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Effectiveness of Workshop on Problem Based Learning for Health Professionals

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ABSTRACT:

Background: Problem based learning (PBL) is a self-directed method that help learner to develop critical thinking, problem solving skills and enhance their aptitude. The objective of the study was to measure the effectiveness of workshop in changing the faculties’ knowledge, skills and attitude on PBL. Methods: A descriptive design with pre-test and post-test was used to examine the objectives of the study. A self-report questionnaire was used to collect data from a convenience sample of 23 health professions faculties from various institutions of Institute of Medicine (IOM), Tribhuvan University (TU), affiliated institutions and others of Nepal who attended the workshop. Faculty’s feedback on PBL was collected before and after workshop using Likert Scale’s 4 and 5 points. Results: The findings of the study were highly significant increment of mean score of post-tests compared to pre-test within the group of “can do it confidently” (p<0.001). Similarly, Majority of participants strongly agreed with ten statements relating to the effectiveness of the PBL after workshop. Conclusion: This PBL workshop training was highly effective to change the faculties’ knowledge, skills and attitude towards the integration of PBL in their classes. This training may help to move from traditional way of thinking to PBL for future implementation.

Keywords: Faculty Development Training, Process Assessment, Problem Based Learning, Problem Solving, Self-directed Learning.

INTRODUCTION:

Problem based learning (PBL) is an educational methodology widely used in medical education.1 PBL is more about “student /learner centered learning” in which knowledge is acquired in dynamic and self-directed way rather than the “teacher teaching “way.2 PBL is specifically aimed at enhancing and optimizing the educational outcomes of learner-centered, collaborative, contextual, integrated, self-directed and reflective learning.1 PBL fits in the student-centered learning based on the accepted principle of constructive alignments.8 According to Gijselaers, there are 3 principles of learning: learning is constructive and not a receptive process, metacognition affects learning and, social and contextual factors influence learning.
The Contextual Learning Theory has often been advocated as the main theoretical underpinning for PBL, which has been highlighted by Boud and Feletti. PBL believes that learning is most effective when students are actively involved and learn in the context in which knowledge is to be used. The PBL tutorial process applies the principles of interactive teaching and learning using discussion pedagogy. The small group learning design creates opportunities for student-centered and collaborative learning characterized by joint goals, mutual rewards, shared resources and complementary roles among members of a group. Students who are guided by a subject-matter expert tutor may benefit more than students guided by a non-expert staff tutor or by a student’s tutor. Barrows and Tamblyn believed that the tutor should have expertise in group facilitation (process expertise) rather than in a subject area (content expertise). Furthermore, the tutor plays a multifaceted role to facilitate learning by supporting, controlling and observing the learning procedure. Forrester and Chau suggest that with this paradigm shift to PBL creates an atmosphere in which social competence, sharing feelings and establishing relationships, is developed not only by the students but also by the facilitators. Qayumi suggests that these schemes are built through self-directed, active interaction and when a new situation or problem arises, we try to apply our scheme to anew situation. Gebhard suggests that learning is achieved by imitating and modeling more experienced learners and that social context is required for learning and development. Tai and Yuen describe in their article different manners used to assess a PBL assignment, and Tiango writes that “the assessment phase should focus on evaluating acts of creativity, problem-solving, self-management and teamwork”. An assessment plan that respects PBL principles; is reliable and valid; and has no negative effect on student learning. From the students or learners’ point of view, major strengths of PBL are self-directed learning, clinical integration, group discussion or work, sharing information, self-confidence, long term memory, team work and rational thinking.

PBL can be expected to equip students with a more enduring educational process and life skills including the higher-order cognitive skills of critical thinking and reasoning and problem-solving as well as “soft skills” in the affective domain of learning such as interpersonal, communication, team-work and leadership.

PBL is originated in the late 1960’s at McMaster University in Ontario, Canada. Howard Barrows’ founder of this educational methodology developed the self-directed model to improve education in the school of medicine. It was developed to improve medical education by shifting from a subject and lecture based curriculum to an interdisciplinary one guided by real-life problems. The group discussion is facilitated by a teacher (i.e., so-called tutor) and is aimed to acquire knowledge, to better understand the problem and to acquire skills to solve the problem. Participants work in small learning teams from 8 to 10 students in each tutorial, bringing together general transferrable skill as communicating, integrating information and problem solving skills (Figure 1).

