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REVIEW ARTICLE

# Problem-based learning: Developing resilience in nursing students

## 問題導向學習：發展護理學生韌性

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**Abstract** A society needs mature and confident nurse practitioners, who are able to think analytically and flexibly, recognize needs for further preparation, and willing to engage in self-development. Concern is raised regarding how educators will build the capacity of resilient students with a knowledge base and a minimum set of skills in responding to various issues and for engaging in self-reflection. Drawing on the framework of nursing competencies and global standards for the education of professional nurses, resilient students may contribute through their social competence, problem-solving ability, sense of purpose, and persistence in the process to achieve the goal of the project. Educators should know how to build the resilient attribute in students by encouraging them to engage in self-reflection. This article discusses four areas that help students build resilience from project-based learning of a small group: the impact of problem-based learning at clinical practice, project/problem-based learning, resilient nursing student, and developing nursing students' resilience. Self-assessment to check the promoting skills for teaching in a problem-based learning program helps the faculty holding the empowerment to encourage or support the students to face the challenge within the small team.

**摘要** 社會需求成熟且有自信的護理專業人員，他們能夠分析思考且有彈性的，能認知更進一步的準備並願意參與自我發展。目前不斷地增加考量教育者如何建立具韌性學生擁有知識基礎且能反映各種問題並參與自省的能力，已日益受到重視。根據護理能力的架構和護理專業的全球標準，具韌性的學生能貢獻他們的社會能力、問題解決能力、意志力和持續堅持達成目標；而護理教師必須知曉如何鼓勵學生參與自我反省建立具韌性的學生。本文將討論幫助學生從小組專案導向學習建立韌性的四方向，包含臨床問題導向學習的衝擊、專案或問題導向學習、具韌性的護理學生，以及發展護理學生的韌性。應用自我評估測量促進問題導向學習計畫幫助教師擁有賦能，能鼓勵或支持學生面對小組的挑戰。

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## Introduction

A society needs mature and confident nurse practitioners, who are able to accept responsibility, think analytically and flexibly, recognize needs for further preparation, and are willing to engage in self-development [1]. Nursing educators have a responsibility to create quality-learning projects for students preparing for careers in health care [2]. Problem-based learning [project-based learning (PBL)] is one of the environmental catalysts of resilience. PBL is an educational approach that challenges students to “learn to learn” [3] and has a positive impact on performance. PBL is an “activity in which students develop an understanding of a topic through involvement in an actual problem or issue” [4]. The literature pertinent to issues of PBL competence, knowledge, and skills has gained acceptance and has been found effective within a variety of disciplines in higher education [5,6]. Many studies have concentrated efforts in understanding on why, how, and in which conditions the educational principles and learning mechanisms underlying PBL work in practice and have indeed reaffirmed the potential role of tutorial groups in promoting the activation of prior knowledge, recall of information, theory building, conceptual change, and collaborative construction of knowledge in their students [7].

We believe that educators should know how to build student resilience in students by encouraging them to engage in self-reflection. Self-reflection because it helps students become aware of their inner strength, from which they can draw their resilience. Resilience enables students who are from a disadvantaged background to successfully adapt to, mature, and thrive in any situation; it also develops a capacity in them to rebound from adversity, conflict, failure, or even positive events and to progress and take up increased responsibility [8]. Often talked about in the field of PBL and resilience but seldom operationalized and implemented are microintervention models to impact performance and an ideal strategy to close the gap between education and practice [9]. However, only few employed health professionals, and fewer students, have the skills to work in groups competently or effectively [10,11]. The purpose of this article is to first briefly review what we mean by the impact on nursing students in PBL at clinical practice and then enter into the PBL incubation process, the still developing nursing students’ resilience or in other words, the evolution of a resilient nursing student.

## A brief introduction to PBL’s impact on nursing students at clinical practice

Our purpose here is not to provide the background or theoretical underpinnings of positive impact on nursing students and their performance in PBL. We operationally define the positive impact on the performance in the PBL process through positive organizational behavior that is related to psychological capital (PsyCap) as follows:

“An individual’s positive impact on performance is characterized by having confidence (self-efficacy) to take on and put in the effort to succeed at challenging task, making a positive attribution (optimism) about

succeeding now and in the future, persevering toward goals (motivation to accomplish goal), and hope to succeed and sustaining and bouncing back and resiliency to attain success [p.3]” [12].

