



## Original Research Article

## Tele-education; views on online problem-based learning for postgraduate physiotherapy students

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## ABSTRACT

**Background:** Tele-education gained popularity with emergence of COVID 19 as the best choice of sustaining education. This study investigated the views of learners on a student centric approach, online problem-based learning (OPBL) as a mode of online education for postgraduate physiotherapy students.

**Materials and Methods:** A weekly OPBL framework was prepared and implemented. A group of 26 students underwent the weekly session. It included a webinar session, self study period, chat-room discussion and videoconferencing conducted into 3 phases. A self-reported feedback questionnaire was designed to measure the quality of the learning experience.

**Findings:** Learners were able to adapt themselves to OPBL with a positive response for the learning experience.

**Conclusion:** Integration of OPBL for postgraduate physiotherapy students can be useful and acceptable mode of teaching-learning from students perspective.

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### 1. Introduction

Tele-education gained popularity over the years beginning from the Millennial. Consequently it was brought into the limelight with the emergence of COVID 19 as the best choice for sustaining education.<sup>1</sup> Amongst the various modes of online teaching-learning, WhatsApp and email for educational interactions were most widely used. Google classroom, zoom or Google meet has been preferred by teachers for online class but absenteeism remained a challenge. Learners have favoured webinars as it remains the most used online mode.<sup>2</sup>

Rearrangement from offline to online education inevitably brought some added challenges. Increased level of stress and fatigue with lengthy, uninteresting mode of online teaching-learning was a common struggle amongst

learners.<sup>2,3</sup> Lack of interaction with the instructor and other classmates, lack of customized teaching methodology for students to manage distraction. To improve interaction, doubt clearance, feedback, increase attendance, make online learning more student friendly and satisfactory there was a need to further explore various online teaching-learning modes.<sup>4,5</sup>

Problem-based learning (PBL), used successfully for over 30 years, is an instructional and curricular student-directed approach that empowers learners to deal with difficulties, conduct research, integrate theory and practice, apply knowledge and skills to develop a viable solution to an outlined problem.<sup>6</sup> Effectiveness of PBL delivered using digital platforms, precisely a blend of online and offline mode of teaching-learning in areas of health care education has shown promising results. There is a dearth of evidence in demonstrating the efficacy of complete digitally delivered, distance-based Online PBL especially

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amongst physiotherapists, which requires further inquiry.<sup>7</sup> The purpose of this study was to implement OPBL as a mode of teaching-learning for postgraduate physiotherapy students and to investigate its effectiveness, from student's perspective.

## 2. Materials and Methods

The conceptual framework of OPBL by Tudor Car et al.<sup>7</sup> and Chung et al.<sup>8</sup> was adopted to develop the guidelines. These guidelines were outlined to describe the application, process, and delivery of teaching-learning methods. To meet the purpose of this study a self-reported feedback questionnaire was systematically designed to measure the quality of the learning experience. The two subject experts from the university screened and approved the selected framework and questionnaire. Moreover, the feedback questionnaire was content and face validated by five other experts.

A structured problem was developed and focused on the levels of healthcare delivery and challenges faced by the Indian health care system from the postgraduate community physiotherapy curriculum. Community challenges such as awareness, accessibility, human power crisis, cost of healthcare, and accountability were selected.<sup>9</sup> In the week before the leading session a meeting was organized by the community department to get oriented and familiarized with the digital system, troubleshoot the technical issues, and highlight steps, processes, core elements of OPBL.

Students enrolled in the first year (n=26) of the Master in physiotherapy (MPT) course were chosen to participate in the study from Sancheti Institute College of Physiotherapy, Pune. The OPBL case was delivered using WhatsApp and zoom allowing participants to send text messages, video calls, share images, documents, and teleconferencing, synchronously communicating with each other respectively. The facilitator, conscripted to administer the protocol, was an experienced PBL facilitator familiar with the online platform.

Learners were oriented to problem-based learning as a mode of teaching-learning method by the faculty expert. The OPBL protocol was developed for a time frame of one week and three phases (Figure 1). The first phase of the protocol included a webinar, developing a foundation of the subject matter, and directing learners to the problem structure. The webinar host provided learners with supplemental references. Based on the WHO theme of 2018- "Universal Health Coverage-Everyone, Everywhere", above mentioned community-based challenges were presented to the learners.