**Figure 1**: Angles of success in PBL

It had spread in a great pace all over the world in health-related programmes. Medical Education in Nepal took first step from Tribhuvan University (TU) Institute of Medicine (IOM), Maharajgunj in 1978 with the MBBS programme. A large number of faculty members had not gone through specific training in the process of PBL. Thus, with the support of University Grant Commission (UGC), National Centre for Health Professions Education (NCHPE), TU, IOM had taken up the challenges to bridge the existing gap of competencies between teaching of knowledge, skills and attitude in the area of PBL and to strengthen the PBL in health professions education at IOM, it’s affiliated colleges and other institutions of Nepal. The professional competencies of faculties through PBL training. A faculties training program was needed to be developed to upgrade tutors from teachers to facilitators. The aim of the study was to evaluate effectiveness of PBL workshop on knowledge, skills and attitude towards PBL using pretest and posttest among the participated faculties.
MATERIAL AND METHODS:

A descriptive study with pre-test and post-test was used to evaluate training workshop intervention and its effectiveness on knowledge, skills and attitude among selected participants of the training towards the integration of PBL to implement into health professions education program.

A three day “Workshop on PBL” was conducted from May, 8-10, 2019 in NCHPE having six hours each day of teaching interactive sessions supplemented by interactive lecture, simulation, video show, small group discussion and presentation.

The study population was heterogeneous representing medical, nursing and basic science. A convenience sample of 23 health professional faculties from various health institutions of Nepal were selected. Of the participants, 19 were clinical teachers from Tribhuvan University and rest were from other institutions. Prospective faculties were selected by the campus chief and respective heads of departments of Maharajgunj Medical and Nursing Campuses, IOM, TU and its affiliated medical institutions; and Academy of Health Sciences and other. The participants were those who had successfully completed the basic Faculty Development Training as well as among those who did not have chance to participate in PBL.

Three days’ workshop was scheduled in four sessions per day.

**Day 1:** First session was included concept of PBL, principles and significance of PBL, designing the problem packages in small groups using patient’s case sheets to construct the problem packages with example. Second session was contented video show of seven steps, discussion on role of the tutors group leader and member and experience sharing of PBL in Bachelor of Medicine and Bachelor of Surgery (MBBS) of IOM, TU. Third session was contented self-directed learning and learning resources for PBL. Fourth session was fulfilled with review articles in small group discussion and presentation and sum up the day’s session.

**Day 2:** First session was contented designing problem packages in small groups using patient case sheets to construct the problem packages and presentation. Second session was provided conduct PBL tutorial session in small group I, video recording and feedback session and students assessment for PBL. Third session was included the significance of small group process in teaching and learning. The fourth session was included review articles in small group and presentation.

**Day 3:** The first session included assessment and evaluation of PBL. The second session was contented conduct PBL tutorial session in small group II and video recording and feedback session. The third session was contented redesigning the problem packages and delivered and the fourth session was contented presentation of the problem package, discussion on ways and strategies to strengthen PBL in health professionals program.

Duration of each session was one and half hour including 10-minute break. The teaching hour per day was 6 hours and the total teaching hours in three days was 18 hours. Validity and reliability were maintained by training coordinator and other resource person who were expert in medical education.

A written semi-structured questionnaire was administered to 23 faculty teachers comprising four sections namely socio-demographic profile of the participants in first section, ability of the participants on Problem Based Learning in second section, feedback of participants on the effectiveness of the PBL after workshop in third section and recommendations from participants for further improvement of the PBL workshop in future in four section.

The respondents were self-administered closed ended questionnaires at the beginning. The same set of questionnaire was administered in the posttest after following the sessions in order to see the effectiveness of PBL workshop which were designed 14 statements in the survey questionnaire for the pretest and posttest to determine their ability on PBL using four point Likert scale categorizing into “cannot do it” (1), “have some ideas” (2), “can do it” (3) and “can do it confidently” (4) mentioned in table 2. A total of 15 minutes’ time was allotted for the pre-test and post-test.

The second category questionnaire was used which had 10 items for feedback about the effectiveness of the PBL after workshop with five-point Likert scale like “strongly agree” (1), “agree” (2), “neutral opinion” (3), “disagree” (4) and “strongly disagree” (5) mentioned in table 3.

At last recommendations were collected from participants for further improvement of the PBL workshop.

