

Tutors Evaluation of Integrated Medical Learning in Karbala Medical College

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Abstract

Background: The main task of the tutor in problem-based learning (PBL) is to facilitate group discussion through increasing their skills and monitoring their progress. Several studies had investigated PBL aspects, but few have explored the tutors knowledge and attitude towards the program.

Methods: All tutors (n=22) involved in the newly adapted 'Integrated Learning curriculum' in Kerbala Medical college during the academic year 2014-2015 voluntarily answered a questionnaire published in 'ABC of PBL in medicine' periodical covering tutors, students and session characteristics. Descriptive statistics and Chi-square test was used for analysis. $P < 0.05$ was considered as statistically significant.

Results: Most tutors viewed PBL positively in the main tested disciplines (tutors, students, and session characteristics). The highest positive rate was found for students' preparation and keeping continuous PBL discussion, followed by well-structured sessions, while the least positive answers was for session progress. For means comparison, the lowest mean was related to two questions concerning students' characteristics. In spite of a greatly high positive attitude, few shortcomings were pointed out. These included session progress, speaking more than the tutor likes and speaking to one or two students instead of speaking to the whole group.

Conclusion: In general, most participants (>90%) answered the study questionnaire positively which indicates a great satisfaction and positive evaluation; however, the main mentioned shortcoming was related to insufficient training and short experience with PBL.

Keywords: PROBLEM BASED LEARNING, TUTORS, INTEGRATED CURRICULUM, MEDICAL STUDENTS, LEARNING

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Introduction

Teaching and learning in medical schools have a fundamental importance that may differ from other teaching premises or scientific schools. What is different is clarified in the following example: when a higher education committee tried to examine candidates for the position of a dean of medical college, a detrimental question was whether the candidate would allow a graduate from his college to treat him.

In another word, medical colleges are expected to graduate professionals whose decisions are translated into years of human life. So, one can say that doctors' work relied on a combination of a hypothetical-deductive reasoning process and expert knowledge in multiple domains. The conventional teaching discipline provides specific content (anatomy, neurology, pharmacology, psychology, etc.) separately, using a "traditional" lecture approach, and this approach did little to provide learners with a context for the content or for its clinical application (1). Additionally, the traditional approach was faced with the rapidly changing and expanding knowledge base in science and medicine, which was driving changes in both

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theory and practice (2).

Generally speaking, different learning theories focus on how learners construct their own meaning. Learning theories are conceptual frameworks describing how information is absorbed, processed, and retained during learning. Cognitive, emotional, and environmental influences, as well as prior experience, all play a part in how understanding is acquired or changed and knowledge and skills are retained. In this respect, constructivism theory concentrates on how students incorporate new gained knowledge with prior knowledge to create new meanings and this is applied in Problem Based Learning (PBL) system. Here, the instructor manages problem solving and structured search activities, especially with small group learning strategies and provide opportunities for students to connect new information to their own body of knowledge. On the other hand, behaviourism theory focuses only on objectively observable behaviours and discounts mental activities. Here the instructor role is to tailor their teaching strategies to student responses and encourage students to analyse, interpret, and predict information. Students are assessed primarily through tests. In addition, too many other theories tried to describe learning process in a few other models which need larger space to discuss. For centuries, medical education like other scientific teaching depended on lectures that focuses on identifying the elements that the learner must know, and learners acquire concepts in isolation; knowledge which often remains inert, and was soon realized as an ineffective and inhumane student preparation (3, 4). In addition to the need for medical education to become more students' centered, it also needs to match the changing healthcare needs of the population (5).

