



# Study of PBL teaching method in practical teaching of surgical nursing

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**Abstract:** PBL(problem-based learning) is a teaching method that students are treated as main parts and have discussions as groups. Objective: to apply PBL to practical teaching of surgical nursing course and explore the effect of this teaching method on developing the ability of active learning, thinking, comprehensive analysis and make conclusions, which will help students find, analyze and resolve questions. Method: we selected 264 students in 1-4 class enrolled in 2014 as subjects. these students were divided into education reform class and control class and 8 teams in each class as randomly. Education reform class and control class adopted different teaching methods and then evaluated overall effect on students. Result: compared to control class, students in education reform class have greater ability to gain theoretical knowledge and take practices; moreover, students in education reform class are satisfied with PBL teaching method. They have more interests in specialized courses and overcome the difficulty of learning medicine. Conclusion: first, PBL teaching method promotes the ability to get knowledge, analyze and solve problems, activating the students. The ability will provide solid foundation for future clinical nursing job. Secondly, PBL teaching method promotes teamwork and collaboration between students, which is indispensable for increased teaching level. Thirdly, our results will facilitate application of this teaching method to other courses. Finally, the experiment advances the abilities of teachers via preparation, instruction and participation and provide another reform direction for future teaching method of medical college.

**Key words:** PBL teaching method; surgical nursing; practical teaching; analytic ability

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## Introduction

Teaching has been focused by college leaders and teachers. With the development of internet technology, cell phone has severely affected the quality of teaching and bring difficulties for teachers. If teachers prohibit the use of cell phone by course is harder for students. Currently, it is common for students to be absent for class or play cell phones, computers at class, which make teachers decrease the requirements. These problems leads to unfinished teaching goals and then

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students, they will have negative emotion. In contrast, the quality of teaching will lower, because medical specialized decreased motivation of learning.

Classroom is the major place for teaching, so the quality of teaching is largely dependent on class. At the era of internet, there are multiple ways for students in college to gain knowledge. Compared to internet, teachers can not inform students knowledge in a interesting, diverse and up-to-date manner. Furthermore, it is hard for students to concentrate on the teachers for two or three hours, since the students are grown at a time of information fragmentation. The teaching style with humor will attract students, but only a minority of teachers can use it. In theory, in spite of abundant entertainment sources, teachers should not treat entertainment as key for improving teaching quality, because teachers are not actor and education is not entertainment industry. Indeed, the emphasis of teaching with humor reflects, on the other side, the boring of lecture class.

Surgical nursing is one of the core courses for nursing major and is specialized course of clinical nursing practice. This course is a required one for nursing student and consists of general and general points of surgical nursing according to teaching contents. The latter mainly encompasses common and frequently developed disease of surgical treatment and nursing. In addition to introduce pathogenesis and clinical phenotype of surgical diseases of human systems, this course highlight nursing and health instruction for patients with common surgical diseases before and after surgeries. To show the specialty of nursing, the part of nursing is taught by nursing procedures and stress the overall and special nursing for surgical patients. However, the general of surgical nursing helps build the concept of sterilization manipulation and utilize the basic techniques for surgical nursing to accomplish global nursing and alleviate pain of patients, thereby contributing to recovery and health.

PBL teaching method is based on questions and the students is the major part. This teaching method is archived through investigating one medical feature or treatment of specific patient case in a group-discussion and mentor-participation manner. Basically, PBL is composed of proposed questions, hypothesis, information collection, proving hypothesis and make conclusions, which is a breakthrough for conventional teaching method and concept. It has been reported that PBL has markedly positive effects on clinical teaching, checking and basic course learning and improves learning efficiency of students via applying this teaching method into teaching of medical nursing course. In order to explore whether PBL has identical effect on surgical nursing course, we selected 264 students at class 1-4 enrolled in 2014 as participants and applied PBL teaching method to surgical nursing course. Meanwhile, we set up the discussion between students and made a report per group to be involved in learning specialized courses, which will help us evaluate overall effect of this teaching method on capacity of students.

## **1. Materials and methods**

### **1.1 Materials**

1.1.1 participants: 264 students at class 1-4 enrolled in 2014, specially, 67 students in education reform class (class 1), 65 students in the other education reform class (class 2), 67 students in control class (class 3), 65 students in the other control class (class 4). Students in every class were grouped into 8 teams (8-9 students every team) by student number and one team leader were elected to take responsible for discussion among team members and communication between teams. Every selected student has passed the examination of basic medicine courses that were taught by conventional teaching method in the past year.

