Effects of Active- learning to Enhance Expected Learning Outcome and Students' Satisfaction of Nursing Students in the Subject of Gerontological Nursing

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ABSTRACT: This research aimed to investigate the outcome of active-learning strategies implemented in nursing students who enrolled in gerontological nursing courses, which consisted of the expected learning outcome and students' satisfaction. Research samples were selected by using a purposive sampling technique. A total of 115 third-year nursing students studying at the Faculty of Nursing, Srinakharinwirot University, were included in this study. The instruments used were active-learning program which incorporated problem-based learning, case-based learning, concept mapping learning, learning from real situations, and innovation development. The expected learning outcome and the students' satisfactions instruments were collected by employing both quantitative surveys and open-ended questions. Data were analyzed by using descriptive statistics, that is, arithmetic means and standard deviation. The results revealed that: 1) All participants in this study achieved the aim of expected learning outcome in all 5 aspects of active learning in a gerontological nursing subject (60%) (M = 78.18, SD = 5.16). In terms of TQF dimensions, ethics and morals were presented as the second-highest percentage of the learning outcomes after utilising active learning strategies (99.67%), followed by communication and interpersonal skills (99.40%), and information technology skills (92.60%), respectively. 2) The mean of students' satisfaction related to teaching and learning management in the subject of gerontological nursing was in the high level (M = 4.14, SD = 0.43). Research results showed that active-learning strategies can enhance the learning of student and their satisfaction. In addition, the management of active learning can develop the expected learning outcome in a gerontological nursing subject. Nursing students who learn active-learning can accomplish educational achievement. Therefore, teachers should be encouraged to apply active-learning in the gerontological nursing subject.

Keywords: Active-learning, Expected learning outcome, Students' satisfaction of nursing students

Introduction

The increase in the ageing population in Thailand and around the world has resulted in health problems of the older people that are becoming more complex. Consequently, nurses with a bachelor's degree are required to possess knowledge and abilities to deal with the health problems of the older people effectively. Moreover, coupled with the changing situation according to socio-economic factors, employers expect new graduates to perform independent roles in the nursing profession immediately after graduation. For this reason, nursing programs should prepare their graduates to meet the needs of society and employers (Nawsuwan, Singhasem, & Naksrisang, 2017). Nursing institutions, likewise, have to adjust their teaching strategies and produce nursing graduates with critical thinking and problem-solving skills according to the National Qualifications Framework for Higher Education (TQF) and as announced by Thailand Nursing and Midwifery Council in the Bachelor's Qualification Standards of Nursing Science (Office of the Higher Education Commission, 2017).

Since the academic year 2018, the Faculty of Nursing, Srinakharinwirot University has updated its curriculum to meet international standards, following the curriculum quality assurance criteria of the ASEAN University Network - Quality Assurance (AUN-QA), which focuses on the expected learning outcome (ELO). This update is in line with rapid changes in technology and people's changing ways of life and builds confidence in the

society, hence confirming that the curriculum produces competent graduates that respond to the needs of prospective employers and stakeholders appropriately (The Working Group for the Promotion and Development of the Educational Quality Assurance System of Srinakharinwirot University, 2017).

The description of the gerontological nursing subject, offered by the Faculty of Nursing, Srinakharinwirot University according to the Bachelor Degree of Nursing (Revised Edition of 2017), includes topics of concepts and principles of nursing for the older people, policies, laws and ethical issues, health and social service systems, the concept of ageing theories, physiological, psychosocial and spiritual transformation processes, health assessment, use of the holistic nursing and nursing process for solving health problems and abnormal symptoms, symptom management, use of alternative medicine, drug administration, prevention of risks and accidents, health promotion, disease prevention, health rehabilitation as well as long-term and end-of-life care. Designed according to the Thai Qualifications Framework for Higher Education (TQF: HEd) 2009, this subject is compulsory for third year nursing students to enroll in the first semester and aims to achieve five areas of academic results that 1) morality and ethics: analyze the controversial arguments related to policy, law, and morality about elderly care, which resulted in making a proper decision; develop morality and ethics in the nursing profession. 2) knowledge: understand and be able to analyze nursing theories and concepts, 3) intellectual skills:apply elderly concepts and principles to provide proper care for aging people and further develop nursing innovation. 4) interpersonal skills, and 5) responsibility as well as numerical analysis skills, communication, and use of information technology use communication skills, share knowledge, cooperate with a team, and lead in developing elderly care. Consistent with the AUN-QA standards, the subject has additionally established expected learning outcomes that promote the evidence-based application of nursing and midwifery knowledge to nursing and midwifery practice to manage health problems with quality.

