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ORIGINAL ARTICLE

Students and Facilitators Perception Regarding Conventional and New Implicated Portal Based Electronic Problem Based Learning (PBL) in Ziauddin University

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ABSTRACT

Aim: To study the students and facilitators perception regarding conventional and new implicated portal based electronic Problem based Learning (PBL) in Ziauddin University

Methods: The study design was comparative cross sectional. The study was conducted at Ziauddin Medical College, Ziauddin University. The study participants included 88 medical students and 26 facilitators. A feedback form was distributed to each student and facilitator. In the feedback form, students and facilitators were inquired about the preference, advantages and disadvantages of conventional and e-PBL system. The forms were collected and data was analyzed.

Results: The students preferred the e-PBL system (48.8%) and the facilitators (76.9%) preferred the conventional PBL system. Regarding the log book submission, (51%) students preferred e-log book while (57.7%) facilitators had preference for conventional log book submission. Regarding preference for learning, (38.6%) students and (57.7%) facilitators selected conventional PBL. The advantages of conventional PBL included log book writing helps in learning (35.2%) students and (46.2%) facilitators, easy to access for study and recall (25%) students and (23.1%) facilitators, searching from books motivated to study (23.9%) and (38.5%) facilitators. Regarding the disadvantages of conventional PBL, (33%) students reported log book writing is time consuming. The advantages of e-PBL reported by students included time efficient (34.1%) and logbook submission deadline makes students punctual (23.1%) as reported by facilitators. In relation to disadvantages of e-PBL, (27.3%) students and (50%) facilitators mentioned that copy paste from websites in e-PBL submission has made PBL less useful to learn and retain knowledge.

Conclusion: The majority of medical students had a preference for e-PBL and the majority of facilitators preferred conventional PBL system.

Keywords: PBL, Medical students, Perception

INTRODUCTION

In various medical institutions the problem based learning (PBL) is implemented as student centered learning strategy[1] to promote knowledge acquisition, and autonomous learning[2]. Problem-based learning has been known to promote cognitive thinking[3], problem-solving[4], communication skills[4] and interlinking the basic and clinical subjects by giving clinical problems to students in integrated modularly learning education system[5]. It has exhibited the effectiveness by various literature surveys on improving student's learning quality by enhancing self-oriented learning, clinical point of view problem solving abilities, cognizance, enhancing critical thinking and deep disciplinary knowledge[5].

Despite of the fact that a learner-centered approach is strongly recommended in the literature, a teacher-centered approach is commonly practiced in the college and university settings[6] in Pakistan. The reason is inadequate research knowledge, lack of interest, time and budget[7]. The interest for research can be increased among undergraduates by promoting PBL system of teaching rather than conventional lecture-based teaching.

The debate about the advantages of problem-based method of learning still continues for those who are in favor of the traditional lecture-based approach of learning. In fact, the improper implementation of PBL has compromised its potential[8]. There could be various reasons that might explain why PBL method of learning is not up to its promises and expectations. This could be due to inadequate support of the curriculum[8], scarce assessment of the PBL curriculum on the part of faculty dealing with its implementation; excessive reliance on insufficient knowledge of teachers and students[9]. There is a need to actively endorse a coordinated set of activities, allowing applications with variants of PBL and alternate models of active learning that would advance the level of competence and conduct of students[10].

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Problem based learning was commenced by Mc Master University Canada for their medical undergraduates in 1969; it was then amended by European and American Medical Universities for their medical undergraduates[11]. PBL was implicated by Ziauddin University as one of their best learning and teaching strategy in 1996. They were the first in Pakistan to introduce this learning stratagem[12,13].

At Ziauddin University, a modified version of conventional PBL, electronic PBL (e-PBL) was implemented in 2018. This e-PBL method helped students to search about the facts and queries related to the case given in no time. Electronic PBL is helpful for students to become more active learners because it situates learning in real-world problems and makes students responsible for their own learning[14]. A better performance of students through introducing Electronic PBL (e-PBL) to enhance their understanding and knowledge of diseases, as compared to conventional PBL was expected.

This study was designed to highlight the experience of implementing PBL electronically. It was intended to stimulate analysis and discussion regarding the extent to which e-PBL system has achieved in acquiring medical knowledge among the undergraduate students. The objective of this research was to study the students and facilitators perception regarding conventional and new implicated portal based electronic Problem based Learning (PBL).

These are the seven jumps of PBL that students of Ziauddin University follow to solve the PBLs. Each PBL has two sessions,

each comprising of two hours, mentioned in their student's guide book[13].