1.1.2 The selected students majoring in nursing and enrolled in 2014 who signed for agreement with this research.

1.1.3 The students with mental disorder and incomplete diseases history information were excluded. In addition, the students cannot understand fully or not perform the experiment as guided were also not selected.

1.1.4 We picked out the students that quited this experiment or developed diseases.

## 1.2 Methods

### 1.2.1 Teaching comparison.

Conventional teaching method were performed by full teaching. The education reform classes were insturcted by teachers and based on questions. Roughly 8-10 questions were raised at a period of practical teaching and assigned to each team who can prepared for 1 week prior to class. During practical teaching period, the teachers teach class in less than 30 min and then the students take practices. Meanwhile, the team members discuss and communicate with others in less than 50 min and team leaders make a report within 15 min. After that, team members supplement and teachers make a conclusion, point out errors and something to be completed. The students were allowed to observe, understand and memorize the knowledge in the last 5 min. finally, the teachers assign the tasks and faciliate self-learning for students.

### 1.2.2 Learning comparison

The control class prepares before class, whereas education reform class assigns the tasks for one week prior to practical teaching. The students discuss with theoretical and practical knowledge among team members and communicate with other teams using PBL teaching method. Moreover, they can search relative information and advances through internet and public library, in addition to combine typical cases, demonstration on the scene with videos to get knowledge, thereby providing foundations for self-learning. Based on discussion and communication, one student were elected to report at class and others make a supplementary.

### 1.2.3 Practice comparison

Education reform class fully take advantage of typical cases, demonstration on the scene and videos to advance understanding of practice teaching-related contents in surgical nursing course. Students can learn and understand the knowledge via observation, touch and manipulation. During the course, education reform class relies on PBL teaching method and raises learning interest by combination of attributes of surgical nursing course with teaching and learning.

To assure the reality of research result of combining teaching with learning and practice during the course of PBL teaching method execution, the basic teaching contents, teachers and evaluation questions should be similar between education reform class and control class. In terms of questions, the biased questions should be avoided.

## 1.3 Information analysis

We evaluated students in education reform class and control class at the end of 2015-2016 first semester. The evaluation consists of practice(30%) and theoretical knowledge(70%), at the same time, the students in both classes were subject to questionnaire investigation to know how the students reckon teaching method and the weaknesses. At last class, we hold a feature meeting to collect the viewpoints of this teaching method by students(8 students each class) and teachers. Finally, all students in education reform class and control class were evaluated by same standard, the grades were analyzed comprehensively and statistically to determine the teaching effect of PBL by combining questionnaire and conversation.

## 2. Result

## 2.1 Comparison of basic information

Basic information of students (shown in table 1) in two classes were analyzed and compared statically. The result shows that the information of students between two classes have no difference( $P>0.05$ ), suggesting these students were suitable for this experiment.

Table 1 basic information of education reform class and control class

Group (n)		Education reform class (132)	Control class (132)
Age	Range	18~21	17~21
Gender	Male	6	7
	Female	126	125
Education	College	132	132

## 2.2 Evaluation of education reform class and control class

Before experiment, the mean marks of theoretical and practical knowledge in education reform class and control class are similar,  $P>0.05$ . In contrast, the mean marks of theoretical and practical knowledge in education reform class are more than control class after experiment, the result shows statistically significant,  $P<0.05$ . In addition, the manipulation and combination of theory with practice in education reform class exhibit better than control class after experiment. The detailed data were shown in table 2.

