Effect of Problem Based Learning and Lecture Based Learning on Nursing Students at Oman Nursing Institute

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الملخص:
خلفية البحث: تعتبر هذه الدراسة الأولى من نوعها في سلطنة عُمان باستخدام إستراتيجية جديدة بتدريس طلبة معهد عُمان للتمريض التابع للمديرية العامة للتعليم والتدريب في وزارة الصحة العمانية. لقد أصبح استخدام الطرق التدريسية التي تربط بين المواد الدراسية النظرية والمواد الدراسية العملية لها دور فعال في زيادة المستوى التعليمي والأكثر تشجيعا للطالب على لدراسة
الهدف: لمعرفة تأثير التدريس بطريقة تعلم حل المشكلة ومقارنتها بطريقة التعلم بالمحاضرة في معهد عُمان للتمريض والتابع للمديرية ألعامه للتعليم والتدريب في وزاره الصحة العمانية.
المنهجية: تم تقسيم طلبة المرحلة الثانية (تمريض البالغين) إلى مجموعتين وكانت الأعداد في المجموعتين متساوية تقريبا. المجموعة الأولى تُدرس بطريقة المحاضرة والتي تُركز على المدرس لشرح المحاضرة وكمصدر للمعلومات وإما المجموعة الثانية فتُدرس بطريقة تعلم حل المشكلة والتي فيها يوزع المدرس الطلبة إلى مجاميع صغيرة داخل القاعة الدراسية ثم يناقش المدرس حالة مرضية مع توجيه أسئلة إلى كل مجموعة لها علاقة بالموضوع الدراسي ، ثم يقوم الطالب بالبحث عن المعلومات للإجابة على الأسئلة المطروحة من المكتبة أو عن طريق الانترنيت يتم بعدها العودة إلى القاعة ثم يقوم المدرس بدور المنسق للمحاضرة ومساعدة الطلبة على المشاركة بشكل فاعل في معرفة الإجابة الصحيحة.
النتائج: تم إجراء اختبار قبلي وبعدي للمجموعتين وتم مقارنة نتائج الاختبارات للطلبة في كلا المجموعتين . ثم اجري تقييم لأراء الطلبة المشتركين بالدراسة حول التدريس بطريقة تعلم حل المشكلة كونها جديدة على الدارسين .وتم تحليل البيانات من خلال تطبيق الأسلوب الإحصائي ألاستنتاجي (معامل الارتباط بيرسن والوسط الحسابي الموزون) باستخدام حقيبة التحليل الإحصائي (SPSS 17.0) . كانت نتائج استجابة الطلبة في الاختبار القبلي هو عدم وجود فرق بين المجموعتين ، في حين كانت الاستجابات في الاختبار ألبعدي تُظهر إن المجموعة الثانية والتي تُدرس بطريقة التعليم لحل المشكلة استجاباتهم أعلى من المجموعة الأولى والتي دُرست بطريقة المحاضرة. إما أراء الطلبة حول التدريس بطريقة التعليم لحل المشاكل فقد كانت أغلبية الطلبة لكلتا المجموعتين تتفق على إن التدريس بطريقة التعليم لحل المشكلة يساعد على اكتساب المهارات في التفكير ألسريري.
الاستنتاج: إن طريقة التدريس بالتعلم لحل المشاكل هي الأصلح في تعليم طلبة التمريض وعليه يمكن إقامة دورات للمدرسين للاستفادة من هذه الطريقة والحصول على لنتائج أفضل في دراستهم
مفردات البحث: التعلم لحل المشكلة0طريقة المحاضرة0طلبة التمريض 0تاثير0

Abstract:

Background: As this study was conducted by using a new strategy for the first time at Oman Nursing Institute, as one of the institutes that works under the umbrella of Directorate General Education & Training DGET at Ministry of health in Oman. Using of the teaching methods that provide matching between theory and clinical have a vital role in improve the students educational level.

Objectives: this study is to know the effect of Problem based Learning nursing and lecture based learning on Nursing students at Oman Nursing Institute.

Methodology: the sample were Year Two student (Adult Health Nursing). They were divided in to two groups LBL group, who receive lectures only as teaching method while the PBL group who were divided into small groups in class room, and teacher guide a discussion of between student about case study and questions related to the same scenario. The students should prepare for next lecture to discuss the subject, and the teacher is considered as a facilitator to control the discussion between the students in their groups and to direct the student to the right answer.