Pajares [13] stated that the higher the sense of efficacy, the greater the effort, persistence, and resilience. Thus, a student’s resilience and persistence are strongly related to that of student’s efficacy. PsyCap has positive correlation with performance and satisfaction [14] and mediates between supportive climate and performance [15].

Students work cooperatively in groups in clinical practice to seek solutions to real-situation problems, to develop skills to become self-directed learners, and need to learn ways to make optimal use of their time and resources while working in groups. Some students find PBL difficult to cope when asked to transform into active critical thinkers [16]. The reality is that not all students have adequately developed the ability to implement PBL skills. Therefore, enhancing PBL will require the development of interpersonal relationship between students and instructors. Without problem solving and interpersonal skills, PBL team members can pull the group in different directions or follow a process of problem solving that has not been agreed upon by the entire team, thus student learning can be frustrating [16]. Conflicts occur when student interaction is not regulated because of unequal participation, workload, and negative PsyCap [17]. The experience leaves an impression on the students that interpersonal skills relating to group process are essential for effective problem solving and learning, and that sheer force of will does not breed success. Case-based learning approach is believed to be a useful strategy for facilitating interprofessional learning, and interaction factors are said to have a significant effect on student interest, learning, and satisfaction with such approaches [18].

Students often do not work productively, waste time, repeat old information, or become confrontational. Students may find themselves in small groups that actually harm individuals and the learning climate. Eventually, using foreign language in a multiple-discipline team might increase students’ anxiety [19]. Students’ perceptions of losing control can strip team members of their self-confidence, causing them to feel hopeless and pessimistic about the future, and eventually weaken their resilience [12]. This can slow down their performance and result in a slump in their morale, decreasing their physical and psychological involvement, health, and well being [12].

## Project-based learning

PBL has the potential to increase students’ sense of responsibility for, and control over, their own learning. Students who are allowed to define and set their learning goals on their own will be more engaged in learning. Activities that involve inquiry learning include problem framing; data gathering; divergent thinking or idea generation—evaluating alternatives and applying a solution to a problem [20]; and using self-reflection to identify personal strengths, weaknesses, values, and ethics. Reflection skills in the PBL process include what all I know, who I am, and how I can use the information to meet the

project's goal, how well I can do as a learner in the environment, what my strengths and weaknesses are, what I can become, how I can improve, and so on [21]. In addition, assessment of student learning is often focused on the final learning product.

PBL provides an environment where the students are immersed in a practical, on-going activity in which they give and receive constructive feedback, multiple interactions, guidance and support, and conflict resolution from other students and the professors [22,23]. The success of PBL depends on the ability of students to work together to identify and analyze problems, and/or generate solutions. Interpersonal skills necessary for a successful team include positive PsyCap; consensual decision-making skills; dialogue and discussion skills; and team maintenance skills of each member's commitment to the project, task, and team. Dialogue is a process that allows students to share their opinions and definitions of a problem among them within a group. Through dialogues, students learn how to think together and contribute to lead to greater understanding of the problem and resolve it. Brainstorming allows all group members equal opportunity to participate in idea generation. Students who strongly create a conducive and supportive learning environment in a PBL setting can overcome the perceived cultural barriers [24] if they have confidence, an optimistic attitude, and motivation to achieve their goals. Desired outcome has its implications from resources necessary for transition to new curricula—money, space, faculty resources, and clinical placements [25]. A PBL tutor should be able to establish the ground rules and recognize that the quality of learning can affect personal and group dynamics within a tutorial setting [26].

### Resilient nursing student

Qualities of resilience, such as social competence, problem-solving ability, resistance to failure, and sense of purpose in nursing students are really helpful when they deal with people facing vulnerability [27]. Social competence includes response to positive feedback, empathy, ability to move between different cultures, flexibility, communication skills, and sense of humor. Problem-solving ability includes planning skills; resourcefulness; and willingness to seek help, creativity, and critical consciousness. Resistance to failure includes refusal to accept negative messages about oneself, detachment, and persistence. Sense of purpose includes having an ability to establish goals, positive attitude, and spiritual connectedness and be achievement oriented [27]. The educators' main commitment is to cultivate the above-mentioned qualities in the nursing students so that they become resilient persons. Resilient students will have capacity and empowerment for more positive response. They may contribute with their attributes of social competence, problem-solving ability, sense of purpose, and persistence in the process, to achieve the goal of the project. They understand how to fit into the school class and are able to look for and find emotional support from other people. They also have the inner resource to overcome the adversity and have more verbal skills, self-confidence, and humor. They fulfill what is required to maintain relationships and are confident of

support of peers, and exhibit positive goals and plans for the future.

