

The Effectiveness of Problem-Based Learning (PBL) in Nursing Education: Cross-Cultural Student's Perspective

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Abstract: Background: Although there is much literature on Problem-Based Learning (PBL) in medical and nursing education, there is little from the cultural perspective. Therefore this study aims to investigate the effectiveness of problem based learning approach on nursing students learning outcome. **Methods:** a descriptive analytic study design was used with 30 undergraduate nursing students in Port Said University, Egypt and 30 from Qassim University of Kingdom of Saudi Arabia. The PBL Evaluation Questionnaire (PBLEQ) was used; it contain a 20-item self-report Likert scale with a 5-point response choice (1= Strongly Disagree and 5= Strongly agree). At the end of the PBLEQ, two open-ended questions were asked to determine students' comments on the positive and negative features of PBL. **Results:** the survey response rates was 100%, the study results revealed that Saudi students had higher item mean score (mean 4.09, S.D = 0.18) than Egyptian students (mean 3.69, S.D = 0.25). all students indicated that PBL was effective in stimulating group discussion (mean 4.28, S.D 0.71), useful for my future work (mean 4.10, S.D 0.85). **Conclusion:** This study offers baseline information in student's perspective regarding the effectiveness of PBL in Egypt and Saudi Arabia.

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1. Introduction

Problem-based learning (PBL) is essentially a learning system design that incorporates several educational strategies to optimize student-centered learning outcomes beyond just knowledge acquisition [1]. PBL was first introduced in the medical schools and has had a major impact on thinking and practice in medical education for the past 30-40 years. This approach has been based on active learning in small groups, with clinical problems used as stimulus for learning, and it has been evaluated in medical literature for its ability to incorporate realistic experiences in the classroom [2; 3]. Problem-based learning is a methodology that engages students in the active pursuit of data to accurately solve a simulated real-life problem. In a PBL environment, distinct topics are not the focus of learning as typically occurs in a lecture setting. Instead, students are responsible for critical analysis of real-life clinical problems. The instructor abandons the traditional didactic model in which he/she assumes the role of content expert and distributor of information and instead becomes a facilitator of student learning. To do this, students necessarily must rely on what they already know and be able to identify what they need to know to solve the problem scenario that has been assigned [4,5,6]. Problem-based learning (PBL) is promoted as a mean to facilitate critical thinking and self directed learning among nursing students. Higher education in nursing should prepare

graduates with the capability to take on the increasingly challenging roles required in the nursing profession [7]. Baccalaureate nursing 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. They are expected to engage in self-directed learning through identifying human and material resources, identifying their own learning needs, setting goals, choosing learning strategies, and evaluating results of the learning process [8].

Cultural contexts

PBL has spread widely across the world and has gained global acceptance. In this context then, the globalization of PBL will obviously have important cross-cultural implications. As a teaching methodology, PBL has not been used widely in developing countries including Egypt. Application of PBL approach in Egypt started in 1976 in Faculty of medicine, Suez Canal University after that extended to Faculty of nursing at the same University in 1991. Few years ago it applied in Faculty of nursing, Port Said University. **Habib et al.** assessed the effectiveness of a community oriented problem-based learning (COPBL) approach and compared this to traditional lecture-based teaching in a baccalaureate level university nursing program in Egypt. A quasi-experimental design

sampled third year nursing students enrolled in a maternal-child nursing course. When compared to traditional lecture-based classes, findings revealed higher faculty performance, knowledge acquisition and satisfaction with the curriculum. Could reflect the effectiveness of problem based learning approach [9].

In Asia, including Kingdom of Saudi Arabia (KSA) nursing education, PBL is not yet widely used. A "hybrid" PBL curriculum ("hybrid" = traditional lectures + PBL) which composed of approximately 20% PBL and 80% traditional lectures (dominant teaching method) was adopted [10]. Much of the foregoing discussion has focused on the potential for conflict between Asian cultural reticence and the open communication style advocated for PBL tutorials. The Asian culture emphasizes group before individual interest, including a group-oriented approach to the achievement of tasks [1]. PBL approach was introduced to KSA in 2000 in college of medicine, Qassim University and extended to the college of nursing in the same University at 2009.

2. Methods

Design and participants

The present research used a descriptive analytic design with sixty undergraduate nursing students from KSA and Egypt; seven second year and twenty three first year students from KSA, aged 18 to 21 with a mean of 20.4 years (S.D = 0.97). The Egyptian students were eight second year and twenty two first year aged 17 to 20 years with a mean of 18.6 years (S.D = 0.81).

Instruments

The Sociodemographic form was designed by the researchers to describe the participant's sociodemographic data including age, gender, academic year, marital status and mother-father's educational level. The latter items were included as they provide some insight into the background of the participating students.

