THE MODEL OF DELIBERATE PRACTICE FOR DEVELOPMENT OF NURSING PRACTICE SKILLS

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Thematic Paper
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THE MODEL OF DELIBERATE PRACTICE FOR DEVELOPMENT OF NURSING PRACTICE SKILLS

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ABSTRACT

The purpose of this study was to search empirical evidence for an evidence based educational model to develop nursing practice skills. The study procedure was as follows: 1) identify the problem of the study, 2) search the empirical evidence from various databases such as electronic databases and hand searching, 3) analyze the evidence pertinent to the problem of interest, and 4) synthesize the content of the evidence for evidence-based education recommendations. The search yielded nine qualified research studies, which were analyzed and synthesized for recommendations of using deliberate practice that are effective to develop nursing practice skills with the following main issues: 1) use of deliberate practice on nursing students of practical nurses (PN) and registered nurses (RN) to facilitate competency and performance improvement; 2) nursing practice skills of situational complexity that involve the patient safety such as cardiopulmonary resuscitation (CPR) and feeding, etc. that are done intentionally and repetitively; 3) informative feedback that is promptly available by experts; 4) teaching method, assessment method, learning resource of deliberate practice on nursing practice skills; 5) motivating learners for engagement in well-defined tasks and self-learning continuously, and 6) training teachers in deliberate practice.

The suggestion of this study is that the developed deliberate practice to improve nursing practice skills be applied to the course curriculum, and teachers conduct a pilot study in order to assess its outcomes.

KEY WORDS: DELIBERATE PRACTICE / NURSING PRACTICE SKILLS

129 pages

รูปแบบของการฝึกฝนอย่างตั้งใจเพื่อพัฒนาทักษะการปฏิบัติการพยาบาล
THE MODEL OF DELIBERATE PRACTICE FOR DEVELOPMENT OF NURSING PRACTICE SKILLS

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บทคัดย่อ

บทคัดย่อการศึกษาครั้งนี้ มีวัตถุประสงค์เพื่อสืบค้นหลักฐานเชิงประจักษ์ในการหารูปแบบของการฝึกฝนอย่างตั้งใจเพื่อพัฒนาทักษะการปฏิบัติการพยาบาล โดยมีการดำเนินงานตามขั้นตอนดังนี้คือ 1) ระบุปัญหาที่น่าสนใจ 2) หาหลักฐานเชิงประจักษ์จากฐานข้อมูลต่างๆ เช่น ฐานข้อมูลอิเล็กทรอนิกส์และการค้นหาด้วยมือ 3) วิเคราะห์หลักฐานเชิงประจักษ์ที่เกี่ยวข้องกับปัญหาที่น่าสนใจและ 4) สังเคราะห์ เนื้อหาของหลักฐานเชิงประจักษ์เพื่อเป็นคำแนะนำด้านการศึกษา ผลการสืบค้นหลักฐานเชิงประจักษ์ได้งานวิจัยที่มีคุณภาพ 9 เรื่อง นำมาวิเคราะห์และสังเคราะห์สรุปเป็นข้อแนะนำ เรื่องรูปแบบของการฝึกฝนอย่างตั้งใจเพื่อพัฒนาทักษะการปฏิบัติการพยาบาลโดยมีประเด็นสำคัญดังนี้ คือ 1) การใช้การฝึกฝนอย่างตั้งใจสำหรับนักศึกษาผู้ช่วยพยาบาล (PN) และนักศึกษาพยาบาลวิชาชีพ (RN) เพื่อช่วยส่งเสริมการพัฒนาสมรรถนะและศักยภาพของนักศึกษา 2) ทักษะการปฏิบัติการพยาบาลที่ทำอย่างตั้งใจและได้ทำซ้ำนั้นควรเป็นสถานการณ์ที่มีความซับซ้อนเกี่ยวข้องกับความปลอดภัยของผู้ป่วย เช่น การช่วยฟื้นคืนชีพ (CPR) และการให้อาหารทางสายยาง ฯลฯ 3) การให้ข้อมูลย้อนกลับโดยผู้เชี่ยวชาญควรทำอย่างทันทีหลังการฝึกปฏิบัติ 4) การฝึกฝนอย่างตั้งใจเกี่ยวกับทักษะการปฏิบัติการพยาบาลด้านวิธีการสอน วิธีการประเมินผลและทรัพยากรการเรียนรู้ 5) การสร้างแรงจูงใจให้ผู้เรียนมีส่วนร่วมอย่างดีในงานที่กำหนดและเรียนรู้ด้วยตนเองอย่างต่อเนื่องและ 6) การฝึกอบรมครูเพื่อใช้รูปแบบการฝึกฝนอย่างตั้งใจ

ข้อเสนอแนะของการศึกษาครั้งนี้คือ สามารถนำแนวทางรูปแบบของการฝึกฝนอย่างตั้งใจเพื่อพัฒนาทักษะการปฏิบัติการพยาบาลไปประยุกต์ใช้ในหลักสูตร และให้ทดลองปฏิบัติในรูปแบบของการศึกษานำร่องเพื่อประเมินผลลัพธ์ก่อน และนำมาประยุกต์ใช้ในการปฏิบัติของหน่วยงานต่อไป

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CHAPTER I
INTRODUCTION

1.1 Background and Significance of the study

Patient care depends on a healthcare team which consists of physician, pharmacist, medical technician, nurses, physical therapist, nursing assistant, medical staff and workers. Nurses and nurse assistants (practical nurses) play important roles in the health team as they are the largest group of people who work closely with patients in the responsibility of the Ministry of Public Health. The nursing profession requires both science and art to perform nursing care for the patient's health as a whole. Nurse assistants play an active role in nursing care for patients undergoing nursing care, and midwifery (nursing and midwifery).[1]They perform duties in patient care, welfare, cleanliness, feeding and excretion. Moreover, they provide care for patients and records to prevent and control the spread of diseases. People are educated about personal hygiene through nurses, in order to clean and organize the patient's environment. At the same time, the abilities to communicate and have good service behaviors are expected highly from nurses. The rotation in 24 hours of patient care comes from nurse assistants who are close to the patient. These staffs are required of basic nursing knowledge and able to effectively perform nursing tasks.[1]

In the production of nurses and nurse assistants, students in these areas must be skilled in the field of nursing in order to be able to take care of the patient’s body physically, spiritually and socially as well as the appropriate environment are expected to provide safer outcomes. So teaching and learning of the nurses (four years) and nurse assistants (one year) of the courses are important for effectiveness of their careers.[2]

At present, crisis of nursing shortage is occurring globally, particularly in Southeast Asia and Africa, affecting health systems and hampering health services for the people, so they can not achieve sustainable development goals. Governments of various countries pay close attention to the urgent and serious shortage of nurses. [3]

For Thailand, lack of nursing care has been a cumulative problem for over 50 years. Continuing to increase the production of nurses and nurse assistants to assist in the care of patients, the lack of professional nurses requires qualified staffs to assist nursing in patient care. This group must be trained. The quality of nursing education has been standardized by the Nursing Council.[4] The Faculty of Nursing emphasizes the need for staff development, patient care, standardization and quality assurance. In accordance with the regulations of the Council, the nurses' ambulances and rescue workers in health care organizations meet the needs of society.

Thailand has an institute and curriculum that provides nursing and midwifery practice accredited by Thailand Nursing and Midwifery Council (89 institutions for nurses) and (64 institutions for nurse assistants). The Graduate School of Nursing course consists of subjects which are learned through four years (143 credits). Diploma of nurse assistant courses study in one year (36 credits).[5-6] In nursing and nursing assistant courses, there are a variety of teaching and learning programs such as demonstration, role play, reflective thinking, bedside teaching, nursing practice. In real-life situations, health and community services cover cultural diversity under the supervision of nursing instructors. Practice in the clinic with the instructors is a way to manage the teaching and learning by the pre-post conferences before and after the problem. The care of individual recipients (case studies), visits formal consultation.[7]

School of Nurse Assistant is an educational institution which its mission is to produce nurse assistants under the responsibility of the nursing department of the Faculty of Medicine, Siriraj Hospital. Diploma of nurse assistant (revised in 2015) is open using one year per curriculum. The main objective of this curriculum is to produce nurse assistants with the following qualifications. 1) Knowledge of the social sciences and humanities as the basis for the work related to human beings.
2) Helps nursing and provides health services to patients and people. 3) Good human relations and working with others efficiently. 4) Having good ethics and attitudes towards work and society. Therefore, the quality of nurse assistants practice of graduates is important among educators. Nurse assistants are described as staffs in nursing team working closely with patients within the scope of responsibility according to the Ministry of Public Health's regulations about persons who take care

of patients in a sanatorium under the supervision of nurse practitioners, midwifery or nurse and midwifery. The nurse assistants takes care of a patient who has no symptoms at all and perform duties in the care of the patient's welfare, cleanliness, feeding and excretion. In additions, they do activities for patient care, record keeping, prevention and control of spread diseases, provide personal hygiene knowledge as well as clean and organize the patient's environment.[8]

It shows that the duty of nurse assistants make them close to the patients all the time, so the basic nursing knowledge is required as they can operate nursing aids effectively. In order to comply with Mahidol University's quality policy, which sets quality standards, graduates are expected to: 1) have the means to check that graduates meet all the qualifications required by the curriculum, with ethics and moral based on the characteristics of the field of study; 2) there is a monitoring system to assess the quality of graduates and users of graduates. The educational management of the school has continuously improved teaching and learning in order to keep pace with the changing world of 21st century and develop teaching techniques in line with learners' skills, so that students have more learning processes, skill learning satisfaction, which leads to sustainable learning. Preparing graduates to be ready for working by having capacity and skills that meet the agency's need is important.[9] From the reflections of students who finished studying subject of SIPN 041: Basic Nursing Assistant and subject of SIPN 042: Basic Nursing Assistant Technique(SI = Faculty of Medicine Siriraj Hospital, PN = School of Practical Nurse), it was found that students needed more time to practice and train repeatedly to ensure confidence especially taking vital signs, suction clear airway and nasogastric tube feeding practical skills.

The results of the evaluation of the satisfaction of the users of the graduates as a whole in the role of a nurse assistant for one year in the academic year 2013-2015 had an average score ($\bar{X}$)of 4.06, 3.70 and 3.93 respectively. It was found that the satisfactions of users of graduates in area of basic skills in working are relatively moderate average scores. The mean score of 3.5 was estimated to be obtained: Scores of Average $\bar{X}$=3.55 (S.D. = 0.49), $\bar{X}$=3.63 (S.D. = 0.49) and $\bar{X}$=3.96 (S.D. = 0.55), for the academic year 2013 to 2015 were obtained as results respectively. [10]

It is recommended that the instructors should provide more academic knowledge and more practice to ensure the increased use of knowledge in the workplace. Based on this information, the concept of practical teaching and learning, basic nursing techniques have been developed to suit the context of the nurse's career in order to meet the needs of learners and be up-to-date. [10] Meanwhile, lack of the nursing workforce (nurses and nurse assistants) is recognized as a worldwide problem of health care system. This issue together with more expectation in health care quality, patient safety, and professional expertise lead to increase the production of professional nurses. These affect health issues as fairness in management of Public health is questioned, especially in rural areas. It is expected that graduated nursing students should have all the skills to perform their jobs, even in an intensive or complex situation. However, those graduates mostly have not enough experiences and, therefore, may not meet the expectations of patients.[11]Thus, the desirable characteristics of the graduates are summarized in two issues: 1) General features that set by the Thailand Qualification Framework for Higher Education in Nursing Science (TQF: HEd) 2) Standardization of performances set by professional nurses in Thailand Nursing and Midwifery Council in the areas of graduates' competency and desirable attitudes of graduated nurses to meet with professional safety and responsibility.

The first issue, TQF: HEd, it has 6 aspects (learning outcomes) as follow: 1) moral ethics 2) knowledge 3) cognitive skills 4) interpersonal relationships skills and responsibilities; 5) numerical analysis, communication and information technology skills, and 6) professional practice skills.[12] The second issue, Nursing and Midwifery Professionals Nursing Council required 8 competencies in bachelor degree level as follow: 1) ethics, code of conduct and the law; 2) nursing and midwifery practices 3) professional qualifications 4) leadership competency and quality development 5) academic and research competencies 6) communication and interpersonal competencies 7) technology and information competencies 8) social performance.[13] These two issues are initial agreements that provide assurances in which nurse graduates can perform nursing care for all ages of people wholly healthy, risk and illness people. They have a lot of knowledge of nursing skills in uncomplicated nursing practice to prevent disease and promote health, including providing service to those with acute and chronic illness. Moreover, they have basic

knowledge and skills in emergency nursing and midwifery nursing. This provides users with an understanding of the performances of graduate nurses.[14]

For nurse assistant courses, the quality assurance curriculum has a quality assurance program in accordance with the institution's policy as follows

1) The curriculum management has a board of nursing assistant curriculum management to provide instructional guardianship to achieve the objectives of the curriculum.

2) Teaching resources include textbooks, journals, digital books in Thai and English language training, advanced searching systems, laboratories equipped with advanced equipment for abscesses and adequate classroom facilities.

3) For the support and administration of the student, the educational institution arranges for lecturers and individual advisors to the students to support their activities and advise them.

4) Job Satisfaction and Satisfaction of users are expected to evaluate their work performance and satisfaction after completing at least one year of work.[5]

School of Nurse Assistant is under the nursing department of the Faculty of Medicine, Siriraj Hospital, using Education Criteria for Performance Excellence (EdPEx) and Nursing and Midwifery Professionals Nursing Council as quality assurance for educational standard.[8]

Nursing education is a complex and important process that will result in getting qualified nurses as the nursing profession is a professional practice. Practice-oriented-discipline focuses on teaching real-life situations in order to create nurse graduates as professional nurses whom could go out and use their skills to improve people's quality lives.[15-16] Moreover, this helps them meet the objectives of both professional competency and social performance. It increases learning process by enhancing their skills. That will lead to long life learning and the satisfaction of users of high-level graduates.

The study of Kunsiripunyo on "The development of criteria for one-valued register nurses competencies" in the year 2015, found that nurse graduates have lowest capacity in nursing and midwifery practices. It is essential for nurse professionals to adapt their practice skills while studying at each institution, and to teach them to have relevant theoretical knowledge. The study results show that graduated nurses

nowadays are not qualified to meet the needs of the labor market as they cannot actually work to the expected standard. There is a need for cooperation between education institutions and entrepreneurs in the form of cooperative education to help the graduate level up their skills so that they can work immediately after graduated. This is one of the challenges in developing nursing education. The views of professors towards the graduates' qualities reflect outcomes of qualities themselves if they are used wisely through cooperation between education institutions and entrepreneurs.[17]

Based on the study of desired characteristics of graduates from faculty of nursing, Chiang Mai University perceived from 306 supervisors / employers in academic year of 2013-2014 found that the Bachelor's degree graduates' overall performance was in a moderate level ($\bar{x}$ = 3.49), while the expected level of performance was in the high level ($\bar{x}$ = 4.49). The recommendation is that the faculty should promote and increase teaching and learning activities which would improve or sharpen nursing skills for nurse students in a real situation.[18]

In accordance with the evaluation of the satisfaction of the graduates of the Faculty of Nursing from Mahidol University in the year 2011(606 students), teachers were satisfied that the graduates' performance in the areas of moral and ethics, personality, academic and professional skills, leadership, attitudes towards the profession are at ($\bar{x}$ = 4.06 , 4.07, 3.41, 3.63 and 3.95, respectively). They suggested that the graduates should have more academic knowledge and confidence in applying their knowledge to use in their work. This would increase the ability to learn.[19]

As for satisfaction of Police College of Nursing in the year 2011 (136 people), graduates have high ethics at ($\bar{x}$ = 4.48, S.D. = 0.48). However, academic and professional skills, cognitive skills, communication and information technology skills are at lowest levels ($\bar{x}$ = 3.85, S.D. = 0.53; $\bar{x}$ = 3.79, S.D. = 0.52; $\bar{x}$ = 3.67, S.D. = 0.33 respectively). Based on the above information, it was found that the knowledge and practice of problem solving was found in all nursing schools. For the suggestion part, they are told to improve academic and professional skills more by arranging the patient's room where the students can practice more skills. Secondly, they should develop learning styles. And more importantly, they should study more models of professional skills.[20]

Based on the opinions of nurse students and nurse instructors on teaching in the practice room at Faculty of Medicine, Ramathibodi Hospital, Mahidol University, the results showed that both samples of the instructors and the students were of the opinion that learning in the practice rooms helps a lot in real situations in the labor room. However, the students suggested that more time should have been given at a certain level, so that they are not pressurized in applying the right steps and principles. In the case of practice with a real baby, they are still under the supervision of the teacher strictly. And for additional opinion, there should be time for students to attend training sessions outside normal time. To obtain more confidence in the procedures, students need to have internal motivation.[21] It corresponds to the Jintana Paiboon Thananont's study in 2014, more time should be given to students. They should be trained in a wide variety of case studies.[22]

From the policy of continuous improvement of teaching and learning to keep pace with the changing world of 21st century, higher standard public health services have been leveled up. Faculty of Nursing's teaching is an important process to get quality results for qualified learners. In the past, the teaching and learning center was based on "Teacher Center" as knowledge and experiences will be conveyed from the instructor to the learner in the one-way communication style called "passive learning style". At present, the age of the information society has great effects on the teaching process and thus, we need to cope with this change to develop new systems or teaching styles to match the social environment. The persons who play important roles in teaching and learning should have knowledge in various fields just to improve teaching skills by focusing more on student-centered instruction. The instructor needs to play a role as both researcher and curriculum developer to bring about the results of the development of teaching.[23]

Teaching in the nursing profession is a very important aspect of the profession as it focuses on the direct action on human beings, both physically and mentally. In order to meet the needs of the recipients, nursing model is used. In the past, the teaching nursing profession focused strictly on following the guidelines and theories. The teaching style emphasized the accuracy of the principles and theories. Instructors would show an example before letting students try to train themselves.

Clinical teaching included practice in the ward in real-life situations, then students would be assigned to practice in a real situation.[24]

Nursing education is a process of developing nursing students to be knowledgeable, skillful and ethical nurses who are ready to be qualified nurses. The emphasis is on practicing in real situations to maximize learning. It is a process of developing skills in critical thinking, problem solving, and self-learning through the uses of appropriate technologies. The development of ethics is also an important process in developing learners' ways of thinking. They should have good awareness of the responsibility to the users of the service and to society as well as themselves. [25]

Nowadays, teaching to gain expertise at practice skills of the nursing profession and practice nursing has been done through common ways such as lecture, the skills laboratory and clinical wards (patient care settings). Lecture might not be main emphasis in terms of practical routes. In skills laboratory, the main routes are performed through demonstration, simulations and problem based learning (PBL). The patient care settings are also trained using case studies and teaching bed side and wound round learning.[26]

Learning skills laboratory is simply for skill practice before entering the clinical environment, or it may serve multiple functions as a learning resource center. The scope of functions varies among nursing education programs depending on institutional mission, curriculum structure, and available resources. The traditional use of the learning skills laboratory is for skill development prior to application in the clinical care settings. In the skills laboratory, the student develops and practices psychomotor and critical thinking skills in preparation for transfer to real clinical practice situations in the patient care settings.[26-27]

To encourage a nonthreatening and safe environment, the learning laboratory is used at several levels of student learning. Using multiple methods of teaching and learning, it provides an environment for students to acquire new skill knowledge and implement those new skills. Furthermore, it gives time for students to do critical thinking and problem solving before digging into complex client environments.[26]

In demonstration methods, students learn more than in lectures as they provide psychomotor skills. These also motivate attentiveness in students while

teachers have opportunities to evaluate the student's knowledge of a procedure, and to determine whether repeated is necessary. Disadvantages of demonstration method are followed through limitation of fewer numbers of students who can take part in clear observation of practice within the time. Secondly, students have a different pace of learning. Those who could learn fast might become bored as they leave their friends stressful. Difficulty in repeating method in order to acquire competence also creates problems. High cost of supplies and equipment may prevent the amount of practice time available to learners. [26-27]

Simulation Practice has benefits as it is conducted in a protected environment for patients and students. For students, since it is a safe process, simulation presents many situations and even rare or difficult circumstance in clinical settings, such as cardiopulmonary resuscitation situation. Thus, students develop their competencies and skills based on their own needs. This stimulating environment and freedom of learning raises student motivation, attention and self confidence in learning.[28]

However, there are some weaknesses to consider. Set up simulation scenarios are expected to be near to realistic situation, repeatable and can be adjustable often in many forms. However, in reality, these might not be possible as circumstances occur widely with huge expenses come along too. Teachers who are not used to new technical styles of teaching may have to waste their time to be trained about how to facilitate students and get feedbacks from practice. The student may be stressed up in the practice, sometimes unable to imagine or confuse simulated situations with reality. Encounter of emergency in listening and intellectual skills might also arise. The confrontation forced the students to be exhausted.[25,28]

Currently, there are many teaching styles developed to facilitate thinking and practicing skills of students. Problem-based instructional management utilizes real-world situations or simulates real-life situations to encourage learners to think in scopes of what they have gotten from the analysis of circumstances and learning. This learning approach develops lifelong learning skills. Teachers are there to guide students to learn as much as they could. They have potential. What has to be done more is teachers would have to balance the situation and time properly in order to match problem-based approach. Teachers might be concerned about whether self-

educated students have enough knowledge to cope with problems given to them or not. Then, they might help too much until students do not learn by themselves. In addition, instructors expect developments of critical thinking and team-based learning in students through this. Using PBL, students have to be enthusiastically prepared for this style of learning. However, it still has a weak point in which study seems to suit the small size of groups. It is difficult to form many groups, in cases of large size class due to lack of enough teachers. Students need to link between to their competency and teamwork to solve situations given to them. Most importantly, the nursing profession emphasizes on high practice. Teaching and learning are only a combination of knowledge and ideas in the form of quality practice.[25,29]

Learning in clinical wards (patient care settings): Ward round is a process in which healthcare providers practice to take care in patients. Practicing word round is crucial way for nursing students to learn from real situations and has a lot of benefits as followed[30]:

1) Students have a chance to learn attitudes and practice clinical skills from real patients.

2) Students can learn from instructors as a role model

3) Students have chance to practice necessary skills such as getting patient's information, clinical examination, treatment planning, and discharge planning, etc.