***Results*:** A pretest and posttest was done to know the difference in the students' answers for both groups. Also the students opinion in both groups regarding PBL as a new method was assessed. Analysis was done through inferential statistical approach (Pearson correlation and mean of score) by using of SPSS version 17.0. . In the pretest, there was no difference between both groups. While in post test, PBL group response was higher than LBL group.

Conclusion: it was found that PBL method as the best method in teaching nursing students. For that teacher need to be given continuing education program about PBL.

Keywords: Problem based learning, Lecture based learning, Nursing students, Effect

Introduction

Teaching, is one of the learning processes with an efficient influence on educational organization. Educators in many other developing countries are the best resources and tools available to provide outstanding learning experiences. Yet, they consistently fall short of performing at that level. (Shakarian & Bui, 2000) stated that the traditional lecture method may not be the most effective

teaching strategies. In the traditional method, the teacher talk and students listen, while in the problem based learning method teaching based on active learning in small groups, which involve students in more than just listening and place greater emphasizes on developing students' skills e.g. analysis, synthesis, application, evaluation, also it provide students an avenue for exploring. Many educators have long advocated the teaching of critical thinking skills such as reasoning and problem solving (Dehkordi, and Heydarnejad, 2008). Problem-based learning is seen as being appropriate for vocational courses such as nursing.

The 'PBL strategy' encouraged students to become active and independent, to take more responsibility for their own learning process in clinical practice. It is very important that clinical education be organized in such a way that students have opportunities to use their theoretical knowledge in practice and to reflect during their practical work (Gabr & Mohamed, 2011). However, proponents of the transfer of nursing education from the hospital to the tertiary education system considered that tertiary education should do more than prepare workers for nursing practice. It was considered that nursing students needed to be able to contribute to changes in nursing and health care system practice. In order to fulfill these requirements the educational orientation that is placed in nursing curriculum would need to contain a socially-critical orientation (Tylee, et al: 2007).

Problem based learning (PBL). PBL has become an integral component of nursing curricula around the world and partially experienced. Student in problem based learning program learn more reflective ways, memorized less and better retention of knowledge in the months afterward (Johson & Mighten 2005). Researches show that PBL gives the learner greater long-term benefits than traditional learning, and many successful and progressive universities around the world use it in their courses. Graduates of PBL courses advance faster and further in their careers(Tylee,et al,:2007)

Cannon and Newble (2000) suggest that PBL also requires students to develop a whole range of skills to enable them to learn effectively, including information skills, team working skills, communication and, most importantly, high order cognitive skills for professional development – the type of key skills that are valued by most employers.

There are many definitions of problem-based learning, but the concept is to encourage learners to participate actively in seeking the whole picture. They should engage in reflective practice and evaluation among themselves, peers and groups, and use exploratory ways to make sense of new ideas and experiences within the learning process so deep learning will occur. Schwartz (2004) endorses this approach as graduates from PBL courses are prepared for a lifetime of learning and discovery, and are more motivated and satisfied with their education.
PBL is a strategy that encourages the development of the students' self-directed learning skills. It helps the student to become more effective in identifying, seeking out and assimilating knowledge. It also helps to foster the development of their analytical and creative skills. In small groups with a facilitator, they embark on the process by identifying the issues surrounding the situation and then identifying their learning needs. Following self-directed study the students re-group to feedback and evaluate their learning in order to move to the next stage - usually an action or care plan (Gibbon 2011).

However, there are many barriers to implementing PBL and many academics consider the approach to be radical and resources intensive. The main obstacle is perhaps due to the fact that academics cannot come to terms with students who will be able to handle problems without being "given foundations." The other argument is the "pure" form of PBL as developed in medical education has proved to be a barrier for others who wish to adopt some aspect of it. This is because medical schools tend to be well resourced, and recruit highly motivated and high achieving students. Nevertheless, the challenge is to adapt the approach to meet the different needs of students and to transform teaching and learning for the benefit of learners of all ages.(Schwartz,2004)(Cannon &newble,2000)

Nursing students who graduates are expected to identify the actual and potential health needs of clients, act in a professional and ethical manner when faced with complex situations, demonstrate professional knowledge and skills, and be responsible for their own personal and professional development (Yuann, et al 2009). Today's, there is an increased need for professional nurses to be autonomous, capable of independent thought and able to make their own assumptions and decisions. Performance of nursing requires a cognitive ability that includes problem solving, decision-making, and clinical judgment. In addition, becoming self-directed and accepting learning as a lifelong activity have also been identified as being essential components of this continued development. Therefore, The aims of this study are to compare traditional lecture based learning (LBL) with Problem based learning, and to assess the opinion and perception of the nursing students regarding the process of working in group while doing PBL.