Strategically, Active-learning emphasized transferring knowledge directly from nurse lecturers to students by letting students learn and reflect on a real situation which includes morality and ethics, knowledge, and intellectual skill (Bonwell & Eison, 1991). Designing a study and activity plan with various learning and technic methods stimulates learners to participate in a study and encourages interaction between students to students and students to teachers that encompass interpersonal skills, and responsibility as well as numerical analysis skills, communication, and use of information technology. Active learning has been regarded as state-of-the-art in the nursing study (Candela, 2011; Michel, Cater, & Varela, 2009) that helps students and lecturers achieve the subject outcomes.

The research study in nursing education found that problem-based learning was effective in stimulating group discussions and helping learners communicate effectively. It helps encourage students to communicate effectively and can be used in future work. Students were also encouraged to have leadership and teamwork than study in a classroom. In addition, it could also improve cognitive skills and learning outcomes and develop clinical reasoning skills (Boonpleng et al., 2018). Case-based learning used case studies and small group discussions among nursing students to arouse them to think critically and exchange opinions. The benefits of this learning style not only help learners to be self-learning and also could use with a large number of students (Kosawanon, Rungamornrat, & Panbangpra, 2015) and concept mapping learning can encourage nursing students to practice the skills of critical thinking and clinical decision-making ability (Sangsongrit, 2016).

Instructional management strategies are, thus, a crucial mechanism that drives learners to achieve expected learning outcomes according to subject objectives. Educators in various disciplines have conducted research studies and confirmed that the active learning approach

encouraging learners to act and use the thinking process while performing activities (Bonwell & Eison, 1991) can enable the learners to obtain expected learning outcomes and critical thinking skills (Michel, Cater, & Varela, 2009). The approach is indeed important for nursing education (Candela, 2011; DeYoung, 2003) as it allows nursing students to develop themselves and their thinking processes, gain awareness and self-understanding, derive happiness from the positive learning process, have a positive attitude towards professional nursing education as well as develop skills necessary for the profession (Kunaviktikul, 2015).

Another method, which was developed by the Institute of Academic Development, is the GPAS 5 Steps that reinforced learning skills in the era of Thailand 4.0. The method emphasized self-learning by designing a process that specifies students not only arrange and summarizing knowledge in their format but also looking for the relationship between theories and what they learn. With this method, learners could apply the knowledge to solve problems in real situations and develop advanced thinking skills which are important for learners to work in a dynamic environment. (Institute of Academic Development, 2018; Untachai et al., 2020). The GPAS 5 Steps consists of a 5-stage thinking process as follows 1) Gathering is the stage where students gather and select important information that will be used in the development of innovation. 2) Processing is the stage concerning organizing information to create meaning through choosing to add values, virtues, values and creative design as well as deciding on the goal and the path that lead to success. 3) Applying 1 is the step in which students join together to plan and take action as well as examine and solve various problems to develop learning to the level of innovation. 4) Applying 2 is the stage where students summarize their knowledge at different levels up to the principle level and present it in a structured manner and 5) Self-regulation is the stage where students conduct an overall assessment of innovation to direct ideas and extend values into wider society and environment so that they can become autonomous learners (Institute of Academic Development, 2018). The learning process help learners build innovation and strengthen their morality and ethics which are consistent with the subject objective (Po Ngern et al., 2021). Therefore, the GPAS 5 Steps could lead lecturers and students to achieve the objectives and expectations of the nursing profession.