Keeping learning theories in mind, many studies pointed out the true defects in the routine education system and a tremendous cry for urgent changes in the educational system was initiated in the 1950s and 1960s

(6). Within this dilemma, integrated systems of teaching and PBL was developed where small groups of students are presented with contextual situations and asked to define the problem, decide what skills and resources are necessary to investigate the problem and then pose possible solutions (7). So PBL course starts with the problem rather than with exposition of disciplinary knowledge. It is a learning system which integrates everyday life demands into the learning process through immediate problem-centered approach and this will initiate an internal motivation drive on the learner's side (8, 9). In addition to the more enjoyable and motivational format, benefits include, flexible knowledge, improved communication, collaborative skills and self-directed learning skills (10). Other benefits gained by learner include: Respect for colleagues' views, critical evaluation of literature and presentation of their own skills (11). By the end, students will acquire knowledge, skills and attitudes through a staged sequence of problems presented in sequence. Historically, PBL started in 1969 when Howard Barrows initiated the PBL in the medical college in McMaster University in Canada to make medical education more interesting and relevant for the students and was adapted by large expanding number of premises latter and was endorsed by most organizations (12-14). However, PBL is not free from disadvantages such as problems with inefficient tutors, the need for human and other resources such as role models and the problem of information overload (9).

The roles of the tutor in PBL include facilitation of the learning process, assisting and ensuring students' progress on the right track (15). The teacher coordinates, facilitates, and pilots this cycle of activity, then teaches skills within that context. Inviting students into a learning experience that allows them to reckon it in their own terms, this teaching approach provides the opportunity for active learning (16). The role of tutors in PBL is not about detailed content or what the group works on,

it is more about how the group approaches big concepts, identifies open ended questions about the presented problem that encourage group discussion and how the group identifies their learning needs and what they need to know (1). It is important to understand the correct meaning of the 'student-centered' idiom which does not indicate that the tutor is inactive. In fact, the students' self-motivation must be balanced against the need for timely, provoking comments that guide learning without imparting facts or intervening by much specialist content expertise less than necessary for students' discussions (5). Compared to conventional learning, which is more often lecture-based learning focusing on factual knowledge and memorization, PBL usually provides higher chance for application of knowledge acquired from basic science to the working situation (8). Extensive research investigated the effect of tutors and facilitators on PBL success since PBL application in the 1960s until now (17, 18). A common obstacle is that PBL tutors usually feel that it is not that easy to change their teaching style from conventional lecture-based format to the PBL format (19, 20).

In most developing countries such as Iraq, the undergraduate medical curriculum is still divided into pre-clinical and clinical phases, with limited integration (21). Few medical schools in Iraq (such as Kerbala, Al-Kindi, and Kufa medical colleges) started recent changes to an integrated system using PBL system in their curriculums; however different methods with variable degree of changes were introduced. A recent article discussed the recent curricular reforms in Iraq (21), and stressed the need to be dynamic and responsive to external influences and changes in order to ensure best knowledge, skills and attitudes required by future doctors. However the author did not mentioned PBL and discussed integrated learning as a minor change towards body systems clustered lectures. The changes in the curriculum in Kerbala Medical College are genuine changes and the system

depends on PBL curriculum. The preclinical curriculum, entitled the "Foundation of Medicine" and "Human Biology", occupies the first year of the undergraduate curriculum. Next two years consist of nine system based units (for example fluids and electrolytes; endocrinology, metabolism, cardiology and nutrition) that focus on normal structure and function, with a progression to abnormal structure and function, disease prevention and therapy. In addition, many units focus on patients and their families, and permit the early introduction of students into the clinical setting and communication skills in medicine. The small groups meet in two PBL sessions weekly in addition to variable practical and skill laboratories related to the clinical case scenario presented and discussed in the PBL session at the beginning of each week. This study aimed at evaluating the locally developed PBL curriculum from tutors' perspectives about three main disciplines (tutor, students and sessions).

Methods

All tutors involved in the medical program during the academic year 2014-2015 were included in this survey. The study was approved by the Ethical Review Board and the dean in Kerbala Medical College, Iraq. A short introductory talk was presented prior to this anonymous survey with all participants who worked as tutors for at least one year with the groups of second year students. The tutors participated voluntarily, when confidentiality and anonymity of the study was assured. English language without translation was used in the survey. The Questionnaire used in the study based on a questionnaire published by David Jacques (22), and the answers consisted of a five-point Likert-type scale. The sequence of the answers was reversed in one half of the questions (questions 2, 7, 8, 9, 10) to change the pattern of answers and ensure non-biased response. The questionnaire consisted of ten questions