Methodology:

Subjects:

The study was conducted in Sultanate of Oman/Muscat from the period 27/9/2010 - 4/6/2011. The subjects in this study were year two students at Oman Nursing Institute. All the students (N=65) were Omani.

Study Design

The experimental design was a quasi-experimental with a control group. Students (N=65) who study Adult Health Nursing (I), they were divided into two groups, students (N=32) in one group who were taught by LBL method while students (N=33) in another group which were taught by PBL method. The class sessions to be assessed in both groups were on fluid and electrolyte balance and disturbance as it will be one of the topics from course syllabus and it will include five divisions: 1) regulation of body fluid 2) route of gain and loss of fluid from the body 3) disturbance of fluid and electrolyte 4) How to solve this disturbance and 5) acid base balance.

The first group was taught by using LBL method in which students was taught using traditional way of lectures on the same topic and the teacher explain all the sessions. The second group was taught by using PBL method. Most of the class time will be devoted to discussion using clinical cases which will be given a head of time. The students should be divided in small groups in the class to collect the data and information about the case studies. Afterward, Discussions of the cases will be done during class time, the teacher will be facilitating students' interaction and learning of the sessions. The students will be exposed to the same effects such as the same class room and same teacher for both groups.

Data Collection Tool.

A 14 Multiple choice questions was chosen for both pretest and posttest. Both groups exposed to same pretest and posttest to assess the knowledge of the students before and after the lectures. Mean, Standard deviation, Person correlations in both groups for these questions were analyzed by using of SPSS version 17.0.

A 10 Questions were used in the questionnaire format that used to evaluate the students' opinions about PBL effectiveness was administered in June of 2011 for both groups, All questions was measured with a five-point Likert scale, with 1: Strongly Disagree, 5; Strongly Agree. Data were analyzed manually. and the percentages were calculated for each question individually. Tables were formulated and data were interpreted.

Results:

Table (1) Means of both groups

GROUPS	NUMBER	MEAN – PRETEST	MEAN - POSTTEST
LBL	**32**	**3.15**	**6.56**
PBL	**33**	**3.57**	**7.36**

Table (1) shows the mean of 65 students in year two at Oman Nursing Institute. They were distributed in two groups. The first group (N=32) students who were taught by LBL, and the second group (N=33) students who were taught by PBL. Both groups were examined in pretest and posttest. As it show in the table the mean of the PBL was higher in Pretest (3.57) compared with the LBL group which was (3.15), also in Posttest the mean was in PBL group (7.36) while it was (6.56) in LBL group.

Table (2) Students' responses to pre-test and post-test

Q. No.	Grade	LBL		PBL	
		Pre	**Post**	**Pre**	**Post**
Q1	0	25	16	25	9
	1	**7**	**16**	**8**	**16**
Q2	0	31	13	31	17
	1	**2**	**19**	**1**	**24**
Q3	0	26	15	26	27
	1	**7**	**17**	**6**	**11**
Q4	0	28	12	22	13
	1	**4**	**20**	**11**	**20**
Q5	0	31	21	31	23
	1	**2**	**9**	**1**	**11**
Q6	0	30	21	31	28
	1	**2**	**5**	**2**	**6**
Q7	0	28	15	29	12
	1	**4**	**17**	**4**	**21**
Q8	0	27	20	31	16
	1	**5**	**12**	**2**	**16**

Q9	0	25	16	22	10
	1	**7**	**16**	**11**	**23**
Q10	0	29	21	31	21
	1	**3**	**11**	**2**	**12**
Q11	0	18	19	16	3
	1	**14**	**13**	**17**	**30**
Q12	0	16	17	16	11
	1	**16**	**15**	**17**	**22**
Q13	0	15	16	14	14
	1	**17**	**16**	**19**	**19**
Q14	0	18	16	19	13
	1	**14**	**16**	**14**	**20**

Table (2) shows the sample response in both groups for the fourteen questions which they were expose to. Each question has two grades The correct answer obtained Grade (1), and the wrong answer get grade (0). There was no difference in the response of the students in pretest for both groups, they were almost have the same level in answering most of the questions. While in post-test, the correct answers of the students of PBL group were higher than the students in LBL group in most of the questions.