According to previous teaching experience occurring only in a classroom and one form of learning could not stimulate students enough to develop the necessary skills that are required in the 21st century. Although active learning has been used in nursing subjects, in this newly designed instructional management, every unit of classroom teaching and learning was developed to include active-learning. In addition, learning outside the classroom was initiated by incorporating innovation development activities for the older person based on the GPAS 5 Steps to provide knowledge and experience in elders nursing care covering gerontology and holistic nursing approach. This instructional management is in line with the framework of the American Association of Colleges of Nursing (American Association of Colleges of Nursing, 2010) that aims to provide students with the knowledge necessary to care for the older people so that they can perform essential nursing care and have a good attitude and morals and ethics in gerontological nursing.

This instructional management process puts the students accountable for their own learning, goals, and educational plans according to their aptitudes and abilities, promote their enthusiasm in participating in learning activities, and encourage them to do regular self-assessment of their progress (Barrow, 2000). This redesigned subject is, therefore, expected to enhance the expected learning outcomes of nursing students and promote their satisfaction with the new teaching approach. The results of the research will be a guideline for the development of effective teaching methods and nursing students who will become lifelong

learners and be able to apply nursing knowledge to the evidence-based nursing practice for the older people in order to manage health problems with quality. The objectives of this research were 1) to study the effects of the active learning approach used in the gerontological nursing subject on the expected learning outcomes of nursing students and 2) t o study the satisfaction of the students with the active learning approach used in the gerontological nursing subject. The research hypothesis was the active learning approach used in the gerontological nursing subject can enhance the expected learning outcomes of nursing students.

Research methodology

According to a review of the literature for this research, active learning has proved to provide empirical evidence that ensures students' achievement of the expected learning objectives of the gerontological nursing subject. Therefore, this research adopted the conceptual framework of instructional management using active learning that comprises problem-based learning, case study analysis, and concept mapping together with learning outside the classroom based on the concept of advanced thinking systems (GPAS 5 Steps) (Institute of Academic Development, 2018; Untachai et al., 2020).

For classroom learning, three methods were employed. The first method was problem-based learning (PBL), which promotes learner-centered instruction in which students learn from experiences and situations in solving problems and problems stimulate the students to seek knowledge and understanding for solving problems. Based on this method, the students without having studied or prepared in advance about such problems (Sinsawad, 2021) will practice solving the problems and searching for both basic and advanced knowledge and understanding (Srihawong, Vanichwatanavorachai, & Nancharut, 2020). The second method used was case study analysis. Based on this method, clinical case studies or situations were included in the classroom for the students to think critically and link their knowledge to practice in diagnosis and problem solving. In class, there were also discussions in which the students were involved in exchanging their learning experiences. The third method was concept mapping. This method allows the students to design a mind map to present the concept and the connection of conceptual frameworks by using a line as a link. This may be done individually or as a group work, followed by presentations in front of the class that allow other students to ask questions and make additional comments (Untachai et al., 2020).

For learning outside the classroom, real situations, and activities to develop innovative nursing care for the older person were used to support learning. This method was based on the concept of advanced thinking Systems (GPAS 5 Steps), one of the tools in active learning that promotes learning through a professional learning community (Professional Learning Community: PLC). The GPAS 5 Steps also allows the students to apply their knowledge to learning with real practice, hence an important tool to enhance their learning and self-study skills. The summary of the conceptual framework as shown in figure 1.