covering three main disciplines related to tutor, students and sessions characteristics. The sample consisted of twenty two tutors who represent all the tutors working to facilitate the PBL sessions for the second year students. The study was conducted at the end of the academic year 2014-2015 in June 2015, just when the tutors finished one year of designed sessions to avoid any recall bias and confirm that the answers were as valid as possible. The tutors are responsible for guiding the PBL sessions of small groups of 12-14 students. All tutors were experienced doctors with many years of teaching experience ranging between 3 and 15 year of teaching experience. The students' enrolment into the groups is random; however gender proportion is around its total among the whole study year students. The tutor responsibility for the groups is also randomly distributed and is not related to their experience, as the number of the groups is large and the PBL problems disciplines are wide, however a biannual change is undertaken to ascertain wider benefit. No gender or other demographic variables were included in the questionnaire because of the small sample size and to ensure anonymity of the participants.

Results

The response rate was 100% (22 out of 22 tutors). The study questionnaire covered three main disciplines in ten questions (Q

concerning tutors' characteristics (Q 1, 5, 7, 8), students' characteristics (Q 3, 4, 10) and session characteristics (Q 2, 6, 9).

An important issue in the analysis of self-reported questionnaire is the internal reliability that measures the effectiveness of the measurement tool used in the study. The internal reliability of the total questions was 0.6, while different study domains the internal reliability indices were also acceptable (0.6-0.8). The answers were categorised into negative answers (<3 Likert scale) and positive answers (≥ 3 Likert scale) and the result is shown in Table 1. The highest rate of positive answer was found with Q 4 (Students' preparation was good) and 6 (Keeping continuous discussion) where no negative answer was given. Next was the proportion of positive answers in Q 9 (Session well structured), followed by answers for Q 3, 5, 7, 10). Least positive answers were encountered in Q 2 (Session progress well) and 8 (Speaking to one or two students).

On a Likert scale of 5, the mean for the answers for the ten questions ranged between 1.86 and 2.62, while the standard deviation ranged between 0.57 and 1.24 (Table 2). The mean of the three main disciplines of questions concerned tutors' characteristics, students' characteristics and session characteristics were 2.71, 2.98 and 3.06, respectively (Table 2). Comparing the mean score of the answers showed; after excluding those with total positive answers (Q 4, 6); that the lowest mean

Table 1: The distribution of positive and negative tutors' answers to study questions in Kerbala Medical College in 2015 (n=22)

| Questions | Positive answer | Percentage | Negative answer | Percentage | Total |
|--|-----------------|------------|-----------------|------------|-------|
| 1 I find it easy to learn students' names | 19 | 86.36 | 3 | 13.64 | 22 |
| 2 My sessions start working slowly | 5 | 22.73 | 17 | 77.27 | 22 |
| 3 I find it easy to get students to contribute | 20 | 90.91 | 2 | 9.09 | 22 |
| 4 Most students prepare well | 22 | 100.00 | 0 | 0.00 | 22 |
| 5 I find it easy to keep discussion to the point | 20 | 90.91 | 2 | 9.09 | 22 |
| 6 I find it easy to keep the discussion going | 22 | 100.00 | 0 | 0.00 | 22 |
| 7 I speak more than I would like to | 3 | 13.64 | 19 | 86.36 | 22 |
| 8 I find myself talking to one or two students | 5 | 22.73 | 17 | 77.27 | 22 |
| 9 Sessions lack structure | 1 | 4.55 | 21 | 95.45 | 22 |
| 10 My students seldom feel free to express their views | 2 | 9.09 | 20 | 90.91 | 22 |

