

ORIGINAL RESEARCH ARTICLE

EVALUATION OF TUTOR PERFORMANCE IN PROBLEM BASED LEARNING: RATING THE SKILL ON STUDENTS PERSPECTIVE

Renu Yadav<sup>1,\*</sup>, Soumitra Mukhopadhyay<sup>1</sup>, Subodh Kumar Yadav<sup>2</sup>

<sup>1</sup>Department of Physiology, Nobel Medical College and Teaching Hospital, Biratnagar-4, Morang, Nepal

<sup>2</sup>Department of Anatomy, Nobel Medical College and Teaching Hospital, Biratnagar-4, Morang, Nepal

Received: 21 May, 2020

Accepted: 17 Nov, 2020

Published: 16 Dec, 2020

**Key words:** Likert scale; PBL-Problem based learning; Questionnaire; Tutor.

**\*Correspondence to:** Renu Yadav, Department of Physiology, Nobel Medical College and Teaching Hospital, Biratnagar-4, Morang, Nepal.  
Email: [drresu@gmail.com](mailto:drresu@gmail.com)

**Citation**

Yadav R, Mukhopadhyay S, Yadav SK. Evaluation of tutor performance in problem based learning: rating the skill on students perspective. Journal of Chitwan Medical College. 2020;10(34):96-99.



Peer Reviewed

**ABSTRACT**

**Background:** The Problem based learning (PBL) was developed at McMaster University School of Medicine in Canada in the 1960s. It has become today's most accepted method of teaching and learning activities in the field of medicine. A skilled and well-trained tutor plays major role in PBL. Present study is aimed to evaluate tutor performance on student's perspective based on questionnaire.

**Methods:** This questionnaire-based study was conducted with MBBS I (n=100) and II (n=100) year students of Nobel Medical College and Teaching Hospital. Tutors performance evaluation form was prepared provided with nine question items and the responses were limited to likert scale (1=strongly disagree, 2=disagree, 3=uncertain, 4=agree and 5=strongly agree). Students were instructed to give their opinion and total percentage score along with mean score of every question items were obtained. Then, mean score of each questions were compared between both MBBS batches.

**Results:** Performance of tutors in problem-based learning sessions were analyzed which were obtained as Likert scale score; the percentage score 4 (agree, MBBS I= 52.11 %, MBBS II=53.55 %) followed by 5 (strongly agree, MBBS I=20.77 %, MBBS II= 32.22 %). Mean score obtained for each question items were compared between MBBS I and II year which significantly vary though the majority of scores were 4 (agree) and 5 (strongly agree).

**Conclusions:** Satisfactory tutor performance was procured on evaluating the tutor for their skill in PBL as facilitator based on student's opinion.

**INTRODUCTION**

The Problem based learning (PBL), a student-centered pedagogy, was developed at McMaster University School of Medicine in Canada in the 1960s and has become today's most accepted method in higher studies especially medicine.<sup>1-3</sup> The basic function of a tutor is to provide a guidance in the learning issues rather than delivering lectures; tutors are required to facilitate a small group of students. The goal of PBL is to enhance active learning that move the archaic passive learning mode to the contemporary active learning mode.<sup>4</sup> The activity of PBL starts with a task having a problem that is solved by a small group of students within a period of time. Problem-based curriculum is well-featured by tutor performance and quality of problem.<sup>5</sup> The depth training and examination performance are highly improved by PBL.<sup>6</sup> Students only memorize the received information by classical teaching method without understanding, making the concepts and using them.<sup>7</sup>

PBL is featured with a cycle; problem scenario, identify facts, generate hypothesis, identify knowledge gaps, engage in self-directed learning, apply new knowledge to problem and evaluation, that fosters student's understanding of concepts through

problem-solving activities.<sup>8</sup> PBL, an advanced learning pedagogy, should have a well-trained tutors and tutor guidelines; consisting of learning objective and key words that meticulously guide them to be "case experts".<sup>9</sup> Dolmans et al.<sup>10</sup> reported that student's perception towards tutors' skills and knowledge can be valuable to improve their performance in PBL sessions.