4) Students learn how to work as a team with other providers

However, practicing word round may have some limitations as followed

1) Unexpected events in word may cause difficulty in specifying the learning objectives for students

2) Students from different levels

3) Patients may deny to co-operate with the students

Conducting nursing rounds during the clinical day is another teaching strategy that can enhance nursing students' critical thinking skills and problem-solving abilities, as well as their confidence in communicating with other health care team members. During nursing rounds, one or two students per week present their patient and the care they have been engaged in to the clinical group, clinical teacher, staff nurses, and other available health care team members. This provides a valuable

opportunity for students to learn to present their patients to other team members in a confident and concise manner, advocate for patients, ask questions of and collaborate with the health care team, consider multiple approaches to care, and so forth.[31]

There are several ways to develop the skills mentioned above, but there are no clear conclusions. From the study of the above problems and employers' satisfaction toward fresh graduates is low. It is also found that there is no development of instructional model that focuses on students to develop nursing practice skills which are vital and necessary for the nursing profession. There are activities that promote nursing practice skills, expertise in problem-solving, and the development of teaching styles for developing psychomotor skills. Accompanied with the results of the graduate student assessment and the needs of students who wish to enhance their nursing practice skills, the deliberate practice module is designed to increase the capacity of the psychomotor to make the teaching style more complete. Due to the effectiveness of the introduction of deliberate practice in medical education in the area of teaching and learning, nursing schools choose to try out deliberate practice in order to enhance capabilities of teaching and learning. Deliberate practice is not just as same as a repetitive practice with low capacity, but it is a way to improve quality of practice. As we can see, there are lots of people who spend 30-40 years practicing in a particular profession, but never reach the level of excellence in their career. To acquire excellent skills, the students should have deliberate practice. In the olden days, it was believed that people who had good skills performed well with talent and practice heavily. However, by studying the skills development process of Ericsson et al professionals, we discover that important issues of earning excellent skills come from training with correct techniques, including reflecting and providing feedback from teachers. For examples, we use in many circles, such as chess, music, typing and sports. In medical education, there are also usages of deliberate practice including nursing education to study the development of teaching style, enhancing skill competency.[32]

Study by Oermann, et al about deliberate practice of motor skills in nursing education: CPR as exemplar by using random control trial with 606 nursing students in 10 schools of nursing in the United states to compare deliberate practice with traditional teaching, it was found that the groups taught by deliberate practice had

higher skills and memory retained than those who did the traditional one. Significant improvement in both compressions skill and ventilations skill occurred through statistic. Therefore, there is a need for employment of deliberate practice to be utilized in nursing education of relevant and high-use skills for students.[33]

In addition, study by Whyte and Cormier about a deliberate practice-based training protocol for student nurses: care of the critically ill patient: also supports the theory of deliberate practice with significant improvement. Forty participants were randomly appointed to control and deliberate practice groups. It had been resulted in statistically important enhancements to big aspects of participants' efforts in every of the four cases. The deliberate practice protocol prompted participants to reconfigure and act on vital and urgent scenario within the simulated task surroundings, leading to substantive performance improvement.[34]

Furthermore, with Muckler, et al study, there is a creation of low-cost simulated tool to be used as simple replacement for deliberate practice such as simulated trachea in cricothyrotomy and retrograde wire use. So, distance-based students can train with deliberate practice at home. For practice to be optimized, the mechanism ought to mirror the fact of an actual patient care setting. Hi-fi simulation typically arrives with high-cost. Yet, simulation proof for many years has suggested that despite the risen realism it offers, high-fidelity simulation doesn't considerably enhance learner outcomes due to low encounters. Therefore, low-cost simulated settings might offer a wiser solution.[35]

It is hard for nurses to fundamentally change their learning from basic skills to advanced development capabilities that prioritize patient safety. Study by Badowski, et al about “impact of a simulated clinical day with peer coaching and deliberate practice (promoting a culture of safety)” shows twenty nine nursing students registered in a nursing fundamentals course were chosen for the sample. Two institutional review boards approved this study for cover of human subjects. It had been through with quasi-experimental designs as a pre-test and post-study test. It can help improve the cognition, psychomotor skills and attitudes of nursing students. This research shows the development of knowledge, the acquisition of such skills by reaching out to help the sample under control in the research. Researchers want to

improve their communication skills and nursing skills. Further research with a broader scope will need to explore other innovative approaches.[36]

Likewise, Chee had done an analysis of “clinical simulation using deliberate practice in nursing education”. In order to use the simulation model effectively, it requires understanding of the key variables. In creating the scenario, Ericsson's 'careful training' theory is the cornerstone of the conceptual learning model. The concept of careful training is in line with the layout of the simulation scenario, which is recommended to be use in nursing education. This analysis uses Wilson's methodology to research the conception of exercise rigorously within the context of application of simulation things involving nursing homes for nursing education. As a result of nursing education should focus on practice training, it is important.[37]

It is concluded that nursing education is required to prepare new graduates for high quality health care services. In hospital, the sickness becomes more complex nowadays and therefore nursing students must be able to develop and maintain core skills in nursing to advance into effective nursing professional practice. However, deliberate practice is one of the ways of creating a learner-centered approach while skill training is a way for students to develop and maintain nursing skills.[38]

As a result, the researcher is interested in studying empirical evidence currently available to find out model of learning that can be applied in a combination of teaching method to develop competency and performance improvement of psychomotor skills in the nurse students. The researcher is interested in the model of deliberate practice in the principles, and methods for the appropriateness of applying in the contexts of organizations.

1.2 Purpose of the study

The objective was aimed to study the model of deliberate practice to develop competency and performance improvement of psychomotor skills in the nurse students.

1.3 Definition of terms

The definitions for the keywords in this study are as follows:

Deliberate Practice: defined as a process used in skill laboratory or clinical setting by which the nurse students and nurse assistants students practice their skills in a way that is designed to continually improve their abilities across a period of time and progress through the feedback process and repeat training.

Psychomotor skills / Nursing practice skills: defined as an experience in nursing activities of students or new graduates, which is a practical teaching and learning activity in skill laboratories and clinical settings.

Nurses: defined as an registered nurses who graduate in Bachelor's degree of nursing science

Nurse assistants: defined as a practical nurses who graduate in certificate of nurse assistant

1.4 Expected outcomes and benefits

1) Organization can bring the teaching model by using deliberate practice to facilitate psychomotor skills both in the nurse students and nurse assistant students.

2) Nurse instructor can bring appropriate model of deliberate practice to develop competency and performance improvement of psychomotor skills both in the nurse students and nurse assistant students.

CHAPTER II
LITERATURE REVIEW

This study was designed to develop the model of deliberate practice for development of nursing practice skills. Researcher reviewed the literature, as followed:

2.1 Learning skills

2.1.1 Thailand Qualification Framework for Higher Education in Nursing Science (TQF: HEd)

2.1.2 Professional nurse's and midwifery competencies.

2.1.3 The role of nursing assistant.

2.2 Theories of deliberate practice (DP)

2.2.1 Definition of deliberate practice

2.2.2 Resource

2.2.3 Elements of the deliberate practice

2.3 Research related to learning management focused on deliberate practice

2.4 Summary

2.1 Learning Skills

Learning Skills is the ability to seek, compile and summarize knowledge from numerous sources of information by own effort to use them in the right ways according to the Thailand Qualification Framework for Higher Education in Nursing Science (TQF: HEd) and professional nurse's and midwifery competencies. (Bachelor of Nursing Science [B.N.S.] graduates)

2.1.1 TQF: HEd: The standard of learning for the Faculty of Nursing Science is divided into 6 aspects in accordance with the standard framework of the national higher education and desired qualifications a graduate of the Nursing Science. For my field of interest is the nursing practice skills which are in aspect of "professional practice skills" as follows[12]:

2.1.1.1 Can practice nursing skills as an organization by applying the science and arts of nursing as well as the nursing process, empirical evidence and healing communication in nursing care for individuals, families and communities.

2.1.1.2 Can perform to promote good health, disease prevention, medical treatment, relief and health recovery to all service users of all health conditions and ages as well as midwifery in all levels of health care service centers under the nursing profession act pregnancy (1985) and amended by the professional act nursing and midwifery (2nd issue) year 1997.

2.1.1.3 Can provide nursing services with mercy and helpfulness by taking moral, ethics, laws and rights of patients

2.1.1.4 Can perform nursing operations with regard to the individual and cultural diversity

2.1.1.5 Show leadership in the workplace. Can manage a multidisciplinary nursing team, working in the community and the health care service in the community.[12]

Nursing students need to develop specific professional skills, which must provide a detailed description of the knowledge and skills of the appropriate profession to the level of qualification in the curriculum. It is intended that all students achieve these standards of learning. Students will be able to develop their own learning skills, such as learning using learning resources, knowledge management, thinking, and research, which lead to problem-solving and decision-making processes. Professional skills include the six areas of development that have been developed, and demonstrated that knowledge and understanding are credible as a means of self-direction. In the continuous learning life, it is evident that learning skills are very important, so learning skills should be promoted so that learners can succeed in a meaningful learning day.[12]

2.1.2 Professional nurse's and midwifery competencies. (Bachelor of Nursing Science [B.N.S.] graduates)

Competency of professional nurses basically refers to knowledge, abilities and attitudes of professional nurses whom have completed the bachelor's degree to be qualified for practice nursing professionally, safely and responsibly. Self and continuous developments are pretty good uses with an importance beauty for nurses, which can simply be divided into 8 areas as follows. 1) ethics, code of conduct and the law 2) nursing and midwifery practice 3) professional qualifications 4) leadership competency and quality development 5) academic and research competencies 6) communication and interpersonal competencies 7) technology and information competencies 8) social performance. For my field of interest is the nursing practice skills which are in aspect of nursing and midwifery practice as follows[13]:

2.1.2.1 Performance in nursing and midwifery

Integration of ideas in Nursing Science to the scopes of basic nursing practice are needed to provide holistic nursing care. Quality, efficiency and safety using the nursing process evidences of ethical and moral known as code of conduct are also integrated. This is a great way to promote health. Health and wellbeing, acute illness, crisis and chronic illness are important issues for the community.

1) Knowledge and the abilities to use the nursing process.

The nursing process is used to provide nursing care for all age groups, including healthy people. So nurses can promote health, prevent diseases and address major health problems and diseases which are to be taken care of to the community in appropriate paths.

2) Knowledge, ability to promote health and disease prevention.

In principle, nurses should have right knowledge and strategies for health promotion. Empowerment with behavior modification can also be used for health promotion, disease and illness prevention in all age groups. Thus, people are able to take care of themselves and be self-reliant on and off the fields.

3) The ability to care for the sick continuously.

Correct knowledge of individual and family responses to physical and mental illness can be used in nursing care of acute and chronic illness

patients. Continuously, it is provided until the patients and family can take care of themselves or until the end of life or can be forwarded appropriately.

4) Knowledge of family nursing and midwifery skills.

Knowledge of family theory, physiological and psychological changes of women during pregnancy, postnatal period, antenatal period. Nurses are able to screen for normal maternal and infant mortality in postnatal care. Parenting and breastfeeding and family planning services are included too.

5) Practical skills and techniques in general nursing practice.

Have knowledge and skills in general nursing skills and techniques to provide nursing services for all age groups, all health conditions which are not risky to relieve symptoms and resolve health problems.

5.1 Practicing procedures in accordance with the Nursing Council regulations on restrictions and conditions of professional nursing and midwifery such as wound dressing, silk screening, puncturing of abscesses that do not harm the organs of the body, removal of nails, warts or eyebrows, surgical removal of the implant in a position that does not harm the organs through exposure of the body by anesthesia.

5.2 Skills and techniques in general nursing practice as defined by the Nursing Council.

2.1.2.2 Professional nursing and midwifery skills (Nursing practice skills)

Nursing practice depends on human action. It also supports the medical profession in the treatment of diseases based on the science and art of nursing. The Nursing Council has considered importance of nursing and midwifery skills. The professional level is as follows.[39]

1) Nursing practicum skills for health promotion

1.1 Health: physical, psychosocial, and spiritual assessment included.

1.2 Measurement of growth and evaluation measurement of height, length, head circumference, and developmental assessment.

2) Nursing practice skills for disease prevention

2.1 Accident prevention

2.2 Sterile techniques and infection control

3) Nursing care practices

3.1 Receiving patient admission, transfer, and discharge

3.2 Taking vital signs (measurements)

3.3 Hygiene includes baby care, mouth, ear, nose, eyes, organs hygiene, back massage, sitz bath

3.4 Relaxation: rest, sleep, comfort, leisure care, sleep care, pain control, wiping to reduce fever

3.5 Care for food, water and solution. Feeding and drinking water. Feeding and drinking water to the stomach and intestines. Parenteral nutrition (Intravenous solution). Recording intake and output of the body. Checking for alkaline and acid balance.

3.6 Blood transfer and blood components transfer

3.7 Oral administration (oral tablets). Intravenous (intravenous, ophthalmic)

3.8 Respiratory care, positioning and pulmonary aspiration. Oxygen (canula, mask, respirator, box, hood, CPAP and croupette). Tracheostomy tube, T-piece tube, endotracheal tube

3.9 Care for excretion, urinary excretion, urinary and fecal care for patients with a urinary tract, wearing a condom to wait for urine. Caring for patients with ostomy. Gardening for gas.

3.10 Gardening, stomach, intestine, bladder care for patients. Peritoneal dialysis.

3.11 Use of body warmth equipment.

3.12 Hot-cold compress.

3.13 Safety, environmental management, safety. Assistance in the event of an accident.

3.14 Wound dressing, wet dressing, wound dressing, and wound care.

3.15 Care of the drainage pipe.

3.16 Collection of blood smears, urine stools, and sputum extracts special specimens.

3.17 Records from nurses

3.18 Preparation of patients to be admitted to the hospital.

3.19 Early and after care treatment and surgery.

3.20 Emergency assistance and assistance in normal accidents including shock patients, bleeding, wounds, over dosage, toxins, concussion, burns, muscle aches, burns, scalp burns, and unconscious patients.

3.21 Last-day care for patients with end-stage care

3.22 Resuscitation

3.23 Diagnosis and Treatment

4. Rehabilitation nursing skills

4.1 Movement and body management: moving, and lifting of patients, physical activity, joints and muscles. Patient: passive and active exercise

4.2 Restoration of body conditions. How to cough properly. Respiratory management, muscular dystrophy orthopedic surgery

The Nursing Council has defined the characteristics of graduate students in knowledge and skills including Nursing and Midwifery practice 23 Nursing skills in nursing practice. Nursing students should be endeavored to train in the practice. The nursing profession is defined in accordance with the nursing skills prescribed by the Council.

2.1.3 The role of nursing assistant.

Nurse assistants use criteria of “Thailand Nursing and Midwifery Council” as a standard. “Thailand Nursing and Midwifery Council” has set the scope of skill practice as follows:[5]

1) The specific tasks assigned to nursing assistants are routine, but under the control of the nursing profession or nursing and midwifery.

1.1 Making simple procedures without complications without causing immediate harm. Non-invasive procedures

1.1.1 Sputum suction in adult patients with stable symptoms.

1.1.2 Patient care with fixed tracheostomy tube

1.1.3 Urinary intermittent catheterization in patients with no urinary tract disease or to put a condom to support urine.

1.1.4 Adult and elderly feces without gastroenteritis.

1.1.5 Hot and cold compress in adults or older people who feel good and can feel.

1.2 Record keeping and reporting of the following information:

1.2.1 Signs of weight gain, height, drinking water and urine. And blood concentration.

1.2.2 Data that has changed from the past but has been assessed by professional nurses.

1.2.3 Patient's response to nursing

1.2.4 Information on environmental situation

1.2.5 Individual and family reviews on care.

1.2.6 Observation and collection of laboratory specimens storage and detection of sugar in urine

1.2.7 Personal cleanliness and wiping to reduce fever.

2) The specific task assigned to the nurse assistant is a routine task, with the patient being symptomatic or severe.

2.1 Walking aids

2.2 Care, hygiene, excretion, baby bath Wiping

2.3 Prepare food tray

2.4 Feeding and watering the stomach to the stomach and intestines.

2.5 Daily care

2.6 Social activities such as providing patients with group participation

2.7 Helping nursing professionals or nursing and midwifery. Let the patient learn about health.

2.8 Rehabilitation according to medical plan

2.8.1 Movement and physical activity

2.8.2 Flip arrangement

2.8.3 Passive and active exercise according to medical plan.

2.9 Assessing the condition of the patient using simple tools such as pain, falls abnormal skin characteristics, such as skin appearance caused by adhesion. The skin is vulnerable to pressure ulcers.

2.10 Caring for death patients

2.11 Basic resurrection first aid

2.12 Prevention and control of disease spread

2.13 Cleansing the external organs of the mother and the gynecologist.

2.14 Assisting patients with screening and diagnostic procedures.

2.15 Moving and distributing patients from the ward

2.16 Preparation and assistance in physical examination

3) Medication is available in the following cases.

3.1 In health care facilities that provide nursing professionals or nursing and midwifery. The long-term care facility is operated by a nurse practitioner. Nursing and midwifery must assess health status. Nursing planning, nursing care, and evaluation by nursing assistants will require specific training.

3.2 In places where individuals live independently constant or predictable illness. And people can participate in self-care. Nursing assistants can administer medications to patients as prescribed by a nurse practitioner or a nurse and midwife, such as oral medications or feeding tubes. Death of the tongue or medication only. Nurses and nursing assistants must be systematically trained by a nurse or midwife or nurse practitioner to supervise the treatment at least once a week or when adjustments are made. Summary of nursing practice skills have 23 skills as mentioned above.

2.2 Theories of deliberate practice (DP)

2.2.1 Definition of deliberate practice

Deliberate practice has many definitions, for example:

Deliberate practice means a practice that is specially designed to improve performance, often with a teacher's help through continuously providing feedback along with highly demanding practice.[40]

Deliberate practice is a structured process that has a specific intent to promote adjustments, corrections and improvement, and it’s not easy due to repetition.[41]

Deliberate practice where practice (frequently designed and managed by their instructors) is focused on enhancing respective tasks. Deliberate practice also involves immediate feedback time for problem and opportunities for repeated performance to shape attitides.[42]

Deliberate practice is a mindful of how destructive form of learning by doing it's a process of continued experimentation mastery at eventually full automatic city of a specific skill.[43]

The meaning of deliberate practice can be summarized as follows:

Deliberate practice touches on an especial sort of practice that is consciousness and systematic. Training shouldn’t be made up of mindless repetitions; DP requires precise attention and is handled with the particular objective of improving performance which are principally supported by feedbacks (immediate) from a variety sources such as teachers, colleagues and repeat training.

2.2.2 Resource

In the past it was believed that the key factor in determining a person's ability level was genetics, for example, most people believed that a musician, athlete, or a talented doctor born of a person had genetic or talent characteristics. It can help develop the ability in that field, but cannot be trained to excel than the level set by genetics. The minister, however, data from research gathered. Nowadays, it is found that human beings can practice self-improvement in terms of memory, mind, physical ability, sports and so on indefinitely, indefinitely breaking the world record in human

capacity continuously until it seems to The human ability is not limited by genetics, but depends on the intention to practice correctly. Data from the study indicates that the key to human achievement is the development of distinctive skills, whether in music, sports, science, or literature, that is, the specific skills they have learned. The nature of the training method is called deliberate practice.[44]

Can a designed activity improve our skills? Commonly, exceptional levels of performance in areas such as music, sports, memory or chess are mainly associated with inbred talent. We believe that human's short-term memory is limit. Usually, this memory capacity is at seven units according to numerical memory test. However, K Anders Ericsson and his colleagues were interested in a memory capacity. They thought that it can be improved by practice. Therefore, they setup a digit memorization test in order to study the acquisition of a memory skill. Their hypothesis was that memory skill can be improved by practice. The subjects of this test were undergraduates. An undergraduate named SF. with average memory abilities and average intelligence engage in the memory span for one hour a day in 3-5 days a week, for one and a half year. Mostly, if people read a six or seven-digit number, they can recall the number from short-term memory correctly. Nevertheless, if the number is eight or more in length, it is very difficult to recall the number correctly. However according to their test, Ericsson and his team showed that memory span can be enhanced by practice up to in excess of 100 digits. A subject of this test was able to increase his memory span from 7 to 79 digits after practicing more than 230 hours in the laboratory.[45]

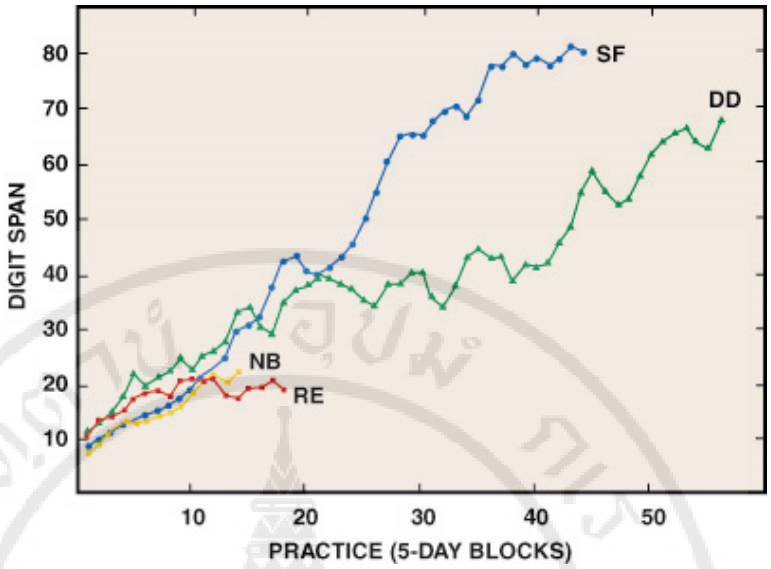

Figure 2.1 A digit memorization task[45]

Deliberate practice is the learning theory proposed by Ericsson, et al to describe the process by which learners practice their skills in a way that is designed to improve their abilities to continually progress through continuous feedback from teachers and repeated training by the learners. This training process tries to keep the learners consciously competent in the training sessions which will make the students examine their skills (advantages and disadvantages) including ways how to improve.[44]

Ericsson studied about expertise from violin students of the Academy of West Berlin, one of the world's best music schools. He observed the behavior of these violin students: how they practiced and what was the results of their practice. Ericsson concluded that all violin students can be divided into 4 levels as follows:

1. Professional violinists 2. Good expert violinists 3. Least accomplished experts 4. Amateurs everyone from all groups started playing around 5 years old. In the first few years, everyone practiced roughly about the same, 2-3 hours a week. The difference of violin practice started around 8 years old. It was the number of hours practice difference. The students who end up the best in their class began to practice 6 hours per week (9 years old), 8 hours per week (12 years old), and 16 hours per week (14 years old) 30 hours per week (20 years old). The total practice hour was about 10,000 hours when they were 20 years old. The graph below is shown about the number of practice hours of each violinist's level.[44, 46]