Table 2: Mean score (scale 1–5) and corresponding standard deviation (SD) for participants answers to the study ten questions and the three the main disciplines in Kerbala Medical College in 2015 (n=22)

| Subject | Mean | SD |
|--|------|-------|
| 1 I find it easy to learn students' names | 2.24 | 1.14 |
| 2 My sessions start working slowly | 2.62 | 1.24 |
| 3 I find it easy to get students to contribute | 2.05 | 1.16 |
| 4 Most students prepare well | 2.19 | 0.75 |
| 5 I find it easy to keep discussion to the point | 2.38 | 0.80 |
| 6 I find it easy to keep the discussion going | 1.86 | 0.57 |
| 7 I speak more than I would like to | 2.33 | 1.11 |
| 8 I find myself talking to one or two students | 2.29 | 1.23 |
| 9 Sessions lack structure | 2.14 | 0.85 |
| 10 My students seldom feel free to express their views | 2.05 | 1.07 |
| 11 Session characteristics | 3.06 | 0.597 |
| 12 Tutors characteristics | 2.98 | 0.607 |
| 13 Students characteristics | 2.71 | 0.566 |

was encountered for Q3 and Q10 and both were within students' characteristics paradigm. The highest mean was for Q2 'My sessions start working slowly'. For Standard deviation, and when total positive answers were excluded, the highest value was encountered with Q 2 (Session progress well) and Q8 (Speaking to one or two students).

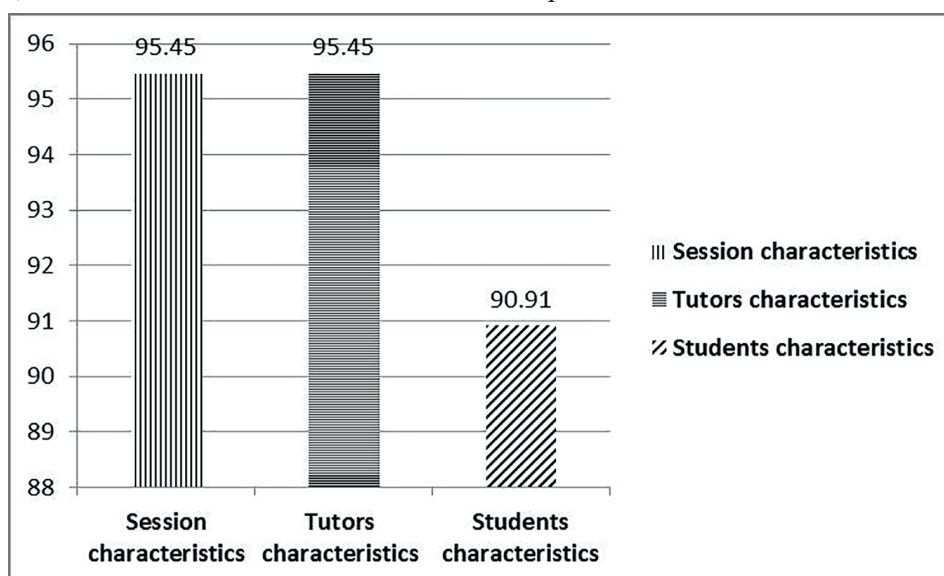
For the three main disciplines, very high positive proportion was found as the differences were obliterated through summation of positive and negative answers for the questions within each (Table 2, Figure 1). Among these three disciplines, students' characteristics showed

the lowest rates of positive answers and the lowest standard deviation.

Table 2: Mean score (scale 1–5) and corresponding standard deviation (SD) for participants answers to the study ten questions and the three the main disciplines in Kerbala Medical College in 2015 (n=22).

In general, high positive proportions (>90%) were found in the answers to the study questionnaire among the three main disciplines (tutors, students and sessions' characteristics, Figure 1).

Structural Equation Model (SEM) of the ten input variables in the three main different

**Figure 1:** The proportion of positive answers in the three main study domains in Kerbala Medical College in 2015 (n=22)

study domains joined together to demonstrate the simultaneous combined effect showing the regression weight of each predictor in the model. Most variables exerted a profound effect in the model with a regression weight ranging between 0.31 and 0.57 and some were negative and others were positive (Figure 2).

