discipline they have selected. Unfortunately, many students fail to complete their studies at university, but may still benefit from skills that are developed while in the University, especially confidence they obtain from new life experiences. This is why it is domineering that all faculty should strive to use personalized tailored methods to teach and enthusiastically employ learners in course content. Studies have shown that in order to achieve quality, excellent teaching and learning; greater attention must be paid given to teaching and learning practice [23]. In classes lessons where we have use interactive teaching and learning methodology, students become active team-players and role-players. There is a need to have prior knowledge on problem-solving and critical thinking methods in order for this approach to work. It is shown that interactive teaching is superior to didactic teaching and that the former one greatly improves academic success and promotes the inclusion of students who generally feel like outsider's interlopers [24]. In role-playing, the concept is to create a workplace scenario that students could encounter in actual life. Such a methodology will allow students to acquire their social skills which are essential for the tourism and hospitality profession. Role-playing is an assessment and synthesis blend of the teaching material while practically allowing students to learn something by 'doing something'. It must be emphasized at the outset that it is an opportunity to participate in the learning process and that their participation will expand their sense of belonging, motivation and accomplishment. Such exercise promotes understanding and deep-learning that are the prerequisites for long-term knowledge acquisition [25]. It is important to note that these methods permit for greater student learner self-reflection while simultaneously at the same time it also enhancing other areas of the learning process.

Technology assistance which intend to exterminate learners' negative opinions, approaches and unwillingness about learning can make learning more effective. Since technology supported learning environments deliver multidimensional transfer of learning content to learners. The resemblance between learning environment and real life are one of the important issues to exemplify and make information to be acquired meaningful, to enable interaction, and to increase learners accomplishment. The technology, which provides learning environments according to learners personalities, increases learning excellence and provides lastingness. Today majority of the learners at learning processes have opinions based on instant contentment. Interactive learning media can be categorized in terms of functions as interactive environments, simulation and virtual reality environments. Interactive learning media can influence learning processes positively. Flash cards and Interactive CD-ROMs as learning media can allure to different senses, enable to transfer abstract information to real situations, give chances to learners to study on their own stride, increase learners enthusiasm for learning accomplishment, make learning enjoyable and motivating, allow active contribution to learning process, assisting information transfer with multimedia amenities such as graphics / pictures/video/animation [26]. the similar findings were found in our study.

6. CONCLUSIONS

Any innovative novel teaching and learning methodology is not a quick rapid fix or universal worldwide remedy. It cannot replace substitute a conventional teaching methodology in education but rather supports it. However, it is clear from our study that innovative novel teaching methodology do provide students learners with greater more experience in dealing with the world of work related issues they encounter. And also, our study showed that the Innovative teaching methodology will lead to student's in the learning society culture in which the creative innovative and intellectual intelligent abilities of them will allow to meet their career goals and can make them a life- long learners.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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