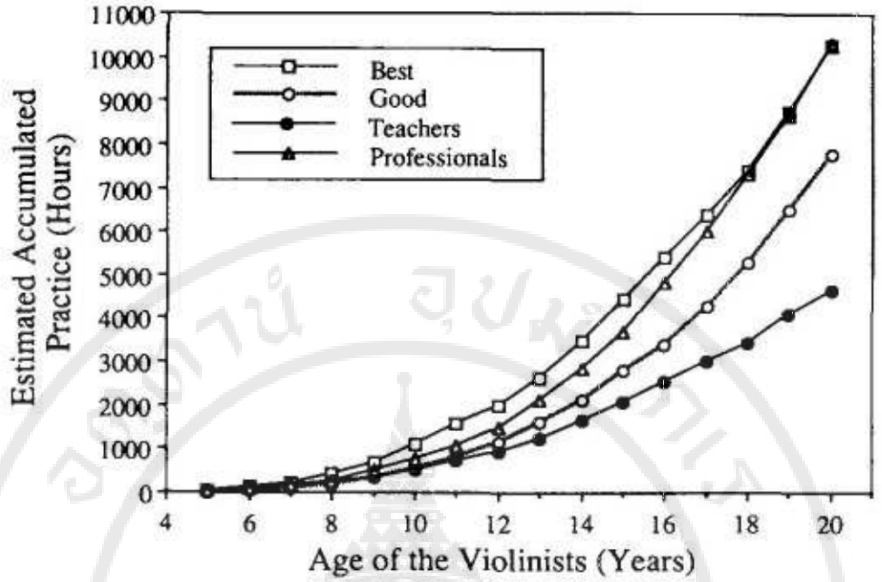

Figure 2.2 Assemble amount of practice hours alone (on the basis of rates of weekly practice) as a function for age of the middle-aged violinists, the best violinists, the good violinists and the music teachers[44]

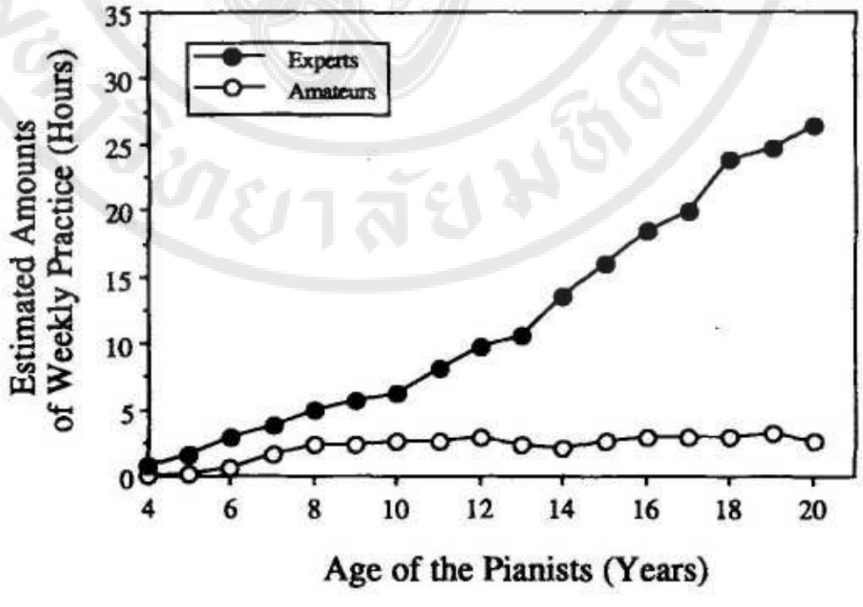

Figure 2.3 Estimated amount of time for practice alone at the piano as a function of age for expert pianists and amateur pianists.[44]

The only difference between Level 1 and Level 2 is that the violinist level 1 or professional violinists begin to learn the violin from the child. They have "flying hours" higher than the violinist level 2. Based on this study, Ericsson concluded three factors for excellence: 1. ritual 2. practice in time-limit 3. time to rest for charge the battery (restoration)

Therefore, no natural musicians can float effortlessly to the top. No people who practice harder than everyone else ended up in failure. Based on Ericsson's study, once a musician has enough skill to get into a top music school, the thing that separates one performer from another is how hard he or she works. Additionally, those people at the very top didn't work just harder than everyone. They work much, much harder. According to the study of world-class expertise in many fields such as basketball players, fiction writers, ice-skaters, pianists, chess players, composers and master criminals, they were accomplished by deliberate practice. By using deliberate practice, the hours of practice is not the only factor to become the expertise. Lots of people spend 30-40 years practicing in a particular profession, but never reach the level of excellence in their career. The factors that also play the important roles in deliberate practice are the practice designed to improve performance, feedback and highly repetitive practice.[44,46-48]

The key to understanding on how to practice in deliberate practice comes from knowledge of four levels of competence.

First level is “unconsciously incompetent”: the ability for a learner to know nothing about the skill and not be able to perform the skill.

Second level is “consciously incompetent”: know the concept but hasn’t gained skills practically.

Third level is “consciously competent”: know the concept and able to do them competently with concentration and awareness.

Fourth level is “unconsciously competent”: able to use such skills very often with lots of experiences even without thinking.

These four levels help teachers understand the state of their students. For example, a student in unconscious incompetence will act differently to training than a learner in conscious incompetence. If students don’t know there’s a problem, they are less likely to engage in the situation. Otherwise, if learners are in conscious

competence, they may just need additional practice rather than training. The development of learners from ignorant to expert levels through the four stages of development as follows: the development of unconsciously incompetent to realize or consciously incompetent to do or not. Be consciously competent and develop until the maximum is made or unconsciously competent.[49]

Importantly, transition from phase 3 (consciously competent) to stage 4 (unconsciously competent) skills, the practice is to concentrate on trying to let the learner to stay in the third phase longer rather than offering them to be in the fourth phase too early. Therefore, they will be able to analyze about how defective or effective their skills are and how they can improve their skills.[49]

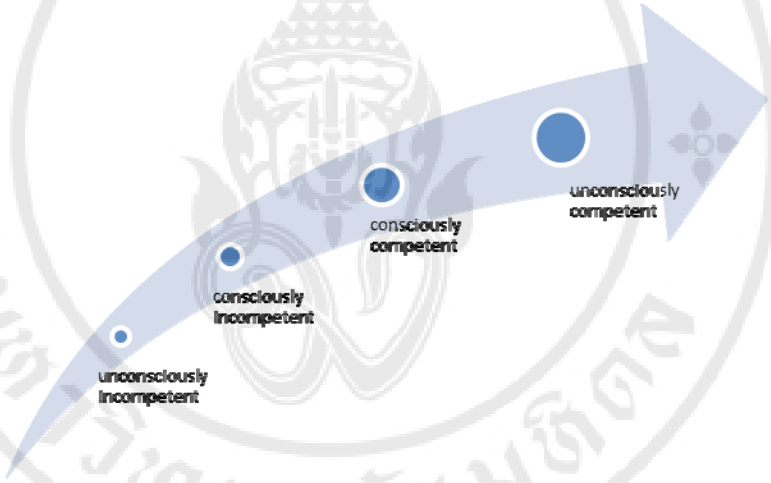

Figure 2.4 Four Levels of Competence[49]

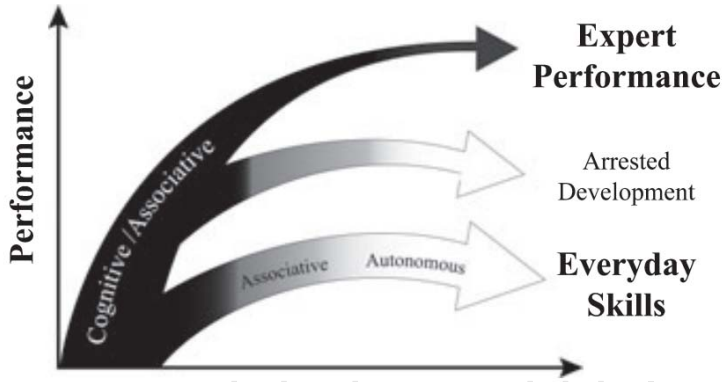

Figure 2.5 Graph of the difference between the course of improvement of expert performance and of everyday activities[42,49]

The above picture shows the dissimilarity between the course of the boost of proficient performance and of everyday activities. The objective for everyday skills is to obtain an adequate level that is steady and autonomous. After persons pass the stages of cognitive and associative, they are able to create their performance close to perfection with the lowest amount of attempts. On the other hand, skillful performers retaliate automaticity by adjusting more elaborate mental representations to attain upper levels of their performance and will, therefore, remain within the cognitive and associative stages. The experts will not want to achieve the autonomous phase of skill development. However, they will enhance their performance by engaging in deliberate practice, which causes in previous automation of their performance.[50-51]

2.2.3 Elements of the deliberate practice

Deliberate practice comes with five main components: 1. Set clear and specific goals 2. A practice designed to increase their abilities 3. The feedback process for the supervisors, teachers or colleagues 4. Continuous training 5. Keeping yourself motivated [44,50]

1) Set clear and specific goals, practice design to increase their abilities composes of techniques as follows. You have to have a goal in mind. Otherwise, how do you know yourself? Whether it is training karate until achieving maneuver or playing one song without an error, let's just have a clear goal and need more potential than the present.

2) A practice designed to increase their abilities

2.1 Divide what to do and plan the training. Some skills may look complicated, but it usually comes from a number of factors. You need to split it into sections. Then plan how and when to train each part.

2.2 Train at moderate speed. The key to the important concept of deliberate practice is to try to keep the learner in the distance, meaning that the learner must be conscious of what he or she is practicing all the time. Do not think you can achieve this goal easily. The learner must not rush so they can pay attention to every part of the practice.

2.3 Train skills repeatedly at appropriate level. What do we mean by “appropriate level”? Difficulty or complexity of the skills is an important

factor that we consider in designing effective training. Noel Tichy, a professor who explained how we learn and grow, showed a brief description of the model. The comfort zone is at the center of the model. It is where we feel well, and comfortable. We do our best to stay in the comfort zone. However, no growth or learning happens here as we are relaxed rather than stretched. The panic zone is a place of high stress and drama. Growth rarely takes place because there is too much stress and anxiety experienced in the panic zone. The learning zone is where growth occurs. In the learning zone, we have a mixed sense of anxiety and pressure as you don't have many things figured out. Yet success is in an achievable range and we are motivated to learn and grow so we can accomplish our goals. The appropriate level is in the learning zone.[49]

3) The feedback process for the supervisors, teachers, or colleagues. Good practice requires a clear goal, which can be achievable. Continuing on with the aim of practicing skills and having opportunity to develop better skills, teacher's duties must be clearly defined so that the correct performance will be achieved. The learner will compare how his or her performance is different from what the instructor has set and find a way to develop his or her goals. For examples, in basketball, teachers are allowed to set goals for 80 percent of the time for penalties shootout practice of their players. The athlete must count how many times he has thrown his ball and compare to that whether he has reached the goal of 80 percent or not. If not, then he should find a better way to improve skills by listening to various suggestions from people who know them well. No one can be skillful at all their skills. These experts can spot your mistakes and help solve them. So to get the perfect result, you need to be trained properly before getting it. It is easier than to guess it yourself.

4) Continuous training. Developing sophisticated skills requires constant repetition. Experts are those who invest efforts to train skills more times than others. No one in the world, no matter in which professions, has way to succeed in professional skill than anyone else without a lot of practice. By following up with skilled professionals in a variety of disciplines, whether musicians, athletes, writers, or professionals, the writer concludes that reach of professional skills at an excellent level is attainable through inexpensive training. For more than 10,000 hours, the time

required to practice this skill is considered quite great. So the important factor in developing learners is to keep the learners on their inspirations.

5) Keeping yourself motivated. Keeping yourself motivated is the fuel of learning. By keeping your motivation, there are three factors to consider: emotional, rational, and environmental factors. [49]Generally speaking, what can inspire students is often a reflection of the students' role model. Role model gives the students the impression that students can make the effort to follow the example that he or she has shown. Students can learn academic contents well if they are given in appropriate amounts rather than being forced to take too many.

The development of a hierarchy of skills can be divided into four categories, in descending order from most forms of mild to advanced developments that are strongest as follows: [51]

1) Naive practice

Persons take up some new activity; practice it bit by bit, maybe obtain some lessons; and do the same things over and over until those persons reach a comfort zone. At that point, the persons stop making progress.

2) Purposeful practice

A collaborative effort to enhance the same skill by moving out of your comfort zone

- Having a comprehensible pin-point goal
- Keeping the focus on that goal
- Using feedback to upgrade performance

3) Proto-deliberate practice

Some domains lack the pre-existing information and objective measures of success required for true deliberate practice. Still, you can estimate the benefits of deliberate practice in these domains by doing 3 things:

- Find an expert (or experts) whose performance clearly outruns that of others in that domain.

-Think of something different.

- Try to progress training routines that allow you to follow their lead try to make up for the lack of informed knowledge that is needed for deliberate practice.

4) Deliberate practice

This is purposeful of a particular kind (i.e. in a domain with objectives for success and specific practice techniques). It has 7 elements

1. Enhancing skills that others have already found a solution, using practice system designed by instructors for example depending on an established knowledge about practice techniques

2. Clear and specific goal for instance objective for improvement. In the case of basketball, the specific goal might be daily/weekly/monthly develop in time to practice as step by step. For example, I want to shoot down the loop 8 from 10 times; they need to be specific, As puts purposeful practice is about putting together a bunch of initial steps to reach a final goal.

3. Shifting outside your comfort zone means pushing yourself to upgrade. This is one of the main factors that segregate purposeful practice from naive practice. The plateauing effect results from people staying in a comfort zone. If you want to get off comfort zone, you need to move outside it (plateau). In the case of basketball, this would mean constantly trying to improve your shooting skills to point success.

4. Using full focus and conscious behavior that is similar to the ‘attention’ element of purposeful practice. Involves being fully attended and engaged in your practice.

5. Using feedback and improvement to reach your objective, for example, examine your performance to check whether or not you are improving. Consequently, in the basketball test, this would mean recording your times; monitoring how many improve your shooting skills to point success. Using a teacher to give advice on your technique and immediately. The mentality is that you can’t really get better unless you know whether your efforts have been successful.

6. Developing effective mental representations is like developing new cognitive feature frameworks that permit you to master the skill. It has been discovered that in study when study of skilled performers that they have come up with advanced mental representations that permit them to defeat limitations faced by different performers. This example comes from the study of chess players and the way they represent the items on the checkerboard. Dissimilarly, novice chess players, they

are doing not notice individual pieces on the board; instead, they see classic game sequences and patterns. This lets them to chunk info into higher order representations and defeat limitations of memory.

7. Improving upon your previous skill set, for example, structuring newly acquired skills on top of previously acquired skills. This is how most learning is done and emphasizes the importance of mastering basic skills. [51]

However, the principles of this theory have been widely applied to improve the learning and skill practicing processes. There are many researches supporting the deliberate practice theory that it plays an important role in improving many professional skills such as insurance officers, instructors, and doctors. Data from the research of professional skill development show that the formats and processes of deliberate practice are different, depending on each profession's learning and work process. In the medical field, this model has been adapted in skill practice. Based on the study of medical students, it was found that medical students in higher year learn to develop their skills by using more deliberate practice process. In addition, it was also found that the medical students who have used the deliberate practice process tend to get higher scores of OSCE (Objective Structured Clinical Examination) Than the students who have not used this deliberate practice process.[52] In the medical expert model, deliberate practice is used to improve medical instruction in the skill laboratory together with simulation technique, For example, the study of McGaghie et al. also supports this theory. McGaghie et al. Concluded "developed a list of nine elements of deliberate practice which are applicable to simulation in nursing. These nine elements included[53]

1. Greatly motivated students with highly attentiveness
2. Clear determine learning objectives or tasks
3. Appropriate level of difficulty
4. Concentrated on, repeated practice
5. Attentive, reliable measurements
6. Descriptive inform feedback from educational sources (e.g., simulators, instructors)

7. Monitoring, error correction, and continuous deliberate practice as needed

8. Assessment and performance that achieve a mastery standard where learning period may vary but anticipated minimal outcomes are identical

9. Furtherance to the next task

2.3 Research related to learning management focused on deliberate practice.

Bond et al did research about “deliberate practice with standardized patient actors and the development of formative feedback for advance care planning facilitators” employing participants (primarily nurses and social workers in a large multisite health system). The course included a precourse video demonstration of advance care planning (ACP), traditional lectures, and four 30-minute simulations with SPs. Knowledge were tested with a multiple choice question (MCQ) test. In addition to standard postcourse / postsimulation evaluations, learners were surveyed pre/post/30-90 days delayed for self-perceived confidence. A linear mixed-effects model was applied to analyze changes over time. Trained faculty rated performance in simulations with an observational mini-clinical examination (mini-CEX)-type rating form with a checklist, global competency, and global communication rating. Inter-rater reliability (IRR) was calculated on randomly selected paired ratings. Results showed MCQ scores improved significantly as paired learner surveys of self-confidence. A linear mixed-effects model was used to analyze changes over time. Trained faculty rated performance in simulations with an observational mini-clinical examination (mini-CEX)-type rating form with a checklist, global competency, and global communication rating. [54]

Whyte, Cormier about “A randomized controlled trial of a deliberate practice-based training protocol for student nurses” The study was carried out by increasing the clinical performance by using the randomized control trial in 40 participants of 4th year nursing students, grouped by DP group and control group. The DP group effect was significantly more preferable than the control group for the area of participants' efforts in each of the 4 simulated setting situations. Conclusions supported the deliberate practice as its protocol prompted participants to reappraise

and act on important encouragement present in the simulated scenario, resulting in critical performance improvement.[55]

McGaghie et al synthesized a research about "Does simulation-based medical education with deliberate practice yield better results than traditional clinical education? A meta-analytic comparative review of the evidence" This is a quantitative meta-analysis that spans twenty years, 1990 to 2010. Even though the number of reports analyzed in this meta-analysis is not considered a big size, these results prove that deliberate practice with simulation-based medical education is supreme to traditional clinical medical education in achieve specific clinical skill acquisition targets. Simulation-based medical education is an abundant educational intervention that should be put consciously to practice with assessed seriously in practice areas. More researches in the future on incorporating simulation-based and deliberate practice in medical education are wanted to extend its energy, usefulness, and cost-effectiveness.[56]

Pukenas, et al did studies about "simulation-based education with deliberate practice may improve intraoperative handoff skills". Pre-deliberate practice (DP) invention and post-deliberate practice intervention pilot study were the design of this study. The study was arranged in simulated operating room of a university-incorporated hospital. There were ten anesthesiology residents participated in a one-day simulation-based handoff course. An intraoperative handoff checklist was used by each subject to re-conduct simulated handoffs with deliberate practice. One year afterwards 7 of 10 residents took part in simulated intraoperative handoff course. Residents' handoffs were recorded by videotape and scored. Result, at the pre DP invention, the overall communication failure rate, defined as the percentage of handoff omissions plus errors, was 29.7%. After add DP intervention with the intraoperative handoff checklist, the communication failure rate decreased to 16.8%, and decreased further to 13.2% one year after the course. Conclusion: simulation-based education using DP may result in improved intraoperative handoff communication and retention of skills at one year. [57]

Liou, et al did research about "The effects of a deliberate practice program on nursing students perception of clinical competence" in year 2013. They studied by letting the students from registered nurses to Bachelor of Science in nursing night

school program in Taiwan do pretest and posttest surveys. They studied 256 students in 2009 and 266 students in 2010. The study was a replicated measure correlational design. The results showed that participants, who had nursing work experience and review the skills through video tutorials, scored a higher grade point average. Conclusions: Previous nursing practice skills and frequent skill reviews are significant factors in promoting nursing competence. Gaining psychomotor skill competency is a slow process acquiring practices. Thus, giving nursing students courses with deliberate practice is suggested in order to encourage students to improve their competence.[58]

DeBourgh and Prion did studies about "student-directed video validation of psychomotor skills performance: a strategy to facilitate deliberate practice, peer review, and team skill sets" in year 2016. This study, conducted with 102 students, searched for students' perception of evaluating self-record psychomotor-skills performance videos. The result shows gains in students' confidence and team work skills to record individual videos of skill performance, and described the influence of teamwork, colleagues, and deliberate practice. This research conclusion: Despite being a time-consuming method, reviewing self-recorded video is perceived as effective by the students in term of improving their confidence and performance in psychomotor skills.[59]

Sawyer, et al did studies about "deliberate practice using simulation improves neonatal resuscitation performance". A pretest-posttest design was used in the study. Regarding subjects of the study, 15 teams of 2 residents participated in a series of three standardized neonatal resuscitation program (NRP) simulations. A brief introduction of the infant simulator was given to subjects before each simulation sessions. After the simulation, a facilitated debriefing was provided immediately to the subjects by a single investigator. NRP performance and time to achieve critical tasks were evaluated on the first (pretest) and third (posttest) simulations by the method of video review by a single investigator. About the evaluation tool a validated scoring instrument was used in evaluating NRP performance. The research found that enhancements were seen in scores for overall neonatal resuscitation program performance. Conclusions: Our results suggest that deliberate practice using simulation is related to enhancements in neonatal resuscitation program performance

and support the use of deliberate practice using simulation in neonatal resuscitation program training.[50]

Cordero, et al did research about “deliberate practice improves pediatric residents' skills and team behaviors during simulated neonatal resuscitation”. The purpose of this study is to assess the skills and team performance of pediatric residents while resuscitation with high-fidelity mannequin prior to and after a deliberate practices intervention. During the neonatal intensive care unit (ICU) rotation, residents take part in two 90-minute sessions each month in an off-site delivery room, which their activities were recorded by video for evaluation. Five skills are required for a team of pediatric residents to react to a simulated scenario. These skills include positive pressure ventilation, chest compressions, endotracheal intubation, umbilical catheterization, and epinephrine administration. Scores were given to each skill according to its technique and timeliness as well as teamwork for communication, administration and leadership. A 2-hour focused deliberate practice was conducted between scenario sessions. The results showed that 33 residents or 11 teams achieved the sessions. During the first session, gaps in procedural skills stated were overcome. However, time consuming for skill achievement stayed below the expectation. In addition, team performance was improved significantly. In conclusion, deliberate practice enhanced pediatric resident’s skills and team behaviors. Nevertheless, weakness of development in time consuming recommends that a different academic model is required.[60]

2.4 Summary

Deliberate practice touches on an especial sort of practice that is consciousness and systematic. Training shouldn’t be made up of mindless repetitions; DP requires precise attention and is handled with the particular objective of improving performance which are principally supported by feedbacks (immediate) from a variety sources such as teachers, colleagues and repeat training. Deliberate practice comes with five main components: 1. Set clear and specific goals 2. A practice designed to increase their abilities 3. The feedback process for the supervisors, teachers or colleagues 4. Continuous training 5. Keeping yourself motivated. From the related

research, it can be seen that deliberate practice improves the efficiency of the practice. However, the appropriate forms and guidelines of deliberate practice in each profession are different. Deliberate practice intensifies the likelihood that students will remember new information easier. Practice also enhances student automaticity or facility. Automaticity is usually achieved from vast repetition and rehearsal. Automaticity frees up students cognitive sources to cope with more challenging tasks. When students train solving problems; they raise their ability to use training skills on new and more complicated issues. Practice assists students to gain expertise in subject issues and, therefore, it assists to differentiate amateur from experts in given subjects.[61] They can train self-regulation, self-efficacy and self-determination. Cognitive obtained from practice frequently bring about motivation for more learning. Deliberate practice makes perfect practice. Encouraging students to continue learning brings about Mastery learning.