Discussion

Significant changes have recently occurred in both healthcare delivery and in the context and methods in which medicine is taught and learned. At the same time changes in the content and style of delivery of medical education have made it harder for established clinicians to teach in the style to which they were previously accustomed “ivory towers”. In this new process, the teacher’s role is as a facilitator of learning rather than a transmitter of knowledge (19). Nonetheless, teachers find PBL challenging to implement. Ertmer and Simons (2006) (23), noted three distinct areas of implementation difficulty for teachers: creating a culture of collaboration

and teamwork in the classroom; adjusting from a directive to a facilitative role; and scaffolding student learning. Additional reported barriers to implementation included: project planning is time-consuming, classrooms sometimes feel disorderly and authentic assessments are difficult to design (24).

Generally speaking, all tutors in the present study seemed to be satisfied with the PBL instructional method from an overall perspective expressed in the high positive rates found for most study questions indicating highly positive evaluation or attitude toward PBL from tutors’ perspective point of view. Tutor satisfaction and their point of view towards PBL or their adaptation level of the system, represent an important requisite for program success (5).

However, the study highlighted the main pitfalls in the three main investigated PBL disciplines; namely the characteristics of tutors, students and session. For tutors’ characteristics, more than one fifth of the participants reported that they find themselves speaking to one or two students (Q2) and a similar proportion

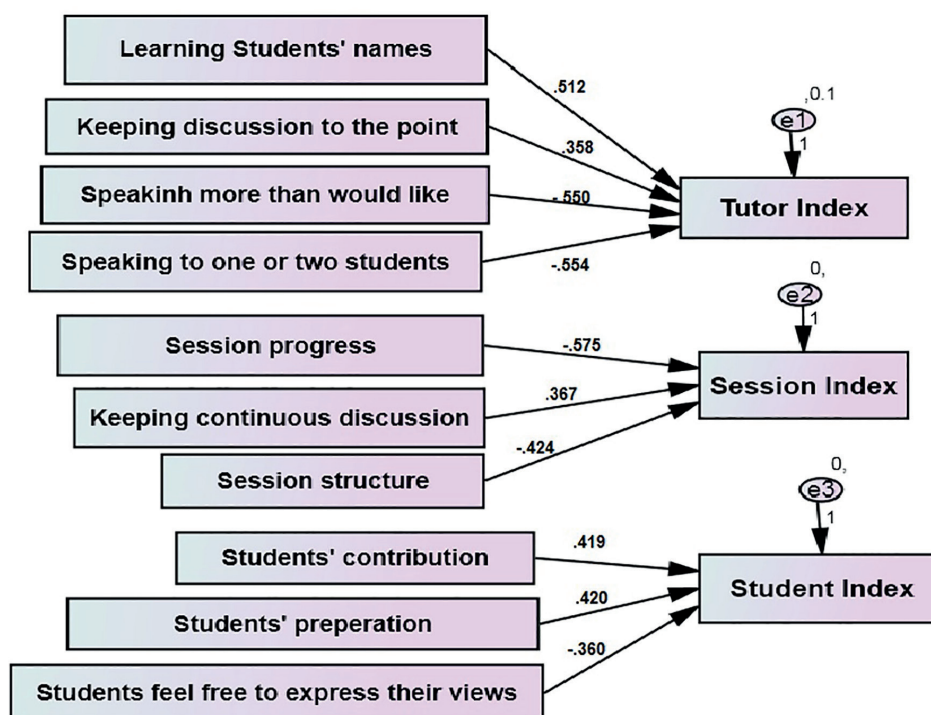


Figure 2: Structural Equation Model of all input variables affecting the study three main disciplines in Kerbala Medical College in 2015 (n=22).

reported that their session progress slowly (Q8, Table 1), and this might explain the high variation found in participants answers, where the highest standard deviation was for these two questions (Table 2). SEM also showed that the highest negative regression weight was for session progress (Figure 2), while remembering student's names got the highest positive weight. Examining the total answers for the study questions showed that the lowest positive answers was encountered for answers for these two questions. The reason behind this shortcoming might be related to the recent adaptation of PBL system and poor training. Training has significantly improved students' ratings of 126 tutors' ability to give feedback over three consecutive years (25, 26).

