

Toolbox of teaching strategies

Review article

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Abstract: A teaching strategy is a method, which can help students to gain knowledge, deliver information, and improve their learning. Different learning environments, such as clinical teaching, online teaching, and face-to-face traditional learning environments, require different teaching strategies for students. Choosing teaching strategies for a course is very important for nurse educators because various factors should be taken into account to make students meet the learning outcomes. The use of modern technologies in teaching strategies can improve students' competencies and confidences. The purpose of this article is to create a toolbox integrating ten teaching strategies that can be used in different teaching environments.

Keywords: Teaching strategies • nursing education • student centered • learning outcomes • review

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1. Problem-based learning

Problem-based learning (PBL) can be identified as learning by solving problems,¹⁻³ and it is based on the constructivist theory of learning.⁴ In the learning process, students are given the chance to gain knowledge through effective interaction and collaboration.⁵ PBL is a student-centered approach that makes students integrate knowledge and ideas to develop a solution to a problem. PBL can be adapted to fit many settings, and it can quickly engage students into the learning process.⁶

PBL is one of the most significant innovations in health-care education.⁷ In nursing education, nursing students have to face the practice–education gap. PBL is identified as an approach to bridge and eliminate that gap by teaching and coaching nursing students to apply the theory to clinical practice.⁸ PBL gives students a reduced-risk opportunity to learn clinical skills without directly contacting the patients. Technologies can be used in PBL to introduce cases and propose problems. When in PBL classes for the fourth year nursing

students, students organize and deliver their ideas or knowledge by brainstorming solution for the assigned problem. After identifying the learning issues, the solution for the assigned problem can be proposed. With evaluation and feedback for nursing students, PBL includes both teaching and learning processes. Therefore, through interaction and collaboration among the fourth year nursing students, PBL can be used to overcome the practice–education gap.

According to the research, PBL can stimulate students' interest in learning because it focuses on the application of knowledge to solve problems rather than recalling. PBL cultivates students' high-level thinking skills by making students analyze and evaluate problems at higher stages. After comparing to a traditional class, PBL has a positive impact on learning because increased motivation and satisfaction can be achieved through the interaction and communication between students.⁹ Nursing students can have a better understanding of collaboration, and their communicational and interpersonal skills will be improved after using the PBL teaching strategy.

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2. Flipped classrooms

The flipped classroom is a student-centered teaching strategy in which the basic elements of a course are reversed.¹⁰ Both traditional education and online learning are embraced in the flipped classroom. Prior to the class, students watch the pre-recorded videos of the lecture and complete the pre-class homework at home to learn the basic fundamental knowledge of the class. Students are divided into small groups in the class, to apply the contents learned before class by interacting or collaborating through different learning activities.¹¹ The level of participation and engagement in the flipped classroom depends on the preparation and preview of students before the class.¹²

Problem-solving and application activities are involved in the flipped classrooms.¹³ Therefore, flipped classrooms can be applied in higher education to cultivate students' high-level thinking skills. In a clinical setting, every nurse has a different educational background. When teaching nursing students in clinical settings with the teaching strategy of flipped classrooms, educational backgrounds should be taken into account. The flipped classroom is a technology-based learning strategy, which can be applied to improve the critical thinking skills.

Research results show that there are many benefits of applying the flipped classroom in nursing education. Burden et al.¹⁴ found that students' satisfaction can be increased through the flipped classroom; this is due to the active atmosphere in the classroom. Mutual cooperation and collaboration are built up from students' interaction and communication with each other. The flipped classroom also helps nursing students understand and remember the pharmacologic knowledge while elevating their critical thinking to a wider and deeper level.¹⁵ Nursing students can repeatedly watch the videos and listen to the contents at any time. Furthermore, the flexible learning environment increases students' abilities to think beyond the classroom.¹⁶ Finally, the students learn how to apply the theory to practice and attain competencies rather than knowledge accumulation. This helps nurses and nursing students gain clinical reasoning skills, which is a core competency for health-care providers to improve patient's outcomes.