A guideline to apply the deliberate practice theory has been proposed to develop various skills and there are also many nursing skills required to further research. Instructors should explore more about deliberate practice in other skills which may affect an improvement of training guidelines in the future. In conclusion, understanding of the deliberate practice concept will help increase the efficiency of student skill training.

CHAPTER III
METHODOLOGY

The objective of this study was to review empirical evidence about the model of deliberate practice to develop competency and performance improvement of psychomotor skills in the nurse students. The researcher performed the steps of empirical evidence as followed: identified a problem of interest, the PICO framework, identified searching database, assessed the level of reliability of empirical evidence, evaluated the use of empirical evidence, and analysing the evaluation of the quality of empirical evidence.

3.1 Search for evidence-based research

3.1.1 Framework of the search

The PICO framework was applied on the formulating an answerable question "What teaching methods develop competency and performance improvement of psychomotor skills in the nurse students?" Therefore, PICO was specified as follows[62]:

Population: Undergraduate and graduate student nurses

Intervention: Deliberate practice

Comparison: N/A

Outcome: Psychomotor skills / Nursing practice skills

3.1.2 Scope of the search:

3.1.2.1 Searching keywords: Deliberate practice, psychomotor skills / nursing practice skills, undergraduate and graduate student nurses

3.2.1.2 Searching criteria: the research evidence concerning deliberate practice in nursing practice skills of undergraduate and nurses who

complete Bachelor degree of Nursing Science (not Master and Doctorate degree of Nursing Science) according to identified searching framework from every level of research published since 2008 to 2018 in full text both Thai and English.

3.2.1.3 Identify searching database: this study identify the searching of research published in full text both Thai and English from electronic database as follows: Academic Search Complete, PubMed, Pro Quest Nursing & Allied Health Source, CINAHL, OVID, Science Direct, SCOPUS.

3.1.2.4 Exclusion criteria for evidence include the studies that were conducted without using deliberate practice skills. Those with deliberate practice in other nursing practice skills' areas such as academic and research skill, technology and information skills and etc. are excluded. Master, Doctorate degree of nurses, non-expert, specialty nurse and advanced practice nurse are also not included.

According to the searching, 9 empirical evidences matching the problem of study were obtained.

3.2 Assessing the level of reliability of empirical evidence and evaluating the use of empirical evidence with analyzing the evaluation of the quality of empirical evidence

3.2.1 Assessing the level of reliability of empirical evidence

Level of evidence rankings for strength of evidence according to criteria of Melnyk and Fineout- overholt[62] indicate how strong the supporting the specific recommendation is. According to the hierarchy of evidence as shown in the table below, the highest rankings go to recommendations supported by a systematic review or meta-analysis of all relevant randomized controlled trials (RCTs), or evidence-based clinical practice guidelines. The lowest rankings are recommendations based on expert clinical opinion. In this study, the researcher use Level I to Level VI as level of reliability of empirical evidence while level VII was excluded due to evidence came from the opinions, attitudes of experts.

Table 3.1 Level of reliability of empirical evidence

Levels of evidence	**Source of empirical evidence**
Level I	Evidence from systematic review or meta-analysis of all studies that are relevant randomized control trials (RCT) or evidence from guidelines developed from a systematic review of research evidence from randomized control trials.
Level II	Evidence obtained from at least one RCT.
Level III	Evidence obtained from at least one well-designed controlled trials without randomized assignment.
Level IV	Evidence from well-designed case-control and cohort studies.
Level V	Evidence from systematic review of descriptive and qualitative study.
Level VI	Evidence from a single descriptive or qualitative study.
Level VII	Evidence from the opinions, attitudes of experts on the issues or and/or a report written by expert committee.

3.2.2 Evaluating the use of empirical evidence

After getting the empirical evidences related to the issues to be solved and might also contain the articles which were associated to the issues, we need to evaluate the quality of the works to suit the targets for perfection of the availability through evaluation of implication of the empirical evidences of each topic towards the summaries with consideration to the criteria of Polit and Beck[63] as follows:

1) Clinical relevance (compliance with educational issues)

The research was measured for consistency with issues and in terms of whether or not the research would be able to help in the decision-making processes of nurse students in solving problems. For example, “Is there a hypothesis test that is consistent with the educational issue that needs to be addressed?” More consideration was on “Whether or not the data collection process in the research could be educationally implemented?” Also consider issues such as compliance with corporate strategy, the severity of the problem and costs and barriers that could hinder change.

2) Scientific merit assessments for suitability and consistency with research designs throughout the studies in the areas of topic, variables, research

hypotheses, objectives, data collection, data analysis, research findings, conclusion, discussion of the findings, research team, sample group populations, instrument reliability, instrument validity, statistical methods employed, research findings, whether the researches had observations of actual clinical situations or not, reliability of literature reviews and reference documents, qualifications of teams which carried out the experiments by experts and whether the reliability of the research was published in a well-known journal or not.

• Is the research clear enough, and can it be used?

• Is statistics in research accurate enough and does it answer the research question?

• Is published sources reliable?

3) Implementation potential

3.1 Transferability of the finding in institutions was considered in areas :

Can deliberate practice be used in accordance with applicable institutions?

• Is the target population in the research similar to the population in the institutions?

• How long does this teaching and evaluation process take?

• Does the purpose of this research differ from the teaching objectives in the department?

3.2 Feasibility of implementation the teaching method in institutions

• Do teachers have the freedom with this kind of teaching?

• Does the board of institutions support this teaching project?

• Does the atmosphere in the organization lead to project implementation?

• Is the teacher skilled (Deliberate Practice) in carrying out the project?

• Does the institution have the tools and resources (appropriate facilities) needed to carry out the project? If there are no such facilities, what do you do to carry out this project?

• Are there appropriate tools for evaluating the teaching of the project?

3.3 Cost / benefit ratio, was considered in areas:

• What are the risks to the project? Can they be used without causing any risk?

• What are the benefits to the students in the project compared to traditional teaching methods?

• What are the costs of implementing the project compared to potential expenses anticipated in line with the new teaching methods?

• Can the project be used in teaching hours and is it complicated to implement?

3.2.3 Analyzing the evaluation of the quality of empirical evidence

Analyze the evaluation of empirical evidence's quality as a conclusive step to obtain the answers that meet the needs of the study, the assessment are based on the following questions: 1) Are the results of the study accurate or reliable? 2) What are the results of the study? 3) How can the results of the study be used as a guideline for practical training to improve nursing skills? [64-65]

3.2.3.1 Are the results valid? The research process was evaluated from research design to analysis and conclusion to evaluate the reliability of the research results. There is a clearly defined purpose of education. Research is systematic and comprehensive. (Comprehensive search) that corresponds to the objective with the appropriate method. The criteria for selection and exclusion are described and the criteria are appropriate, describing the qualitative assessments of selected research. The research data is adequate. The randomized controlled trial was evaluated by the appropriate research model and the bias reduction efforts of the researcher. The samples were randomly assigned to the control group and the experimental group. Follow and measure of the control group and the experimental group with appropriateness.

3.2.3.2 What is the result of the study? Evaluation of the results of the research, statistical significance and importance of the study results, such as the evaluation of the research in the Randomized controlled trial. Are the results of

the intervention effective? Categorical outcomes are the values of Risk Relative Reduction and Absolute Risk Reduction. What is the difference between the mean and the absolute risk reduction? Continuous outcomes are the difference in average. How much How important is the research and its importance in education?

What are the results? This appraising question concerns if the effects have sufficient influence on practice and statistic. The intervention result should be large enough to show statistically significant. In addition to the statistical meaning, the intervention result must be precise too. That is, the intervention result should be in the estimated range when the studies are repeated with similar participants.

3.2.3.3 Can the application of the learning outcomes in teaching and learning be applied? How to evaluate the appropriateness of the application in considering the nursing students, the situation of the institution, and the application of research results in teaching and learning? Does the research need to consider every important result, taking into account the interests of students / learners received more than costs and risks or hazards to students / learners? Consider differences in subgroups, beliefs of student / student values, and the context of the school. For the application of research results in the teaching and learning management of randomized controlled trials with nurses, nurse students, nurse assistants who are interested. It is possible to apply the intervention to them. For the nature of the institution, the costs or the hazards and interests of students / learners who will receive it?

CHAPTER IV
SEARCH RESULTS

4.1 Search results

Based on empirical findings from various databases related to the deliberate practice for the development of nursing practice skills using the PICO framework, there were 286 empirical evidences that screened empirical evidence that met the criteria. A total of 9 items were analyzed and synthesized. The results of the research were analyzed and synthesized. Summary of the issues to be used in the practice of nursing skills with details and the level of reliability of empirical evidence are shown. The details are as follows.

Table 4.1 Number of empirical evidence

Source of information	Number of found items
Academic Search Complete	14
OVID	26
CINAHL	24
Pub Med	21
Scopus	24
Science Direct	119
Pro Quest Nursing & Allied Health Source	106
Total	286

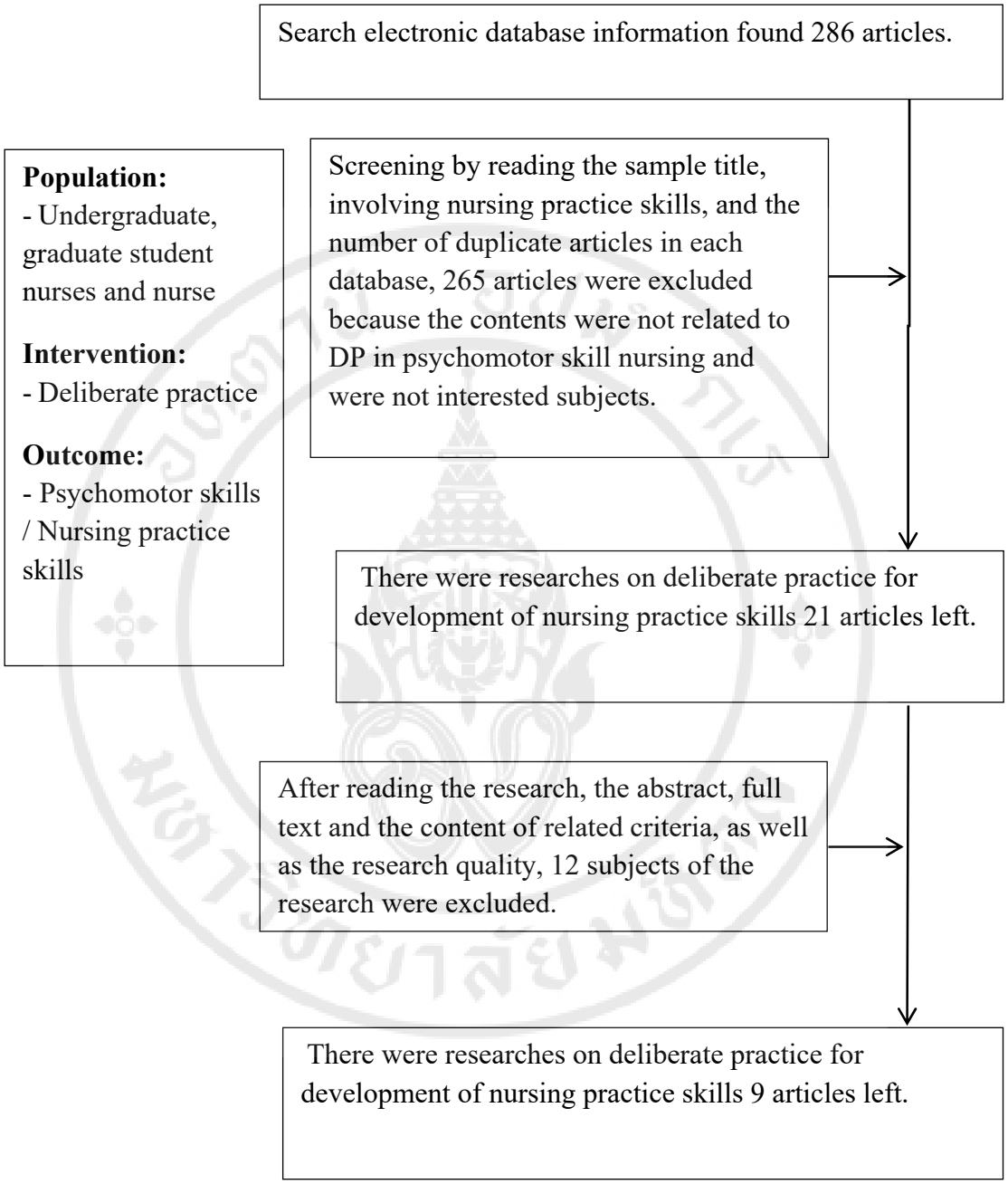

Figure 4.1 Flow diagram of the evidence search and study coding

Exclusion of empirical evidences

Reason for exclusion of empirical evidences of "deliberate practice for development of nursing practice skills": there were 286 cases of research related to these screened by checking through reading names involving nursing practice skills, and the number of duplicate articles in each database, 265 articles were excluded

because the contents were not related to DP in psychomotor skill nursing and were not interested subjects. There was research on deliberate practice for development of nursing practice skills 21 articles left. After reading the research, the abstracts of analysis of articles related to the contents “Deliberate practice for development of nursing practice skills” with population as undergraduate, graduate student nurses or nurse only (non-expert, specialty nurse and advanced practice nurse as well as the research quality, 12 subjects of the research were excluded. There were researches on deliberate practice for development of nursing practice skills 9 articles left with inclusion of studies. Therefore, the use of deliberate practice for the development of nursing practice skills will be analyzed in total of 9 subjects.

4.2 Evaluating the quality of empirical evidence

Based on empirical evidence regarding the deliberate practice for development of nursing practice skills. When searching empirical evidence from various databases. Find relevant research and can be used to solve teaching method problems. And as a guide for nurse teachers. To develop psychomotor skills in nurse students by using deliberate practice. The details are as follows.

4.2.1 Level of reliability of empirical evidence

Level of empirical evidence of all nine studies were evaluated by using evaluation standard of Melnyk & Fineout – Overholt. All 9 research evidences can be applied as follows[62]:

Table 4.2 Evaluation on level of searched empirical evidence

No	Author's name / title	Type / level of empirical evidence
1	Oermann MH, Kardong-Edgren S, Odom-Maryon T, Hallmark BF, Hurd D, Rogers N, et al. Deliberate practice of motor skills in nursing education: CPR as exemplar. Nurs Educ Perspect. 2011;32(5):311-5.[33]	Randomized Controlled Trial Level II
2	Whyte J, Cormier E. A deliberate practice-based training protocol for student nurses. Care of the critically ill patient: a randomized controlled trial of a deliberate practice-based training protocol. Clinical Simulation in Nursing. 2014;10:617-25.[55]	Randomized Controlled Trial Level II
3	Lengetti, E. A Randomized control trial assessing the impact of an innovative approach to education new to practice [dissertation]. Pittsburgh: Duquesne University; 2016.[66]	Randomized Controlled Trial Level II
4	Leveille D, Deliberate practice of IV medication procedures by student nurses: feasibility, acceptability, and preliminary outcomes [dissertation]. Massachusetts: University of Massachusetts Worcester; 2015.[67]	Randomized Controlled Trial Level II
5	Badowski, Donna M, Oosterhouse, Kimberly J. Impact of a simulated clinical day with peer coaching and deliberate practice: promoting a culture of safety. Nurs Educ Perspect. 2017; 38(2):93-5.[68]	Quasi-experimental research Level III

Table 4.2 Evaluation on level of searched empirical evidence (cont.)

No	Author's name / title	Type / level of empirical evidence
6	Owen MI, Garbett M, Coburn CV, Amar AF. Implementation of deliberate practice as a simulation strategy in nursing education. Nurse Educator. 2017;42(6):273-4.[69]	Cohort study research Level IV
7	Liou SR, Chang CH, Tsai HM, Cheng CY. The effects of a deliberate practice program on nursing students perception of clinical competence. Nurse Educ Today. 2013;33(4):358.[58]	A single descriptive study Level VI
8	Chee JD. Deliberate practice for the purpose of psychomotor skill acquisition: nursing students and the motivational constraint [dissertation]. Hawaii: University of Hawaii; 2015.[70]	A single descriptive study Level VI
9	Bond WF, Gonzalez HC, Funk AM, Fehr LS, McGarvey JS, Svendsen JD, et al. Deliberate practice with standardized patient actors and the development of formative feedback for advance care planning facilitators. J Palliat Med. 2017;20(6):631-7.[54]	A single descriptive study Level VI

4.2.2 Evaluating the use of empirical evidence

The researches were assessed of evaluating applications of empirical evidence in 3 aspects that are clinical relevance, scientific merit and implementation potential. All 9 research evidences can be applied as shown in Appendices A

4.2.2.1 Clinical relevance

The study found that DP can be used in the teaching and learning process and the students learn to enhance critical thinking skills and can practice more effectively.

4.2.2.2 Scientific merit

Research designs possess suitability and consistency throughout the studies in the areas of topic, objectives, sample group populations, instrument reliability and validity, statistical methods, data collection, data analysis, research findings, and conclusion. In the result of research has an improvement in the quality of nursing practice skills. Furthermore, the research was published in a well-known journal.

4.2.2.3 Implementation potential

Evaluation of transferability in practice, the teaching method of deliberate practice is accordance with agency to be used. The target population in the research is similar to the population in the organization. Teaching methods take fairly moderate time to implement and evaluate. The purpose of this research is not different from the teaching objectives in the department. Moreover, the feasibility in teaching, teachers are free to conduct their teaching according to the deliberate practice because the school administrators support this kind of teaching project and the atmosphere in the organization leads to project implementation. None of risks associated with the project. The benefits to the students are enhance their capabilities, try out their critical thinking skills, and improve their reflection skills (co-operate with teachers' feedbacks and peer feedbacks) There is no cost of projecting implementation because the school of Nurse Assistant is one of departments in the Faculty of Medicine, Siriraj Hospital, Mahidol University. The project can be used in teaching hours and, when applied, does not have to be difficult to perform but needs to be adjusted in terms of timelines and appropriate evaluation of the context of the practical nurse’ students.

4.2.3 Analyzing the evaluation of the quality of empirical evidence

Evaluating the quality of empirical evidence associated with targeted training to improve nursing skills nine evidences. The research used criteria for assessing the reliability and quality of evidence based on the assessment of Grace.[65] The results of the qualitative assessment of empirical evidence consisted of three components: the validity of the results, the results of the study, and implications of the results of the study.

4.2.3.1 The validity of the results: Evaluating the validity of empirical evidence obtained from randomized and controlled trial (Level 2 of 4 evidences), it found that all evidence was clearly identified as accomplishing training to improve nursing skills by deliberate practice. The samples were randomly assigned to the experimental group or the control group. All evidence shows random sampling using a computer system. There were more than 200 samples for one evidence, and there were fewer than 100 samples for two evidences. Moreover, does there any consideration between the experimental group and the control group of different subjects' right from the initial state of the experiment or not? Considering the characteristics of the sample, it was found that most of the evidence was not significantly different between control and experimental groups. There was notion that samples were removed from the study. All evidence was divided into groups that were organized and non-organized groups. Overall, there is no cover for the sample and the researcher (blindness). There was no report of the analysis of the results of all from the initial state. Therefore, "the quality of the evidence was assessed and trustworthy can be used to review.

There were five evidences which are non-experimental researches. There was one evidence for quasi-experimental research. There was one evidence that is cohort. There were three evidences. These evidences are for study of the use of deliberate practice to intently develop nursing practice skills. There are clear research questions, considering that the population is defined as risk factors with outcome. This research is appropriate to use the research method of each model to answer the research question. Samples were obtained from the same source. There were two evidences for samples which are more than or equal to 99 samples. There was one evidence of samples more than 60 samples. Two evidences were found for samples which are less than 50 samples. Consideration of selection bias through ways of the population representation is mobilized. It is asked of how did the samples come from (Recruitment)? There are measurement of appropriate factors (exposure), considering the issue of measurement bias that is based on the method of measurement of the appropriate study. A similar measure of outcome was found in the outcome group.

4.2.3.2 The result of the study: The total of empirical evidence is nine focused on the use of deliberate practice to improve nursing skills. Four evidences for experimental and one for quasi-experimental studies concluded that the intervention group had improved nursing skills better than the control group significantly There were appropriate statistic to compare differences between groups such as t-test pair -test, ANOVA test. The amount of cohort study is one. The amount of descriptive studies is three. There are summary that intervention group achieved passive skill test higher than control group, including soft skill, satisfaction, confidence, feelings, self-esteem. The use of statistics in comparison between groups was appropriated.

4.2.3.3 The application of the learning outcomes in teaching and learning be applied: Application by evaluating all empirical evidence, there is the possibility of implementing by the agency. It is suitable for the context of the agency. There is an implementation in conducting empirical evidence practice in teaching and learning. The samples used in the study were similar to the target group. It is a group of nursing students, nursing assistants' students, and nurses. The empirical evidence of DP helps develop the teaching and learning model to improve nursing skills. The nature of the agency is the same as empirical evidence that it is a source of education. When used in the unit, it must be developed to be appropriate for the agency. Relevant instructors must be trained and able to handle DP teaching. This study will benefit from the implementation of research results. Because of the context of the agency is the nursing assistant school, the results of the study are important and beneficial to the management of the teaching plan compared to the weight of risk and cost benefit.

By gathering, all nine empirical evidences were concerned deliberate practice to develop competency and performance improvement of psychomotor skills in the nurse students. The issues of synthesis can be summarized as shown in Table 4.3

Table 4.3 Collective table

Author/Title /Year	Objective / Method/ Sample	Instrument/ Statistics	Intervention	Results	Summary for application
1.Oermann MH, Kardong-Edgren S, Odom-Maryon T, Hallmark BF, Hurd D, Rogers N, Haus C, et al. Deliberate practice of motor skills in nursing education: CPR as exemplar. 2011.	**Objective:** To examine the effects of deliberate practice using a voice advisory manikin (VAMs) for learning and practicing CPR (Cardiopulmonary resuscitation) psychomotor skills among nursing students. **Method:** Randomized control trial **Sample:** 606 nursing students in 10 schools of nursing in the United States.	**Instrument:** 1. Resusci Anne™ adult manikins 2. Bag-valve-mask (BVM). 3.Voice advisory manikin (VAM) **Statistics:** F –test(A one-way analysis of variance (ANOVA))	**Deliberate Practice of CPR Skills** **1. Intervention (DP) group:** The practice sessions of CPR skills on Resusci Anne™ adult manikins were six minutes one time a month.(in this order: two minutes of compressions, then two minutes of ventilations with bag-valve-mask (BVM), and lastly, two minutes of single-rescuer CPR). **2. Control group:** No further practice of CPR beyond the initial training.3. Students practiced independently using only the feedback from the voice advisory manikin (VAM) 3. Differences in performance between students who had deliberate practice and a control group, with no practice beyond the initial training, were compared at 3, 6, 9, and 12 months.	Differences in CPR Skills Between Intervention and Control Groups: 1. Number of Compressions with Adequate Depth in the intervention group was significantly more than control group. 2. Number of Compressions with Adequate Depth during Single Rescuer CPR in the intervention group was significantly more than control group. 3. Number of Ventilations with Adequate Volume CPR in the intervention group was significantly more than control group. 4. Number of Ventilations with Adequate Volume during Single Rescuer CPR was significantly more than control group.	**Subject:** Nurse student or practical nurse student. **Intervention:** CPR skills practice sessions on Rescue adult manikin on six minutes one time a month.(in this order: two minutes of compressions, then two minutes of ventilations with bag-valve-mask (BVM), and lastly, two minutes of single-rescuer **Duration:** Practice for one year at 3, 6, 9, and 12 months. **Feedback:** Voice advisory manikin (VAM).

