ORIGINAL ARTICLE

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Audiences' Feedback of Problem Based Learning Workshops as a New Experience in Mashhad University of Medical sciences

Background: Problem-based learning (PBL) has been defined as the learning that results from the process of working toward the understanding or resolution of a problem. We decided to solve the enigma of PBL in our university via this strategy.

Methods: In this case, 8 PBL tutorials were held for 30 observers in Mashhad University of Medical Sciences (MUMS). The "PROBLEM" should be solved was "PBL". A handout was prepared for observers by a tutor as a big picture of each session and all faculty members received it two times. The tutorial group, especially the tutor had to involve in observers' questions and comments during and also after the sessions. After 8 sessions, faculty members were asked to complete the valid and reliable questionnaire (r=0.74) electronically, including criteria by which the impact of this course on faculty members and students could be observed. Descriptive statistics were used to analyze data.

Results: Thirty observers participated in this study. Around 71% have learnt the essentials of this method. More than 76% reported the feasibility of this course. 86% of the participants trusted in their ability to their own development. For more than 90% course material was attractive. Around 90% of participants reported their interest in passing the complementary courses. 57.14 % strongly expected themselves to do PBL well. Just 14.28% participated in this course because of certification.

Conclusions: It seems that both participants and observers were encouraged to participate in tutorials. Therefore, planning for working based on PBL approach will be necessary.

Keywords: PBL approach, Learning experience, Teaching experience

التغذیة الراجعة في دورات تعلم المتمحوره حول مسأله به عنوان تجربه جدیدة في جامعه مشهد للعلوم الطبیه

التمهید و الهدف: PBL یعتبر أسلوب تعلیمي یتمحور حول مسئله واحده و یتم معالجة هذه المسئله حتی یتم تعلمها بشکل دقیق . هدف هذه المطالعه هو دراسة تأثیر هذه الدوره التعلیمیة علی أعضاء الهیئة العملیة الناظره بنسبة الی (PBL).

الأسلوب: عقد 8 جلسات تعلیمیة PBL امام ناظری 30 استاد في هذه الدراسه. المسأله المطروحه و التي کان یجب البحث فیها کانت «کیف نجري الأسلوب التعلیمي PBL في المجموعات التعلیمیة ».

لقد تم تحضیر کراسات بواسطة المدرس و تم اعطائها خلال مرحلتین الی اعضاء الهیئة العملیة الناظرة. کان مدیر الجلسه یجت المشارکون الی البحث الفعال من خلال اعطاء زمن کافي الی طرح الاسئله و ألآدلاء بالآراء. و في ختام الجلسه الثامنه تم تزوید الاعضاء باستمارات معتبره احصائیاً R=۰.۷٤ بشکل الکتروني. تم استخدام الأحصاء التوصیفي في تحلیل المعطیات.

النتائج: اشترك في هذه الدراسه 30 شخصا. قد علم ٧١٪ اصول هذا الاسلوب ٧٦٪ اعتبروا أن هذا الاسلوب یمکن أن یعمل به، ٨٦٪ کانوا یعتقدون أن یمکن رفع مستواهم الذاتي ٩٠٪ اعتبروا أن هذا الأسلوب ممتاز جدا و اعلنوا تعاونهم مع الإشتراك في دورات تکمیلیه. ٥٧.١٤٪ کان لدیهم اعتقاد راجع أنهم قادرون علی اجراء هذا الأسلوب ١٤.٢٨. اشترکوا لأجل حصول علی شهاده في هذا المجال.

الإستنتاج: بما أن حصل شوق شدید من قبل کلا الفریقین المشترکون و الناظرین نجاح هذا الأسلوب لذا یجب اعداد برامج تستخدم هذا الأسلوب في التعلیم في جامعه مشهد للعلوم الطبیه.

الکلمات الرئیسیة: السیر نحو التعلیم المتمحور حول مسأله ، تجربه التعلم، تجربه التدریس.