3. Simulations

Simulations can be defined as models, processes, and activities that closely imitate the real clinical environment.¹⁷ In clinical settings, simulations are divided into low-fidelity, medium-fidelity, and high-fidelity simulations. Many advanced technologies are incorporated into the high-fidelity simulations, which use human-like

computerized manikins to imitate real patients in the clinical situations. The diverse functions of high-fidelity simulators create realistic and actual environments for nursing students to practice skills such as intravenous injection without involving real patients.

High-fidelity simulations can be utilized for vaginal deliveries and C-sections, offering the opportunity for nursing students to experience the birth process. There used to be an observational process for novice nurses and nursing students, but they are very nervous and stressed when operating in a clinical laboratory setting.¹⁸ Repeated practices on high-fidelity manikins help students and novice nurses decrease their fear and anxiety, and the obstetrical skills can also be improved without the potential of harm to patients.

Compared to the traditional classroom, high-fidelity simulations using advanced technology facilitate students' auditory, visual, and tactile learning. Through the different simulations, students can gain a better understanding of nursing practice skills. Meanwhile, simulations cultivate a nursing student's ability to face and deal with emergencies and eventualities.¹⁹ Experiencing these emergencies in a simulation can increase students' confidence when facing the same situation in future clinical practice. Through the vivid high-fidelity simulation classes, students' self-efficacy and learning motivation are improved.²⁰ The comfortable learning environment makes it easier for students to acquire knowledge.

4. Concept map

A concept map is a diagram using multiple graphic organizers to connect theories.²¹ There is a main concept around different branches, and each one representing a different aspect or explanation of the main concept. Concept maps require students to connect the isolated topics together with visual presentations.²² Based on the constructivist theory of learning, the concept map makes students remember and understand the knowledge through related and organized contents. It is easy for students to make a concept map by organizing the information through brainstorming and problem-solving. Today, there is concept mapping software to help students easily make a concept map.

Students are motivated to present their ideas through concept maps, which involve application, analysis, and evaluation.²³ Therefore, concept maps can be applied to the nursing process to help students cultivate critical thinking. When writing a clinical plan with the nursing process, a concept map is a good teaching strategy for nursing students to identify their theoretical misconceptions about nursing interventions.²⁴ In a class, nursing students are told to collect patients' diagnosis, medical

regiments, and medical history for the concept map. The medical diagnosis is in the center of concept map, and the nursing process steps are the five branches. Patients' outcomes and quality of care are ensured by the nursing process with the concept map. After finishing the concept map, students are able to discover and understand the interrelationships of clinical problems.

Ghojzadeh et al.²⁵ found that students learn more deeply and retain knowledge longer when the teaching strategy of concept maps is used as it helps the students both to recall the previous knowledge and gain new knowledge. Other researchers showed that concept maps have a positive impact on cultivating nursing students' critical thinking abilities,²⁶ which include interpretation, analysis, and evaluation.²⁷ These skills are part of core competencies of a qualified and professional nurse.

5. Games

Games have been implemented in nursing education for quite a long time. A game can be defined as an activity that has specific rules and is enjoyable.²⁸ Games such as *Bingo*, *Trivial Pursuits*, and *Jeopardy!* are utilized in the nursing education to attract students' attentions and interests. *Monopoly* and *Who Wants to Be a Millionaire* are also used in the education as computer games enriching the game resource. Delivering quick and frequent feedback is one of the benefits of using games in teaching.²⁹ In addition, students are motivated to gain knowledge when playing a game, and educators deliver knowledge in a very enjoyable, relaxed, and interactive environment. However, time management should be considered; the long period of time needed for teaching the games will make students feel daunted and bored.