Table 4.3 Collective table (cont.)

Author/Title /Year	Objective / Method/ Sample	Instrument/ Statistics	Intervention	Results	Summary for application
2. Whyte J, Cormier E. A Deliberate Practice-Based Training Protocol for Student Nurses Care of the Critically Ill Patient: A Randomized Controlled Trial of a Deliberate Practice-Based Training Protocol.2014.	**Objective:** To establish the efficacy of a deliberate practice intervention designed to increase levels of clinical performance in senior baccalaureate nursing students **Method:** Randomized control trial. **Sample:** 40 Nursing students from a college of nursing undergraduate baccalaureate program in the United States.	**Instrument:** 1. Human Patient Simulator adult model 2. Human Patient Simulator record 3.Deliberate Practice Questionnaire 4.Audio record (verbal report) 5. Video record (direct observation of actions) **Statistics:** Dependent sample t-test	**Deliberate Practice of Clinical performance** **1. Intervention (DP) group:** Participants completed two deliberate practice-based training sessions, 1 and 3 weeks after initial testing, and post-testing 6 weeks after initial testing, or 2 weeks after final deliberate practice training session. In deliberate practice-based training sessions had to 4 step: 1. Engage in scenarios (conventional manner though give verbal report of the end.) 2. Observe and reflect from videos and give their thoughts of how to improve. 3. Search for information in iPad though internet provided by organizations for proper treatment of scenarios to seek for improvement in their performances in the final run. 4. Repeat the scenarios of step 1: engage in scenarios to give final retrospective verbal report. **2. Control group:** Participants completed the pre-posttest sessions only, with the post-testing scheduled 6 weeks after initial testing. **3. Pre-Post Test 4 scenarios:** For the pretest, the scenarios were administered	The deliberate practice resulted in statistically significant improvements to key aspects of participants' efforts in each of the four scenarios. **Trial 1:** Acute Hypotension shows Intervention group did significantly more than control group in terms of "Questions regarding symptoms" and "Titrates vasoactive medication". **Trial 2:** Acute Hypotension due to sepsis indicates Intervention group did significantly more than control group in terms of "Establishes level of consciousness" and "Titrates vasoactive medication". **Trial 3:** Closed Head Injury due to a Fall displays Intervention group did significantly more than control group in terms of "Establishes level of consciousness", "Calls for help" and "Notes enlarged pupil". **Trial 4:** Abdominal Surgery with Bleeding show the result Intervention group did significantly more than control group in terms of "Establishes level of consciousness "and "Notes bloody dressing".	**Subject:** Nurse student (all had completed courses in nursing fundamentals, health assessment, pharmacology, adult health, and mental health nursing with associated clinical experiences) **Intervention:** the scenarios were (a) a patient of anoxia and hypotension due to opiate toxicity (b) a patient with acute hypotension and bradycardia, from excessive diltiazem via an IV infusion. The second session scenarios were (a) a patient suffering from hypotension

Table 4.3 Collective table (cont.)

Author/Title /Year	Objective / Method/ Sample	Instrument/ Statistics	Intervention	Results	Summary for application
			in an order (1, 2, 3, and 4). For the posttest, they were administered in a different order (4, 2, 3, and 1). **Trial 1:** Acute Hypotension due to opiate toxicity, a patient experiencing acute hypotension and bradycardia and receiving a dopamine infusion **Trial 2:** Acute Hypotension due to sepsis on too low a dose of IV dopamine and a patient experiencing a hypertensive emergency on a sodium nitroprusside drip at an excessive dosing rate. **Trial 3:** Closed Head Injury due to a Fall, a patient who had fallen, resulting in a closed head injury with subsequent hypertensive crisis **Trial 4:** Abdominal Surgery with Bleeding, a patient who had undergone recent abdominal surgery and was experiencing postoperative hemorrhage.		(b) a patient experiencing a hypertensive emergency on a sodium nitroprusside drip at an excessive dosing rate. Training sessions had to 4 step: 1. Engage in scenarios. 2. Observe and reflect from videos. 3. Search for information for treatment of scenarios. 4. Repeat the scenarios **Duration**: Based training sessions, 1 and 3 weeks after initial testing, and post-testing 6 weeks after initial testing, or 2 weeks after session. **Feedback**: Audio record (verbal report) and Video record (direct observation of actions).

Table 4.3 Collective table (cont.)

Author/Title /Year	Objective / Method/ Sample	Instrument/ Statistics	Intervention	Results	Summary for application
3. Lengetti, E A. Randomized control trial assessing the impact of an innovative approach to education new to practice.2016.	**Objective:** 1. To compare the effect of mastery teaching and traditional teaching on the learner's ability to maintain competence for the psychomotor skill. 2. To compare the frequency of using self-regulation as a strategy for maintaining competence of psychomotor skill. **Method :**Randomized control trial **Sample:** 42 graduate nurses from Duquesne University in the United States.	**Instrument:** 1. A Performance Assessment Tool (PAT) (procedural checklist) 2. Survey of Academic Self-Regulation (SASR) Questionnaire. **Statistics:** 1.Levene's test, a dependent-groups 2. paired t-test, independent groups	**Deliberate Practice of psychomotor skill of inserting an indwelling urinary catheter** 1. All received baseline education on indwelling urinary catheter insertion before completing the procedure in the simulation lab through a self-paced computerized instructional module that reviewed the procedural steps for the insertion of an indwelling urinary catheter in a female prior to the initial assessment. (10-15 minutes to complete) **2.In the simulation lab:** **-Intervention (DP) group:** Participants was offered multiple attempts for insertion with deliberate practice, repetition and feedback. (Permitted multiple attempts with feedback and correctives for each step performed incorrectly.) The expert nurse provided immediate individualized feedback and correctives to the participant after each performance error. If a performance error occurred at one of the 17 critical steps, the participant was asked to stop and received immediate feedback on the step performed incorrectly and then asked to perform the entire procedure again starting at the beginning.	1. The Intervention group had significantly greater in the seventeen critical steps as compared to the control group. 2. A comparison between groups exclusively on those procedural steps deemed critical (potential to cause harm) was significant: the experimental group scored significantly higher. The mean SASR scores between groups was significant.	**Subject:** Nurse student or practical nurse student. **Intervention:** Participants was offered multiple attempts for insertion of an indwelling urinary catheter with deliberate practice, repetition and immediate feedback of correctives for each step performed incorrectly. **Duration:** One month after the initial assessment, the skill was reassessed by the expert nurses with feedback provided at the end of the session. **Feedback:** Nurse experts, who were Master's Degree

Table 4.3 Collective table (cont.)

Author/Title /Year	Objective / Method/ Sample	Instrument/ Statistics	Intervention	Results	Summary for application
			3. One month after the initial assessment, the skill was reassessed by the expert nurses with feedback provided at the end of the session. 4. The Survey of Academic Self-Regulation (SASR) was administrated to all study participants at the one-month assessment. **-Control group:** Participants was offered one attempt for insertion with feedback at the end.		
4. Leveille D, Deliberate Practice of IV Medication Procedures by Student Nurses: Feasibility, Acceptability, and Preliminary Outcomes. 2015.	**Objective:** To search the utilization of deliberate practice with second-degree nursing students in improvement of fundamental intravenous medication (IV) management.	**Instrument:** 1.IV Pump Self-Confidence Survey 2.Safety Skills Self-Confidence Survey 3.Skills Inventory Checklist 4. Simulation Design Scale	**Deliberate Practice of IV Medication Procedures** **Intervention(DP) group:** **1.** Nurse students were received three 30 minute one-on-one practice sessions at 2-week intervals with an expert nurse (focused on IV skills). 2.First 20 minutes will be used to complete the scenario, and the remaining 10 minutes will be used for debriefing, reviewing key concepts	1. Significant differences were found in overall medication administration skills between the control and intervention groups particularly with medication preparation skills. 2. Confidence scores were higher scores in the intervention group compared to the control group.	**Subject:** Nurse students **Intervention:** Received three 30 minute one-on-one practice sessions at 2-week intervals with an expert nurse (focused on IV skills).

Table 4.3 Collective table (cont.)

Author/Title /Year	Objective / Method/ Sample	Instrument/ Statistics	Intervention	Results	Summary for application
	Method : Randomized control trial. **Sample:** First-year nursing students (N = 32) in the United States.	5.Feasibility/Resource Tracking Form 6.Participant Progression Form 7. Medication Administration Checklist 8. Post-Intervention Survey **Statistics :**paired sample t-test, Cohen's d and Pearson coefficients	3. In training sessions, it requires participants to determine the appropriateness of the medication with performing a medication calculation of an intravenous medication. Select the appropriate solution and supplies, prepare and administer medications. 4. Participants completing the Simulation Design Scale (SDS) and the PI will complete the Feasibility/Resource Tracking Form. 5. Pre- and post-intervention instruments tested participants' confidence with IV management and safety skills. 6. The primary outcome was their ability to safely administer and monitor IV medications during a 20 minute videotaped medication administration scenario. **Control group:** **1.** Nurse students were received three 30 minute one-on-one practice sessions at 2-week intervals with an expert nurse (skills unrelated to IVs). 2.To sign up for a 30-minute session with the principal investigator (PI) 3. PI will present the student with a written scenario of patient requiring nursing care in first 20 minutes to complete the scenario and the remaining 10 minutes will be used for debriefing and reviewing key concepts.		First 20 minutes will be used to complete the scenario, and the remaining 10 minutes will be used for debriefing, reviewing key concepts, and participants completing the Simulation Design Scale (SDS) and the PI will complete the Feasibility/Resource Tracking Form. **Debriefing:** after the simulations immediately. **Duration:** One month of training sessions: 20 minute videotaped medication administration scenario for posttest **Feedback:** Nurse experts.

Table 4.3 Collective table (cont.)

Author/Title /Year	Objective / Method/ Sample	Instrument/ Statistics	Intervention	Results	Summary for application
5. Badowski, Donna M, Oosterhouse, Kimberly J. Impact of a Simulated Clinical Day With Peer Coaching and Deliberate Practice: Promoting a Culture of Safety. 2017.	**Objective:** To compare nursing students' knowledge, skills, and attitudes for promoting safety. **Method:** Pretest/ posttest design **Sample:** Nursing students (29) in the United States.	**Instrument:** 1. A20-item multiple choices. 2. Skills checklists. 3. The Team STEPPS™ Teamwork Attitude Questionnaire (T-TAQ **Statistics:** A quasi-experimental pretest/posttest design.	**Deliberate Practice of Promoting a Culture of Safety** 1. All students experienced the study simultaneously over the eight-week course. Before instructions were given, students had to do pretest. 2. All students were taught the same skills and practice during the first four weeks of the lab component of the course and were encouraged to practice independently throughout the course. **3. The simulation (DP) group:** 3.1Four traditional clinical days and three on-campus simulated clinical days with DP of select psychomotor skills and peer coaching. 3.2 The cases unfolded over the course of three clinical weeks to provide DP of head to-toe assessment and medication administration by intramuscular (IM) and enteral routes. 3.3 Students were assigned roles play as primary/ secondary nurse, observer, patient, or family member. 3.4 Verbal report on all three patients was provided to the entire simulated clinical group, and time was given to plan care as a team. 3.5 The observers stood in the patient room while patient care was completed by the	1. Both the simulation and standardized groups had significant differences from pretest to posttest on knowledge and skills. 2. The simulation groups had the enteral medication mean change score approached significance. 3. The mean change score for the T-TAQ construct of communication approached significance with the simulation group	**Subject:** Nurse students or practical nurse students. **Intervention:** 1. Deliberate Practice of psychomotor skills use four traditional clinical days and three simulated clinical days. 2. Giving the head to-toe assessment and medication administration by IM and enteral routes (3 weeks). 3. Students play as primary/ secondary nurse, observer, patient, or family member. 4. Verbal report on all 3 patients was provided to the entire simulated clinical group. 5. The observers stand in the patient room and coach their peers for patient safety during skill performance occurred. 6. By the end of the clinical day, students has the opportunity for either direct practice or

Table 4.3 Collective Table (cont.)

Author/Title /Year	Objective / Method/ Sample	Instrument/ Statistics	Intervention	Results	Summary for application
			primary and secondary nurses during skill performance. 3.6 Debriefing took place following each simulation experience. 3.7 By the end of the clinical day, students had the opportunity for either direct practice or observational practice of each of the three skills. **4. The standard practice (Control) group:** Seven traditional clinical days, which allowed for the incidental practice of the same psychomotor skills. 5. Posttest was done at the end of the eight-week course.		observational practice of each three skills. **Debriefing**: Take place following each simulation experience. **Duration:** 8-week **Feedback:** Peer Participants
6. Owen MI, Garbett M, Coburn CV, Amar AF. Implementation of Deliberate Practice as a Simulation Strategy in Nursing Education.2017	**Objective:** To improve performance of a specific skill using DP by providing repetitive, consistent simulation experiences for students. **Method:** Cohort study research	**Instrument:** Deliberate Practice Sessions: DP Scenarios **Statistics:** Online survey (dependent sample t-test) **Instrument:** Deliberate Practice Sessions: DP	**Deliberate Practice of Medication administration, Nasogastric tube placement, tracheostomy suctioning, and straight catheterization.** 1. Tasks in DP sessions: 1.1 Session 1 • Interpretation of the Medication administration record (MAR). • Administration of drugs by jejunostomy tube, subcutaneously and intravenously. 1.2 Session 2 • Administration of oral, subcutaneous and intravenous medications. • Nasogastric tube placement, tracheostomy suctioning, and straight catheterization.	1. More than 94% of students reported that the DP was useful and valuable. 2. A representative comment was ‘‘these are so helpful for me to put what I am learning into practice.’’ 3. Over 92% of students reported feeling more confident in their nursing skills. 4. 87% thought DP sessions improved their critical thinking skills.	**Subject:** Nurse students or practical nurse students. **Intervention In session 1**, - Interpretation of the medication administration record clinical reasoning for a contraindication, and checks for compatibility before IM administration. - Students administer

Table 4.3 Collective Table (cont.)

Author/Title /Year	Objective / Method/ Sample	Instrument/ Statistics	Intervention	Results	Summary for application
	Sample: Nursing students (n = 99) in the third and fourth year of baccalaureate degree.	Scenarios **Statistics:** Online survey (dependent sample t-test)	2. Debriefing follows immediately after the end of the simulations and the students receive a group grade for the second session.3. At the end of each session, students complete an online survey about the experience		medications to a client via jejunostomy tube, subcutaneously and intravenously. **In session 2,** - The students administered oral, subcutaneous and intravenous medications. - Students must present an order for straight catheterization and updated the client's vital signs, indicating that suction of the tracheotomy is necessary. -Students should note the change, ask appropriate questions, and choose to suction the tracheostomy before catheterization. **Debriefing:** after the simulations immediately. **Duration:** 2 year **Feedback:** Teacher

Table 4.3 Collective Table (cont.)

Author/Title /Year	Objective / Method/ Sample	Instrument/ Statistics	Intervention	Results	Summary for application
7. Liou SR, Chang CH, Tsai HM, Cheng CY. The effects of a deliberate practice program on nursing students perception of clinical competence. 2013	**Objective:** 1.To develop a program including deliberate skill practices and technical skill testing. 2.To examine the program's effects on nursing students' clinical competence. **Method :** A repeated measure correlational design. **Sample:** Nursing students (256 and 266 in a RN-to-BSN) of night school program in Taiwan.	**Instrument:** 1.Clinical Competence Questionnaire (CCQ). 2.Focus group discussions with the clinical instructors. **Statistics:** Questionnaire, SPSS: Analysis of covariance (ANCOVA)	**Deliberate practice of clinical competence** 1. Identifying the 17 core nursing skills of adult health clinical practicum 2. Explain the purposes and contents of the program to students. 3. Students view instructional nursing-skill videos for practicing their skills, and instructors are available if students need assistance. 4. Skill test, which include clinical scenarios of patient safety, teamwork and communication, professional ethics, and problem solving 5. The outcomes of deliberate practice are measured by the Clinical Competence Questionnaire	1. Participants who had nursing work experience, a higher grade point average, practiced their skills while watching videos, and higher proficiency scores prior to the test had significantly higher post-test skill scores. 2. Participants working in the operating room or outpatient department had greater confidence in their clinical performance and had a higher level of work stress than post-test testing.	**Subject:** Nurse students or practical nurse students. **Intervention:** Deliberate nursing practice program 1.Identifying the 17 core nursing skills of adult health clinical practicum 2. Explain the purposes and contents of the program to students. 3. Students view instructional nursing-skill videos for practicing their skills, and instructors are available if students need assistance. 4.Skill test, which include clinical scenarios of teamwork and communication, professional ethics, and problem solving 5.The outcomes of deliberate practice are measured by the Clinical Competence Questionnaire **Debriefing:** after the clinical scenarios immediately. **Duration:** 1 year **Feedback:** Teacher and peer Participant

Table 4.3 Collective Table (cont.)

Author/Title /Year	Objective / Method/ Sample	Instrument/ Statistics	Intervention	Results	Summary for application
8.Chee JD. Deliberate practice for the purpose of psychomotor skill acquisition: Nursing students and the motivational constraint. 2015.	**Objective:** To evaluate methods for developing psychomotor skills with nursing students. **Method :** -Quasi-experimental research -Descriptive research **Sample:** Nursing students in a Bachelor's Of Science (BS) in nursing program and Master's Entry Program in Nursing(MEPN) At a large University in The Pacific.	Instrument: -Central Venous Catheter (CVC) Dressing change Procedure checklist (15 item skill checklist) -Self-Determination Index -Questions for focused interview **Statistics:** -One-way ANOVA -Two-way ANOVA -Linear Regression -Independent t-test -Mann-Whitney U test	**Deliberate practice of psychomotor skill** **Intervention group:** 1. A two-minute video presenting the evidence-based standards of practice and the rationale for the measure was presented to the students. 2. Afterwards, the students became familiar with a static manikin with a center line and had access to the procedure video, a dressing change checklist, supplies, and the simulation facilitator. 3. Students practiced and reviewed the video until they could perform the dressing change to the standards described in the learning objectives, dressing change checklist, and observed in the video. 4. Students had time to reflect on their deficiencies and correct them; benefiting from the success or failure of each attempt. 5. The students repeated the steps as many times as it was necessary for each of them to perform the dressing changes with constant success. **Non-intervention group:** -Following the video the participants assigned to the group were provided an opportunity to practice the CVC dressing change and have access to the same resources as the intervention group.	-A statistically significant relationship was found between the mean skill test score of the intervention and comparison group. -Nursing students who were exposed to a deliberate practice intervention achieved a passing score (minimal competence) on a follow-up skill test, while those in the comparison group did not. -No statistically significant relationship was found between students' academic motivation and their test scores.	**Subject:** Nursing students **Intervention:** 1. A two-minute video presenting the evidence-based standards of practice and the rationale for the measure was presented to the students. 2. Afterwards, the students became familiar with a static manikin with a center line and had access to the procedure video, a dressing change checklist, supplies, and the simulation facilitator. 3. Students practiced and reviewed the video until they could perform the dressing change to the standards described in the learning objectives, dressing change checklist, and observed in the video. 4. Students had time to reflect on their deficiencies and correct them; benefiting from the success or failure of each attempt. 5. The students repeated the steps as many times as it was necessary for each of them to perform the dressing changes with constant success.

Table 4.3 Collective Table (cont.)

Author/Title /Year	Objective / Method/ Sample	Instrument/ Statistics	Intervention	Results	Summary for application
			-Resources present were the video, the 15-item checklist, a summary of the procedure. -Facilitator did not provide immediate, formative feedback to the participant regarding performance. -After a minimum of 5 and maximum of 20 minutes the participant was asked to complete the dressing change while being scored by the researcher using the 15-item skill checklist.		Debriefing: after the psychomotor skills practice immediately. **Duration:** 30 minutes **Feedback:** Teacher
9. Bond WF, Gonzalez HC, Funk AM, Fehr LS, McGarvey JS, Svendsen JD, et al. Deliberate Practice with Standardized Patient Actors and the Development of Formative Feedback for	**Objective:** Multimodal curricular assessment after adding standardized patient (SP) actor-based simulation to an advance care planning (ACP) facilitator training course and development of	**Instrument:** -Pre–post multiple choice question test. -Survey of self-perceived confidence and competence. **Statistics:** -Pretest posttest. -Analysis of Paired t Tests	**Deliberate practice of advance care planning (ACP)** 1.Precourse video demonstration of ACP (18-minute) 2. Traditional lectures 3. Four 30-minute simulations with SPs/ course: -Simulation group sizes contained of two to four participants. Each learner had one to two opportunities to directly interact with the SP actor, while the learner observers used an anonymous observation checklist form purely to help keep them engaged. -Teachers observed the scenario and rated	-Post-course evaluations were successful in meeting the learning objectives. -Post-simulation session evaluations indicated increases in confidence managing each of the cases.	**Subject:** Nurse student **Intervention:** 1.Precourse video demonstration of ACP 2. Traditional lectures 3. Four 30-minute simulations with SPs. **Duration:** Seven courses over 13 months (30 minutes per simulation and 4 simulations per course) **Feedback:** standardized patient (SP) and teachers

Table 4.3 Collective table (cont.)

Author/Title /Year	Objective / Method/ Sample	Instrument/ Statistics	Intervention	Results	Summary for application
Advance Care Planning Facilitators. 2017.	a formative feedback tool. **Method:** Descriptive research **Sample:** were primarily internal to the health network and volunteered for training in the simulation Augmented ACP facilitator course.		from behind a two-way glass. -The critical actions were noted by the faculty and drove qualitative feedback shared verbally. -Two of the debriefers were palliative care experts, other debriefers were clinical educators who had taken a faculty development course on debriefing techniques. 4. Knowledge was tested with a multiple choice question (MCQ) test. 5. Skills were tested with standard post course/ post simulation evaluations. 6. Learners were surveyed pre/post/30–90 days delayed for self-perceived confidence.		