باز خورد شرکت کنندگان در کار گاههای یادگیری مساله محور به عنوان تجربه ای جدید در دانشگاه علوم پزشکی مشهد

زمینه و هدف: یادگیری مسأله محور(PBL) به عنوان روشی که در طی آن فرآیند منتج به حل یا درک مساله منجر به یادگیری می گردد، تعریف شده است. هدف این مطالعه بررسی تاثیر این دوره آموزشی بر اعضای علمی هیات علمی ناظر نسبت به PBL می باشد.

روش: در این مطالعه، 8 جلسه آموزشی PBL در مقابل چشمان 30 ناظر برگزار گردید. مساله ای که باید حل می شد عبارت بود از "چگونه روش آموزشی PBL را در گروههای بالینی اجرا نماییم؟" برای هر جلسه جزوه ای توسط مدرس آماده و طی دو مرحله در اختیار اعضای هیات علمی ناظر قرار می گرفت. استاد راهنما با در اختیار قرار دادن زمان کافی جهت مطرح نمودن سوالات و نظرات ناظرین، موجب درگیر شدن فعال ناظرین می گردید. پس از اتمام 8 جلسه، شرکت کنندگان به پرسشنامه ای معتبر و روا (r=0.74) به صورت الکترونیکی پاسخ دادند. جهت آنالیز داده ها از روشهای آماری توصیفی استفاده گردید.

یافته ها: 30 نفر در این مطالعه شرکت کردند. حدود 71٪ اصول این روش را آموختند. بیش از 76٪ عملی بودن این دوره راگزارش و 86٪ شرکت کنندگان به توانایی ارتقای خود اعتقاد داشتند. این دوره برای بیش از 90٪ جذاب بوده و علاقه خود برای گذراندن دوره های تکمیلی را اعلام نمودند. 57.14٪ اعتقاد راسخ بر اجرای این روش توسط خود را داشتند. تنها 14.28٪ برای دریافت گواهی دراین دوره شرکت نموده بودند.

نتیجه گیری: به نظر می رسد که هر دو گروه شرکت کنندگان و ناظران برای به کار گیری این شیوه آموزشی تشویق گردیدند لذا بر نامه ریزی جهت به کار گیری روش یادگیری مساله محور در دانشگاه علوم پزشکی مشهد ضروری می نماید.

واژه های کلیدی: رویکرد به یادگیری مساله محور، تجربه یادگیری، تجربه تدریس

مشہد یونیورسٹی آف میڈیکل سائنس میں پرابلم بسیڈ لرننگ کی ورک شاپ، ایک نیا تجربہ

بیک گراونڈ: پرابلم بسیڈ لرننگ کا طریقہ لکچر یا تدریس کے دوران مسئلے کو حل کرنے یا مسئلے کے ادراک کا سبب بنتا ہے ۔ اس تحقیق کا ہدف اس روش پر نگرانی کرنے والی اکیڈمیک کونسل کے ارکان پر اس کے اثرات کا جائزہ لینا ہے۔

روش: اس تحقیق میں پی بی ایل کے آٹھ اجلاس کئے گئے جس میں تیس ممبصرین نے شرکت کی۔ جس مسئلے کا جائزہ لیا جانا تھا وہ یہ تھا ہم کس طرح سے پی بی ایل طریقے کو کلینیکل تعلیم کے دوران استعمال کرسکتے ہیں؟ ہر اجلاس کے لئے لکچرر نے ایک جزوہ تیارکیا تھا جو اکیڈمیک کونسل کے ارکان کو دیاگیا۔ لکچرر کی جانب سے شرکاء کو کافی وقت دیا گیا تاکہ وہ اپنے سوالات پیش کرکے مفید بحث کرسکیں۔ آٹھ کلاسوں کے خاتمے سے پہلے شرکاء کو ایک سوال نامہ دیاگیا جو انٹرنیٹ کے ذریعے پر کیا گیا۔ جوابات کا تجزیہ اعداد وشمار کی توصیفی روش سے کیا گیا۔