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┌─────────────────────────────────────────────┐          ┌──────────────────────────────┐
│        Active-learning instructional         │          │ 1. Expected learning outcomes│
│                 management                    │          │    of nursing students       │
│  1. Classroom learning                        │─────────▶│ 2. The students' satisfaction│
│       • Problem-based learning                │          │    with the instructional    │
│       • Case study analysis                   │          │    management of the         │
│       • Concept mapping                       │          │    gerontological nursing    │
│  2. Learning outside the classroom            │          │    subject                   │
│     Using the advanced thinking systems       │          └──────────────────────────────┘
│     (GPAS 5 Steps)                            │
│       G = Gathering                           │
│       P = Processing                          │
│       A = Applying and constructing the       │
│           knowledge                           │
│       A = Applying and communication skill    │
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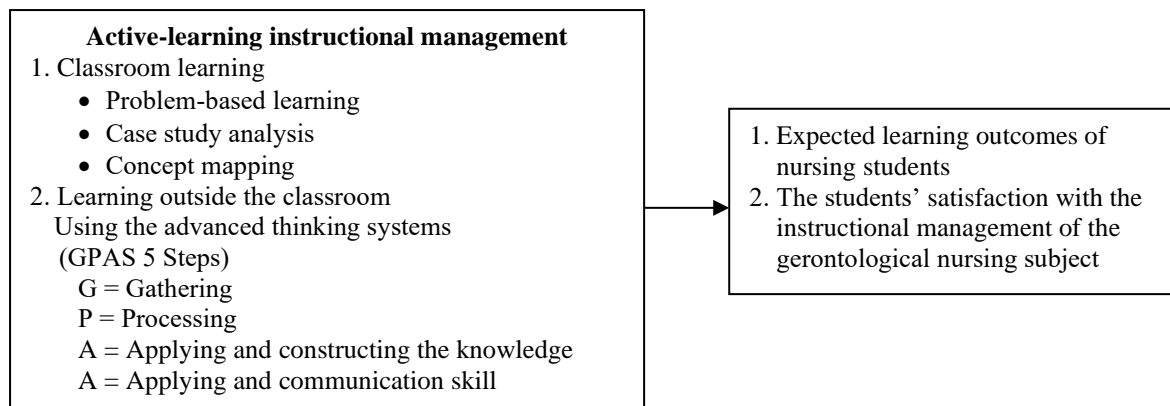
Figure 1 Conceptual framework for conducting research

This pre-experimental research was conducted using the one-group post-test design. It aimed to study the effects of active-learning in the gerontological nursing subject on the expected learning outcomes of nursing students and the students' satisfaction with the active-learning approach. Purposive sampling was employed to select the population of the research, who were 115 all of third-year nursing students of the Faculty of Nursing, Srinakharinwirot University and enrolled in the subject. With regard to exclusion criteria, any students who encountered problems, participated in less than 14 times of scheduled subject activities, and refused to answer the questionnaire were excluded from the study. A classroom learning comprised of PBL, case analysis, and concept mapping were used in teaching with big both groups and small groups which consisted of one teacher and 7– 8 students. An outside classroom learning was learning in the real situation at Charity Home for Destitute Elderly Women. The nursing students were divided into small groups and each group composed of one teacher per 7–8 students.

Research instruments

Two sets of instruments were used for conducting this research.
1. The instruments used for collecting data were divided into three parts as follows:
Part 1 is a questionnaire asking six general questions. The questionnaire consists of a fill-in-the-blank form seeking answers about respondents' age and grade point average (GPA), and multiple-choice questions about gender and religion. The students answer the questionnaire by themselves.
Part 2 is an assessment questionnaire about a respondent's satisfaction with the instructional management. It consists of 15 questions based on the 5-point Likert Scale, and one open-ended question seeking recommendations for the subject. The data from the open-ended question section were used as part of the discussion of research results. The students evaluate satisfaction by themselves.
Part 3 consists of an assessment form and a knowledge measurement test. Based on the 5-point Likert Scale, the form seeks the answers about the expected learning outcomes (ELO1) in five main areas: morality and ethics, knowledge, intellectual skills, interpersonal skills, and responsibility as well as numerical analysis skills, communication, and use of information technology. These learning outcomes assessment forms are the

standard forms of Nursing Faculty, Srinakharinwirot University which were developed by the Bachelor of Nursing Sciences Program Committee. The students were evaluated by each group consultant teacher.

The knowledge measurement test consists of 4 multiple choice questions, totaling 120 questions written by subject instructors and critically reviewed by 11 instructors in the field of adult and gerontological nursing. The item analysis of the knowledge measurement test has difficulty index (p) = 0.62 and disciminant index (r) = 0.25.

2. The instrument used in the experiment was an instructional management program for the gerontological nursing subject revised for the academic year 2019. To conduct the experiment, the following steps were taken: 1) analyzing the subject to establish subject content; 2) determining the components of knowledge or concept from the subject content; 3) developing a matrix that coordinates necessary knowledge components and organizing teaching activities as described in the following table 1.