PBL Evaluation Questionnaire

The PBL Evaluation Questionnaire was developed by Yuan (2007) to evaluate Chinese students' views about the effectiveness of PBL in terms of the following well documented PBL outcomes identified in the literature: constructing professional knowledge, developing problem-solving skills, self-directed learning, increasing motivation to learn, and promoting effective group collaboration. The questionnaire is a 20-item self-report Likert scale with a 5-point response choice, the higher the score the more likely the students considered PBL to be effective the scores 5 and 4 indicated "Strongly Agree" and "Agree", score 3 indicated "no preference", and the scores 1 and 2 indicated "Strongly Disagree" and "Disagree", respectively [11].

Translation

The PBL Evaluation Questionnaire (PBL-EQ) was used in Kingdom of Saudi Arabia and Egypt in Arabic as appropriate. The back-translation method [12] was applied to ensure cross-cultural conceptual equivalence. English-Arabic bilingual expert in the field of Educational Sciences was involved and back translation was compared until the consistent meanings were obtained.

Data collection and analysis

A sociodemographic form and PBL evaluation questionnaire (Arabic translated version) were used as data collection tools. Statistical analyses were conducted with SPSS (Social Package for Social Science, version 19). The data were collected in the middle of the final semester of the academic year. The questionnaires were distributed during class time and students were asked to complete and return after the class was completed.

Ethical considerations

Ethical approval was obtained from the administrative authorities of the college of nursing, from which participants were voluntarily recruited in Qassim and Port Said University, in KSA and Egypt consecutively. The aim of the study was explained to the students and participation was entirely voluntary. Students had an opportunity to determine their willingness or refusal to participate in the study. A signed informed consent was obtained from each student before data collection and confidentiality was ensured through the use of code numbers. Students were apprised that all findings would be reported as group results and would be submitted for publication.

3. Results

Evaluation forms were completed by students and forwarded to the PBL coordinator. The survey response rates was 100%. The demographic characteristics of the study population are summarized in table 1; the mean age of students recruited in Egypt was 18.6 years lower than in Saudi Arabia. Among Egyptian students the male and female distribution was 43.3 male and 56.7% female, while all Saudi participants were female because the male section not yet established.

Overall, students considered PBL to be moderately effective in increasing the ability to solve real- problems (item mean 3.62, S.D 1.04). As evident in all students indicated that PBL was effective in stimulating group discussion (mean 4.28, S.D 0.71), useful for my future work (mean 4.10, S.D 0.85), and sharing what they had learned with the entire group (mean 4.27, S.D 0.75). Course increased my ability to work effectively on a team (mean 4.18, S.D 0.74) (Table 2).

Table (3) demonstrated that Saudi students had higher item mean score (mean 4.09, S.D = 0.18) than Egyptian students (mean 3.69, S.D = 0.25).

Several items emerged from the content analysis of students' comments and summarized in Figure 1 & 2; In general, Saudi students expressed little in open end questions regarding the positive and negative views of PBL. Most of participants in both

country indicated that PBL enhance the collaborative work and help in accept the others opinion and criticism. Additionally, there are agreements between the most of the Saudi and Egyptian students indicated that PBL was often time-consuming, stressful and represent a heavy workload.

Table 1 Demographic characteristics of the sample

Demographic factors	Egypt		KSA		P-value
Age (Mean \pm SD)	18.6 \pm 0.81 (30)		20.4 \pm 0.97 (30)		.000
Sex	Freq. %		Freq. %		
Male	13	(43.3)	0	0	.000
Female	17	(56.7)	30	(100)	
Academic year					
1st year	22	(73.3)	23	(77)	.347
2nd year	8	(26.7)	7	(23.3)	
Marital status					
Single	29	(96.7)	27	(90)	.170
Married	0	(0)	3	(10)	
Divorced	1	(3.3)	0	(0)	
Mother's education					
Illiterate ^a	2	(6.7)	2	(6.7)	.395
Literate ^b	3	(10.0)	3	(10)	
Elementary	2	(6.7)	4	(13.3)	
Middle school	8	(26.7)	12	(40)	
University	15	(50.0)	9	(30)	
Father's education					
Illiterate	1	(3.3)	0	(0)	.048
Literate	3	(10.0)	1	(3.3)	
Elementary	2	(6.7)	6	(20)	
Middle school	8	(26.7)	15	(50)	
University	16	(53.3)	8	(26.7)	

^a Illiterate: cannot read and write.