Jeopardy! is a game in which the players are provided with clues that are actually the answers to a question. In America, *Jeopardy!* has already been utilized in nursing education to review and strengthen the essential nursing terminology. However, in China, there are no similar games used in nursing education. It is imperative to apply this game to Chinese nursing education to not only grab students' attention but also deepen their level of learning. By playing *Jeopardy!* and interacting with others, the students can gain a better understanding of terminologies and knowledge.

Aljezawi and Albashtawy³⁰ showed that using games as a teaching strategy has a positive impact on students' retention and recall of knowledge. The use of games is an innovative teaching strategy to help students retain and convey information. Student satisfaction is also higher in game teaching more than that in a traditional teaching setting. Due to the teamwork and collabora-

tion during the process of games, students should interact with other students to make a final decision. This process cultivates decision-making and critical thinking skills in students.³¹

6. Podcasts

Podcasts are audio files that can be downloaded from the Internet, into a computer or an electronic device. With the development of technologies, podcasts are downloaded automatically using the subscribed Really Simple Syndication (RSS) feeds.³² Podcasts are commonly used to record the contents of lectures, which can be listened more than once.³³ Students can conveniently listen to the podcast at any time and in any place; furthermore, portability and flexibility are the main benefits of podcasts. Students not only improve their learning outcomes but also learn time management.

Podcasts can be used as a teaching strategy for continuing nursing education due to their flexibility. Nursing is a career requiring life-long learning, and thus, podcasts are good teaching approaches to use for continuing education for clinical nurses. In China, if clinical nurses want to continue their learning, they have to attend the class in the campus regularly. However, nurses may miss the classes because of night shifts. If the nurses miss the classes they can listen to the podcasts, rather than using class notes from peers. Meanwhile, podcasts can also be replayed, helping nurses better understand the learning material. Therefore, it is necessary to utilize podcasts in continuing education in China.

It is reported that podcasts can improve both teaching and learning. In order to help students meet learning outcomes, educators can make high-quality podcasts by making use of students' positive attitude toward technology. Schlairet³⁴ showed that the high-quality podcasts are able to improve students' satisfaction, students' learning outcomes, and learning environments.³⁵ As an adjunct learning approach, podcasts help students adapt to diverse learning styles and needs. Podcasts provide students with a non-traditional teaching strategy, offering a beneficial shift from visual to auditory methods.

7. Debate

A debate is an argument on a specific topic between two teams or individuals who have the opposite ideas and opinions.³⁶ Evidence-based contents should be prepared to support the ideas and opinions through the logic and reasoned speeches. Persuasive statements and rebuttals are used to argue controversial issues and make audiences agree or disagree with certain opinions. A debate is an experiential learning activity in which the

verbal communication skills and critical thinking are developed to build students' empathy and confidence.

In clinical practice, nurses often face with some ethical dilemmas, such as euthanasia and other crises in the health-care system. Students' critical thinking skills should be improved to respond to and analyze these either right or wrong issues. Therefore, debate, as a teaching strategy, can be applied to nursing ethics courses focusing on values clarification, ethical standards, and ethical decision-making. When using a debate, the topic involving complex, controversial, or conflicting problems should be told to students prior to the class. While preparing for the topic, students are excited to gain new knowledge and learn critical thinking skills. After the debate, a debrief meeting will be held to summarize the performance of the students and summative assessment of the class.

Darby³⁷ showed that debate has already been effectively used in the nursing programs. Debate enhances critical thinking and analytical skills.³⁸ In order to defend their position, students may use different resources from other professions and integrate diverse information, resulting in cultivating the capacity for critical thinking skills. Simultaneously, verbal communication skills will also be improved due to the students' quick logical rebuttals to the debater. Clearly spoken, persuasive statements should be proposed quickly to the rebutter with confidence.

8. Role playing

Role playing can be defined as a dramatic performance in which the participants improvise behaviors and actions in a given scenario. Through acting out different roles, students are allowed to understand the significance of behaving differently in various situations. Role play is an effective teaching strategy for nursing education. Patient behaviors can be simulated by the nursing students in order to gain clinical competencies.³⁹ Students' communication skills will be improved in the process of role playing through the multiple experimental environments.