Table 2 marks of two groups of students before and after receiving two teaching methods

Group	Experiment (132)		Control (132)	
	Before	After	Before	After
Practice	$22.0 \pm 10.3$	$28.9 \pm 13.4$	$22.2 \pm 15.4$	$25.0 \pm 10.4$
theory	$40.9 \pm 17.3$	$63.0 \pm 19.5$	$40.9 \pm 14.4$	$47.7 \pm 19.4$

## 2.3 Questionnaire of education reform class and control class

At the end of semester, we conducted the questionnaire to collect the feedback and assessment of every part of teaching and global effect. The questionnaire comprises 20 questions, the majority of these questions involves expected goal achievement and recognition of specific teaching parts. The data were shown in table 3:

Table 3 questionnaire

Number	Question	A (disagree)	B (partially agree)	C (agree)	D (very agree)
1	Interesting and attractive				
2	Complete homework after class and discuss with others				
3	Discuss with others at				

	class				
4	Course contents and homework is suitable				
5	This teaching method improves activeness and positiveness				
6	Overall evaluation				
7	Difficulty for me				
8	Good for critical thinking				
9	I can adapt to this teaching method				
10	.....				

We retrieved all 264 questionnaires handed out to students in education reform class and control class. The marks of goal recognition and achievement given by students are relatively high. Exemplified by 3 questions, the mean value of goal recognition are 4.2(0.8),4.5(0.6),4.6(0.5), 4.0(0.7),all values are between satisfied and very satisfied. The mean value of goal achievement are 4.4(0.6),4.1(0.9),4.5(0.6)and 3.9(0.8). the values shown in bracket are standard deviation. Collectively, in terms of teaching, learning after class and discussion, students gave high evaluation of goal recognition and achievement for this teaching method. For research course, 77.3% students are satisfied with learning using PBL teaching method and 91% students believe that the strength of learning is weaker than conventional teaching method. Compared to conventional teaching, 86.4% students believe this teaching method is better. The reports written by students indicate that PBL teaching method help acquire better teaching efficacy and are appreciated by students under the normal strength of learning.

### 3. Discussion

The major goal of nursing teaching is to cultivate applied nursing specialist for society, but there is gap between nursing teaching and clinical nursing requirement in our country. PBL, the question-oriented teaching method, is applied to medical education by using specific patient case and the students play major roles. This teaching method is characterized by investigating a medical feature or diagnosis and nursing of patient case. Teaching objective of it is to help students develop ability of solving problem. The core of PBL is to link theoretical knowledge with clinical practices, which highlight that the knowledge should be applied to specific clinical situation and cooperation between students can improve self-learning and problem-solving ability. PBL teaching method requires the class as unit. The teachers organize group discussion on the basis of course contents. It has been reported that applying PBL teaching method to practical teaching of surgical nursing course is an effective way to associate nursing teaching with clinical practice and thus this method can aid nurture nursing specialists to meet the requirement of development. Taken together, this method has at least four advantages:

First, this method spurs learning motivation and passion of students. For conventional teaching method, the teachers play leading roles, while students are passive ones to receive knowledge, which largely constrains the activeness of students. By contrast, PBL teaching method is different from conventional teaching. Specifically, the students play major roles and collect information by themselves. In addition, they solve problems by discussion within teams, so the students positively think questions and learn knowledge, activating learning interest and seeking knowledge.

Secondly, critical thinking and creativity of students are improved. PBL teaching method simulates the real case and consists of questions posing, analysis, hypothesis, searching information, solving problems and assessment. During the process, clinical thinking of students are widened effectively. Through continual discussion and exploration in the process of learning, students can utilize previous knowledge to eliminate problems and promote their independent thinking, facilitating genesis of creative thinking.

Thirdly, the ability of analysis and problem-solving is improved. A whole learning process is composed of motivation, knowledge gaining, comprehension, strengthening and application, while the main goal of PBL teaching is to build learning capacities of students and teach students with the combination of lecturing, discussion and practice, which offer students a comprehensive opportunity for clinical training. This illuminating teaching method greatly improves the ability of analysis and solving of questions.

Finally, this method strengthens cooperation and communication of students. It is necessary for students to discuss with each other to propose and resolve questions, which will make students interesting to cooperate. It is required for students to collaborate with one another and handle different viewpoints and even conflicts, developing relatively complete strategies of problem solution and helping cooperation and communication between students.

Besides, PBL teaching method has limitations in the process of execution, requiring solutions in the future. First, PBL teaching method requires a large number of time to investigate questions at or out of class, but students (especially, for students with bad self-learning and understanding capacities) need some time to adapt to it and the teachers will need more time to prepare. Secondly, due to lack of infrastructures and teaching resource, the widespread use of PBL teaching method is hampered. Thirdly, deficiency of experienced teachers and effective evaluation standards.

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