نتیجے: تیس افراد نے اس تحقیق میں شرکت کی اور تقریبا اکبر فیصد نے اس روش کے اصول سے شناخت حاصل کی۔ چھتر فیصد نے مطالبہ کیا کہ اس روش کو عملی صورت میں بھی اپنایا جائے، جبکہ چھیاسی فیصد شرکا نے کہا کہ اس روش سے ان کی توانائیوں میں اضافہ ہوا ہے۔ نوے فیصد شرکاء نے ان کلاسوں میں دلچسپی اور ان کی افادیت کا اظہار کیا اور کہا وہ مزید کلاسوں میں شرکت کرنے کے خواہاں ہیں۔ ستاون اعشاریہ ایک چار فیصد نے کہا کہ اس روش کو عملی طور سے ضرور لاگو کیا جانا چاہیے۔ صرف چودہ اعشاریہ دو سات فیصد شرکاء نے سرٹیفیکٹ لینے کےلئے پی بی ایل کلاسوں میں شرکت کی تھی۔

سفارشات: یہ محسوس ہوتا ہے کہ شرکاء نے پی بی ایل کلاسوں میں شرکت کرکے اس روش کو عملی طور پر لاگو کرنے میں دلچسپی ظاہر کی ہے۔لہذا عملی طور سے اس روش کو لاگو کرنے کی کوشش کی جاۓ ۔

کلیدی الفاظ : پی بی ایل روش ۔ اکیڈمیک کونسل، تجزیہ اور تعلیم

INTRODUCTION

Barrows and Tamblyn (1980) have defined problem-based learning (PBL) as the learning that results from the process of working toward understanding or resolution of a problem. Authentic PBL requires students to go through the same activities during learning that are valued in the real world (1). The intent is to challenge students with high impact problems that they will encounter in practice. These problems serve as a stimulus for learning and a focus for organizing what has been learned in small group tutorial sessions for later recall and application in future work (2).

Problem-based learning is a learner-centered educational method, an exciting alternative to more traditional lecture based teaching by which students are encouraged to become more actively involved in the subject material and to develop critical thinking skills. Problem-based leaning is a comprehensive approach to education (3). Problem-based learning is not only a curriculum development but also an instructional approach. It is both a curriculum and a process. The curriculum is carefully selected and designs problems that demands the learner the acquisition of critical knowledge, problem-solving proficiency, self-directed learning strategies, and team participation skills (4). The process replicates the commonly used systematic approach to resolve problems or meet challenges that are encountered both in life and career.

The first use of PBL was in Medical schools, by which the knowledge base of graduates was rigorously tested .In PBL real world problems are utilized, rather than hypothetical case studies with neat, convergent outcomes (5). It is occurred in the process of struggling with real problems that students learn content besides critical thinking skills.

Learners are progressively given more responsibility for their own learning and become increasingly independent of the teacher for their education. This produces independent learners who are able to learn on their own in life and in their future careers (6). The responsibility of PBL teacher is to provide educational materials and facilitate learning.

An effective means of defining PBL is to outline the steps of students' learning. Stepien, Gallagher, and Workman (1993) provide the following summary: Problem-based learning is apprenticeship for real-life problem solving: students discover a situation with undefined problems, incomplete information, and unasked questions. The presented scenarios require problem solving, the way used in life: defining issues, producing hypotheses, searching for and then scanning data, refining hypotheses using collected data, doing empirical experiments or other research, developing solutions fit the problem conditions and evaluating and/or justifying solutions (7).

In PBL, organizing the curricular content around problem scenarios rather than subjects or disciplines is emphasized. Students usually work in groups or teams for solving or managing these conditions, but they are not expected to find a series of 'right answers' (8). A systematic educational method that involves students in learning essential knowledge and life-enhancing skills through an extended, student-influenced inquiry process is structured around complex, authentic questions and carefully designed products and tasks.