METHODS

This comparative cross sectional study was conducted among students and facilitators of MBBS year 2 and MBBS year 3 at Ziauddin University. The study was approved by Ethics Review Committee of Ziauddin University. Participants who gave the consent were included in this study while those who were absent, on leave, repeating their back year MBBS 2 or didn't give consent were excluded from the study. There were total 130 students in MBBS year 3 and 106 in MBBS year 2. Students were divided equally into 8 PBL groups according to their roll numbers in ascending order[13]. A feedback form was given to MBBS 2nd year, 3rd year students in their self-study session. The forms were collected and data was analyzed.

Electronic PBL system was introduced by Ziauddin University in the year 2018 in which portal i.ds of all students and facilitators of MBBS 3 were firstly tested for e-PBL submission and checking. After 3 months it was then also implicated on MBBS 2nd year. There were 2 sessions of a PBL for two hours (of each session), first session was conducted on Monday where the students read the case, defined and sorted the problems by applying prior knowledge, enlisted learning goals (LGs) and made flow chart of the problem. The second session was conducted after 3 days i.e on Friday, in which students discussed and accomplished their Learning goals, related PBL's clinical problem to their module objectives (basic sciences) and completed their 7 jumps of PBL with pertinent references. Lastly they abridged the entire discussion. Both sessions were conducted by same facilitator. In old conventional PBL system students had to derive LGs by own under guidance of facilitator but in new portal system LGs were already displayed in portal when students login to fill it for submission.

The data was analyzed using SPSS version 22. Descriptive statistics was used for analysis of data. Data was expressed in terms of Frequencies and percentage.

RESULTS

A total of 88 students participated in this study out of which 32(36.4%) were from MBBS 2nd year and 56(63.6%) from MBBS 3rd year. Out of 88 students, 55(62.5%) were females. Their age range was 20-22 years.

Regarding facilitators a total of 26 participated in the study. Their age range was 25-37 years, in which 15(57.7%) were of MBBS 3 and 11(42.3%) of MBBS 2. Out of 26(69%) were females and 15 (57.7%) were married. By education point of view, MBBS 2 and 3 PBL instructors' majority (38.5%) were BDS graduates and M Phil trainees, (23%) were BDS qualified and (11.5%) were MBBS and M.Phil trainees.

Fig. 2: Individual Frequency and percentage of students and facilitators year 2 and 3 favored/liked 'x' PBL system

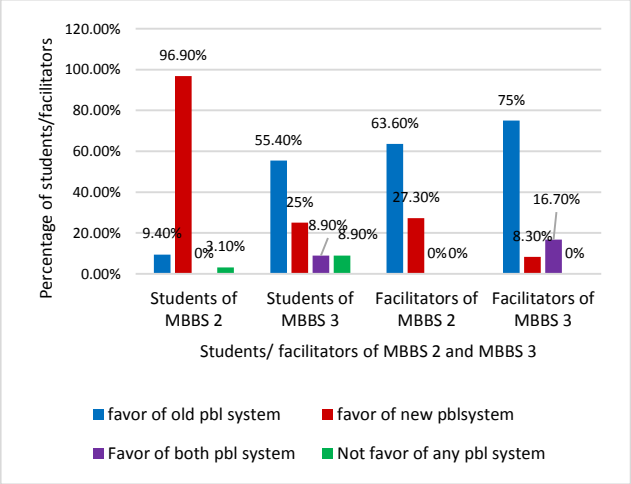

Figure 3: The preferred PBL system for learning purpose in students and facilitators

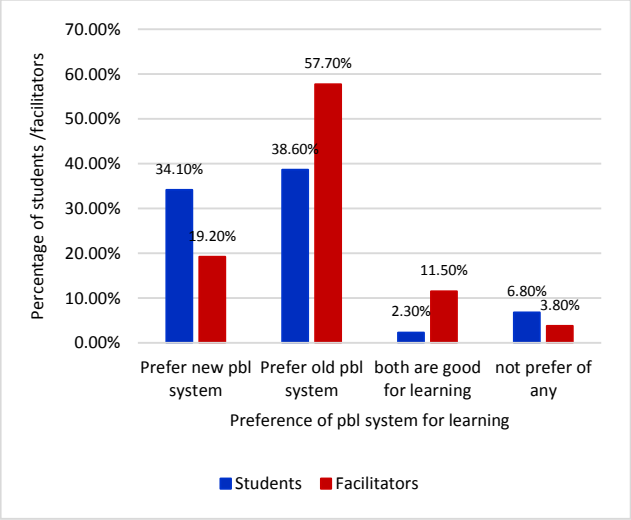

Table 1: Frequency and percentage of students and facilitators of both year 2 and 3 favored/liked 'x' PBL strategy