Additionally, 13.6% of the tutors in the present study stated that they speak more than they would like (Table 1), but no estimation of the time during speaking was determined. This problem represents a common drawback in PBL (5, 27-29). A qualitative study in Turkey reported similar finding as some tutors intervened the discussions more frequently and explained some topics more than the others (29). Powell had reported early in PBL adaptation that when PBL for small groups were run without tutors many students doubled their own contributions and tutors spoke for rather more than half of the time (27). Tutor characteristics represent a fundamental cornerstone discipline in PBL with a lot of debate within the literature as to whether the best PBL tutors are necessarily subject experts. It was noticed that expert tutors are tempted to interrupt the group discussion too often compared with non-expert tutors. On the contrary, non-expert tutors might not be able to follow the group discussion, or ask questions that could foster deeper understanding of the concepts discussed by the group (28). A possible reason for this shortcoming might relate to poor training. However, despite the large bulk of studies addressing this issue, there is no general agreement about the need to train all tutors, regardless of their background

(13, 25, 30-32). Without tutor training and the willingness of tutors to accept their new roles, PBL discussions will become a mini-lecture and the learning values enforced in PBL will be lost (5). Training tutors to shift their teaching/learning skills to match the philosophy of PBL and expand their facilitation skills is essential for a successful PBL programs (25). The college faculty should place an emphasis on its staff development and training and explore ways to reward teachers who have demonstrated leadership and helped in the success of the PBL program.

Holden and his colleagues (2001) interviewed 27 PBL tutors (n=27) to identify problems they encountered in facilitating a hybrid PBL-lecture curriculum. They determined six main problems for students: "mini-lecturing," dysfunctional group dynamics, completing cases too quickly, superficial research, frustration with tutors who lack content expertise, and lack of support for PBL. A fundamental suspected potential predictors for these problems were students' lack problem-solving and interpersonal skills needed to benefit from PBL (33). The reported problems related to session progress are similar to those found in the present study, however no point was attracted to the lack of student skills, but the reverse was true as most tutors accredited students' preparation and contribution in PBL session.

For students' characteristics, the proportion of negative answers was lower where two questions showed similar negative answer proportion (9.1%, Table 2); namely, 'I find it easy to get students to contribute' and 'My students seldom feel free to express their views' (Q 3 and 10, respectively). The reasons behind these findings might be related the short training and recent adaptation of the integrated learning system in the college and improvement is anticipated in the future. Two questions showed totally positive answers; for Q 4 and 6 ('I find it easy to keep the discussion going' and 'Most students prepare well'). These differences were partially obliterated when the

three main study disciplines were investigated in total where the differences didn't exceed 5% (table 2). Here, the students' characteristics showed the lowest positive rate in comparison to the two other disciplines (Figure 1).

There were certain limitations in this study. Firstly, the sample size taken in this study was small; however, it represents all tutors involved in PBL system in the college. If this study is ever done with a larger sample size in the future, the result might be improved and could form the base for comparison. Secondly, the short questionnaire might be another limitation; however, it covers the main conceptual and practical disciplines investigated in similar studies.

A recent Brazilian study disclosed the significant effect of expert versus non-expert facilitators in a (non) problem-based learning environment among medical 252 students (34). They reported significantly ($p \leq 0.001$) greater proportions at building knowledge (95% vs. 6%), guiding the learning process (93% vs. 7%), achieving cognitive learning (92% vs. 18%), generating learning goals (87% vs. 15%), and motivating self-study (80% vs. 15%).

Conclusion

PBL is a relatively new approach to most of us in the Kerbala Medical College even though others might argue that it has been within medical education realm since decades and making the transition from the traditional approach to PBL format is fairly taxing for both faculty and students. However, the study results showed that PBL seems a viable methodology for medical education. Like many other studies, this small investigation suggests that PBL has positive influence on tutors' attitude. It is also clear that overall measures suggest that PBL is having a positive impact on students' learning in Medical sciences. The responses also show that PBL sessions were well structured and provided the students a great opportunities to participate in continuous focused discussion. However the study had

indicated some defects which might relate to insufficient training, so further improvements and refinements are still necessary in order to meet the needs of the students, and that of the society.

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Conflict of Interest

The author declares no conflict of interest.

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