The present study was aimed to evaluate tutor performance based on standardized questionnaire provided to the students. This study also attempted to compare the responses between two batches of MBBS students.

**METHODS**

This was a questionnaire-based study conducted in Nobel Medical College and Teaching Hospital from 2<sup>nd</sup> April 2019 to 31<sup>st</sup> December 2019. A purposive sampling technique was performed among MBBS students; MBBS I and MBBS II year. The study included all the first-year (n=100) and second year medical students (n=100) from Nobel Medical College who were regularly present during the PBL session and no absent record throughout the study. Written informed consent was taken and each student were instructed for strict personal opinion

to answer every question provided with five categories Likert scale score. Standardized, validated and reliable tutor self-assessment questionnaire with reference to Dolmans et al<sup>10</sup> were taken in the tutor evaluation form. There were nine questionnaires provided in the form which were explained and listed in simplified version for the students without changing the meaning and value of information for each.

Tutor effectively promote us to: -

1. Summarize our learning needs
2. Search issues discussed and solution from underlying problem
3. Understand underlying problem
4. Generate our own learning issues
5. Search for various resources by ourselves
6. Apply knowledge to the discussed problem
7. Apply knowledge to other similar condition
8. Give constructive feedback about our group work
9. Evaluate group co-operation regularly

On starting of academic year, all the MBBS students were divided into 6 groups from each batch of MBBS I and II year according to the academic schedule of problem-based learning (PBL), which was based on the Kathmandu University curriculum. Each group had 15± 2 students including both male and female. Thus, the study was conducted among 12 groups of students from first year and second year MBBS. There was no change in any participants among the groups throughout the study period. Both batches of MBBS students were directed to attempt the questions according to the instructions. Further, students were instructed to give their personal opinion and experience to respond every question for their allotted tutors in PBL. Regarding tutors, provided as facilitators in each group, our university had conducted workshop for PBL training before starting the PBL activities in college. Thus, tutors were well trained for conducting PBL and were aware of their role as facilitators. Tutors (facilitators) allotted for each group were considered to be an expert in guiding the group and no tutors were exchanged during study period. The concept behind conducting the study for two batches is to include most of the basic science teachers in the evaluation process and also to assess variation between two different academic year. The study had included all the basic science faculties from various departments of basic science; Anatomy, Physiology, Pharmacology, Biochemistry, Microbiology and Pathology and community medicine as a tutor for facilitation of the group. This study included twelve tutors in the evaluation process provided with one tutor in each group during the session. Thus, present study evaluated basically the application of training skills on PBL.

Each student was provided with a set of nine questions and allowed to select an option provided with 5-point Likert scale; strongly disagree (1), disagree (2), uncertain (3), agree (4), strongly agree (5), after end of the session which were lasted for a week followed by a seminar. Each set of questions evaluated the tutor of each PBL group. Thus, one tutor was evaluated by a group (15± 2) of students at a time. Same was for another tutor in another group.

Statistical analysis of data was processed on an IBM, the Statistical Packages for Social Sciences (SPSS) version 25. Percentage frequency were analyzed for the responses of question items provided to the students based on Likert scale. Data were also analyzed for differences between responses of academic years (MBBS I and MBBS II-year) by Mann Whitney U test at 95% confidence interval. Ethical clearance was taken from Institutional Research Committee of Nobel Medical College and Teaching Hospital.