Pre-test and Post-test questions were prepared and maintained validity and reliability by training coordinator and other two
resource person who were experts in medical education. The survey form questions were pilot tested to see its uniformity and consistency; and if their wording is needed correction or modification. Participants were provided PBL related reading articles by email before one-week of workshop for self-study. Total numbers of resource person were three.

Ethical written consent was taken from participants before collecting the Pretest and Posttest and feedbacks. All participants attending the PBL workshop session returned back the questionnaire. During this workshop training, resource persons used video show, interactive lecture, small group discussion and presentation, simulation with debriefing and self-directed learning. A strategy of workshop was learning by doing, participatory, evidence based and problem-based learning.

The data of pre-test and post-test were analyzed using SPSS Version 21. The paired t-test and one-way ANOVA were used to compare means scores. Data was presented in mean ± standard deviation and measured statistically significant at p≤ 0.05 (Confidence level 95%).

RESULTS:

Section 1: Socio-demographic Profile of the Participants (n=23)

Gender of the Participants: In this study, majority (66%) of the participants was male whereas minority (34%) was female.

Professions of the Participants: Majority of the participants’ profession were clinical teachers (43%). Others were nursing and basic science teachers.

Academic Positions: Majority 34.75 % of the participants in both of the academic position were lecturer and associate professor in same percentage. Others were instructor, teaching assistant and professor.

Year of Experiences in Teaching: Majority (66%) of the participants were less than 10-year experience whereas minority (34%) of the participants were more than 10 years’ experiences in teaching various subjects of medical education.

Previous Experiences of PBL Training: All of the participants responded that they didn’t have previous training on PBL. It may be inferred that majority of teaching faculties of medical education haven’t been trained in PBL.

Section II: Ability of the Participants on Problem Based Learning:

In this study, majority 14 (60.86%) of the participants scored that they “cannot do it” in the pre-test to play role of tutor/facilitator in PBL tutorial whereas in post-test 15 (65.21%) of them scored that they “can do it confidently”. In the same way, majority 14 (60.86%) of them scored that they “cannot do it” in the pre-test to conduct PBL session by following the process of seven steps of PBL whereas in post-test 16 (69.56%) of them scored that “can do it confidently”. Furthermore, majority 13 (56.52%) of them scored that they “cannot do it” in the pre-test to prepare the problem package for PBL session whereas in post-test 18 (78.26%) of them scored that they “can do it confidently”. Likewise, majority 16 (69.56%) of them scored that they “can do it confidently” in post-test to identify the importance of self-directed learning whereas 10 (43.47%) of them scored that they “cannot do it” in the pre-test. Similarly, 14 (60.86%) of them scored in post-test that they “can do it confidently” to identify types of assessment in PBL tutorial whereas 13 (56.52%) of them scored that they “cannot do it” in pre-test (Table 2).