Table 1 Active-learning instructional management program

Learning Method	Duration	Evaluation Method
Classroom learning (Using a variety of teaching methods) Allowing students to use listening skills and analyzing, synthesizing and evaluating skills as well as construct knowledge by themselves.	**Weeks 1-10** The instructors provided classroom instruction using the active learning approach that emphasized problem-based learning, case study analysis, and concept mapping for 3 hours per week, for a total of 30 hours.	The knowledge measurement test
Learning outside the classroom Using the GPAS 5 Steps G = Gathering P = Processing A = Applying and Constructing the knowledge A = Applying and Communication Skill S = Self – regulation	**Weeks 11-16** The instructors engaged students in learning from real situations and holistic nursing innovation development activities for the older person at Baan Sudthavas Chalerm Phra Kiatr Charity Home for Destitute Elderly Women in Nakhon Nayok Province for 3 hours per week, for a total of 15 hours. For this activity, the sample group was divided into sub-groups consisting of 7-8 people each for the students to gain learning experiences according to the steps to create holistic nursing innovations for the	1. The morality and ethics assessment form 2. The intellectual skills assessment form 3. The interpersonal skills assessment form 4. The responsibility as well as numerical analysis skills assessment form 5. The communication and use of information technology assessment form

Learning Method	Duration	Evaluation Method
	elderly. Each group was given one assignment. G = Having the students in each group assess the health status of one older person P = Analyzing the collected health data of the older person altogether and writing an action plan to create innovations to solve problems for the older person A = Using the developed innovations with the older person for further improvement of the innovations A = Improving the innovations to be suitable for the older person and presenting the development of holistic nursing innovations for the older person for 3 hours S = Self–regulation = Organizing an innovation contest and handing the innovations over to the older person	

Instrument quality check

1. The three parts of the research instruments were sent to three experts to test their content validity and language appropriateness. The expert team consisted of the following persons:

1.1 A nursing instructor who specializes in gerontological nursing

1.2 A nursing instructor who specializes in psychiatric nursing

1.3 A nursing instructor who specializes in community health nursing

2. After that, the researchers improved the quality of the instruments according to recommendations from the three experts.

3. After the instruments had been improved, they were validated for content validity of each item of the questionnaire after being reviewed by the reviewers. The accepted value of Content Validity Index (CVI) is expected to be greater than or equal to 0.80. According to the consideration of the consistency between the questionnaire and the definition or theoretical framework, the result of the calculation revealed the CVI value of 0.91.

Ethical consideration

The research project was approved by the Research Ethics Assessment Committee of Srinakharinwirot University according to the research project certificate SWUEC/E-295/2562. The researchers described the research objectives and data collection procedure and requested cooperation from the sample group to answer the questionnaire based on the principles of rights protection of the sample group, or in this case students, who have the right to participate or refuse to participate in this research and terminate their participation at any time without affecting their learning or the rights that they should receive. All answers and information will be kept confidential and presented as an overview only in this research. Before the beginning of the subject, the sample group was officially invited to participate in the project and the research objectives were clarified. During this stage, they were ensured they have the right to refuse to participate in this research as it will not affect their learning or the rights that they are entitled too.

Data collection

1. The researchers met with the target population before the beginning of the subject, described the research project in detail, distributed documents detailing the research project to them, and gave them time to ask questions. After they had understood the project clearly and been satisfied with the given information, they signed a consent form.
2. An orientation was arranged to clarify details about the research project and schedule the date, time, and place with them for data collection.
3. The researcher started an experiment and collected information through the following activities.
(1) In weeks 1-11, the instructors provided classroom teaching based on active learning for 3 hours per week, for a total of 30 hours.
(2) The instructors assessed their students' learning outcomes after classroom learning.
(3) In weeks 12-16, the instructors engaged their students in activities to develop holistic nursing innovations for the older people at Baan Sudthavas Chalerm Phra Kiatr Charity Home for Destitute Elder Women in Nakhon Nayok Province for 3 hours per week, for a total of 15 hours, using the GPAS 5 Steps.
(4) The instructors assessed their students' learning outcomes according to the GPAS 5 Steps.
(5) The instructors gave the students a test to assess their knowledge obtained from the subject and assessed their satisfaction with the instructional management at the completion of the subject.