In the second phase, learners were instructed to divide themselves to form five small groups and assigned sub-questions based on specific real-world situations. For example, why low level of health awareness amongst Indians remains a long-standing challenge? Each group



Fig. 1: A weekly plan for online problem-based learning

received instructions to acknowledge the problem, analyze facts, and issues related to their assigned situation, collect research evidence and generate a hypothesis to offer a solution within the allotted time frame. Each group was assigned with one facilitator, whose role was to ensure adherence to the topic during the chat room discussion.

The third phase was split into two steps, chat room discussion on WhatsApp followed by video conferencing on zoom. In the first step learners listed out their hypotheses, ideas, or hunches followed by brainstorming on missing information which included sharing links, articles, and other references. In the second step, the reporting session on zoom video conferencing, each group summarised what they have learned and gave a brief proposition on how their newly acquired knowledge is being applied to problem-solving followed by learners and facilitator analyzing the results.

Data was collected using Google forms, a survey administration app that is included in the Google Drive office suite was used to create a self-reported feedback questionnaire (Table 1). It was shared promptly after the session and the response was recorded using a 5 point LIKERT based system from 5 (strongly agree) to (1 strongly disagree).

Scoring : Strongly agree - 5, Agree- 4, Neutral - 3, Disagree- 2, Strongly disagree- 1

## 3. Findings

Qualitative thematic analysis was done for the study. Problem scenario and cognitive support is presented in Figure 2, online learning environment and facilitator support in Figure 3 and OPBL as a mode of teaching-learning in Figure 4. Majority of the learners strongly agreed or agreed to the all aspects of OPBL suggesting it to be a favourable and advantageous online mode.

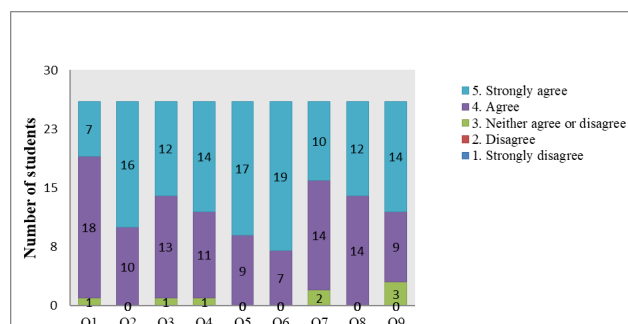
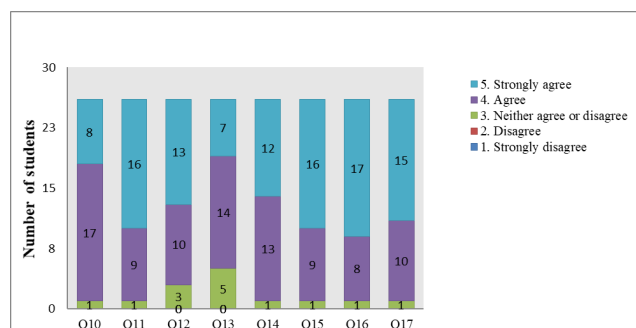
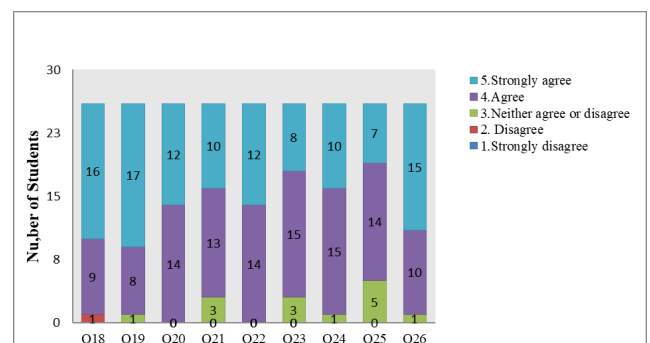