Table 2: Ability of the participants on Problem Based Learning

<table>
<thead>
<tr>
<th>Statement</th>
<th>Cannot do it (1)</th>
<th>Have some ideas (2)</th>
<th>Can do it (3)</th>
<th>Can do it confidently (4)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Explain the concept of PBL</td>
<td>9 (39.13%)</td>
<td>12 (52.17%)</td>
<td>2 (26.08%)</td>
<td>16 (69.56%)</td>
</tr>
<tr>
<td>2. Conduct PBL tutorial session using the principle of PBL</td>
<td>13 (56.52%)</td>
<td>10 (43.47%)</td>
<td>6 (26.08%)</td>
<td>17 (73.91%)</td>
</tr>
<tr>
<td>3. Play the role of tutor/facilitator in PBL tutorial</td>
<td>14 (60.86%)</td>
<td>8 (34.78%)</td>
<td>8 (34.78%)</td>
<td>15 (65.21%)</td>
</tr>
<tr>
<td>Statement</td>
<td>Cannot do it (1)</td>
<td>Have some ideas (2)</td>
<td>Can do it (3)</td>
<td>Can do it confidently (4)</td>
</tr>
<tr>
<td>---------------------------------------------------------------------------</td>
<td>------------------</td>
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<td>---------------</td>
<td>--------------------------</td>
</tr>
<tr>
<td></td>
<td>Pre-test Post-test</td>
<td>Pre-test Post-test</td>
<td>Pre-test Post-test</td>
<td>Pre-test Post-test</td>
</tr>
<tr>
<td>4. Play the role of group leader in PBL tutorial</td>
<td>13 (56.52%) 0 (0%)</td>
<td>8 (34.78%) 0 (0%)</td>
<td>2 (8.69%) 6 (26.08%)</td>
<td>0 (0%) 17 (73.91%)</td>
</tr>
<tr>
<td>5. Play the role of members in PBL tutorial</td>
<td>13 (56.52%) 0 (0%)</td>
<td>8 (34.78%) 0 (0%)</td>
<td>2 (8.69%) 5 (21.73%)</td>
<td>0 (0%) 18 (78.26%)</td>
</tr>
<tr>
<td>6. Conduct PBL session by following the process of seven steps of PBL</td>
<td>14(60.86%) 0 (0%)</td>
<td>8 (34.78%) 0 (0%)</td>
<td>1 (4.34%) 7 (30.43%)</td>
<td>0 (0%) 16 (69.56%)</td>
</tr>
<tr>
<td>7. Prepare the problem package for PBL session</td>
<td>13 (56.52%) 0 (0%)</td>
<td>8 (34.78%) 0 (0%)</td>
<td>2 (8.69%) 5 (21.73%)</td>
<td>0 (0%) 18 (78.26%)</td>
</tr>
<tr>
<td>8. Establish the concrete action plan to achieve the learning goals of PBL</td>
<td>12 (52.17%) 0 (0%)</td>
<td>9 (39.13%) 0 (0%)</td>
<td>2 (8.69%) 6 (26.08%)</td>
<td>0 (0%) 17 (73.91%)</td>
</tr>
<tr>
<td>9. Identify the importance of Self-Directed Learning</td>
<td>10 (43.47%) 0 (0%)</td>
<td>11 (47.82%) 0 (0%)</td>
<td>2 (8.69%) 7 (30.43%)</td>
<td>0 (0%) 16 (69.56%)</td>
</tr>
<tr>
<td>10. Identify the significance of the process of small group discussion</td>
<td>9 (39.13%) 0 (0%)</td>
<td>12 (52.17%) 0 (0%)</td>
<td>2 (8.69%) 8 (34.78%)</td>
<td>0 (0%) 15 (65.21%)</td>
</tr>
<tr>
<td>11. Identify and use the learning resources for the relevant information</td>
<td>7 (30.43%) 0 (0%)</td>
<td>12 (52.17%) 0 (0%)</td>
<td>4 (17.39%) 7 (30.43%)</td>
<td>0 (0%) 16 (69.56%)</td>
</tr>
<tr>
<td>in PBL</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12. Assess and evaluate peer and self in PBL tutorial</td>
<td>10 (43.47%) 0 (0%)</td>
<td>9 (39.13%) 0 (0%)</td>
<td>4 (17.39%) 9 (39.13%)</td>
<td>0 (0%) 14 (60.86%)</td>
</tr>
<tr>
<td>13. Construct and use different types of checklist to assess students in</td>
<td>11 (47.82%) 0 (0%)</td>
<td>10 (43.47%) 0 (0%)</td>
<td>2 (8.69%) 8 (34.78%)</td>
<td>0 (0%) 15 (65.21%)</td>
</tr>
<tr>
<td>PBL tutorial</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14. Identify types of assessment in PBL tutorial</td>
<td>13(56.52%) 0 (0%)</td>
<td>8 (34.78%) 0 (0%)</td>
<td>2 (8.69%) 6 (26.08%)</td>
<td>0 (0%) 17 (73.91%)</td>
</tr>
</tbody>
</table>

**Outcomes of the Tutor Training Workshop:** The results of the study showed a statistically significant difference between the results of the pre-test and post-test (p<0.05). As regards participants (n=23) overall satisfaction with their learner’s performance during taking PBL sessions, table 3 showed that there was statistically significant (p<0.0001) difference between pre (5.75±5.10) and post (6.75±6.76) mean scores of group among faculties participated in PBL workshop (Table 3).