Data analysis

1. The data about the expected learning outcomes of the sample group were analyzed by using frequency, percentage, mean, and standard deviation. The passing score was at 60 percent according to the criteria for the evaluation, and grading of nursing subjects in the Faculty of Nursing, Srinakharinwirot University, the revised edition of 2019.
2. The data about the students' satisfaction with the instructional management were analyzed by using frequency, percentage, mean, and standard deviation.

Research Results

1. Expected learning outcomes

The expected learning outcomes of the sample group consisting of 115 students met the passing criteria (60 percent), accounting for 100 percent (M = 78.18, SD = 5.16). The expected learning outcomes on morality and ethics achieved the highest score, followed by ones on interpersonal skills and responsibility as well as ones on numerical analysis skills, communication, and use of information technology, as shown in Table 2.

Table 2 Expected learning outcome scores of the sample group after using active learning, with the passing criteria at 60 percent and data analyzed by using frequency, percentage, mean, and standard deviation

No.	Learning outcomes	Full score	Lowest score	Highest score	Mean	Average percentage of scores by area	Standard deviation
1	Morality and ethics	3	2.5	3	2.99	99.67	0.07
2	Knowledge	65	34.3	55.7	46.20	71.08	4.72
3	Intellectual skills	22	15.5	21.0	19.40	88.18	1.01
4	Interpersonal skills and responsibility	5	3.6	5.00	4.97	99.40	0.09
5	Numerical analysis skills, ommunication, and use of information technology	5	4.5	4.80	4.63	92.60	0.08
	Total	100	64.1	87.30	78.18	78.18	5.16

2. Satisfaction assessment results

The overall satisfaction of the sample group with the instructional management of the subject was at a high level (M = 4.14). The greatest satisfaction of the students was found to be with the activities that enabled them to apply knowledge to real practice, followed by satisfaction with the instructors who had incorporated morals, ethics and professional ethics into teaching, satisfaction with clarifications about the subject objectives and the expected learning outcomes, as well as satisfaction with clarifications about the instructional management program and the evaluation criteria, respectively, as shown in Table 3

Table 3 The results of the assessment of the sample group's satisfaction with the instructional management of the gerontological nursing subject

Areas of satisfaction	Mean	Standard deviation	Satisfaction level	Order
1. Students were clarified about the objectives and the expected learning outcomes of the subject.	4.36	0.55	High	3
2. Students were clarified about the instructional management program and the evaluation criteria.	4.36	0.67	High	3
3. Students were clarified about the application of the subject knowledge in real conditions.	4.35	0,58	High	4
4. The instructors incorporated morals, ethics, and professional ethics into teaching.	4.38	0.60	High	2
5. Students engaged in activities to seek knowledge from various learning sources, both inside and outside the classroom.	4.18	0.76	High	7
6. Students had the opportunity to ask questions and receive advice from the instructors.	4.27	0.67	High	5
7. Students engaged in activities to exchange learning in this subject.	4.25	0.75	High	6
8. Students conducted activities that enabled them to apply their knowledge to real practice.	4.45	0.67	Highest	1
9. The learning materials were appropriate and easy to understand.	4.01	0.68	High	14
10. Students used information technology to promote learning.	4.05	0.62	High	13
11. The instructional process promoted the expected learning outcomes.	4.11	0.59	High	11
12. The assignments were suitable for learning.	3.86	0.76	Moderate	15
13. The evaluation criteria were appropriate.	4.09	0.66	High	12
14. Students were reflected on their learning outcomes while studying.	4.17	0.61	High	8
15. Overall satisfaction	4.15	0.63	High	9
Total	4.14	0.43	High	10

Discussion

This section presents and discusses the results of the effects of active learning on the expected learning outcomes and students' satisfaction in the gerontological nursing subject. Two major points are presented as follows:

1. The expected learning outcomes of the nursing students were found to meet the subject objectives. That is, 100 percent of the students achieved the expected learning outcomes (M = 78.18, SD = 5.16). The results confirmed that the active learning approach contributed greatly to their learning. This is because the subject was designed to incorporate active learning and a variety of teaching methods. This well-designed subject enabled them to develop innovations for the elderly and use advanced skills, including analysis, implementation, and evaluation skills. According to the results, the average expected learning outcome score was 78.18 percent. The active learning approach provided opportunities for the students to participate in collaborative learning, encourage them to be interested in learning, develop a good attitude towards the nursing profession as well as develop learning skills on morality and ethics, knowledge, intellectual skills, interpersonal skills and responsibility, numerical analysis skills, communication, and use of information technology as well as professional skills (Suapumee , Naksrisang , & Singhasem, 2015).