### Developing nursing students' resilience

PBL teachers may also face difficulty as they prepare to facilitate discussion, provide coaching, challenge student thinking, and manage group work. Teachers can contribute by helping students understand the merits of group work better. PBL teachers need to better understand the meaningful ways of assessing students' work to motivate learning. Teachers may also choose to hold a student responsible for setting a timeline and generating assessment criteria. When students are guided appropriately to define and set their goals (motivation and hope) and monitor their progress on their own (optimism and persevere), they become more self-regulated (efficacy and resilience). However, the three main catalysts of environment of resilience are as follows [27]: (1) Role model was sufficient to help students overcome the obstacles in their lives; (2) High expectations and support—educators providing students with adequate support can develop crucial resilience traits: self-esteem, self-efficacy, and autonomy; (3) Participation of activities: extracurricular activities let the students have the opportunity to associate with a new peer group through sharing of similar interests, the peer group can help elevate the student's expectation and enthusiasm for school-related activities; community activities can expose students to a wider range of learning experiences and diverse groups of people; and the valuable experience will help students mature, learn about the work world, and develop real-life skills. PBL experiences teach students about how to set and achieve goals by working with another adult. Success in achieving personal goals helps to foster self-reliance, autonomy, and confidence that are the key components of resilience.

In addition, the faculty can promote students' thinking by Promoting Student Thinking-A Teacher Self-Assessment Scale to perform [28], playing the role of positive leader characteristics on firm performance [29], and the role of trust and transparency [30] to make positivity impact the followers' positivity and performance [14], and associated with positive PsyCap, including a higher order positive construct comprising the four-facet constructs of hope, resilience, optimism, and self-efficacy/confidence [12,14]. The attempts by teachers to change their teaching practices, to professionally develop, must be continuously encouraged, nurtured, and valued as there are major transitions currently in social and political contexts beyond the school [28].

### Advantages of small-group cooperative learning

Systematic resolute procedures stimulate thinking and develop an internal locus of control and problem-solving ability in students. Functioning effectively in groups involves knowing how to organize the work, distribute responsibility, break up complex tasks, and provide useful feedback on work that is done. Effective leadership skills

allow students to become more self-managed, which may allow for fewer tutors, thereby reducing the cost of a PBL curriculum—a common obstacle in PBL implementation.

### Contribution of small group in developing students' resilience

A valid project for developing resilience must use resiliency model to create environment, develop consensus to have strong commitment, create a program to maintain a positive self-image, give high expectation, and foster ownership. If a small group participates in the PBL, it is easy to receive and share ideas with each other; also, it is easy to communicate and seek support. After the group members pass through the conflict and stress, they come to have more strength to resist any crisis, because in the process of PBL they learn the cognitive strategies, searching for the meaning, value, and belief to face the vulnerability.

### Implications of PBL for nursing education

Because of ongoing advances in medical and nursing sciences, nurse professionals have to study continuously by themselves to be up-to-date about these changes. Professionals will also engage in their self-development to cultivate the commitments of educators and evaluate factors in ecological environment, which interrupt the quality of learning. Based on these, the teaching strategies should be created and evolved. Then, there is more chance to overcome the obstacles in PBL processes that should strengthen the inner power to resolve the problems and build PsyCap ability. Evaluation of PsyCap and outcome of PBL learning can provide the evidence as to what methods in education are efficacious. For the students, self-checklist helps them to review which area is weak or strong and to know how to modify the strategies for achieving the goal of PBL. For the faculties, self-assessment to check the promoting skills for teaching in a PBL program help them hold the empowerment to encourage or support the students to face the challenge in the small team. A Self-esteem Scale or Resilience Scale may be used to pretest and posttest to evaluate the efficacy of a PBL program.

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