4.3 Summary of recommendations from empirical evidence

From the review of 9 empirical evidences, these studies were analyzed and synthesized for summary of using deliberate practice which were effective to develop competency and performance improvement of psychomotor skills in the nurse students. The results of the study were summarized as a model of deliberate practice and showed in Figures 4.2, which were applied for student practical nurses and student nurses. The model consisted of 8 main issues, as followed:

1) Setting objectives of teaching and learning in nursing practice skills that were well defined, specific, and measurable. The objectives should be sequenced, starting with basic skills and progressing to more sophisticated ones.

2) Practice activities should be focused on improving a particular aspect of competency and performance of psychomotor skills in the nurse students which could be applied to core nursing skills.

3) Selection of psychomotor skills in situational complexity that involve the patient safety to be practiced. The duration of training are done intentionally and repetitively, as followes:

3.1 Skills of cardiopulmonary resuscitation (CPR)

- The duration of training is 6 minutes (two minutes of compressions, two minutes of ventilations with bag-valve-mask and two minutes of single-rescuer) one time a month for one year. For evaluation, the test will be conducted at 3rd, 6th, 9th, and 12th months.

3.2 Skills of core nursing such as feeding, tracheostomy care, head-to-toe assessment, nasal tube care, central venous line care, oral medication, intravenous (IV) bag medication, chest tube intravenous medicine, intramuscular medicine, intravenous administration, intravenous administration, venipuncture, wound dressing, advance care planning and blood transfusion.

- The duration of training is 30 minutes per 2 months for one year. It is a practice session in the learning resource center until the practice is carried on in the ward. The training is continuous for up to one year.

3.3 Skills of inserting an indwelling urinary catheter and urinary catheter care

- The duration of training is 30 minutes of practice per 1 month for one year. It is a practice session in the learning resource center until the practice is trained on the ward. The training is continued for up to one year.

3.4 Skill of suction

- The duration of training is 15 minutes per month for one year. It is a practice session in the learning resource center until the practice is trained on the ward. The training is continued for up to one year.

4) Method of teaching: The combination of various training methods can be done to meet the needs of all students. Interactive lectures will be available for 10-15 minutes. Vice versa, instructors can use instruments of media, computer assisted instruction (CAI) / video (VDO), for the students to see beforehand. In addition, the teaching of demonstrations and simulation use the manikin (a simulated patient model for teaching people), and standardized patients (SP, is a person who is trained and plays a role as a patient so that students can practice their skills). In classroom, the students are trained by role play and group discussion, including reflection, and critical feedback from teachers. After the end of each session, the teachers will use the technique of reflections and effective feedback for students to analyze whether they are doing what is right or wrong, or what to do to improve their skills and practice.

5) Automated feedback by Manikin and SP for the students when done correctly or incorrectly can suggest correct methods to the students. Furthermore, SP helps for evaluations of attitudes which leads to test of clinical skill performance and competence in skills such as communication, clinical examination, medical procedures, prescription, and exercise prescription.

6) There are supports for learning resources, such as classrooms, computer instructional equipment, simulate patient models. Nursing Assistant School is affiliated to the Faculty of Medicine, Siriraj Hospital, Mahidol University, therefore students have the appropriate resources with enough amount. However, it may be necessary to coordinate for cooperation with staff to use the room and training equipment. Also, faculty has to add more teachers to students for training or assessment sessions.

7) Assessment methods related with the teaching objectives and teaching methods

- Measurement of knowledge by pre-posttest: multiple choice question: MCQ, which requires analysis of the test.

- Attitude measurement by using rating scale (satisfaction, soft skills: self-confidence, self-esteem, etc.)

- Measure the psychomotor skill using the checklist competent skills created by expert teachers (nurse).

8) Motivation should be start from beginning to continuous learning until ending of the course with students, to describe them with details. Motivation is an important factor for successful practice. Teachers should lay the groundwork for the practice to achieve continuity. Teachers need to use motivation to increase appropriate attitudes of students, to participate in the activities, to create a climate of attention.

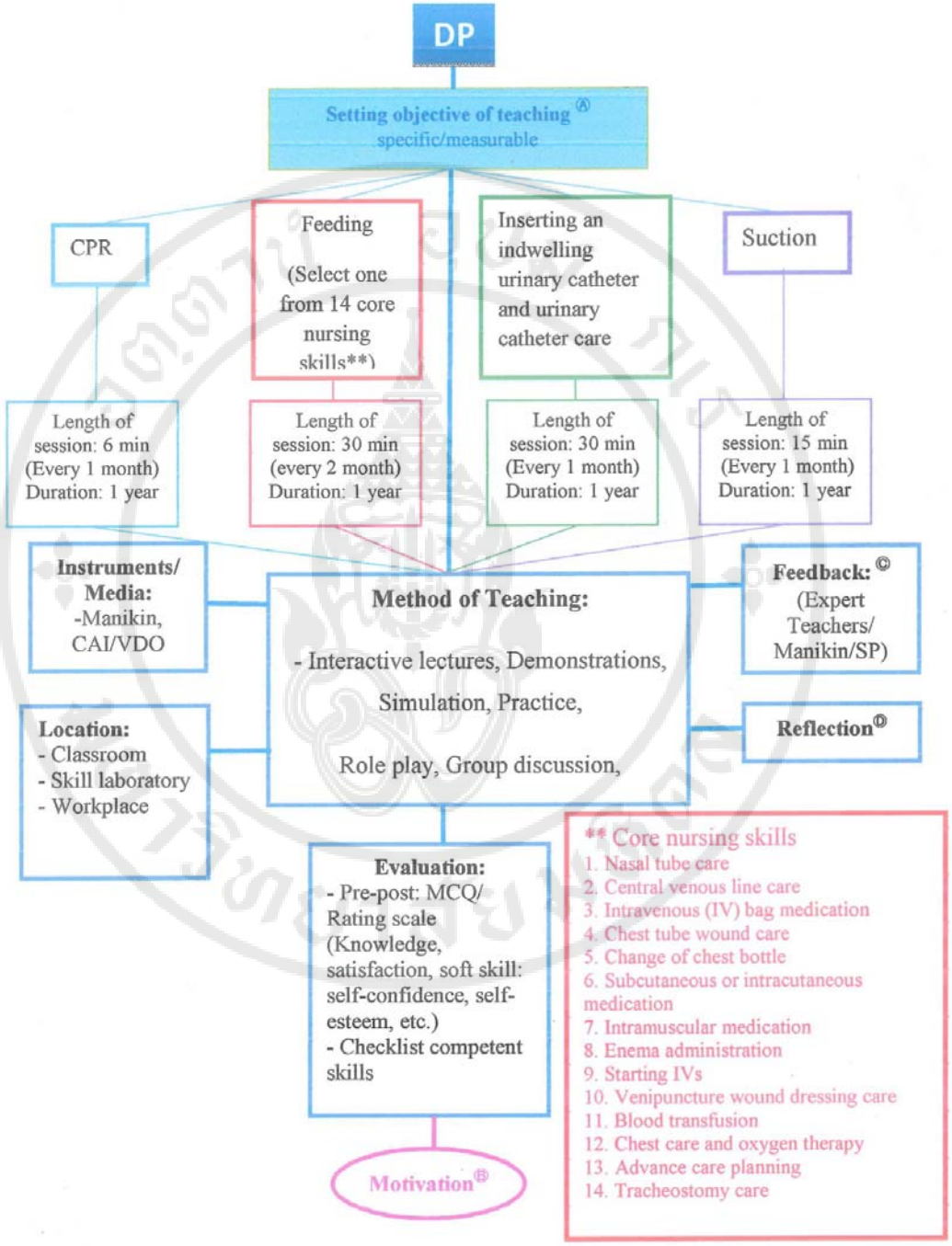

Figure 4.2 Model of deliberate practice for nursing student

Setting objective of teaching Ⓐspecific/measurable

CPR skill*
1. Students need to press chest with 2 hands on the lower half of the breastbone (sternum) of Manikin deep enough (range: 50 mm to 60 mm): 80% of total number of compressions within 2 min
2. Students need to press chest with 2 hands on the lower half of the breastbone (sternum) with adequate depth during single rescuer CPR (range: 50 mm to 60 mm): 80% of total number of compressions during in single rescuer CPR within 2 min
3. Students need to ventilate with adequate volume (range: 400 ml and 800 ml): 80% of total number of ventilations within 2 min
4. Students need to ventilate with adequate volume during single rescuer CPR (range: 400 ml and 800 ml): 80% of total number of ventilations during in single rescuer CPR within 2 min
*Following the rule of the American Heart Association (AHA) (version 2015).[71]

Feeding skills**
1. Students can provide intermittent enteral tube feeding.
2. Students can suck gastric content to test the position of the feeding line and digestion correctly. (Students can hold syringe with the NG tube to suck the gastric contents correctly)
3. Students can grab the syringe with the NG tube and remove the plunger from the syringe cylinder.
4. Students can get food into the stomach properly.
5. Students can adjust patient's position to be in the semi Fowler's position at 30-45 degrees correctly (lying down on the bed).
6. Students check correct types, numbers of meal, food bag, tray, feeding syringe and cotton wool put in boiled water.
7. Students aren't allowed to do any mistake in critical steps (potential to cause harm) for feeding skills:
-Students don't adjust the bed position in flat position
- Students do the suction of gastric content to test the position of the feeding line and digestion before feeding process.
**The course syllabus is designed for each institution, which will set the checklist for each skill. Each institution needs to provide its own checklist to suit required types of its own students.[72]

Suction skills**
1. Students are able to operate the suction device with the suitable level for the patient and control the suction force by using finger tips appropriately.
2. Students can properly suck saliva in the patient's mouth correctly.
3. Students can do hyperinflation correctly while in the suction process with the Manikin.
4. Students put the catheter into the endotracheal tube without causing any contamination or violence.
5. Students aren't allowed to do any mistake in critical steps (potential to cause harm) for suction skills:
If students do these following criteria, they are considered to be wrong:
-Do not wipe fingertip / Cause contamination
-Do not test the suction force before procedure
-Open the suction machine with adjustment of the pressure higher than 120mmmHg.
-Hold the suction catheter away from the end of the catheter beyond 4 inches.
-Violent with suction process
-Time (duration) for suction more than 15 seconds per time
- Cause contamination to sterilized gloves.
**The course syllabus is designed for each institution, which will set the checklist for each skill. Each institution needs to provide its own checklist to suit required types of its own students.[73]

Setting objective of teaching Ⓐspecific/measurable

Inserting an indwelling urinary catheter (IUC) skills**

1. Students can enter the IUC correctly.
2. Students can prevent contamination through appropriate methods.
3. Students insert the cord deep into the patient's bladder, and then there is urine flowing out.
4. Students are able to choose the size of the line with the patient correctly, including the lubrication gel before the catheter procedures.
5. Students aren't allowed to do any mistake in critical steps (potential to cause harm) for inserting IUC skills:

5.1 Preparation before IUC procedures such as: choosing the size of the line with the patient, the lubrication gel before the catheter, cleaning the perineal area as wiping front to back from the clitoris toward the anus, picking up the catheter with dominant hand through sterile technique and etc.

5.2 Inserted the catheter:

Insert the catheter into the bladder until the urine is pulled off (approximately 2.5 to 5 cm deep from the entrance of vagina). If no urine appeared, insert it deeper until urine is pulled off.

Blow balloon when the balloon has been placed in the bladder. Blow the balloon of the indwelling catheter by following the manufacturer's instructions to get the correct amount.

While pumping sterile water into the balloon, check out for any sign of the patient's pain. If such pain occurs, please stop inflation. Aspirate the fluid back into the syringe, and then forward the catheter to reattempt inflation. After inflating the balloon, pulled gently on the catheter tubing until resistance was felt.

5.3 Placed the drainage bag below the level of the bladder. Please do not place the bag on the side rails. Please ensure that there were no dependent loops in the tubing.

5.4 Anchored the catheter. a. Secured the catheter tubing to the patient's inner thigh with a securement device.

**The course syllabus is designed for each institution, which will set the checklist for each skill. Each institution needs to provide its own checklist to suit required types of its own students.[66]

Feedback: ©

Feedback giving refers to providing information about student's status, capacity and behaviors in an activity, which the objective is to be a guideline for learners to improve themselves in order to achieve the goals by each learner's ultimate potential. In order to help learners achieve the expected outcomes, teachers should provide them effective feedbacks. Thus, the effective feedbacks should be a follows:[74]

1. Creating an atmosphere of trust and targeting between teachers and students: To create an atmosphere of trust, teachers have to pay attention to listen to learners. Teachers should explain students that feedback is a part of learning process. Students play an important role in self-assessment. Providing feedback regularly as well as having a, clear timetable will help students realize that it is normal to give feedback in learning process.
2. Providing feedback from information derived from direct observation. Direct observation is very important fundamental in providing feedback. Teachers should check the accuracy of information before providing feedback to learners. Furthermore, teachers should always give an opportunity to learners to provide them information from learner's view point first.
3. Feedback providing in appropriated time and regularly. Feedback should be given to learners as soon as possible. If we let time pass by too long to give feedback, some important issues may be missed as both teacher and learners cannot remember all details of the event. Moreover, providing feedback regularly in both positive and negative aspects will make learners feel that it is normal and acceptable.
4. Starting with self-assessment by learners. Process of feedback providing should start with giving learners opportunity to reflect or assess themselves first by using open-ended questions.
5. Providing positive feedback first. Teachers should give learners positive feedback first by praise or emphasizing correctness of that issue. Giving positive feedback first helps make good atmosphere in conversation. Furthermore, providing positive feedback regularly as mentioned before will also help learners to accept negative feedback better.
6. Providing negative feedback that is specific and focuses on behaviors. Constructive feedback points out things that do not meet the established goals, which make learners know how to improve their performance. In providing feedback, teacher should focus on learner's behaviors. However, teachers should avoid using words that indicate learner's appearances or personalities as well as words regarding judgments.
7. Providing feedback in appropriated amount and selective issues and can correct first. Sometimes there are many issues that teacher want to give learners feedbacks. Teacher should assess the situation so that they can give appropriated amount of feedback to learners. Teacher may plan to provide feedback to learners in many times according to the situation. Important issue that can be corrected should be selected to give feedback first.
8. Giving recommendations and problem solving plans. Feedback should be two-way communication. Teacher should provide learners the opportunity to ask questions with open-minded attitude. Meanwhile, teacher should assess that whether learners understand the issue of feedback as well as their acceptance of feedback. At first, teacher should give learners the opportunity to offer the methods of improvement. Afterwards, teacher provides learners additional recommendations or offers other choices. Lastly, teacher should determine time of plan and make appointment with learners for follow-up the results.

Reflection©

Reflection is a learning experience that is well thought out to improve the current ability. The questions used for reflection are as follows:

1.From this experience, what is the most important thing you learned? - (from both you practiced yourself and what you observed from others).
2.Why is that so?
3.What are advantages and disadvantages of this situation in your opinion?
4.Have you ever experienced this similar situation? Have you got different results?
5.What would you do improve if situation happen again?

Reflection©

Reflection is a learning experience that is well thought out to improve the current ability. The questions used for reflection are as follows:[75]

1. From this experience, what is the most important thing you learned? - (from both you practiced yourself and what you observed from others).
2. Why is that so?
3. What are advantages and disadvantages of this situation in your opinion?
4. Have you ever experienced this similar situation? Have you got different results?
5. What would you do improve if situation happen again?

Motivation®

Motivation: (make the students believe with the ability to do.)[76] From beginning to continuous learning until the end of the course with students.

1. Firstly, in the student orientation, teacher should inform students the overview of the course in order to stimulate the student's interest to lean.
2. Teachers should organize learning activities at the level of ability that student can do.
3. In assignment, the teacher must tell the goals and characteristics of the work specifically and clearly.
4. In a class room, teacher should develop a positive learning environment for students by creating atmosphere of safety, trust and respect. Teacher should get to know each student as soon as possible. This makes students feel valued as individuals. Moreover, well - equipped classroom should be provided to students in order to motivate the learning behavior of the students, As a result, students can learn and practice smoothly.
5. Teacher should provide both positive and negative feedback to students so that they know how to improve their performance and feel motivated.

CHAPTER V
CONCLUSION AND SUGGESTIONS

5.1 Conclusion

This study aimed to study the model of deliberate practice to develop competency and performance improvement of psychomotor skills in the nurse students. The researcher performed the steps of empirical evidence as followed: Identified a problem of interest, the PICO framework, identified searching database, assessed the level of reliability of empirical evidence, evaluated the use of empirical evidence, and analyzing the evaluation of the quality of empirical evidence. Based on the searching of empirical evidence, the researcher obtained nine quality researches which were randomized control trials of level II: 4 empirical evidences, Quasi-experimental research of Level III: 1 empirical evidence, Cohort research of Level IV: 1 empirical evidence and correlational study design, completed pretest and posttest surveys, descriptive research of Level VI: 3 empirical evidences. Thus, the researcher summarized the recommendations for competency and performance of psychomotor skills in the nurse students as follows:

1) The results of the study are summarized then brought to implications student nurses. (Follow as Figures 4.1)

2) Setting objectives of teaching and learning in nursing practice skills that are well defined, specific, and measurable. The objectives should be sequenced, starting with basic skills and progressing to more sophisticated ones.

3) The selection of nursing practice skills to be practiced must be a complex and important skill that may be risky to the patient, such as cardiopulmonary resuscitation (CPR), feeding, tracheostomy care, head to toe assessment, insertion of an indwelling urinary catheter and urinary catheter care, suction, nasal tube care, central venous line care, oral medication, intravenous intramuscular medication, enema administration, starting intravenous fluid, venipuncture wound dressing care and blood transfusion.

4) The duration of training are done intentionally and repetitively about 6 to 30 minutes, every 2 weeks to 2 months, with a total duration time of about 6 months to one year, depending on the skill.

5) Method of teaching and learning management: There are various methods of teaching and learning to support all students. For example, using lectures about 10-15 minutes may be used as a computer medium or a video. Then enter into the simulation room in the skill lab. It may start with demonstration from a teacher or grouping for students to practice. There are role play, including group discussion, reflection, Manikin / standardized patients: SP.

6) Learning resources such as classroom, instructional equipment, computer modeling, patient model simulation, SP are provided.

7) Assessment methodology related with teaching objectives and how to teach. There are measurement of knowledge using pretest - posttest or MCQ, which requires analysis of the test, also measurement of attitude using rating scale (satisfaction, soft skills: self-confidence, self-esteem, etc.), and importantly, measurement of the psychomotor skill by using Checklist competent skills created by expert teachers (nurse).

8) Feedback by Expert Teachers / Manikin / SP.

9) Motivation from beginning to continuous learning until the end of the course with students.

5.2 Suggestions

The recommendations from this study are:

5.2.1 Deliberate practice can be used to improve the teaching and learning process for development of nursing practice skills by implementing this model into the curriculum.

5.2.2 Prepare expert teachers (skillful with professional skills and DP): Provides courses of teaching and learning with DP styles as a teaching method. Furthermore, preparing students is very important. Orientation is needed before students can realize the importance of practicing and understand cooperation in practice.

5.2.3 Motivation were tracked the students by using a portfolio system for self-monitoring, counseling, and assessment. Using the portfolio will help teachers gain more information about student and any events that led to his or her learning. This information can be used to guide students to gain more experience.

5.2.4 The pilot study which give favorable result can be implemented as a guideline which leading to change in teaching and learning in organization by 1) getting full support from organization, 2) communicate clearly with all organization personnel, and 3) with development of necessary knowledge and skills among staff members.

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APPENDIX

EMPIRICAL EVIDENCE EXTRACTED TABLE

Analysis and synthesis tables

The synthesis of nine empirical evidences of deliberate practice to develop competency and performance improvement of psychomotor skills in the nurse students is as follows:

Evidence No. 1

Title: Deliberate practice of motor skills in nursing education: CPR as exemplar.

Author: Oermann MH, Kardong-Edgren S, Odom-Maryon T, Hallmark BF, Hurd D, Rogers N, Haus C, et al.

Source of print / year: Nursing Education Perspectives.2011;32(5):311-5.

Topics	**Description**
1. Research Objectives	To examine the effects of deliberate practice using a voice advisory manikin (VAM) for learning and practicing CPR (Cardiopulmonary resuscitation) psychomotor skills among nursing students.
2. Research Methodology / Level of research	Randomized control trial **Credibility**: Level 2
3. Sample	606 nursing students in 10 schools of nursing in the United States.
4. Instrument/ Statistics	**Instruments:** 1. Resusci Anne™ adult manikins 2. Bag-valve-mask (BVM). 3.Voice advisory manikin (VAM) **Statistics:** F –test(A one-way analysis of variance (ANOVA))

Topics	Description
5. Intervention	**Deliberate Practice of CPR Skills** - The practices were done in the school of nursing's skills lab. Site coordinators in each school carried out the study per protocol but did not teach students CPR nor be a guidance to their performance; students practiced on their own using only the feedback from the VAM. **1. Intervention (DP) group:** - Students in the intervention group trained their CPR skills on Resusci Anne™ adult manikins for 6 minutes a month in following order: 2 minutes of compressions, then 2 minutes of ventilations with bag-valve-mask (BVM), and in the end, 2 minutes of single-rescuer CPR. Students got their immediate feedbacks from VAM while practicing so those students could adjust their skills to suit needs of quality of appropriate skills for their next attempts. **2. Control group:** - Participants in the control group had initial practice with no further training on CPR. These were students who trained on traditional manikins without automated feedback. - All participants 20 percent of the students in both groups were randomly selected for CPR performance reassessment to determine how well they retained their skills and those 20 percent returned to the skills lab every 3 months and checked an envelope that told if they were to be reassessed on their skills or continue in the study. - The statistician work through randomization, and neither the site coordinators nor participants knew who would be selected for reassessment.

Topics	Description
5. Intervention	- The quality of compressions and ventilations was checked by a Laerdal Resusci Anne SkillReporter™ manikin. For the reassessment, students performed 3 minutes each of compressions, ventilations, and single-rescuer CPR, with information on their performance collected electronically and sent directly to the data center.
6. Results	Differences in CPR Skills Between intervention and Control Groups: 1. Number of Compressions with Adequate Depth in the intervention group was significantly more than control group. At the 3 month reassessment, students in the intervention group, who trained 6 minutes per month and obtained automated feedback and prompts from the VAM to help their performance, not only retained this acquired skill but showed improvement with continued practice. After finishing course of training for 1 year, results of the intervention group showed higher standard in performance compared to control group. 2. Number of Compressions with Adequate Depth during Single Rescuer CPR in the intervention group was significantly more than control group. At the 3 month reassessment, students in the intervention group, who practiced 6 minutes per month and attained automated prompts and feedbacks from the VAM to help their performance, not only retained skill but showed improvement with continued practice. After finishing course of training for 1 year, the intervention group enhanced their skills more than the control group with higher standard of scores.