Learning in the 21st century requires a transformation of teaching style from the traditional passive model to an active model that allows learners to learn from real situations. Learning from real situations is essential for nursing education and also for students. This is because they must practice their analytical thinking and apply their knowledge from the theory to use during planning comprehensive nursing care for older people. Within the classroom, the PBL teaching model and case study analysis were used to promote analytical and problem-solving skills. Organizing students to be in small groups in the class allows them to participate in learning activities. In addition to this, classroom presentations can assist students with demonstrating leadership, teamwork, coordination, and communication skills. Besides, teachers also play a significant role in enhancing the competency of students during their learning process. The reason for this is that they are able to insert any moral and ethical topics more easily. The use of concept mapping can help learners crystallize their ideas and knowledge by themselves. Nevertheless, merely studying in the classroom may not be sufficient in the era of the 21st century. As a result, students were allowed to assess the problems and needs of older person outside the class in the real-life practice under the supervision of teachers. It is interesting to note that they could express and apply their knowledge from the classroom through the critical thinking method that was taught from the theory. Alongside this process, innovations have been created based on the needs and health problems of older people. Students had opportunities to try and adjust the innovations and their functions until the older people were satisfied. For illustration, a group of students began an initial assessment of the health status of an older person at their first appointment and identified that there was a risk of falling in this older person. After the first meeting with an older person, time was allowed for students to design which type of innovation could help this older person. With the time provided, they created a balance cushion to promote the ability to balance and muscle strength for the ageing group that was satisfied with this tool.

To sum up from aforementioned procedures, there were two main strategies that delivered the teaching activities. The first was learning in classroom. It comprised PBL, case analysis and concept mapping, which were used in teaching with both large groups and small groups of students, estimated that one teacher per 7 to 8 students. These learning methods encourage learners to acquire more knowledge, morality and ethics, intellectual skills, interpersonal skills, and responsibility. In addition, learning theories allow them to

participate in classroom activities and receive hands-on experiences in gerontological nursing according to the GPAS 5 Steps. The second strategy was learning in a real-world situation. The GPAS model reinforced numerical analysis skills, communication, and the use of information technology. Therefore, the GPAS model could lead lecturers and students to achieve the objectives and expectations of the nursing profession.

The results indicated that the instructional management model enhanced learning outcomes of gerontological nursing as they participated in every step of their learning process, thereby resulting in satisfactory learning outcomes. Based on this program, the instructors acted as facilitators who stimulated their students' learning as well as followed and assessed their progress. The results of this research were consistent with those of the study by Kiatkamjorn Kusol et al. (Kusol et al., 2017) who investigated the effects of problem-based learning and traditional teaching on students' problem-solving, critical thinking, and self-directed learning abilities. To illustrate, the students who were exposed to problem-based learning received higher scores in all aspects, including problem-solving ability, critical thinking ability, and self-directed learning ability because the instructional management that had allowed them to participate in activities helped stimulate their learning (Suttipong et al., 2015) On the other hand, students who were exposed to traditional teaching obtained lower scores on problem-solving ability and self-directed learning.

2. According to the results of the assessment of the sample group's satisfaction with the instructional management of the gerontological nursing subject, it was found that overall satisfaction was at a high level (M=4.14). The greatest satisfaction of the students was found to be with the activities that enabled them to apply knowledge to real practice (M=4.38), followed by satisfaction with the instructors who had incorporated morals, ethics, and professional ethics into teaching (M=4.36), satisfaction with clarifications the about the subject objectives and the expected learning outcomes (M=4.36) as well as satisfaction with clarifications about the instructional management model and the evaluation criteria (M=4.35), respectively.