PBL strategy (x)	No. of students n (%)	No. of facilitators n (%)
Favoring old PBL system	34 (38.6)	20 (76.9)
Favoring new PBL system	43 (48.8)	4 (15.4)
Favoring both PBL system	5 (5.7)	2 (7.7)

Table 2: The preferred Log book submission method in students and facilitators among both PBL systems

Log book submission method	No. of students%	No. of facilitators%
New e log book submission on portal	45 (51.1)	6 (23.1)
Old conventional/manual logbook	28 (31.8)	15 (57.7)
No log book submission	1 (1.1)	1 (3.8)
Both new and old log book submission system	3 (3.4)	0 (0)

Table 3: Students observed/received facilitators response to new e-PBL system and facilitators observed students response on implication of new e-PBL system

Students perceived facilitators' behavior	Frequency/No. of students n(%)	Frequency/No. of facilitators n(%)
Neutral/normal/as usual	47 (53.4)	8 (30.8)
Satisfactory to new e PBL system	12 (13.6)	4 (15.4)
Unsatisfactory/not welcoming	24 (27.3)	6 (23.1)
Happy/relieved/promoting new e-PBL system	2 (2.3)	5 (19.2)
Missing (who did not answer)	3 (3.4)	3 (11.5)
Total	88 (100)	26100)

Table 4: The advantages of old conventional PBL learning system (most of them answered more than one) as experienced by students/facilitators

Frequent advantages of conventional PBL mentioned by students	Students%	Facilitators%
None	15 (17)	0 (0)
Help in viva preparation	13 (14.8)	3 (11.5)
Easy to access for study and recall	22 (25)	6 (23.1)
Can make and edit as notes later also	12 (13.6)	2 (7.7)
Log book writing help in learning more than typing i-e, copy paste only	31(35.2)	12 (46.2)
Extracting PBL from relevant text books and articles and summarized in notes form	9 (10.2)	5(19.2)
Searching from books rather than copy paste from different websites and motivated us to study, understand and learn from relevant books	21 (23.9)	10(38.5)
Can read at any time	8 (9.1)	2 (7.7)
No internet dependency	4 (4.1)	3 (11.5)
Reward keeping. Facilitators gave remarks on logbook when they checked manually. It motivates us to study more in appropriate way	3 (3.4)	1 (3.8)
It helped to clarify concepts which were not understood by text book reading alone.	6 (6.8)	3 (11.5)
Log book checking by facilitator improves student teacher communication, facilitator identified individual students lacking, strength and the area where student needs guidance	0 (0)	4 (15.4)

Table 5: The disadvantages of old conventional PBL learning system (most of them answered more than one) as experienced by students/facilitators

Frequent disadvantages of conventional PBL mentioned by students/facilitators	Students%	Facilitators%
None	24 (27.3)	6 (23.1)
Log book writing is time consuming	29 (33)	4 (15.4)
Risk of losing log book	7 (8)	2 (7.7)
To approach and to get log book checked manually by facilitator	8 (9.1)	0 (0)
Paper wastage	0 (0)	3 (11.5)
Some students skipped didn't submit log book to facilitator to get it checked on time	0 (0)	3 (11.5)

Table 6: The advantages of new e-PBL learning system (most of them answered more than one) as experienced by students/facilitators

Frequent advantages of new e-PBL mentioned by students/facilitators	Students%	Facilitators%
None	21 (23.9)	7 (26.9)
Time efficient	30 (34.1)	5 (19.2)
Faster and easy to submit	13 (14.8)	3 (11.5)
Easy to copy and paste from webs thus easy to submit the PBL in less time	11 (12.5)	1 (3.8)
No need to approach to the facilitator for log book checking	1 (1.1)	1 (3.8)
Cost effective; no log book required	6 (6.8)	0 (0)
Marking and scoring of each PBL become easy	0 (0)	2 (7.7)
Log book submission deadline is making students punctual to submit PBL on time	0 (0)	6 (23.1)

Table 7: The disadvantages of new e-PBL learning system (most of them answered more than one) experienced by students/facilitators