**Table 3 : Outcomes of the tutor training workshop**

<table>
<thead>
<tr>
<th>PBL Workshop</th>
<th>Pre-test Mean ±SD</th>
<th>Post-test Mean ±SD</th>
<th>p-value (t-test)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tutor training workshop</td>
<td>5.75±5.10</td>
<td>6.75±6.76</td>
<td>&lt;0.0001</td>
</tr>
</tbody>
</table>

**Note:** Statistically significance at P≤0.05. Total number of 23 participants (Intervention group)

**Comparison between Participants’ Responses on the given Statement:** Concerning participants’ self-assessment of their overall performance during taking PBL sessions, Table 4 showed that there was a statistically a significant difference between the pre and post mean score in “can’t do it”, “have some idea”, “can do it” and “can do it confidently”. There was significantly (p<0.0001) decreased in “can’t do it” in the mean score of pre-test (11.50±2.176) in comparison with post-test (00± 0.000). Similarly, it was found that “have some idea” was significantly (p<0.0001) decreased in the mean score of pre-test (9.50±1.653) in comparison with post-test (00± 0.000) in the group.
Table 4: Comparison between tutors’ responses on the given statement

<table>
<thead>
<tr>
<th>Responses on 14 statements of effectiveness evaluation</th>
<th>Intervention group</th>
<th>p-value (t-test)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pre-test Mean ±SD</td>
<td>Post-test Mean ±SD</td>
</tr>
<tr>
<td>Can’t do it</td>
<td>11.50±2.176*</td>
<td>00± 0.000</td>
</tr>
<tr>
<td>Have some Idea</td>
<td>9.50±1.653</td>
<td>00± 0.000</td>
</tr>
<tr>
<td>Can do it</td>
<td>2.17± 0.937</td>
<td>6.83± 1-267</td>
</tr>
<tr>
<td>Can do it confidently</td>
<td>0.00±0.000</td>
<td>16.21± 1.188*</td>
</tr>
</tbody>
</table>

Note: Statistically significance at P<0.05.

Furthermore, it showed that all participants scored 14 statements in “can do it confidently” in post-test (16.21±1.188) whereas out of 14 statements; ten got highest scored in “cannot do it” in pre-test (11.50±2.176) in the respective groups. There was highly significant (p<0.0001) improvement of the post-test score over pre-test score by PBL workshop among the participants.

Similarly, it was found that “can do it” was significantly (p<0.0001) increased in the mean score of pre-test (2.17±0.937) in comparison with post-test 6.83±1-267; and “can do it confidently” was highly significant (p<0.0001) increment in the mean score of pre-test (0.00±0.000) in comparison with post-test (16.21±1.188) in the group. The above findings show that PBL workshop was highly effective among participants.

Section III: Feedback of Participants on the Effectiveness of the PBL after Workshop

Majority (73.91%) of the participants strongly agreed with the statement that overall objectives of the workshop were met. The findings showed that 65.21% of the participants strongly agreed that the content of the workshop was applicable and relevant to their practice as well as the simulations of small group tutorial process in PBL were conducted in the workshop; 82.60% of the participants strongly agreed with the statement that the materials above findings show that PBL workshop was highly effective among participants.

Table 5: Feedback of participants on the effectiveness of the PBL after workshop(n=23)