^b Literate: can read and write but attained no formal schooling

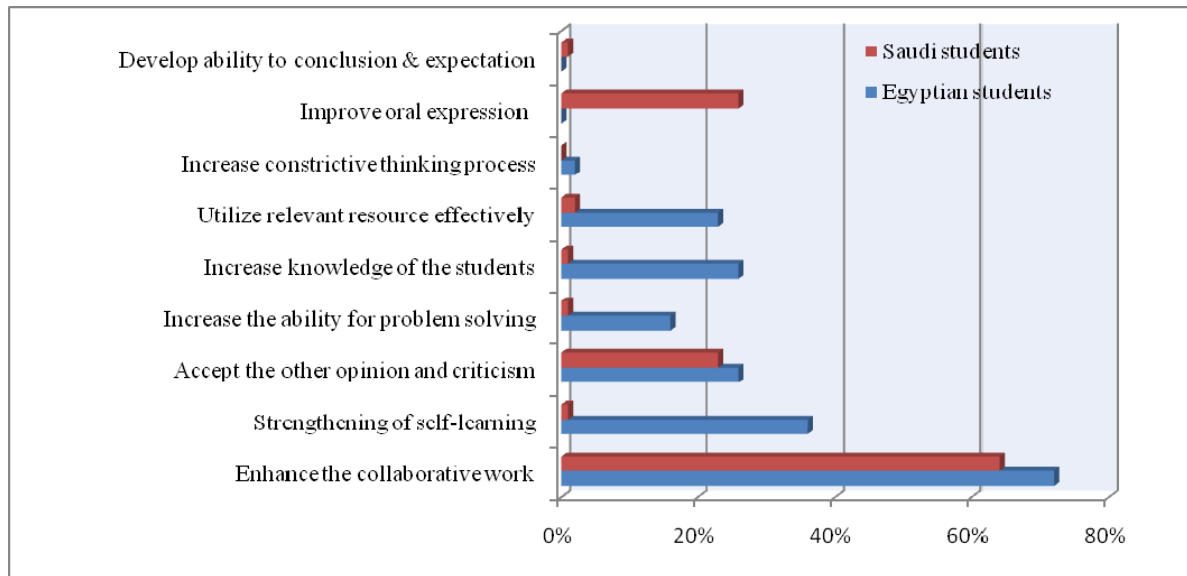
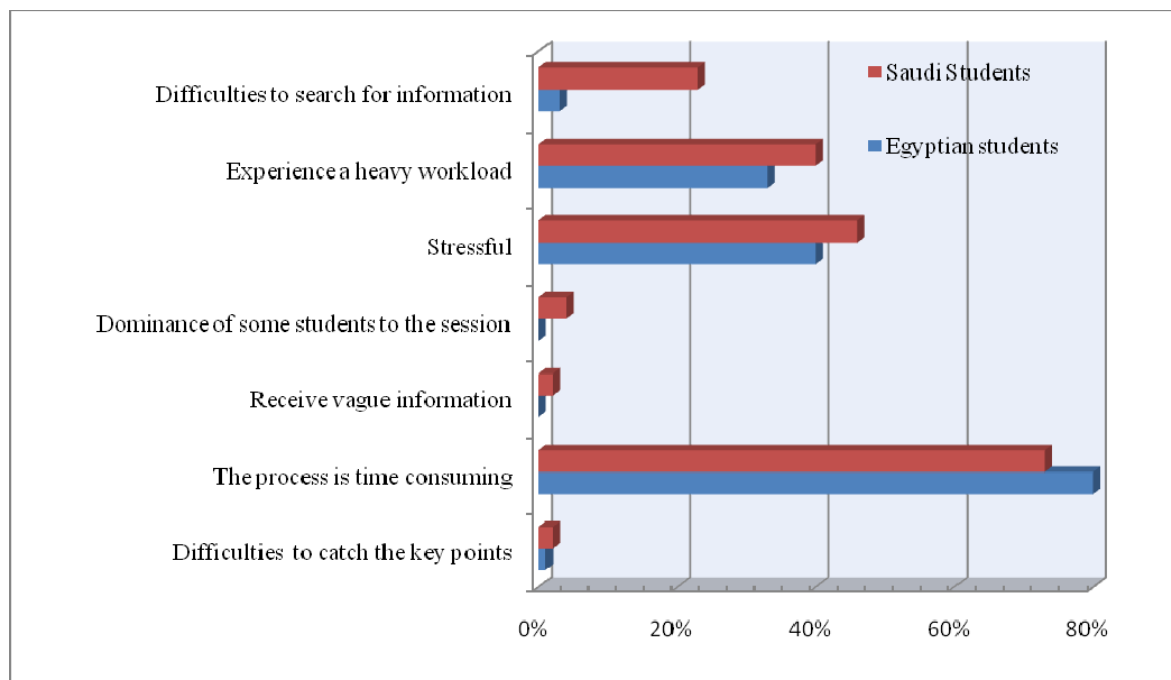
P-value calculated using Chi -Square test

Table 2. Description of PBL evaluation (n=60).