Topics	Description
6. Results	3. Number of Ventilations with Adequate Volume CPR in the intervention group was significantly more than control group. Intervention group students were able to keep their ventilation skills over the year at 3, and 12 and to improve their skills while the control group retreated over time. 4. Number of Ventilations with Adequate Volume during Single Rescuer CPR was significantly more than control group. The effects of practice also were clear in students' capability to ventilate during single-rescuer CPR. At the end of the year, intervention group got higher standard of scores more than control group.
7. Compliance with issues	The study found that DP can be used in the teaching and learning process, thus students learn to enhance critical thinking skills and can practice more effectively.
8. The meaning or value of science	1. This research is clearly applicable to CPR training. 2. The F-test (A one-way analysis of variance (ANOVA)) was used to determine the validity of the questionnaire. 3. Research is reliable. It was published by Nursing Education Perspectives (2017 RG Journal Impact: 0.905), ranked 12th for the Journal of Nursing on world stage. Cited References: 37(CINAHL Database) and refer to:58 Article (Google Scholar)
9. Evaluation of feasibility in practice	**Transferability** • The teaching method of deliberate practice is accordance with agency to be used. • The target population in the research is similar to the population in the organization. • This teaching method practices for one year at 3, 6, 9, and 12 months. It is a long in terms of operation and evaluation in school of assistant nursing. The application

Topics	Description
9. Evaluation of feasibility in practice	for using need to be adjust the suitable duration for school of Nurse Assistant. • The purpose of this research is not different from the teaching objectives in the department. **Feasibility** • Teachers are free to conduct their teaching according to the deliberate practice. • School administrators support this kind of teaching project. • The atmosphere in the organization leads to project implementation. • Teachers need to have teaching skills for deliberate practice. There should be training of the teachers before implementation of deliberate practice. • The department has the tools and facilities needed to carry out the project. • Have the appropriate tools for evaluating the teaching of the project by process of checklists which come from brainstorm of experts and quality feedback. **Cost-benefit ratio** • Risks associated with the project: None. • The project implementation's benefits to the students are enhance their capabilities, try out their critical thinking skills, and improve their reflection skills (co-operate with teachers' feedbacks and VAM feedbacks) • There is no cost of projecting implementation because the school of Nurse Assistant is one of departments in the Faculty of Medicine, Siriraj Hospital, Mahidol University..

Topics	Description
9. Evaluation of feasibility in practice	• The project can be used in teaching hours and, when applied, does not have to be difficult to perform but needs to be adjusted in terms of timelines and appropriate evaluation of the context of the practical nurse' students

Evidence No. 2

Title: A Deliberate Practice-Based Training Protocol for Student Nurses Care of the Critically III Patient: A Randomized Controlled Trial of a Deliberate Practice-Based Training Protocol.

Author: Whyte J, Cormier E.

Source of print / year: Clinical Simulation in Nursing. 2014;10:617-25.

Topics	Description
1. Research Objectives	To establish the efficacy of a deliberate practice intervention designed to increase levels of clinical performance in senior baccalaureate nursing students.
2. Research Methodology / Level of research	Randomized control trial **Credibility**: Level 2
3. Sample	40 Nursing students from a college of nursing undergraduate baccalaureate program in the United States.
4. Instrument/ Statistics	**Instruments:** 1. Human Patient Simulator adult model 2. Human Patient Simulator record 3.Deliberate Practice Questionnaire 4.Audio record (verbal report) 5. Video record (direct observation of actions) **Statistics**: Dependent sample t-test
5. Intervention	**Deliberate Practice of clinical performance** **1. Intervention (DP) group:** Participants completed two deliberate practice-based training sessions, 1 and 3 weeks after

Topics	Description
5. Intervention	initial testing, and post-testing 6 weeks after initial testing, or 2 weeks after final deliberate practice training session. **2. Control group:** Participants completed the pre-posttest sessions only, with the post-testing scheduled 6 weeks after initial testing. **In deliberate practice-based training sessions had to 4 step:** 1) Engage in scenarios (conventional manner in the simulated task environment (STE) mimic an acute care patient room in hospital though give audio record (verbal report) of the end.) The scenarios were placed in the time frame that a nurse enters a patient's room to take on an initial assessment, respond to an alarm, or reply to a patient's call for assistance. The nurse lacks extensive information regarding a patient. The scenarios needed the participant to analyze information searching, diagnosis, treatment-based intervention. This served to extend the complexness of the individual situations, that giving a clearer chance to differentiate performance. The situations simulated things wherever nurses had the chance to rescue" or "fail to rescue" a patient undergoing a care connected adverse event. Most significantly, Every of the clinical situations were developed in order that it was reproducible under the controlled standardized conditions of a STE. 2) Observe and reflect from videos and give their thoughts of how to improve. Participants were the ones who learned from their own critical thinking with reflection and feedback from audio record (verbal report) and video record (direct observation of actions). 3) Search for information in IPad™(Apple, Cupertino, CA) through internet provided by organizations for proper treatment of scenarios to seek for improvement in their performances in the final run.

Topics	Description
5. Intervention	4) Repeat the scenarios of step 1: engage in scenarios to provide final retrospective verbal report. Analyze and enhance their performances to repeat with of the rest of the scenarios. **2. Control group:** Participants completed the pre-posttest sessions only, with the post-testing scheduled 6 weeks after initial testing. **Pre-Post Test 4 scenarios**: For the pretest, the scenarios were administered in an order (1, 2, 3, and 4). For the posttest, they were administered in a different order (4, 2, 3, and 1). Trial 1: Acute Hypotension due to opiate toxicity, a patient experiencing acute hypotension and bradycardia and receiving a dopamine infusion Trial 2: Acute Hypotension due to sepsis on too low a dose of IV dopamine and a patient experiencing a hypertensive emergency on a sodium nitroprusside drip at an excessive dosing rate. Trial 3: Closed Head Injury due to a Fall, a patient who had fallen, resulting in a closed head injury with subsequent hypertensive crisis Trial 4: Abdominal Surgery with Bleeding, a patient who had undergone recent abdominal surgery and was experiencing postoperative hemorrhage.
6. Results	The deliberate practice resulted in statistically significant improvements to key aspects of participants' efforts in each of the four scenarios. Trial 1: Acute Hypotension shows intervention group did significantly more than control group in terms of "Questions regarding symptoms" and "Titrates vasoactive medication". In this situation, the key area that could determine a quite difference in outcome of the patient was the titration of the dopamine infusion. For the posttest in which the intervention

Topics	Description
6. Results	group improved largely was due to their upgraded performances in the titration. Trial 2: Acute Hypotension due to sepsis indicates Intervention group did significantly more than control group in terms of "Establishes level of consciousness" and "Titrates vasoactive medication". In this section, the control group again did the advantages over the intervention group in the pretest. However, in the posttest, the intervention group did progress in several actions earlier than the control group. Trial 3: Closed Head Injury due to a Fall displays Intervention group did significantly more than control group in terms of "Establishes level of consciousness", "Calls for help" and "Notes enlarged pupil". In this situation, the key area in this case was the patient's dilated pupil. No clear advantage was shown for either group; However the posttest, student in the intervention group found the presence of the enlarged pupil more quickly. In addition, the intervention group called for help more swiftly than the control group. Trial 4: Abdominal Surgery with Bleeding show the result Intervention group did significantly more than control group in terms of "Establishes level of consciousness "and "Notes bloody dressing". In this section, Bloody dressing was the key assessment variable in the situation. Score in pretest show superiority of the control group over the intervention group surprisingly, the posttest the intervention group improve their performance significantly.
7. Meaningful Value of science	The study found that DP can be used in the teaching and learning process, thus students learn to enhance critical thinking skills and can practice more effectively.

Topics	Description
8. The meaning or value of science	• Research is clear and applicable. • The use of accurate statistics in research and answer research questions sensibly. • Credible published sources (2017 RG Journal impact factor= 0.685, ranked 21th for the Journal of Nursing on world stage). Journal was published in 2014 by Clinical Simulation in Nursing. Cited References: 3(Scopus Database) and refer to: 6 Article (Google Scholar)
9. Evaluation of feasibility in practice	**Transferability** • The teaching method of deliberate practice is accordance with agency to be used. • The target population in the research is similar to the population in the organization. • Teaching methods take fairly moderate time to implement and evaluate. • The purpose of this research is not different from the teaching objectives in the department. **Feasibility** • Teachers are free to conduct their teaching according to the deliberate practice. • School administrators support this kind of teaching project. • The atmosphere in the organization leads to project implementation. • Teachers need to have teaching skills for deliberate practice. There should be training of the teachers before implementation of deliberate practice. • The department has the tools and facilities needed to carry out the project. • Have the appropriate tools for evaluating the teaching of the project by process of checklists which come from brainstorm of experts and quality feedback.

Topics	Description
9. Evaluation of feasibility in practice	**Cost-benefit ratio** • Risks associated with the project: None. • The project implementation's benefits to the students are enhance their capabilities, try out their critical thinking skills, and improve their reflection skills (co-operate with teachers' feedbacks and peer feedbacks) • There is no cost of projecting implementation because the school of Nurse Assistant is one of departments in the Faculty of Medicine, Siriraj Hospital, Mahidol University. • The project can be used in teaching hours and, when applied, does not have to be difficult to perform but needs to be adjusted in terms of timelines and appropriate evaluation of the context of the practical nurse' students.

Evidence No. 3

Title: Randomized control trial assessing the impact of an innovative approach to education new to practice.

Author: Lengetti, E A.

Source of print / year: Published by ProQuest LLC.2016.

Topics	Description
1. Research Objectives	1. To compare the effect of mastery teaching and traditional teaching on the learner's ability to maintain competence for the psychomotor skill of inserting an indwelling urinary catheter in a simulated environment. 2. To compare the frequency of using self-regulation as a strategy for maintaining competence of psychomotor skill.
2. Research Methodology / Level of research	Randomized control trial **Credibility**: Level 2

Topics	Description
3. Sample	42 graduate nurses from Duquesne University in the United States.
4. Instrument/ Statistics	**Instruments**: 1. A Performance Assessment Tool (PAT) (procedural checklist) 2. Survey of Academic Self-Regulation (SASR) Questionnaire. **Statistics**: 1.Levene's test, a dependent-groups 2. paired t-test, independent groups
5. Intervention	**Deliberate Practice of psychomotor skill of inserting an indwelling urinary catheter** 1. All received baseline education on indwelling urinary catheter insertion before completing the procedure in the simulation lab through a self-paced computerized instructional module that reviewed the procedural steps for the insertion of an indwelling urinary catheter in a female prior to the initial assessment. (10-15 minutes to complete) The initial performance assessment for both groups was conducted within 2 weeks of employment at the institution's simulation center. All participants were requested to carry out the procedure for insertion of an indwelling urinary catheter. **2.In the simulation lab:** Nurse experts, who were Master's Degree prepared and served as coordinators for the nurse residency program (NRP), were assigned to this study and monitored each study participant's initial assessment as well as the reassessment conducted one month later. (Nurse experts had checklist papers (Performance Assessment Tool {PAT}) : PAT is a criterion-based assessment tool in that it measures the individual's performance against a practice standard of Measurement in Nursing and Health Research **-Control group:** Participants was offered one attempt for

Topics	Description
5. Intervention	insertion of an indwelling urinary catheter with feedback at the end. (not feedbacks immediately during the process of practice) The average time for this learning activity was 15 minutes with a SD = 4.36. **-Intervention (DP) group:** Participants was offered multiple attempts for insertion of an indwelling urinary catheter with deliberate practice, repetition and feedback. (Permitted multiple attempts with feedback and correctives for each step performed incorrectly.) The expert nurse provided immediate individualized feedback and correctives to the participant after each performance error. If a performance error occurred at one of the 17 critical steps, the participant was asked to stop and received immediate feedback on the step performed incorrectly and then asked to perform the entire procedure again starting at the beginning. 3. One month after the initial assessment, the skill was reassessed by the expert nurses with feedback provided at the end of the session. (Completed the skill of insertion of an indwelling urinary catheter on a task simulator. 4. The Survey of Academic Self-Regulation (SASR) was administrated to all study participants at the one-month assessment. The SAR is a 63 item self-report questionnaire which shows measurement of the participants' report of self-regulation practices on a six-point Likert scale. It is organized into 6 six subscales: 1. Metacognition (contemplating or thinking) 2. Extrinsic motivation (external rewards) 3. Self-regulation (study habits) 4. Personal relevance & control (personal expectations) 5. Intrinsic motivation (personal mastery) 6. Self-efficacy (personal beliefs).

Topics	Description
6. Results	1. The Intervention group had significantly greater in the seventeen critical steps as compared to the control group. 2. A comparison between groups exclusively on those procedural steps deemed critical (potential to cause harm) was significant: the experimental group scored significantly higher. 3. The mean SASR scores between groups was significant. The mean for the experimental group is greater than the mean for the control group indicating that the experimental group reported using learning and study strategies more often than the control. Analysis of the SASR subscale Metacognition (MC) which reflects consideration on goal aiming, following and evaluating progress, and altering performance goals as necessary was completed. The mean MC subscale score for the intervention group was higher than the mean for the control group. Further review of the SASR data that analyzed each individual question in the MC subscale, highlighted the statements "I know when and where to use certain learning/studying strategies" and "When learning is boring I find ways to make it interesting" was significant.
7. Meaningful Value of science	The study found that teaching DP can be used in the teaching and learning process, thus students learn. Critical thinking and can practice more effectively.
8. The meaning or value of science	• Research is clear and applicable. • The use of accurate statistics in research and answer research questions sensibly. • Credible published sources by ProQuest, a multidisciplinary database that provides access to a variety of documents. It is the work of famous doctoral student of this institution, who seems to be studying while his or her work is in the process of publish.

Topics	Description
9. Evaluation of feasibility in practice	**Transferability** • The teaching method of deliberate practice is accordance with agency to be used. • The target population in the research is similar to the population in the organization. • Teaching methods take fairly moderate time to implement and evaluate. • The purpose of this research is not different from the teaching objectives in the department.
9. Evaluation of feasibility in practice	**Feasibility** • Teachers are free to conduct their teaching according to the deliberate practice. • School administrators support this kind of teaching project. • The atmosphere in the organization leads to project implementation. • Teachers need to have teaching skills for deliberate practice. There should be training of the teachers before implementation of deliberate practice. • The department has the tools and facilities needed to carry out the project. There should be media for computerized instructional module that reviewed the procedural steps for the insertion of an indwelling urinary catheter in a female (through Vejnitatphattana school of the Faculty of Medicine, Siriraj Hospital Mahidol University) • Have the appropriate tools for evaluating the teaching of the project by process of checklists which come from brainstorm of experts and quality feedback. Cost-benefit ratio • Risks associated with the project: None. • The project implementation's benefits to the students are

Topics	Description
9. Evaluation of feasibility in practice	enhance their capabilities, try out their critical thinking skills, and improve their reflection skills (co-operate with teachers' feedbacks and peer feedbacks). • There is no cost of projecting implementation because the school of Nurse Assistant is one of departments in the Faculty of Medicine, Siriraj Hospital, Mahidol University. • For the media for computerized instructional module, the school of assistant nursing is cooperative with Vejnitatphattana school of the Faculty of Medicine, Siriraj Hospital Mahidol University. • The project can be used in teaching hours and, when applied, does not have to be difficult to perform but needs to be adjusted in terms of timelines and appropriate evaluation of the context of the practical nurse' students.

Evidence No. 4

Title: Deliberate Practice of IV Medication Procedures by Student Nurses: Feasibility, Acceptability, and Preliminary Outcomes.

Author: Leveille D.

Source of print / year: Published by University of Massachusetts Medical School from ProQuest.2015. / https://escholarship.umassmed.edu/gsn_diss/42/

Topics	Description
1. Research Objectives	To search the utilization of deliberate practice with second-degree nursing students in improvement of fundamental intravenous medication (IV) management.
2. Research Methodology / Level of research	Randomized control trial **Credibility**: Level 2

Topics	Description
3. Sample	First-year nursing students (N = 32) in the United States. (Setting: The University of Massachusetts Worcester)
4. Instrument/ Statistics **4. Instrument/ Statistics**	**Instruments:** 1.IV Pump Self-Confidence Survey (IVPSCS) 2.Safety Skills Self-Confidence Survey (SSSCS) 3.Skills Inventory Checklist (SIC) 4. Simulation Design Scale (SDS) 5.Feasibility/Resource Tracking Form 6.Participant Progression Form 7. Medication Administration Checklist 8. Post-Intervention Survey **Statistics** :paired sample t-test, Cohen's d and Pearson coefficients
5. Intervention	**Deliberate Practice of IV Medication Procedures Intervention(DP) group**: 1. Nurse students were received three 30 minute one-on-one practice sessions at 2-week intervals with an expert nurse (focused on IV skills) in 2 months' time. 2. First 20 minutes will be used to complete the scenario (practice the skills), and the remaining 10 minutes will be used for debriefing, reviewing key concepts 3. In training sessions, a scenario of a patient requiring intravenous medications will be presented to the participants. All scenarios will include algorithms with scripts to determine the appropriateness of the medication with perform a medication calculation of an intravenous medication (bolus and continuous drips), select the appropriate solution and supplies, prepare and administer medications, state how they would assess, evaluate the response, and intervene if required.

Topics	Description
5. Intervention	During the DP session the principal investigator (PI) will provide responsive assistance to the participants in the form of feedback, modeling, linguistic means of assistance (instructing, questioning, and cognitive structuring) and contingency management (positive and negative feedback reflected in patient's response to the participants' interventions). 4. Participants completing the Simulation Design Scale (SDS) and the PI will complete the Feasibility/Resource Tracking Form. 5. Pre- and post-intervention instruments tested participants' confidence with IV management and safety skills. 6. The primary outcome was their ability to safely administer and monitor IV medications during a 20 minute videotaped medication administration scenario. **Control group**: 1. Nurse students were received three 30 minute one-on-one practice sessions at 2-week intervals with an expert nurse (skills unrelated to IVs) in 2 months' time. The group got helped by the principal investigator (PI) with minimization of helps regarding medication administration. The principal investigator (PI) will not specifically lead the participant though the process of safe IV medication administration. Instead, the PI will present the student with a scenario of a patient requiring nursing care. 2. To sign up for a 30-minute session with the principal investigator (PI). The scenarios will include algorithms with scripts unrelated to IV medication administration (insertion and care of a patient with a urinary catheter, wound care, and initiating and managing a nasogastric tube feeding). 3. The principal investigator (PI) will present the students with a

Topics	Description
5. Intervention	scenario of patient requiring nursing care in first 20 minutes to complete the scenario and the remaining 10 minutes will be used for debriefing and reviewing key concepts.
6. Results	1. Significant differences were found in overall medication administration skills between the control and intervention groups particularly with medication preparation skills. 2. Confidence scores were higher scores in the intervention group compared to the control group. 3. Descriptive statistics were used to evaluate satisfaction of DP sessions. The students gained a lot of satisfaction with the simulation scenarios by an average response of 4.8/5 reflecting strongly agreed/very important for both design and importance. Descriptive statistics were utilized for evaluation of feasibility, student acceptability and satisfaction of using DP. 4. Descriptive statistics were used to evaluate preliminary efficacy of using DP, participation in the study increased the ability to provide safer care, skill performance, understanding and awareness of the importance of evaluating care.
7. Meaningful Value of science	The study found that teaching DP can be used in the teaching and learning process, thus students learn. Critical thinking And can practice more effectively.
8. The meaning or value of science	• Research is clear and applicable. • The use of accurate statistics in research and answer research questions sensibly. • Credible published sources by ProQuest, a multidisciplinary database that provides access to a variety of documents. It is the work of famous doctoral student of this institution, who seem to be studying while his or her work is in the process of publish.

Topics	Description
9. Evaluation of feasibility in practice	**Transferability** • The teaching method of deliberate practice is accordance with agency to be used. • The target population in the research is similar to the population in the organization. • Teaching methods take fairly moderate time to implement and evaluate. • The purpose of this research is not different from the teaching objectives in the department. **Feasibility** Teachers are free to conduct their teaching according to the deliberate practice. • School administrators support this kind of teaching project. • The atmosphere in the organization leads to project implementation. • Teachers need to have teaching skills for deliberate practice. There should be training of the teachers before implementation of deliberate practice. • The department has the tools and facilities needed to carry out the project. • Have the appropriate tools for evaluating the teaching of the project by process of checklists which come from brainstorm of experts and quality feedback. **Cost-benefit ratio** • Risks associated with the project: None. • The project implementation's benefits to the students are enhance their capabilities, try out their critical thinking skills, and improve their reflection skills (co-operate with teachers' feedbacks and peer feedbacks). • There is no cost of projecting implementation because the

Topics	Description
9. Evaluation of feasibility in practice	school of Nurse Assistant is one of departments in the Faculty of Medicine, Siriraj Hospital, Mahidol University. • The project can be used in teaching hours and, when applied, does not have to be difficult to perform but needs to be adjusted in terms of timelines and appropriate evaluation of the context of the practical nurse' students.

Evidence No. 5

Title: Impact of a Simulated Clinical Day With Peer Coaching and Deliberate Practice: Promoting a Culture of Safety.

Author: Badowski, Donna M, Oosterhouse, Kimberly J.

Source of print / year: Nursing Education Perspectives. 2017;38(2):93-5.

Topics	Description
1. Research Objectives	To compare nursing students' knowledge, skills, and attitudes for promoting safety.
2. Research Methodology / Level of research	Quasi-experimental research **Credibility**: Level 3
3. Sample	Nursing students (29) in the United States.
4. Instrument/ Statistics	**Instruments:** 1. A20-item multiple choices. 2. Skills checklists. 3. The Team STEPPS™ Teamwork Attitude Questionnaire (T-TAQ) **Statistics**: A quasi-experimental pretest/posttest design.
5. Intervention	**Deliberate Practice of Promoting a Culture of Safety** 1. All students experienced the study simultaneously over the eight-week course. Before instructions were given, students had to do pretest.

Topics	Description
5. Intervention	2. All students were taught the same skills and practice during the first four weeks of the lab component of the course and were encouraged to practice independently throughout the course. Two groups of simulated ones and traditional ones were given seven hours on clinical days. **The simulation (DP) group:** • The simulation group attended four traditional clinical days and three on-campus simulated clinical days with DP of select psychomotor skills and peer coaching. • The cases unfolded over the course of three clinical weeks to provide DP of head to-toe assessment and medication administration by intramuscular (IM) and enteral routes. • Students were assigned roles play as primary/ secondary nurse, observer, patient, or family member. • Verbal report on all three patients was provided to the entire simulated clinical group, and time was given to plan care as a team. • The observers situated in the patient room while patient care was carried out by the primary and secondary nurses. • Debriefing took place following each simulation experience. • By the end of the clinical day, students had the opportunity for either direct practice or observational practice of each of the three skills. **The standard practice (Control) group** Seven traditional clinical days, which allowed for the incidental practice of the same psychomotor skills. 3. Posttest was done at the end of the eight-week course. 4. There were evaluation of knowledge, psychomotor skills and attitudes.