Table (3) Pearson correlation in both groups

Q. No.	LBL				PBL			
	Value	**Asymp. Std. Error (a)**	**Approx. T (b)**	**Approx. sig (c)**	**value**	**Asymp. Std. Error (a)**	**Approx. T (b)**	**Approx. sig (c)**
Q1	**0.293**	0.118	2.414	0.019	**0.485**	0.108	4.438	0.000
Q2	**0.607**	0.084	6.011	0.000	**0.476**	0.095	4.333	0.000
Q3	**0.358**	0.114	3.021	0.004	**-0.038**	0.123	-0.305	0.761
Q4	**0.516**	0.103	4.748	0.000	**0.273**	0.118	2.272	0.026
Q5	**0.400**	0.091	3.440	0.001	**0.294**	0.106	2.443	0.017
Q6	**0.350**	0.103	2.937	0.005	**0.148**	0.115	1.194	0.237
Q7	**0.433**	0.107	3.778	0.000	**0.531**	0.100	5.013	0.000
Q8	**0.248**	0.118	2.013	0.049	**0.491**	0.096	4.472	0.000
Q9	**0.293**	0.118	2.414	0.019	**0.364**	0.115	3.125	0.003
Q10	**0.302**	0.111	2.498	0.015	**0.371**	0.100	3.192	0.002
Q11	**-0.032**	0.125	-0.249	0.804	**0.435**	0.102	3.865	0.000
Q12	**-0.031**	0.125	-0.246	0.806	**0.154**	0.121	1.248	0.217
Q13	**-0.031**	0.125	-0.246	0.806	**0.000**	0.123	0.000	1.000
Q14	**0.063**	0.125	0.494	0.623	**0.182**	0.121	1.480	0.144

a. Not assuming the null hypothesis.
b. Using the asymptotic standard error assuming the null hypothesis.
c. Based on normal approximation

With the use of Pearson's correlation in both groups, the table (3) shows that there were significant correlation for PBL group in most of the questions answers, while the LBL group get poor correlation in these questions

Table (4) LBL Students' opinion about PBL Teaching Method

#	Items	5	%	4	%	3	%	2	%	1	%	100 %
1	Gaining clinical reasoning skills	4	12.50	20	62.50	4	12.50	1	3.13	3	9.38	100
2	Facilitation of problem solving skills	3	9.38	13	40.63	10	31.25	3	9.38	3	9.38	100
3	Facilitation of communication skills	3	9.38	11	34.38	6	18.75	8	25.00	4	12.50	100
4	Facilitation of self-directed learning	3	9.38	9	28.13	7	21.88	8	25.00	5	15.63	100
5	Gaining robust, retrievable knowledge	9	28.13	12	37.50	3	9.38	4	12.50	4	12.50	100
6	Gaining basic science knowledge	6	18.75	20	62.50	2	6.25	0	0.00	4	12.50	100
7	Facilitation of integration of basic and clinical science knowledge	9	28.13	15	46.88	4	12.50	1	3.13	3	9.38	100
8	Increasing intrinsic motivation of student	6	18.75	17	53.13	6	18.75	1	3.13	2	6.25	100
9	Facilitation of development of self -assessment and peer -assessment skills	14	43.75	13	40.63	1	3.13	0	0.00	4	12.50	100
10	Overall effectiveness of PBL	3	9.38	2	6.25	12	37.50	10	31.25	5	15.63	100

Table (4) summarized the LBL students' opinion about PBL teaching method. 12.5% of the students strongly agreed and 62% agreed that PBL will help students in Gaining clinical reasoning skills. Around 9% strongly agreed and 40.63% were agreed that the PBL can facilitate of problem solving skills. Regarding facilitate of communication skills, the result was 9.38% of the students were strongly agree while about 34% of the students have been agreed. 9.38% of the students were strongly agreed and around 28% agreed that PBL will Facilitation of self-directed learning. In gaining robust, retrievable knowledge from PBL about 28% were strongly agreed and 37.5% of them agreed. 18.75% of the students were strongly agreed and 62.5% agreed that gaining basic science knowledge. 18.75% of the students were strongly agreed and around 53% agreed that PBL help in increasing intrinsic motivation of student. The highest percentage for strongly agree among all the items were 43.75% was given to facilitation of development of self-assessment and peer –

assessment skills, and 43.63% were agreed. Concerning the Overall effectiveness of PBL, the result shows that only 9.38% were strongly agreed and 6.25% of them agreed.