Introduction of PBL in Mashhad University of Medical Sciences (MUMS)

Many efforts have been made for involving faculty members of MUMS in the field of Instructional methods, especially student-centered ones. Workshops, CME programs, and also refreshment courses were carried out for them. PBL has a more than a 20-year history in this term. Many people have experienced such courses in different countries such as Netherland, Canada, Japan, etc. as an observer and many faculty members were educated in countries either whose curriculum was PBL or their teaching strategy was based on PBL, but unfortunately none of them has cut no ice and practical PBL has remained as an infertile project up to now. Perhaps this is due to unfeasibility of these courses, inconsistency of PBL with curriculum, lack of time due to arrangement of academic credits, lack of general interest among teachers and students and even lack of infrastructure and enculturation for applying this method, etc. Regarding the history of PBL, recent project was defined both for updating and feasibility of this method.

It is a format that simultaneously develops both problem solving strategies and knowledge bases and skills by placing students in the active role of problem-solvers. A problem-based learning is student-centered, makes a fundamental shift from a focus on teaching to a focus on learning.

A systematic educational method that involves students in learning essential knowledge and life-enhancing skills through an extended, student-influenced inquiry process is structured around complex, authentic questions, and carefully designed products and tasks.

Designing the project took 3-4 month by the head of the student committee of EDC. He tried to find a tutor, manage the students for data collection on PBL, prepare and translate PBL educational materials, and send the content as a guide book for observers. The head of the committee and the tutor, and the head of the committee and the tutorial group had several informal sessions before and after tutorial sessions in order to coordinate and evaluate the sessions respectively; therefore planning and conducting such project in MUMS lasted 8-9 month (June 2009-january 2010).

METHODS

So far, tutorials were held in a climate, set privately as a classroom so that tutor and the participants could interact in a stress-free environment and share their knowledge under the umbrella of the tutor's supervision, but we made a new experience in MUMS recently.

In this case, 8 tutorials were held in front of the eyes of observers, 30 faculty members and medical education students, who were invited for learning what PBL is and its steps and how PBL tutorials is like, i.e. The "PROBLEM" which had to be solved was "PBL" as to "The principal idea behind PBL is that the starting point for learning should be a problem, a query, or a puzzle that the learner wishes to solve (9).

In other words we decided to solve the enigma of PBL in our university via this strategy. A handout was prepared for the observers by the tutor as a big picture of each session and all faculty members received it two times, when participated in sessions, in paper version and before the

next session in electronic version via their e-mail as a review. All of the tutorials were recorded on video-tapes. The tutorial group, especially the tutor had to get involved in observers' questions and comments during and after the sessions too. After 8 sessions, faculty members were asked to complete the questionnaire electronically, including criteria by which the impact of this course on faculty members and students could be observed. It should be noted that 10 educational experts reviewed and confirmed this questionnaire. Descriptive statistics were used to analyze the data, the effects of eight educational sessions on observers (faculty members) and participants (students of tutorial group). A pilot study was done for calculating reliability; subjects participated in pilot study excluded from study. Split-half method was used for the reliability of the questionnaire. Scores of odd and even questions were calculated separately, then the correlation between these scores was calculated using Spearman-Brown. The reliability coefficient was 0.74 for the questionnaire.

RESULTS

Thirty observers including 24 faculty members and 6 MSc Medical Education students participated in this study. As the MSc students participated in pilot study, they were excluded from the analysis. So we lost 20% of our observers due to this. Of 24 faculty members, 21 filled out the questionnaire electronically.

The questionnaire was scored both quantitatively and qualitatively based on Likert Scale in which Strongly agree:5,Agree:4, No idea:3, Disagree:2, Strongly disagree:1 were scored.