<table>
<thead>
<tr>
<th>Statement</th>
<th>Strongly Disagree (1)</th>
<th>Disagree (2)</th>
<th>Neutral (3)</th>
<th>Agree (4)</th>
<th>Strongly Agree (5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Content of the workshop</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Overall objectives of the workshop were met.</td>
<td>0 (0%)</td>
<td>0 (0%)</td>
<td>0 (0%)</td>
<td>6 (26.08%)</td>
<td>17 (73.91%)</td>
</tr>
<tr>
<td>2. The content of the workshop was applicable and relevant to my practice.</td>
<td>0 (0%)</td>
<td>0 (0%)</td>
<td>0 (0%)</td>
<td>8 (34.78%)</td>
<td>15 (65.21%)</td>
</tr>
<tr>
<td>3. The venue of the workshop was convenient.</td>
<td>0 (0%)</td>
<td>0 (0%)</td>
<td>0 (0%)</td>
<td>5 (21.73%)</td>
<td>18 (78.26%)</td>
</tr>
<tr>
<td>4. My expectation was met.</td>
<td>0 (0%)</td>
<td>0 (0%)</td>
<td>1 (4.34%)</td>
<td>6 (26.08%)</td>
<td>16 (69.56%)</td>
</tr>
<tr>
<td>Presentations</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. The materials in the workshop were adequate and useful</td>
<td>0 (0%)</td>
<td>0 (0%)</td>
<td>0 (0%)</td>
<td>4 (17.39%)</td>
<td>19 (82.60%)</td>
</tr>
<tr>
<td>6. The speakers were resourceful</td>
<td>0 (0%)</td>
<td>0 (0%)</td>
<td>0 (0%)</td>
<td>5 (21.73%)</td>
<td>18 (78.26%)</td>
</tr>
<tr>
<td>7. The time allocated for the workshop was appropriate.</td>
<td>0 (0%)</td>
<td>0 (0%)</td>
<td>1 (4.34%)</td>
<td>6 (26.08%)</td>
<td>16 (69.56%)</td>
</tr>
<tr>
<td>8. Learned new and relevant things from the PBL workshop.</td>
<td>0 (0%)</td>
<td>0 (0%)</td>
<td>0 (0%)</td>
<td>7 (30.43%)</td>
<td>16 (69.56%)</td>
</tr>
<tr>
<td>Small group discussion</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. Increased awareness of the significance of PBL process.</td>
<td>0 (0%)</td>
<td>0 (0%)</td>
<td>0 (0%)</td>
<td>4 (17.39%)</td>
<td>19 (82.60%)</td>
</tr>
<tr>
<td>10. The simulations of small group tutorial process in PBL were conducted in the workshop.</td>
<td>0 (0%)</td>
<td>0 (0%)</td>
<td>0 (0%)</td>
<td>8 (34.78%)</td>
<td>15 (65.21%)</td>
</tr>
</tbody>
</table>
provided in the workshop were adequate and useful and similar percent of them strongly agreed with the statement that the workshop has increased awareness of the significance of PBL process; 78.26% of the participants strongly agreed with the statement that the speakers were resourceful; 69.56% of the participants strongly agreed with the statement that the time allocated for the workshop was appropriate; 78.26% of the participants strongly agreed with the statement that the venue of the workshop was convenient. Likewise, 69.56% of the participants strongly agreed with the statement that they had learned new and relevant things from the PBL workshop. Furthermore, similar percent of them strongly agreed that their expectations were met (Table 5).

**Section IV: Recommendations given in the PBL Workshop**

- It should be started in undergraduate and post graduate medical and other courses of health professions.
- In future, advanced PBL training for all the faculties should be conducted.
- PBL is not a simple task so it should be implemented very carefully.
- PBL training should be conducted outside of Kathmandu valley as well as another region of Nepal.
- PBL orientation should be given to the top-level managers so that it would be very easy to start in health professions.
- It should be continued in existing MBBS and BAMS curriculum as well as need to incorporate in existing courses of nursing and other courses.
- It is high time to start in other colleges.
- Both teacher and student should be oriented before going to implement PBL.
- Resources should be well developed before going to implement PBL.
- The faculty development workshop should be an integral part of the PBL implementation at institutes.

**DISCUSSION :**

**Socio-demographic Profile :** In this study (n=23), majority of participants were male. The participants of the PBL workshop were mostly clinical teachers and they had worked in the position of lecturer or teaching assistant and had experience of less than 10 years.

The outcomes of PBL training workshop showed statistically significant compared pre-test with post-test findings (p≤ 0.05). Effectiveness of the PBL workshop was evaluated using 14 statements evaluation tool. The responses were collected before and after conducting PBL workshop in four categories of each statement namely can’t do it, have some idea, can do it and can do it confidently.

The findings showed that there was statistically significant difference in the mean score of the pre and post-test within the groups “can’t do it”, “have some idea”, “can do it” and “can do it confidently” (p≤ 0.05). There was significantly decreased in the mean score of post-test compared with pre-test within the group “can’t do it”. Similarly, it was found that “have some idea” was significantly decreased in the mean score of post-test compared with pre-test within the group. Furthermore, the study showed that “can do it” was significantly increased in the mean score of post-test compared with pre-test; and “can do it confidently” was highly significant increment in the mean score of post-test compared with pre-test. The above findings show highly effective in changing knowledge, skills and attitude towards PBL using pretest and post-test among the participated tutors. A similar previous study conducted by McLean in South Africa found that a 3-days training workshop was effective in understanding PBL, the role as facilitators and how to manage the groups.29 Joshi et.al. (2015) reported that increment of the knowledge, application and opinion scores were not only statistically significant (p<0.05), the difference were also very large and for most of the sub-groups as well29 indicating that these scores were indeed significantly different even for small samples.