Table (5) Means and Standard deviation of LBL students' opinion regarding study by method of PBL

#	Items	MEAN	SD
1	Gaining clinical reasoning skills	**3.66**	**1.06**
2	Facilitation of problem solving skills	**3.31**	**1.05**
3	Facilitation of communication skills	**3.03**	**1.23**
4	Facilitation of self-directed learning	**2.91**	**1.19**
5	Gaining robust, retrievable knowledge	**3.56**	**1.36**
6	Gaining basic science knowledge	**3.75**	**1.16**
7	Facilitation of integration of basic & clinical science knowledge	**3.81**	**1.18**
8	Increasing intrinsic motivation of student	**3.75**	**1.01**
9	Facilitation of development of self -assessment and peer - assessment skills	**4.03**	**1.28**
10	Overall effectiveness of PBL	**2.63**	**1.12**

Table (5) specifies the mean and standard deviation of each question. When looking at the LBL Students' opinion about PBL Teaching Method, the item with the highest level of students' agreements (mean+/-SD) related to Increasing intrinsic motivation of student (3.75+/- 1.01).

Table (6) PBL Students' opinion about PBL Teaching Method

#	Items	5	%	4	%	3	%	2	%	1	%	100%
1	Gaining clinical reasoning skills	12	36.36	16	48.48	4	12.12	1	3.03	0	0	100
2	Facilitation of problem solving skills	7	21.21	13	39.39	8	24.24	4	12.12	1	3.03	100
3	Facilitation of communication skills	11	33.33	16	48.48	5	15.15	0	0.00	1	3.03	100
4	Facilitation of self-directed learning	12	36.36	13	39.39	6	18.18	2	6.06	0	0	100
5	Gaining robust, retrievable knowledge	7	21.21	14	42.42	8	24.24	2	6.06	2	6.06	100
6	Gaining basic science knowledge	12	36.36	14	42.42	4	12.12	2	6.06	1	3.03	100
7	Facilitation of integration of basic and clinical science knowledge	11	33.33	13	39.39	6	18.18	2	6.06	1	3.03	100

8	Increasing intrinsic motivation of student	12	36.36	11	33.33	4	12.12	4	12.12	2	6.06	100
9	Facilitation of development of self - assessment and peer - assessment skills	10	30.30	14	42.42	6	18.18	1	3.03	2	6.06	100
10	Overall effectiveness of PBL	12	36.36	14	42.42	3	9.09	3	9.09	1	3.03	100

Table (6) shows the PBL students' opinion about PBL teaching method. A round 36% of the students strongly agreed and 48.48% agreed that PBL will help students in Gaining clinical reasoning skills. While only 21.21% strongly agreed and 39.39% were agreed that the PBL can facilitate of problem solving skills. Regarding PBL can facilitate of communication skills, the result shows that around 33.33% of the student are strongly agreed and 48.48% of the students agreed. 36.36% of the students were strongly agreed and 39.39% agreed that PBL will Facilitation of self-directed learning. In gaining robust, retrievable knowledge from PBL about 21% were strongly agreed and 42.42% of the students were agreed. Around 33% of the students were strongly agreed and 39.39% agreed that gaining basic science knowledge. (36.36%) for students strongly agreed and 33.33% of the students agreed that PBL help in increasing intrinsic motivation of student. In facilitation of development of self-assessment and peer –assessment skills, around 30% were strongly agreed and 42.42% agreed. Concerning the Overall effectiveness of PBL, the result shows that 36.36% were strongly agreed and 42.42% of the students were agreed.