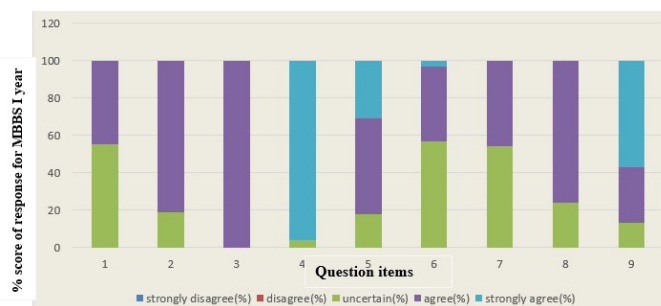
## RESULTS

Students responses collected from MBBS I (n=100) and II year (n=100) were analyzed for frequency of scores displayed in 5-point Likert scale in table 1. The highest frequency recorded in both batches was score 4, (MBBS I=52.11 %, MBBS II=53.55 %), which stands for agree. The result was followed by score 5, (MBBS I=20.77 %, MBBS II=32.22 %), represents strongly agree. Most of the students from MBBS I and II year were satisfied with tutors skills and knowledge regarding facilitation of PBL based on their response in table 1.

**Table 1: Frequency table for the scores (responses) given by MBBS I and II-year students (n=200)**

Scores (Likert scale)	MBBS I Frequency (%)	MBBS II Frequency (%)
1 (strongly disagree)	0 %	0 %
2 (disagree)	0 %	0 %
3 (uncertain)	27.12 %	14.23 %
4 (agree)	52.11 %	53.55 %
5 (strongly agree)	20.77 %	32.22 %

Figure 1 showed the frequency of student response recorded from MBBS I year (n=100) in percentage for nine questions individually in a 3-D stacked column. Hundred percent of students agreed for question item 3 (understand the underlying problem) and most of the students were strongly agree for questions item 4 (generate our own learning issues).



**Figure 1: Percentage score of responses of individual questionnaire for MBBS I year (n=100)**

Responses from MBBS II-year (n=100), students were analyzed and displayed in figure 2 as a 3-D stacked column. The percentage frequency of student responses scores for same nine question items were analyzed where highest score (80%, agree=4) was obtained for question item eight (Q8). Majority of stu-

dents agreed that tutors were able to give constructive feedback about the group work (Q8). Most of the question item responses were score 4 (agree) and score 5 (strongly agree) favoring the tutor performance to be satisfactory.

Table 2 compared the mean scores for nine question items by Mann Whitney U test for MBBS I and MBBS II-year students. Highest score were obtained for question items 4 (mean =4.92) and 9 (mean=4.37) among MBBS I year and II year respectively. There were significant difference between the mean score responses for all the question items of both MBBS batches except question item nine; 1 (p=0.024), 2 (p=0.00), 3 (p=0.001), 4 (p=0.00), 5 (p=0.00), 6 (p=0.00), 7 (p=0.00), 8 (p=0.00). The mean score obtained for question item nine showed no significant difference suggesting that tutors were able to evaluate

group cooperation regularly on the perception of all the MBBS I and II-year students.

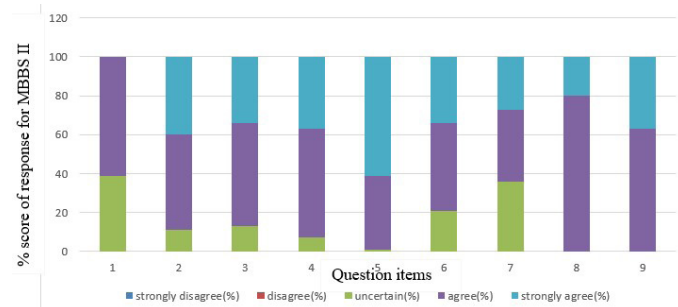


Figure 2: Percentage score of responses of individual questionnaire for MBBS II year (n=100)

Table 2: Comparison of mean scores (Likert scale) between MBBS I and II-year (n=200)

Variables (questions)	MBBS I (n=100)	MBBS II (n=100)	95% Confidence interval		T value	p- value
	Score (Mean)	Score (Mean)	Lower bound	upper bound		
Q1	3.45	3.61	0.02	0.08	-2.261	0.024*
Q2	3.81	4.29	0	0.015	-5.841	0.00*
Q3	4	4.21	0	0.015	-3.468	0.001*
Q4	4.92	4.3	0	0.015	-8.386	0.00*
Q5	4.13	4.6	0	0.015	-4.92	0.00*
Q6	3.46	4.13	0	0.015	-6.365	0.00*
Q7	3.46	3.91	0	0.015	-4.067	0.00*
Q8	3.76	4.2	0	0.015	-6.624	0.00*
Q9	4.44	4.37	0.067	0.153	-1.618	0.106