Upadhyaya et.al. reported that the increase in pre-test and post-test average score from 26.50 to 34.55 and decrease in standard deviation indicates positive changes in knowledge on PBL and PBL process assessment among the faculties. Most importantly, the highly significant result with p< 0.0001 indicates the difference between pre-test and post-test scores was not by chance. In other words, the post-test score was significantly higher than the pre-test scores indicating the success of the intervention program among 20 faculty members involved.22

Majority (73.91%) of the participants strongly agreed with the statement that overall objectives of the workshop were met. The findings showed that 65.21% of the participants
strongly agreed that the content of the workshop was applicable and relevant to their practice as well as the simulations of small group tutorial process in PBL were conducted in the workshop.

A study conducted by Naggar et.al. (2013) using the first level of Kirkpatrick’s model which is reaction and it was assessed by workshop evaluation form using a 5-point likert scale; “reaction” of the tutors in the intervention group towards the workshop was assessed. The results have shown overall satisfaction with the organization, content and small group task of the workshop, with most responses being either “excellent” or “very good”.23 It is similar to present study.

Coffin summarizes that staff development is one of the central elements in implementing PBL initiative as well as maintaining the PBL implementation and needs to be put into an action plan from the very beginning when a higher education institution wants to implement PBL.24

Abou-E1-Soud et.al. (2018) reported that training workshops were effective to bring about change in knowledge and attitude of the faculty toward PBL as a new teaching strategy that would be implemented in nursing curriculum25 which was consistent with the present study. This study was supported with previous literatures who have reported that workshops were helpful tool to acquaint PBL among faculties and important way to enhance knowledge, practice and the opinion of PBL.26,27,28 Similar result was also observed for the tutor training program conducted at Suez Canal University, Egypt24 and BP Koirala Institute of Health Sciences, Nepal.29

This study demonstrates the change in faculty perception in the area of knowledge, skills and attitude. A study conducted in Pakistan showed similar findings that workshop had significant impact on changing the perception of faculties regarding PBL system, its positive effect on academic and professional development and improvement of group dynamics among students.30

Without feedback from real life practice their training cycle will not be completed. Participants in this study reported satisfaction with the workshop provided in terms of convenience of the training spot, experience of resource persons and usefulness of the materials and appropriateness of information. Participants reported increased awareness of the importance of the PBL process. Majority of the participants said that their goals and expectations were met and were stimulated by interest. This was congruent with other works who found that training workshops were convenience, within participants’ interest and effectively raised their satisfaction, faculty development and role transition from tutors to facilitator.31,32

The workshop was effective to change the tutors’ knowledge and attitude towards the integration of PBL in their classes. Implementing such a teaching strategy is important to move from the traditional way of thinking. The study result of Piryanl et.al. supports this study on specific sessions such as; PBL process, role of tutor, designing PBL package for PBL and conducting PBL tutorial and changing role of teacher as a facilitator in PBL.33 Joshi et.al. in their study supports tutor facilitation skills in the areas of active learning, self-directed learning, collaborative learning, group skill and increase educational effectiveness of the PBL sessions and the importance of different aspects of PBL tutorial process.21 Zaidi et.al. in their study reveals that facilitator training workshops can help not just to improve the facilitation skills of participants but also to stimulate interest amongst faculty to use PBL in the curriculum.34 The tutor training workshop increases tutors’ self-satisfaction with their performance and incorporated adult learning principles.35 Kaufman and Mann in their study showed that tutors should be trained to guide the process of PBL in order to achieve its goal.36

Faculty training that involves experiential learning, small group work, critical reflection and problem-based learning itself not only resolves these issues but also helps teachers empathize with students’ emotional and intellectual needs.37

The findings of the study was also supported by Baral et.al. that it was significant gain in knowledge and highly beneficial competencies in PBL following the workshop.29

The perception of the teacher found quite relevant and useful for adopting new role as tutor. Olmesdahl and Manning also demonstrated a better understanding of the system and their roles as facilitators.38 Upadhyay et.al. stated that the faculty training for PBL and assessment was helpful in implementing PBL pedagogy.32 Hence, this workshop was found effective on changing knowledge, skills, attitude and perceptions among faculties towards Problem Based Learning.

CONCLUSION:

The study concluded that tutor training workshop was effective in improving faculty facilitation skills in the areas of constructive active learning, self-directed learning,
collaborative learning, intra-personal behavior as tutor. The faculty training workshop increases faculties’ self-satisfaction with their performance.

This study reveals that faculty training workshop can support not just to improve the faculty’s knowledge, skills and attitude but also to stimulate interest amongst faculty to use PBL in the curriculum.

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