Topics	Description
5. Intervention	• For testing of knowledge: a 20-item multiple-choice exam of head- to toe assessment, communication skills, administration of medication by IM and enteral routes and safety were provided. • The test was developed by the inspectors and validated for content by 2 nurse educators. • For psychomotor skills: skills checklists were utilized to measure psychomotor acquisition of head-to-toe assessment and medication administration. Items were constructed by nurse educators. • For attitudes: The Team STEPPS™ Teamwork Attitude Questionnaire (T-TAQ) was utilized to measure attitudes associated to teamwork.
6. Results	• Both the simulation and standardized groups had significant differences from pretest to posttest on knowledge and skills. • Simulation group got quite high scores compared to standardized group in their improvement. • The simulation groups had the enteral medication mean change score approached significance (p = .056), with the simulation group performing better. • The mean change score for the T-TAQ construction of • communication hit significance (p=.078) with achievement of the simulation group of greater gains÷
7. Compliance with issues	The study found that DP can be used in the teaching and learning process, thus students learn to enhance critical thinking skills and can practice more effectively.

Topics	Description
8. The meaning or value of science	• This research is clearly applicable to CPR training. • Paired t Tests, Chi-square was used to determine the validity of the questionnaire. • Research is reliable. It was published by Nursing Education Perspectives (2017 RG Journal Impact: 0.905), ranked 12th for the Journal of Nursing on world stage.
9. Evaluation of feasibility in practice	**Transferability** • The teaching method of deliberate practice is accordance with agency to be used. • The target population in the research is similar to the population in the organization. • Teaching methods take fairly moderate time to implement and evaluate. • The purpose of this research is not different from the teaching objectives in the department. **Feasibility** • Teachers are free to conduct their teaching according to the deliberate practice. • School administrators support this kind of teaching project. • The atmosphere in the organization leads to project implementation. • Teachers need to have teaching skills for deliberate practice. There should be training of the teachers before implementation of deliberate practice. • The department has the tools and facilities needed to carry out the project. • Have the appropriate tools for evaluating the teaching of the project by process of checklists which come from brainstorm of experts and quality feedback.

Topics	Description
9. Evaluation of feasibility in practice	**Cost-benefit ratio** • Risks associated with the project: None. • The project implementation's benefits to the students are enhance their capabilities, try out their critical thinking skills, and improve their reflection skills (co-operate with teachers' feedbacks and peer feedbacks). • There is no cost of projecting implementation because the school of Nurse Assistant is one of departments in the Faculty of Medicine, Siriraj Hospital, Mahidol University. • The project can be used in teaching hours and, when applied, does not have to be difficult to perform but needs to be adjusted in terms of timelines and appropriate evaluation of the context of the practical nurse' students.

Evidence No. 6

Title: Implementation of Deliberate Practice as a Simulation Strategy in Nursing Education.

Author: Owen MI, Garbett M, Coburn CV, Amar AF.

Source of print / year: Nurse Educator. 2017;42(6):273-4.

Topics	Description
1. Research Objectives	To improve performance of a specific skill using DP by providing repetitive, consistent simulation experiences for students.
2. Research Methodology / Level of research	Cohort study research **Credibility**: Level 4
3. Sample	Nursing students (n = 99) in the third and fourth year of baccalaureate degree.

Topics	Description
4. Instrument/ Statistics	**Instrument**: Deliberate Practice Sessions: DP Scenarios **Statistics**: Online survey(dependent sample t-test)
5. Intervention	**Deliberate Practice of Medication administration** 1. Tasks in DP sessions: 1.1 Session 1 • Interpretation of the Medication administration record (MAR). (Students administered medications to a patient through jejunostomy tube, subcutaneously and intravenously. Interpretation of the medication administration record required clinical reasoning for a medication that could not be crushed, withholding medication for a contraindication, and verifying compatibility before intravenous medication administration) • Administration of drugs by jejunostomy tube, subcutaneously and intravenously. (Students performed a sterile procedure. The faculty gave minimal helps during the simulation, with the exception of cues relevant to the patient condition. Errors, such as wrong medication dose, were not discussed till debriefing to let the scenario to move on without interruption. Lack of correction during the scenarios allowed the students the opportunity to analyze and correct mistakes independently) 1.2 Session 2 • Administration of oral, subcutaneous and intravenous medications. • Nasogastric tube placement, tracheostomy suctioning, and straight catheterization. (Students were showed with an order for straight catheterization and updated vital signs for the patient, which indicated that tracheostomy suctioning was required.) 2. Debriefing follows immediately after the end of the simulations and the students receive a group grade for the

Topics	Description
5. Intervention	second session. (Debriefing is an important element of DP to permit the students and the faculty to review performance. Without debriefing, learning may not be consistent among students and may happen easily by chance. Students reflected on the experience, received faculty feedback, and had additional skills practice as required. Students were asked to list what had been performed well and to explain what could have been done differently.) 3. At the end of each session, students complete an online survey about the experience (Students responded to 13 Likert-scale questions and provided open ended feedback.)
6. Results	From result of questionnaires: 1. More than 94% of students reported that the DP was useful and valuable. 2. A representative comment was ‘‘these are so helpful for me to put what I am learning into practice.’’ 3. Over 92% of students reported feeling more confident in their nursing skills. (A representative comment included ‘‘we didn’t get to use a lot of different skills in our clinical practice so it was good to have a review, and it keeps us confident in our skill level.’’ Another student explained, ‘‘I truly learned how to critically think and prioritize the presented case.’’) 4. 87% thought DP sessions improved their critical thinking skills. 5. Overall, students recommended more DP classes and cooperating open laboratory classes.
7. Compliance with issues	The study found that DP can be used in the teaching and learning process, thus students learn to enhance critical thinking skills and can practice more effectively.

Topics	Description
8. The meaning or value of science	• This research is clearly applicable to Administration of oral, subcutaneous and intravenous medications, Nasogastric tube placement, tracheostomy suctioning, and straight catheterization. • Online survey (dependent sample t-test) was used to determine the validity of the questionnaire. • Research is reliable. It was published by Nurse Educator (2017 RG Journal Impact: 1.245)
9. Evaluation of feasibility in practice	**Transferability** • The teaching method of deliberate practice is accordance with agency to be used. • The target population in the research is similar to the population in the organization. • This teaching method practices for two years. It is a long in terms of operation and evaluation in school of assistant nursing. The application for using need to be adjust the suitable duration for school of Nurse Assistant. • Based on the review of the research, Nasogastric tube placement, tracheostomy suctioning, and straight catheterization can be used to develop the curriculum by practicing practical skills on key topics which cause no harm to patients. • The purpose of this research is not different from the teaching objectives in the department. **Feasibility** • Teachers are free to conduct their teaching according to the deliberate practice. • School administrators support this kind of teaching project. • The atmosphere in the organization leads to project implementation.

Topics	Description
9. Evaluation of feasibility in practice	• Teachers need to have teaching skills for deliberate practice. There should be training of the teachers before implementation of deliberate practice. • The department has the tools and facilities needed to carry out the project. • Have the appropriate tools for evaluating the teaching of the project by process of checklists which come from brainstorm of experts and quality feedback. **Cost-benefit ratio** • Risks associated with the project: None. • The project implementation's benefits to the students are enhance their capabilities, try out their critical thinking skills, and improve their reflection skills (co-operate with teachers' feedbacks and peer feedbacks). • There is no cost of projecting implementation because the school of Nurse Assistant is one of departments in the Faculty of Medicine, Siriraj Hospital, Mahidol University. • It may be necessary to cooperate with the staff in order to use the room and training equipment, as well as to add more teachers to the students in training in case of expansion. • The project can be used in teaching hours and, when applied, does not have to be difficult to perform but needs to be adjusted in terms of timelines and appropriate evaluation of the context of the practical nurse' students.

Evidence No. 7

Title: The effects of a deliberate practice program on nursing students' perception of clinical competence.

Author: Liou SR, Chang CH, Tsai HM, Cheng CY.

Source of print / year: Nurse Education Today. 2013; 33(4): 358.

Topics	Description
1. Research Objectives	1. To develop a program including deliberate skill practices and technical skill testing. 2. To examine the program's effects on nursing students' clinical competence.
2. Research Methodology /	Correlational study design, completed pre-test and post-test surveys **Credibility**: Level 6
3. Sample	Nursing students (256 and 266 in a RN-to-BSN) of night school program in Taiwan.
4. Instrument/ Statistics **4. Instrument/ Statistics**	Instruments: 1. Clinical Competence Questionnaire (CCQ). 2. Focus group discussions with the clinical instructors. **Statistic:** Questionnaire, SPSS: Analysis of covariance (ANCOVA)
5. Intervention	**Deliberate practice of clinical competences** 1. Identifying the 17 core nursing skills of adult health clinical practicum • Feeding and nasal tube care • Tracheostomy care • Central venous line care • Sterile airway suction • Chest care and oxygen therapy • Oral medication • Intravenous (IV) bag medication • Chest tube wound care

Topics	Description
5. Intervention	• Change of chest bottle • Insertion of indwelling urinary catheter for female • Urinary catheter care • Subcutaneous or intracutaneous medication • Intramuscular medication • Enema administration • Starting IVs • Venipuncture wound dressing care • Blood transfusion 2. Explain the purposes and contents of the program to students who were enrolled 3. Students view instructional nursing-skill videos for practicing their skills, and instructors are available if students need assistance. 4. Skill test, which include clinical scenarios of patient safety, teamwork and communication, professional ethics, and problem solving which are considered as vital factors of competence in clinical settings. The results of the skill test were counted in the students' grade point average of the clinical practicum. Students were acquired to take the skill test before starting the clinical workplace; if students failed to pass the test, they could request for retests until they managed to pass. 5. The outcomes of deliberate practice are measured by the Clinical Competence Questionnaire (CCQ). The CCQ is a 47-item, 5-point Likert scale. The CCQ contains 4 subscales: (a) Nursing professional behaviors, such as adhering to ethical and legal standards of practice, according to health and safety precautions

Topics	Description
5. Intervention	(b) Core nursing skills, such as performing wound care, performing airway suction (c) General performance, such as performing patient health assessment, developing care plans for patients (d) Advanced nursing skills, such as starting IVs, performing venipuncture, performing chest tube care.
6. Results	-Participants who had higher pretest scores on the nursing professional behaviors and general performance subscales also yielded higher posttest scores. -Participants who had a higher grade point average exhibited a significantly higher posttest score on the core nursing skill subscale. -Participants who consulted instructors about nursing skills had a significantly higher posttest score on the nursing professional behaviors subscale. -Participants who possessed low self-confidence in clinical performance exhibited a significantly higher posttest score on all 4 subscales of the CCQ. -Participants who had lower future job stress scores exhibited significantly higher posttest scores on the nursing professional behaviors and core clinical nursing skills subscales. -Participants who had worked more months in nursing work sites (seniority) worked in hospital wards/ICU/ER, practiced skills by watching videos, and were satisfied with their posttest clinical nursing skills exhibited significantly higher posttest scores in the core nursing skills and advanced nursing skill subscales.)
7. Compliance with issues	The study found that DP can be used in the teaching and learning process, thus students learn to enhance critical thinking skills and can practice more effectively.

Topics	Description
8. The meaning or value of science	• This research is clearly applicable to clinical competence. • Analysis of covariance (ANCOVA) was used to determine the validity of the questionnaire. • Research is reliable. It was published by Nurse Education Today (2017 RG Journal Impact: 1.154), ranked 6th for the Journal of Nursing on world stage.
9. Evaluation of feasibility in practice	**Transferability** • The teaching method of deliberate practice is accordance with agency to be used. • The target population in the research is similar to the population in the organization. • This teaching method practices for one year. It is a long in terms of operation and evaluation in school of assistant nursing. The application for using need to be adjust the suitable duration for school of Nurse Assistant. • Based on the review of the research, clinical competence such as suction, enteral feeding, urinary catheterization and etc. can be used to develop the curriculum by practicing practical skills on key topics which cause no harm to patients. Moreover, we can use them in other important areas. • The purpose of this research is not different from the teaching objectives in the department. **Feasibility** • Teachers are free to conduct their teaching according to the deliberate practice. • School administrators support this kind of teaching project. • The atmosphere in the organization leads to project implementation. • Teachers need to have teaching skills for deliberate practice. There should be training of the teachers before implementation

Topics	Description
9. Evaluation of feasibility in practice	of deliberate practice. • The department has the tools and facilities needed to carry out the project. • Have the appropriate tools for evaluating the teaching of the project by process of checklists which come from brainstorm of experts and quality feedback. **Cost-benefit ratio** • Risks associated with the project: None. • The project implementation's benefits to the students are enhance their capabilities, try out their critical thinking skills, and improve their reflection skills (co-operate with teachers' feedbacks and peer feedbacks). • There is no cost of projecting implementation because the school of Nurse Assistant is one of departments in the Faculty of Medicine, Siriraj Hospital, Mahidol University. • The project can be used in teaching hours and, when applied, does not have to be difficult to perform but needs to be adjusted in terms of timelines and appropriate evaluation of the context of the practical nurse' students

Evidence No. 8

Title: Deliberate practice for the purpose of psychomotor skill acquisition: Nursing students and the motivational constraint.

Author: Chee JD.

Source of print / year: Published by ProQuest LLC.2015.

Topics	**Description**
1. Research Objectives	To evaluate methods for developing psychomotor skills with nursing students.
2. Research Methodology / Level of research	-Quasi- experimental research -Descriptive research **Credibility**: Level 6
3. Sample	Nursing students in a Bachelor's of Science (BS) in nursing program and Master's Entry Program in Nursing(MEPN) At a large University in the Pacific.
4. Instrument/ Statistics **4. Instrument/ Statistics**	**Instruments:** - Central Venous Catheter (CVC) Dressing change Procedure checklist (15 item skill checklist) - Self-Determination Index - Questions for focused interview **Statistics:** - One-way ANOVA - Two-way ANOVA - Linear Regression - Independent t-test - Mann-Whitney U test
5. Intervention	**Deliberate practice of psychomotor skills** **Intervention group:** 1. A two-minute video presenting the evidence-based standards of practice and the rationale for the measure was presented to the students.

Topics	Description
5. Intervention	2. Afterwards, the students became familiar with a static manikin with a center line and had access to the procedure video, a dressing change checklist, supplies, and the simulation facilitator. 3. Students practiced and reviewed the video until they could perform the dressing change to the standards described in the learning objectives, dressing change checklist, and observed in the video. 4. Students had time to reflect on their deficiencies and correct them; benefiting from the success or failure of each attempt. 5. The students repeated the steps as many times as it was necessary for each of them to perform the dressing changes with constant success. **Non-intervention group:** -Following the video the participants assigned to the group were provided an opportunity to practice the CVC dressing change and have access to the same resources as the intervention group. -Resources present were the video, the 15-item checklist, a summary of the procedure. -Facilitator did not provide immediate, formative feedback to the participant regarding performance. -After a minimum of 5 and maximum of 20 minutes the participant was asked to complete the dressing change while being scored by the researcher using the 15-item skill checklist.

Topics	Description
6. Results	-A statistically significant relationship was found between the mean skill test score of the intervention and comparison group. -Nursing students who were exposed to a deliberate practice intervention achieved a passing score (minimal competence) on a follow-up skill test, while those in the comparison group did not. -No statistically significant relationship was found between students' academic motivation and their test scores.
7. Compliance with issues	The study found that DP can be used in the teaching and learning process, thus students learn to enhance critical thinking skills and can practice more effectively.
8. The meaning or value of science	• This research is clearly applicable to psychomotor skill (Central Venous Catheter (CVC) Dressing change). • One-way ANOVA, Two-way ANOVA, Linear Regression, Independent t-test and Mann-Whitney U test was used to determine the validity of the questionnaire. • Research is reliable. Credible published sources by ProQuest, a multidisciplinary database that provides access to a variety of documents. It is the work of famous doctoral student of this institution, who seem to be studying while his or her work is in the process of publish.
9. Evaluation of feasibility in practice	**Transferability** • The teaching method of deliberate practice is accordance with agency to be used. • The target population in the research is similar to the population in the organization. • Teaching methods take appropriately time to implement and evaluate. It depends on the practice of skills to give perfection. Thus, it brings about prevention of harm to the patient. The students can be confidence enough before going to solve the patients' problems.

Topics	Description
9. Evaluation of feasibility in practice	• Based on the review of the research, psychomotor skill (Central Venous Catheter (CVC) Dressing change Procedure) can be used to develop the curriculum by practicing practical skills on key topics which cause no harm to patients. Moreover, we can use them in other important areas. • The purpose of this research is not different from the teaching objectives in the department. **Feasibility** • Teachers are free to conduct their teaching according to the deliberate practice. • School administrators support this kind of teaching project. • The atmosphere in the organization leads to project implementation. • Teachers need to have teaching skills for deliberate practice. There should be training of the teachers before implementation of deliberate practice. • The department has the tools and facilities needed to carry out the project. • Have the appropriate tools for evaluating the teaching of the project by process of checklists which come from brainstorm of experts and quality feedback. **Cost-benefit ratio** • Risks associated with the project: None. • The project implementation's benefits to the students are enhance their capabilities, try out their critical thinking skills, and improve their reflection skills (co-operate with teachers' feedback). • There is no cost of projecting implementation because the

Topics	Description
9. Evaluation of feasibility in practice	school of Nurse Assistant is one of departments in the Faculty of Medicine, Siriraj Hospital, Mahidol University. • It may be necessary to cooperate with the staff in order to use the room and training equipment, as well as to add more teachers to the students in training in case of expansion. • The project can be used in teaching hours and, when applied, does not have to be difficult to perform but needs to be adjusted in terms of timelines and appropriate evaluation of the context of the practical nurse' students.

Evidence No. 9

Title: Deliberate Practice with Standardized Patient Actors and the Development of Formative Feedback for Advance Care Planning Facilitators.

Author: Bond WF, Gonzalez HC, Funk AM, Fehr LS, McGarvey JS, Svendsen JD, et al.

Source of print / year: Journal of Palliative Medicine. 2017;20(06): 631-37.

Topics	Description
1. Research Objectives	Multimodal curricular assessment after adding standardized patient (SP) actor-based simulation to an advance care planning (ACP) facilitator training course and development of a formative feedback tool.
2. Research Methodology / Level of research	Descriptive research Credibility: Level 6
3. Sample	67 participants were primarily internal to the health network and volunteered for training in the simulation Augmented ACP facilitator course.

Topics	Description
4. Instrument/ Statistics	**Instruments**: -Pre–post multiple choice question test. -Survey of self-perceived confidence and competence. **Statistics:** -Pretest-Posttest. -Analysis of Paired t Tests
5. Intervention	**Deliberate practice of advance care planning (ACP)** 1. Pre-course video demonstration of ACP (18-minute) through an e-Learning platform that explains the ACP process, its value, and demonstrates several conversations. 2. Traditional lectures: advance care planning needs and ethical framework, the ACP model, practitioner orders for life-sustaining treatment, and legal considerations, including the power of attorney for healthcare form. 3. Four 30-minute simulations with SPs/ course (3minutes in the hall to read over the learning objectives and focus of the discussion, 12 minutes to interact with the actor, then 10 minutes to debrief.): - Simulation group sizes contained of two to four participants. Each learner had one to two opportunities to directly interact with the SP actor, while the learner observers used an anonymous observation checklist form purely to help keep them engaged. - Teachers observed the scenario and rated from behind a two-way glass. - The critical actions were noted by the faculty and drove qualitative feedback shared verbally. - Two of the debriefers were palliative care experts, other debriefers were clinical educators who had taken a faculty development course on debriefing techniques. 4. Knowledge was tested with a multiple choice question

Topics	Description
5. Intervention	(MCQ) test. 5. Skills were tested with standard post course/ post simulation evaluations. (The mini-CEX tool has 13 observation points, which should be demonstrable in any ACP discussion scored as observed versus not observed and five additional observation points that had a not applicable option, plus two to three case-specific items rated observed or not observed.) 6. Learners were surveyed pre/post/30–90 days delayed for self-perceived confidence.
6. Results	• Post-course evaluations were successful in meeting the learning objectives. • Training both didactic and simulation was found to have a significant positive effect on the likelihood of a correct response on the MCQ test. • Paired surveys of self-confidence across six domains were available for 65, 65, and 40 learners, respectively, with all competency areas showing a significant positive association from pre–post and pre-delayed time frame. • Self-perceived competence in discussing values and goals improved over time with 57% pre, 92% post, and 95% delayed choosing minimal supervision or independent. • Self-perceived competence with advance directives improved with 48% pre, 86% post, and 92% delayed choosing minimal supervision or independent. • Post-simulation session evaluations indicated increases in confidence managing each of the cases.
7. Compliance with issues	The study found that DP can be used in the teaching and learning process, thus students learn to enhance critical thinking skills and can practice more effectively.

Topics	Description
8. The meaning or value of science	• This research is clearly applicable to advance care planning (ACP). • Pre-test post-test, Analysis of Paired t Tests was used to determine the validity of the questionnaire. • Research is reliable. It was published by Nursing Journal of Palliative Medicine. (2017 RG Journal Impact: 1.34), ranked 4th for the Journal of Nursing on world stage.
9. Evaluation of feasibility in practice	**Transferability** • The teaching method of deliberate practice is accordance with agency to be used. • The target population in the research is similar to the population in the organization. • Teaching methods take appropriately time to implement and evaluate. It depends on the practice of skills to give perfection. Thus, it brings about prevention of harm to the patient. The students can be confidence enough before going to solve the patients' problems. • Based on the review of the research, advance care planning (ACP) can be used to develop the curriculum by practicing practical skills on key topics which cause no harm to patients and plan to care for patients effectively. • The purpose of this research is not different from the teaching objectives in the department. **Feasibility** • Teachers are free to conduct their teaching according to the deliberate practice. • School administrators support this kind of teaching project. • The atmosphere in the organization leads to project implementation. • Teachers need to have teaching skills for deliberate practice.

Topics	Description
9. Evaluation of feasibility in practice	There should be training of the teachers before implementation of deliberate practice. • The department has the tools and facilities needed to carry out the project. • Have the appropriate tools for evaluating the teaching of the project by process of checklists which come from brainstorm of experts and quality feedback. **Cost-benefit ratio** • Risks associated with the project: None. • The project implementation's benefits to the students are enhancing their capabilities, try out their critical thinking skills, and improve their reflection skills ((standardized with teachers' feedbacks). • There is no cost of projecting implementation because the school of Nurse Assistant is one of departments in the Faculty of Medicine, Siriraj Hospital, Mahidol University. • It may be necessary to cooperate with the staff in order to use the room and training equipment, as well as to add more teachers to the students in training in case of expansion. • The project can be used in teaching hours and, when applied, does not have to be difficult to perform but needs to be adjusted in terms of timelines and appropriate evaluation of the context of the practical nurse' students.

BIOGRAPHY

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