Nowadays, nurses have to work with patients from various cultures, nationalities, religions, and races. It is essential for nurses to cultivate the cultural competency, which is necessary to take care of the patients with cultural sensitivity. Therefore, cultural competency can be taught through role playing, by making the nursing students play different roles. By playing different roles, the nursing students meet learning outcomes with enthusiasms and improve their skills of communication and collaboration. By taking the course with role playing, the nursing students may obtain the cultural competency to take high-quality care of the patients.⁴⁰

As one of the benefits, role playing helps students enhance learning and evoke reflections.⁴¹ Students will put themselves into another's positions through role playing. Students' active participations make them develop the empathy through the different emulation scenarios. Role play is an effective teaching strategy and is applicable for all levels of students, to engage nursing students in the learning situations.

9. Humor

Humor is the ability to make others laugh. It has been used in the education for quite a long time and develops students' innovative thinking while helping them understand the learning contents.⁴² Humor as a teaching strategy can aid in learning and provide an enjoyable environment for students and teachers. Using humor in nursing education relieves students' tension and engages them in the learning atmosphere.⁴³ However, ironic humor cannot be used in the class, as it is counterproductive for the students.

Humor is an effective teaching strategy to enhance students' learning outcomes. Therefore, humor can be applied in the teaching process to improve students' learning. Various styles can be presented in the classroom. There are many resources on the Internet such as humorous videos, cartoons, and humorous health-care journals, which can be shared with the students to increase their learning initiatives. The active participation between teachers and students can engage students in learning.⁴⁴ Some offensive and negative humors should be avoided because students may become angry or nervous.⁴⁵

There are various benefits of using humor in the classroom. A close connection will be built between students and educators through humor. The educators become more approachable in a relaxed learning atmosphere.⁴⁶ Utilizing humor in class can improve students' knowledge retention. When students experience humor in a class, they will engage in the learning process to get a deep impression of learning contents. Finally, humor is a learning facilitator that can grab the students' attention to improve the learning outcomes.

10. Interprofessional education

Every health profession has its own educational program. Teaching health professions separately will lead to misunderstandings between one another.⁴⁷ Interprofessional collaboration between different health professions provides high-quality treatment and improved patient outcomes. Interprofessional education (IPE) plays an important role in eliminating the barriers. IPE can be defined as the situation where

two or more professionals learn together to improve collaboration. Mutual respect, role clarity, and communication skills are the core competencies, which can be learned from IPE.⁴⁸

The separate health profession learning causes the role ambiguity in the clinical practice because of the misunderstanding of each other. The IPE can be applied in simulation-based setting such as cardiopulmonary resuscitation (CPR) scenario, for clarifying different roles and responsibilities. Different professions have different rules for their own professions. There will be chaos in collaboration without communication with other professions. However, there will be the same rule for different professions in the IPE class. Through IPE, students' deeper understandings to other professions will be developed to eliminate the barrier of role ambiguity.

In the IPE process, nursing students interact and collaborate with students of other professions. Problem-solving ability and critical thinking skills will be improved.⁴⁹ Through shared decision-making, students will be provided with essential team-based skills.⁵⁰ The conflict between other professions will be decreased

and the work efficiency will be increased in the future through learning the core competencies of IPE. The ultimate aim of IPE is to improve patient outcomes.⁵¹

11. Conclusions

Ten teaching strategies in this toolbox can improve nursing students' learning in different learning environments. Each strategy has the specific features to help student achieve their learning outcomes. Students' interests and attention are better attracted by the teaching strategies that use technologies. Teaching strategies are adjuvant for nursing educators to teach nursing students in both traditional classes and clinical settings. With the assistance of these teaching strategies, not only will nursing educators improve their teaching skills but they will also help nursing students learn effectively and efficiently.

Conflicts of interest

All contributing authors declare no conflicts of interest.

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