All subjects observed the 8 sessions of PBL. Observers follow their learning stream by participating in sessions both between and after tutorials. Analysis of findings revealed the following facts. 72.41 %(15 participants) reported their agreement by learning material that really challenged them and were conducive to learning new things. It should be noted that around 14.28 %(3 participants) strongly agreed with this. So, more than 86% of the participants challenged their previous knowledge by this course. 66.66 %(14 participants) agreed with learning basic knowledge of PBL during this course and again 14.28% (3 participants) reported their strong agreement. So, around 71% have learnt the essentials of this method. 52.38% (11 participants) got the feasible results of this course and 23.8 % (5 participants) demonstrated their strong agreement. So, more than 76% reported the feasibility of this course. 52.38% (11 participants) agreed with the idea that they could develop the material by appropriate way of studying and 33.33 % (7 participants) strongly agreed in this term. So around 86% of the participants trusted in their ability to their own development. 42.85 % (9 participants) reported their agreement with the fact that learning materials are important for them. It is interesting that 47.61 % (10 participants) strongly agreed with this importance. So the importance of learning this method was stated by more than 90% of the participants. 47.61 % (10 participants) were interested in the presented material and 42.85 % (9 participants) strongly agreed. So, for more than 90% course material was attractive.

52.38 %(11 participants) were interested in PBL content area too and 38 %(8 participants) strongly agreed. So, more than 80% of participants reported their interest in PBL area apart from the course. 47.61% (10 participants) reported their triggering for thinking whenever they hear or read something about PBL and 38 %(8 participants) strongly agreed. So thinking of more than 85% of participants was activated by this course. Just 14.28% (3 participants) participated in this course because of certification.

23.8 % (5 participants) reported their master in the PBL basic skills taught in the course and 14.28 % (3 participants) strongly agreed. So, around 37% got the master of skill.

47.61 % (10 participants) liked to pass the complementary courses and 42.85 % (9 participants) strongly agreed. So around 90% of participants reported their interest in passing the complementary courses. 57.14 % (12 participants) strongly expected themselves to do PBL well and 38 % (8 participants) stated their agreement. So more than 95% expected to do it well. Time of course was proper for around 70% and place of course was proper for more than 86%.

DISCUSSION

As to Albenese and Mitchell, the aims of PBL are:
Improving the learning environment of medical school
Improving lifelong learning skills and clinical performance
Enhancing humanistic skills of teamwork and attention to patients (10). We tried to develop this instructional method through MUMS using this technique for teaching it in order to bring in the faculty members to the PBL atmosphere. Obviously, in these sessions their role was defined implicitly as an active observer or participant. So this trend can qualify the teaching-learning process because of the following:
PBL may increase skills-level, flexible learning process, a way of reducing the costs of teaching, enabling students to decide and prioritize their own learning agenda, giving the students a chance to draw on their own experiential knowledge,and allowing them to reflect on the very process of their own thinking and meaning- making. It can be enjoyable and nurturing, making them more goal-oriented, seeing their work in a larger perspective. It is an excellent introduction to the research process. One is allowed to make mistakes and learn from them. Group interaction enables individuals to see the many perspectives in a problem .All of these are valuable professional and team-working skills for life beyond university.
High level of communication skills could be achieved and also ability to define problems, gather and evaluate the information,and develop solutions is obtained. Team skills, i.e., ability to work with others could be developed and the ability to use all of the above to address problems in a complex real-world setting could be taught (11).
Both participants(students participated the tutorials and observers) came to this conclusion that BPL is a a method in which the approach of Student-centered and Experiential quality can be found, it is not only inductive and builds on/challenges prior learning but also context-specific. Usually problems are complex and ambiguous, and require meta-cognition and creates cognitive conflict, so they are

conducive, collaborative, and interdependent.

We did the course on the basis of the following:

Presentation of Problem, Organization of ideas and prior knowledge (what do we know?), Posing questions (what do we need to know?), Assigning responsibility for questions, discussing resources, Research questions, summarizing, and analyzing findings, Reconvening , reporting research, Integration of new information, refining questions, Resolution of problem (How did we do?) (11).