## DISCUSSION

Evaluation of tutor’s performance, on facilitating the PBL sessions, is one of the tools to assess the tutor’s skill. The outcomes of tutor guide implementation in PBL and to update tutors with PBL workshop for improving teaching and learning process is essential which is possible by workshop and a regular feedback from the students. Before conducting the PBL, all the faculties of our institute had attended PBL training workshop, sponsored by Kathmandu University. Thus, present study has evaluated the tutor performance as trained facilitator on student’s perspective provided with nine standardized question to the MBBS students. The evaluation scores for the tutors below 3-point Likert scale considered unsatisfactory performance. Likert scale score 4-5 (agree-strongly agree) signifies competent tutors and satisfactory performance.

Frequency distribution analysis for MBBS I year (n=100) and MBBS II year (n=100) showed the percentage scores as; (1=0 %, 2= 0 %, 3=27.11 %, 4=52.11%, 5=20.77 %) and (1=0 %, 2= 0 %, 3=14.22 %, 4=53.55 %, 5=32.22 %) respectively. Frequency distribution of Likert scale 4 showed highest value (MBBS I=52.11%, MBBS II=53.55 %). Based on majority of student’s perception, tutors from our institute were skilled and have satisfactory performance to facilitate learning in PBL though the tendency of total percentage score was higher among II-year MBBS.

One of the PBL research studies among students of medicine

and health sciences, the ratings for the tutors during two consecutive years; 1997 and 1998 were recorded. The study performed reported the tutor skill concerning on three range; below average (1), average (2), outstanding (3). For tutor skill, ‘guided about information resources’ the mean rating was 1.87 in 1997 and 1.93 in 1998 academic year. Similarly, the mean rating for the tutor skill, ‘facilitated collection of information’ was 1.90 in 1997 and 1.93 in 1998 academic year. This information reflected the rating for the tutors that showed improvement as academic year advances.<sup>11</sup> Our study also showed similar increasing trend for total scores as it was analyzed in percentage frequency (MBBS I=52.11%, MBBS II=53.55 %).

Though two different academic year were with two separate group of students in present study, the trend of score was in an increasing order. Increasing trend of total score with advancing year could be because of student’s better knowledge towards PBL that it is a self learning process and tutors are just to facilitate them rather than to teach.

The result seems to be comparable to our study since most of the question variables in our study also scored above 3-point Likert scale in an average, comprised of satisfactory tutoring skill.

Hundred percent of MBBS I year students agreed for question item 3 (understand the underlying problem) and most of the students were strongly agree for questions item 4 (generate our own learning issues).

Among MBBS II year, the percentage frequency of student responses scores for same nine question items were analyzed. Highest score was obtained for question item 4 (mean=4.92) and question item 9 (mean=4.37) among MBBS I year and II year respectively. According to the mean score accomplished, highest score among MBBS I year for question item 4 suggested that tutors help to “generate our own learning issues”. Based on question number 9, MBBS II-year students perceived that tutors help to “evaluate group cooperation regularly”. Including this, most of the question item responses score were 4 (agree) and 5 (strongly agree) favoring the tutor performance to be satisfactory.