Table (7) Means and Standard deviation of PBL students' opinion regarding study by method of PBL

#	Items	**MEAN**	**SD**
1	Gaining clinical reasoning skills	**4.09**	**0.76**
2	Facilitation of problem solving skills	**3.59**	**1.04**
3	Facilitation of communication skills	**4.06**	**0.87**
4	Facilitation of self-directed learning	**4.09**	**0.88**
5	Gaining robust, retrievable knowledge	**3.71**	**1.06**
6	Gaining basic science knowledge	**4.09**	**1.00**
7	Facilitation of integration of basic and clinical science knowledge	**4.03**	**1.01**
8	Increasing intrinsic motivation of student	**3.94**	**1.22**
9	Facilitation of development of self -assessment and peer - assessment skills	**4.03**	**1.07**
10	Overall effectiveness of PBL	**4.18**	**1.04**

Table (7) specifies the mean and standard deviation of each question. When looking at the PBL Students' opinion about PBL Teaching Method, the item with the highest level of students' agreements (mean+/-SD) related to gaining clinical reasoning skills (4.09+/- 0.76).

Discussion:

This study indicated that student in PBL group were able to gain more knowledge compared with the LBL group, that encourages the development of the students' self-directed learning skills. This was supported by the study of Gibbon (2011), It found that PBL can helps the students to become more effective in identifying, seeking out and assimilating knowledge. It also helps to foster the development of their analytical and creative skills. Also Grauer et al (2008) were they suggests that the two teaching methods were of similar efficacy. There was no direct effect of teaching method on group scores for either examination. But Kim (2006), and Lake (1999) they found that no statistically significant difference was found between the PBL and lecture groups in the level of attitude toward learning. (Mcparland, 2003) recognized that Learning motivation was significantly higher in the PBL group. No differences in learning styles or attitudes between Student.

The students work through a series of carefully constructed problem situations, which are the basis for acquiring relevant knowledge, skills and attitudes. The problems are developed from actual cases and reflect what are considered to be typical encounters in professional practice. The students' attitudes toward PBL in LBL group were positive which can improve their abilities in gaining reasoning skills. This result congruent with the study of Beers (2005) who pointed out that using PBL provides students with opportunity to be active participants in the learning process and to develop critical thinking skills. One of the strongest arguments in favor of PBL is that it provides a more enjoyable and stimulating learning environment for both students and faculty. This was similar to what Sankaran & Bui (2000) has stated that the use of learning strategies allows students to actively process information, thereby influencing their mastery of material and subsequent academic achievement.

Students' opinion about PBL Teaching method, both groups show positive opinion about PBL. The reason that LBL had positive opinion about PBL related to feedback and discussion that may be given by the students out side the class. As Musal et al (2003) testified that tutors` and students` opinions about PBL, for both groups had positive opinions about PBL's effectiveness. They agreed that the gaining of clinical reasoning skills is one of the main outcomes of PBL, giving it the highest rating. The next most highly rated were communication skills and problem solving skills.

Problem-based learning may develop the students' capacity to gather data, to practice the skills and interventions of technical nursing but it will not equip graduates to develop the profession or to cope with the difficulties and frustration of the current health care system. Tylee etal (2007) and Rogeh (2010) both in their studies considers problem-based learning to be more effective in preparing students for professional practice. Problem-based learning provides students with an opportunity to confront practice problems that they are likely to encounter in the workplace.

Gabr & Mohamed, (2011) stated that Integration of theory and practice has been emphasized as a necessary component. There is a positive effect and the influence of PBL teaching strategy on students. Students in the PBL group gained more knowledge and were more motivated for learning than those in the lecture group. PBL is a potentially powerful approach for students to gain practical problem-solving experience and self-directed learning. Dehkordi & Heydarnejad (2008) suggested that the inefficient performance of nurses in practice is due to a gap between education and practice, the replacement of the current method of training with one which is able to increase critical thinking skills should provide improved educational outcomes. Amongst all new educational methods the best strategy probably is PBL.

Conclusion and Recommendation:

In conclusion, we determined that a PBL is a case-based small group cooperative learning approach to undergraduate Nursing student can be a more effective educational tool for engaging students in the course material while also improving student performance. This conclusion is in congruent to much of the literature demonstrating that use of PBL result in improving student performance on standardized tests. From that result the author recommend the following guidelines:

1. This study must be discussed with the faculty of Nursing program who utilize both learning modalities
2. A series of workshops for the Nursing faculty be organized to train them in the use of the Problem Based learning method so it can be used more effectively.
3. Research should be conducted into different PBL programs at different Nursing institutes and universities in an effort to more fully understand the processes involved in planning and implementing a PBL program, as well as the variables that contribute to its successes and challenges.
4. There is a need for more long term and even longitudinal assessments of the effects of participating in PBL in Nursing education.

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