Frequent disadvantages of e PBL mentioned by students/facilitators	Students%	Facilitators%
None	11(12.5)	0(5)
Copy paste from different websites in e PBL submission has made PBL useless to learn, retain knowledge and information	24(27.3)	13(50)
Once submitted we cannot access back to recall information/knowledge.	12(13.6)	4(15.4)
Cannot edit later the submitted PBL to make notes	6(6.8)	0(0)
Submitted PBL was allowed to view for revision only few days before exams thus could not be revised to recall that submitted topic when we want as we did easily in old manual log book.	7(8)	1(3.8)
Not allowed to open electronic devices when sitting in waiting room for viva exam revision	5(5.7)	0(0)
Internet connection problem	9(10.2)	3(11.5)
I.T problem and site trafficking to submit/check PBL again and again	15(17)	3(11.5)
Time deadline information to students to submit/check PBL at pink of time	11(12.5)	2(7.7)
Easy to copy paste by taking whole content from batch mates	9(10.2)	10(38.5)
Difficult to learn	11(12.5)	1(3.8)
Not useful for exam preparation	10(11.4)	0(0)
In e PBL submission students skip some learning goals (LGs) derivation thus they derived less LGs	0 (0)	5(19.2)
Indirect checking via portal is less guiding and communicable to each individual student	0 (0)	4(15.9)
Promoting students to study and paste material in e log book from unreliable sources, web	0 (0)	3(11.5)

DISCUSSION

Problem based learning is a learning strategy that is developed on principles of adult learning[15]. New knowledge and understanding develops through working on the problem[16].

The employment of technology in education and the use of electronic learning applications have become markedly increased for learning and assessment activities[14]. Electronic applications increase the interest and motivation of students and promote learning. They have also been applied to PBL sessions[14].

Regarding the written feedback Performa; about (48.8%) students were in favor of new e-PBL system and (76.9%) facilitators were in favor of old PBL system with highly significant p-value <0.005 (table 1 and figure 2). About (51%) of students' preferred new e-PBL system and (58%) facilitators preferred the old conventional PBL system for log book submission (table 2). Logbooks are reported to be widely used in undergraduate medical education as tools for individual student guidance, evaluation and training[17, 18]. The students of MBBS 2nd and 3rd year observed their facilitators (53%) neutral response on implication of new e PBL system and in the same way facilitators also perceived students response (30.8%) normal/neutral with significant p-value on its association which is showing peer effect (table 3).

In figure 3, (38.6%) students and (57.7%) facilitators selected conventional PBL system for learning purpose. The study done by Musal[14] et al. and Kumar[19] et al. reported that the students were in favor of conventional PBL as they determined the learning objectives, had better participation in the sessions and depth of discussion.

Table 4 depicted the advantages of conventional PBL as mentioned by students and facilitators. The advantages of conventional PBL included log book writing helps in learning

(35.2%) students and (46.2%) facilitators, easy to access for study and recall (25%) students and (23.1%) facilitators[19], searching from books motivated to study and understand[16] (23.9%) and (38.5%) facilitators. In a study done by Aldayel[17] et al. and Oderinu[20] et al. and it was reported that students preferred PBL as it helps in better understanding and problem solving.

Table 5 showed the disadvantages of conventional PBL, (33%) students reported log book writing is time consuming and (23.1%) facilitators reported no disadvantage. It was reported by Jud[21] et al that logbook did not increase the students' interest in the subject.

Table 6 showed the advantages of e-PBL. The advantages of e-PBL reported by students included time efficient (34.1%) and logbook submission deadline makes students punctual (23.1%) as reported by facilitators. Dahllof[22] et al did a study on logbook for continuous self assessment in pediatric dentistry. This study reported that 54% of students wanted to maintain logbook for formative tool of evaluation. A study done by Denton[23] et al. mentioned that a feasible and acceptable logbook system is an achievable goal, although the students usually do not complete logbooks unless required. It was reported by Krieger[24] et al. that in order to use the logbook as an evaluation tool and to determine the progress of students towards the goal and objectives, the students need to be supervised and feedback should be given to students.

Table 7 mentioned the disadvantages of e-PBL. About (27.3%) students and (50%) facilitators reported that copy paste from websites in e-PBL submission has made PBL less useful to learn and retain knowledge. A study done by Achuthan[25] et al. suggested that data entry in the logbook is required to be kept simple. Students should be given advice regarding submission of logbook. Facilitators need to discourage students for copy pasting the material from websites. Students should be encouraged to write the PBL content in their own words and they need to understand what they have written. Also, it is the duty of facilitators to make evaluation of student performance and give feedback to students about their participation and learning in the group[18].

CONCLUSION

The majority of medical students had a preference for e-PBL and the majority of facilitators preferred conventional PBL system.

Declaration of Interest: We declare no conflict of interest

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Figure 1: Seven jumps of a PBL