One of the questionnaires-based study for performance of tutors from basic sciences for different variables; constructive learning (4.01±0.34), self-directed learning (3.95±0.47), contextual learning (3.99±0.38), collaborative learning (4.00±0.38) and intrapersonal behavior as tutor (4.11±0.39) showed very comparable result to us.<sup>11</sup> Another similar questionnaire based study reported “tutor effectiveness” mean scores: constructive, active learning: 4.08 ± 0.76; self-driven learning: 4.22 ± 0.78; context-relevant learning: 3.92 ± 0.79; collaborative learning: 4.15 ± 0.78; and intrapersonal behavior: 4.15 ± 0.80.<sup>12</sup>

Based on these findings, tutors in our institute were able to facilitate the learning in PBL having satisfactory performance. Though it was satisfactory, the study may help in planning and designing PBL training programmes to update periodically for improvement of tutor skills based on student’s need. There are limitations in institutional study because of sample size, technical issues and even the background of tutor’s qualifications. Thus, there are further scope to conduct research including these factors in future.

## CONCLUSION

Above findings concluded that the tutor performance was highly satisfactory and tutors were able to facilitate learning during PBL session particularly to generate learning issues by their own and to evaluate group cooperation. More precisely, it is highly recommendable mode of learning for medical students provided with trained tutors.

**CONFLICT OF INTEREST:** None

**FINANCIAL DISCLOSURE:** None

## REFERENCES:

1. Chung EK, Hitchcock MA, A-Oh S, Han ER, Woo YJ. The relationship between student perception of tutor performance and tutors background in problem-based learning in South Korea. *International Journal of Medical Education*. 2011;2:7-11. [\[DOI\]](#)
2. Hawthorne L, Minas H, Singh B. A case study in the globalization of medical education: Assisting overseas-born students at the University of Melbourne. *Medical Teacher*. 2004; 26(2): 150-9. [\[DOI\]](#)
3. Wood DF. Problem based learning. *British Medical Journal*. 2003;326:328-30. [\[DOI\]](#)
4. Abualhija N. Using Constructivism and Student-Centered Learning Approaches in Nursing Education. *Int J Nurs Health Care Res*. 2019;7: 093. [\[DOI\]](#)
5. Lamiaa Ismail Keshk, Sanaa Abd El-Azim, Shereen Ahmed Qalawa. Quality of Problem Based Learning Scenarios at College of Nursing in Egypt and KSA: Comparative Study. *American Journal of Educational Research*. 2016; 4(9):701-10. [\[DOI\]](#)
6. McParland M, Noble LM, Livingston G. The effectiveness of problem-based learning compared to traditional teaching in undergraduate psychiatry. *Med Educ*. 2004;38(8):859–67. [\[DOI\]](#)
7. Dehkordi AH, Heydarnejad MS. The impact of problem-based learning and lecturing on the behavior and attitudes of Iranian nursing students. A randomised controlled trial. *Dan Med Bull*. 2008;55(4):224–6. [\[DOI\]](#)
8. Hmelo-Silver CE, Eberbach C. Learning theories and problem-based learning. In: S. Bridges, C. McGrath, & T. Whitehill (Eds.). *Researching problem-based learning in clinical education: Innovation and Change in Professional Education*. The next generation New York: Springer. 2012; 8: 3-17. [\[DOI\]](#)
9. El-Aziz El Naggar MAA, Maklady FAH, Hamam AM, Omar AS. Designing, Implementing, and Evaluating a Tutor Guide for Problem Based Learning Phase II Class Tutors at the Faculty of Medicine, Suez Canal University. *Intel Prop Rights*. 2013; 2: 106. [\[DOI\]](#)
10. Dolmans DH, Ginns P. A short questionnaire to evaluate the effectiveness of tutors in PBL: validity and reliability. *Med Teach*. 2005;27(6):534-8. [\[DOI\]](#)
11. Das M, Mpofu DJS, Hasan MY, Stewart TS. Students perception of tutor skills in problem-based learning tutorials. *Med education*. 2002;36:272-8. [\[DOI\]](#)
12. Gerhardt-Szep S, Kunkel F, Moeltner A, Hansen M, Böckers A, Rüttermann S, Ochsendorfet F et al. Evaluating differently tutored groups in problem-based learning in a German dental curriculum: a mixed methods study. *BMC Medical Education*. 2016; 16:14. [\[DOI\]](#)