Items	Min-Max	Item Mean	S.D.
Construction of professional knowledge			
1. The course made me use previous relevant knowledge and experience.	1-5	3.80	0.95
2. The course helped me to interpret, analyze, and apply key concepts precisely and rationally.	1-5	3.78	0.97
3. The course furthered my in-depth understanding of nursing knowledge	1-5	3.98	1.00
4. The content of the course is useful for my future work	2-5	4.10	0.85
Development of problem-solving skills			
5. The problems used in the course were challenging to discuss	1-5	3.64	1.04
6. The course increased my ability to solve real-world problems.	1-5	3.62	1.04
7. The course encouraged me to consider alternatives when solving problem.	1-5	3.67	1.03
8. The course helped me to make reasonable inferences and conclusions to address problem or issues.	1-5	3.88	0.86
Development of self-directed learning			
9. Problem situations encouraged me to continue to study on my own.	1-5	3.62	1.09
10. The course helped me to identify gaps in my knowledge.	1-5	3.60	1.01
11. The course helped me improve my ability to identify a variety of resources to meet own learning needs.	1-5	3.95	0.92
12. The course helped me to think independently	1-5	3.83	1.01
Improvement of motivation			
13. The course encouraged me to take an active role in my learning	1-5	3.73	1.00
14. The course motivated me to learn more.	1-5	3.85	1.07
15. The course stimulated my interest in learning.	1-5	3.85	1.06
16. The course encouraged my participation through the discussion of problems	1-5	4.14	0.88
Promotion of effective group collaboration			
17. The course stimulated group discussion.	1-5	4.28	0.71
18. The course promoted open discussion of differing opinions.	2-5	4.25	0.70
19. The course increased my ability to work effectively on a team.	2-5	4.18	0.74
20. The course encouraged me to share what I learned	2-5	4.27	0.75

Table 3. Comparison of the PBL evaluation by group

PBL evaluation	Egyptian students (n=30)		KSA students (n=30)	
	Item mean	S.D.	Item mean	S.D.
Construction of professional knowledge	3.78	0.84	4.05	0.48
Development of problem-solving skills	3.50	0.86	3.89	0.50
Development of self-directed learning	3.49	0.90	4.00	0.48
Improvement of motivation	3.61	1.08	4.15	0.56
Promotion of effective group collaboration	4.11	0.73	4.37	0.41
Total	3.69	0.25	4.09	0.18

**Figure 1. Students' comments on positive experiences in PBL****Figure 2. Students' comments on negative experiences in PBL**

4. Discussion

While most of the studies mentioned here do not really focus on cultural differences between Asian and non-Asian nursing students, the problem that Asian students experience in a PBL curriculum do not seem to differ from those of students from other cultures.

Statistically significant difference was detected between Egyptian and Saudi students regarding gender where, Egyptian participants were male and female while the Saudi participants were restricted to female students. This difference noted between the study participants recruited in gender may reflect the Saudi cultural tradition in total separation between male and female students. The present study showed no significant difference between the undergraduate nursing students in Saudi Arabia and Egypt in Marital status and Father and mother's education, which supports the homogeneity of the study population.

The results of the present study were similar to those previously reported in the literature. The Turkish study which conducted by **Musal, et al., (2003)** to determine the opinions of tutors and students regarding the effectiveness of Problem-Based Learning and its results revealed both groups gave high ratings to the areas of clinical reasoning, communication and problem solving and gave lower ratings to gaining basic science knowledge [13].

In a study of the use of PBL in a Master's level course for educational administrators at the Chinese University of Hong Kong, The results revealed that the Asian students' responses mirrored those of the Western students. Initially, the students seemed lost, but with motivation and effort they progressed through PBL sessions, expressed pride in the final presentations and considered their experience to have been positive [14].

The difficulties reported by the Malaysian medical students (29) getting actively involved in discussion and their perception that subject-based tutorials would be more efficient for obtaining information. Similarly, the Sri Lankan students (30) complained about poor participation of their colleagues and found PBL too time-consuming. Such difficulties may not necessarily be a result of cultural differences as the report from the University of Newcastle 31 in Australia concluded that their foreign (mainly Asian) medical students' lack of confidence, motivation and participation in the PBL course was due to their being foreign rather than being Asian [15].

Conclusion

Students in both countries (KSA and Egypt) considered PBL to be effective in constructing

professional knowledge, developing problem solving and self-directed learning, improving motivation to learn, and promoting effective group collaboration. The present study offers baseline information in student's perspective regarding the effectiveness of PBL in Egypt and Saudi Arabia.

Limitations

The study was limited by the self-report aspect of the instruments and the use of a convenience sample of students enrolled in two nursing colleges at one point of time. Generalization of the findings therefore is limited.

Conflict of Interest

The authors declare that there are no conflicts of interest.

This study involved students enrolled in the first and second year of an undergraduate nursing program in Egypt and KSA that utilized a PBL approach to undergraduate nursing education.

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