Fig. 2: Problem scenario and cognitive support

**Table 1:** Self-reported feedback questionnaire for online problem-based learning

Items	5	4	3	2	1
Problem Scenario					
1. Easy to understand					
2. Triggered interest					
3. Stimulated critical reasoning					
4. Helped in self-directed learning and plan my own work					
5. Helped in developing the ability to work as a team member					
Cognitive Support					
6. Adequate time was provided for self study					
7. Better accessibility of educational material					
8. It was easy to reflect and revise the topic of discussion					
9. Faster and better access to the information					
Chat room, Online session and Learning environment					
10. It was easy to participate in group discussion					
11. This made studying the subject interesting					
12. Equal opportunity was provided for participating in the discussion					
13. Online environment was comfortable and easy to work in					
14. It helped in gaining confidence and express myself					
Staff and facilitator					
15. Strong efforts were made to make subject interesting					
16. Focus was more on understanding than memorizing					
17. Were active throughout the session and helpful feedback was provided to solve the questions					
Overall OPBL session as a mode of teaching learning					
18. Enables productive discussion					
19. Developed more interest with the passage of time					
20. Satisfactory results in building new knowledge					
21. More working than in traditional PBL ( student centric)					
22. Developed my analytical skill, ability to find target information and tackling the subject					
23. Time saving					
24. Easy to take in large amount of information					
25. OPBL is better and effective than traditional PBL and classroom learning					
26. I would like to repeat the experience					
Comments					

**Fig. 3:** Online learning environment and facilitator support**Fig. 4:** Online PBL: Mode of teaching-learning method

### 3.1. Theme 1 - Problem scenario

Learners agreed the ill structured problem presented was easy to understand and triggered interest. One of the

participants enthusiastically shared that ‘The problem scenario was very relatable because it was real-life. So this helped in stimulating the group to discuss in depth and write

the hypothesis.’ Similarly another participant also resonated with the same thought when she shared that ‘I enjoyed the PBL mostly because we were so many minds working as a team to think about the problem and its solution. Having various perspectives on the nature of the problem and its implications greatly contributed to my learning.’

### 3.2. Theme 2 - Cognitive support

One participant mentioned that it made it easier to grasp the topic and contribute to the discussion because it was spread over a week. This gave enough time to also do background reading and then contribute productively to the discussions.

### 3.3. Theme 3 - Online learning environment

‘I do not generally like to be very vocal in online classes, but since this PBL was combining the use of video conferencing with other modes of being part of the discussion - like whatsapp, I felt more comfortable and was able to participate better.’ Another participant commented that the environment created was energetic and did not allow too to get bored and distracted. Because the conversations were ongoing, focused and well directed, it made it an interesting experience.

### 3.4. Theme 4- Facilitator support

A participant shared that since it was the first time she was attending a PBL, the support and guidance of the facilitators was integral to her learning experience. She commented ‘The facilitators tried to stimulate the conversation and involve everyone, that motivated me to participate and enjoy this experience.’

### 3.5. Theme 5 - OPBL as a mode of teaching-learning mode

‘I was initially skeptical about participating in the PBL since I had assumed that it would not contribute much to my learning, but I was quite surprised at how well-structured it was, and because it was systematically conducted, I found it quite effective.’ Another participant commented that the time frame it was set in and the topic the PBL covered was relevant and appropriate, hence these two factors made it a mode of teaching learning that he looks forward to engaging in the future as well.

## 4. Discussion

The Indian educational system has always been dominated by face-to-face, classroom-based learning methods which were no longer available due to the unusual phase of lockdown. The government of India had allowed Indian educational institutions to continue the curriculum through virtual classrooms. The education system resorted to the online mode of teaching-learning method, an imperfect

nevertheless quick solution to the crises.<sup>4</sup> Undoubtedly, challenges such as internet connectivity, electricity, and availability of a laptop or smartphone are indisputable, the online teaching-learning method is successful initially when students meet these demands.<sup>5</sup>

Tele-education had conflicting responses regarding the effectiveness of learning. Learners have reported a lack of interest, loss of attention, unable to cope with the pace of online sessions, communication issues, and felt the session to be teacher-centric. Lack of interaction with the instructor and other classmates, an increased level of stress, and fatigue were also reported.<sup>2-5</sup> OPBL has been proposed to overcome some of these challenges, to not only regain the interest of students, make it more interactive and student-centric but also get insights into the student’s perception in shaping future online mode of teaching-learning approaches.