And participants replied to the above by these activities:

Clarifying the setting, Defining the problem, Analyzing/investigating the case, Re-structuring the problem, Formulating learning goals, Individual learning, Reporting back to the group (12).

In reality, this process was generated and repeated several times until the problem was solved (13).

During all the sessions participants explored the issues at first then listed "What do they know?" developed, and wrote out the problem statement in their own words. Listed out possible solutions, listed actions to be taken with a timeline, list "What do they need to know? Wrote up their solution with its supporting documentation, and submitted it and finally reviewed their performance.

The most interesting issue for observers (faculty members) was understanding the tutors' role, because they had to play the tutor role in the near future after completing the PBL and tutor training courses. They reported their perception both orally specially in "TUTOR" session and written in the questionnaire. Fortunately their teaching was consistent with the following point of views:

The PBL tutor will not teach—that is not their role during PBL. All PBL tutors are experts in their field, but that is not necessarily medicine. They are also all trained, and update their training regularly. They will guide participants through the PBL process, particularly in the early days. They reported that they taught them by this course and participated in the tutorials and questioning sessions and discussions after that. Every quarter the faculties were faced with determining how to present the course material so that students not only gain knowledge of the discipline, but also become self directed learners who develop problem-solving skills they can apply in future courses and in their careers. In problem-based learning (PBL) courses, students work with classmates to solve complex and authentic problems that help develop content knowledge as well as problem-solving, reasoning, communication, and self-assessment skills. These problems also help to maintain student interest in course material because students realize that they are learning the skills needed to be successful in the field. Almost any course can incorporate PBL, and most faculties and students consider the benefits to be substantial (14).

It seems both participants and observers were encouraged to participate in tutorials, so that in two sessions, suggested a problem scenario for running a discussion on HOW TO DESIGN A PROBLEM and run a session on headache for running a discussion on TUTOR and PARTICIPANT by criticizing it by tutorial group. Participants developed their knowledge and experiences throughout continuous searching data and sharing their information via e-mail, informal sessions, telephone, and etc.

All during this process, as a student (participant), will be actively defining and constructing potential solutions. As an instructor (tutor), his role is primarily to model, guide, coach, and support the team through the learning and assessment process.

The most important characteristic of these sessions was its self-directedness. It was characterized by the juxtaposition of individual and collective analytical work combining team-based exploration and synthesis with individual research and analysis. Making learning more student-centered experiential and activity-based (15).

It can be considered as a proof for effectiveness of this course, because it could trigger participation of observers as well as participants.

While the exact format of PBL varies considerably, certain key features are consistent: an emphasis on learner-focused exploration of case based patient problems, and the use of patient case histories to help students identify learning issues that become the focus of individual and group problem solving (16).

As defined by Dr. Howard Barrows and Ann Kelson of Southern Illinois University School of Medicine, PBL is both a curriculum and a process. The curriculum consists of carefully selected and designed problems that demands the learner acquire critical knowledge, problem solving proficiency, self-directed learning strategies, and team participation skills. The process replicates the commonly used systematic approach to resolve problems or meet challenges that are encountered in life and career.

Problem-based learning (PBL) is an approach that challenges students to learn through engagement in a real problem. It is a format that simultaneously develops both problem solving strategies and disciplinary knowledge bases and skills by placing students in the active role of problem-solvers confronted with an ill-structured situation that simulates the kind of problems they are likely to face as future managers in complex organizations. Problem-based learning is student-centered. PBL makes a fundamental shift from a focus on teaching to a focus on learning.

As this 8-session educational course was an introductory, observers are expected to apply PBL method in their classes or clinical settings after completing the tutor training workshops which they registered after tutorials sessions. A study skills course (participant ship) should be planned for students as well. So, developing PBL without tutor and participants is impossible. Therefore, converting present teachers to tutors and students to participants is the best guarantee for switching it in the real environment.

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