The self-reported questionnaire revealed that OPBL triggered interest amongst students and assisted in improvising the study approach during the lockdown period. The advancement in technology and easy access made the working student-friendly. This is consistent with previous study suggestive of OPBL offers increased accessibility and reduced costs for students.<sup>10</sup> The majority of the learner in the current study agreed that it was easy for them to reflect on and revise the topic of discussion. It showed a positive atmosphere and teamwork, which is consonant with group work effectiveness in traditional PBL.<sup>8</sup>

The challenge of lack of interaction with classmates and tutors was resolved. There was strong agreement on being able to express and execute themselves in a constructive discussion. It supported ‘quieter’ students, giving them better opportunities to contribute in online discussion than they would in the classroom setup or webinars.<sup>10,11</sup> Though not the aim of the study, online learning factors have a contrasting outcome for introverts and extroverts, and based on student’s personalities they build a certain rhythm to get along with the online environment.<sup>12</sup> Regardless of that learners reported OPBL was comfortable and easy to work in. Learners were also satisfied with the facilitator and their participation in giving feedback and insight on the topic. Participants perceived OPBL as productive and developed their knowledge on the topic. A study by Gündüz AY et al. showed one week of OPBL proved to improve performance and knowledge on the topic.<sup>13</sup>

Tele-education, which gained fame owing to the entire pandemic situation, will have a long-lasting effect on shaping the modern era’s educational system. Continuity in exploring the online educational approaches beyond pandemics will surely benefit the entire system worldwide. OPBL as a mode of teaching-learning method was received positively during the lockdown by postgraduate physiotherapy students. The study has its limitations in that it does not test the student’s knowledge of the topic after the

OPBL session to objectify the effectiveness. Nevertheless, students perceived that it was easy to take in a large amount of information and increase knowledge on the topic.

## 5. Conclusion

Integration of OPBL for community-based topic for postgraduate physiotherapy students can be useful and acceptable mode of teaching-learning from students perspective.

## 6. Source of Funding

None.

## 7. Conflict of Interest

The authors declare no conflict of interest.


## References


1. Furqan Z, Fatima SN, Awan GA. Tele-education in the post-COVID period; A new normal. *Anaesth Pain Intensive Care*. 2020;24(3):255–8.
2. Mishra L, Gupta T, Shree A. Online teaching-learning in higher education during lockdown period of COVID-19 pandemic. *Int J Educ Res Open*. 2020;1:100012. doi:10.1016/j.ijedro.2020.100012.
3. Kant R. COVID-19 Pandemic: Looking in the mind of students during lockdown. *Pacific Int J*. 2021;4(1):22–9.
4. Nagar S. Assessing Students' perception toward e-learning and effectiveness of online sessions amid COVID-19 Lockdown Phase in India: An analysis. *UGC CARE J*. 2020;19(13):272–91.
5. Raj U. Indian Education System in Fight against COVID-19 Pandemic. *Int J Creative Res Thoughts*. 2020;8(7):2084–8.
6. Savery JR. Essential readings in problem-based learning: Exploring and extending the legacy of Howard S. Barrows. *Interdiscip J Problem-based Learn* 9(2). 2015;9. doi:10.7771/1541-5015.1593.
7. Car LT, Kyaw BM, Dunleavy G, Smart NA, Semwal M, Rotgans JJ, et al. Digital Problem-Based Learning in Health Professions: Systematic Review and Meta-Analysis by the Digital Health


Education Collaboration. *J Med Internet Res*. 2019;21(2):e12945. doi:10.2196/12945.

8. Chung EY. Facilitating learning of community-based rehabilitation through problem-based learning in higher education. *BMC Med Educ*. 2019;19(1):433. doi:10.1186/s12909-019-1868-4.
9. Kasthuri A. Challenges to healthcare in India-the five A's. *Indian J Community Med*. 2018;43(3):141–3.
10. Erickson S, Neilson C, O'halloran R, Bruce C, McLaughlin E. 'I was quite surprised it worked so well': Student and facilitator perspectives of synchronous online Problem Based Learning. *Innov Educ Teach Int*. 2021;58(3):316–27.
11. Downing K. Personality and online learning. In: Cases on Interactive Technology Environments and Transnational Collaboration: Concerns and Perspectives. IGI Global; 2010. p. 126–39.
12. Pavalache-Ilie M, Cocorada S. Interactions of students' personality in the online learning environment. *Procedia Soc Behav Sci*. 2014;128:117–22.
13. Gündüz AY, Alemdag E, Yasar S, Erdem M. Design of a Problem-Based Online Learning Environment and Evaluation of its Effectiveness. *Turk Online J Educ Technol*. 2016;15(3):49–57.

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