Despite the overall high satisfaction, three issues were found to be least satisfied by the sample group. The three issues were concerned with assignments suitable for learning (M=3.86), the learning media appropriate and easy to understand (M=4.01) and the students' use of information technology to promote their learning (M=4.05), respectively. Overall, the satisfaction results agreed well with the information obtained from additional recommendations of the sample group, particularly when most of the students praised their group's instructors and advisors for their impressive roles. As a result, instructors and nursing supervisors should have a good attitude towards the older person and be excellent role models in clinical nursing practice towards the older person so that their students who will become registered nurses can learn from them and perform duties according to their models (Ankanawin et al., 2018).

In addition, the results revealed the sample group's additional comments about learning outside the classroom according to the GPAS 5 Steps. That is, the students indicated they were able to apply theoretical knowledge from the classroom to practice, gained more confidence in assessing the health and recognized problems of the older person, and adopted positive attitudes towards the older person. These results corresponded to the subject objectives that focus on students' ability to apply the evidence-based knowledge of nursing and midwifery to provide quality management of health problems. Therefore, the instructional management that aims for students to have a good attitude towards the older person and understand the individuality of the older person should engage the students in real situations (Garbarino & Lewis, 2020; Murray, 2018; Introntakun, 2014) as learning from real situations helps them understand elder care better. Expanding the learning process in the

gerontological nursing subject is, therefore, significant as it enables nursing students to have a positive attitude towards the elders (Salin et al., 2020; Okuyana, et al., 2018). Active learning is, indeed, a crucial process that enables the students who enrolled in the gerontological nursing subject to achieve the expected learning outcomes and subject objectives.

With regard to the least satisfaction issue about the assignments suitable for learning, some students asserted that they had been given too many assignments, hence contradicting the concept of active learning. To clarify, nursing subjects incorporated with active learning should not only focus on the teaching process and engaging students in the learning process but should also enable the students to manage stress, increase team working and support instructors (Magnavita & Chiorri, 2018). To deal with this issue properly, instructors should, therefore, consider giving suitable assignments.

In conclusion, the research results confirmed that the instructional management based on the active learning approach enabled the students to achieve the expected learning outcomes and great satisfaction with learning activities. For this reason, gerontological nursing subject, both in theory and practice, for the bachelor's degree program should aim to develop nursing students to be knowledgeable, be competent to care for the older person, and have a good attitude towards the older person (Ankanawin et al., 2018). The teaching and learning process should also be diverse and complete in terms of knowledge and provide students with the opportunity to experience caring for the older people during the subject. Furthermore, instructors must be knowledgeable and able to transfer knowledge and experience in gerontological nursing to their students effectively.

Conclusion

The expected learning outcomes of the sample group consisting of 115 students met the passing criteria. The limitation of this study was the assessment of the expected learning outcomes was merely based on the students' academic achievement and may not reflect reality. Therefore, the expected learning outcomes of the students' self-assessment should also be conducted. Finally, the researcher has the following suggestions.

1. Preparing students for the process of active learning and arranging supporting materials such as teaching media, textbooks, journals, and various searchable sources will help students learn more effectively.

2. For further research studies, a comparative study on the effectiveness of various active learning methods in gerontological nursing subject should be conducted. Furthermore, students' satisfaction with instructional management methods should be explored. These studies will be beneficial for improving teaching and learning methods that enhance students' learning.

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References

American Association of Colleges of Nursing. (2010). *Recommended baccalaureate competencies and curricular guidelines for the nursing care of older adults.* Retrieved September 10, 2018, from https://www.aacnnursing.org/Portals/42/AcademicNursing/CurriculumGuidelines/AACN-GeroCompetencies-2010.pdf

Ankanawin, U., Untaja, P., Bohplian, S., & Meeparn, A. (2018). The development of nursing Student to engage in gerontological nursing. *Journal of The Royal Thai Army Nurses, 19*(2), 95-102.

Barrow, H. S. (2000). *Problem-based learning applied to medical education* (Revised edition). Illinois: School of Medicine, Southern Illinois University.

Bonwell, C. C., & Eison, J. A. (1991). *Active learning: Creating excitement in the classroom. ASHEERIC Higher Education Report No. 1.* Washington, D.C.: George Washington University, School of Education and Human Development.

Boonpleng, W., Thiengtrongdee, A., Norapoompipat, A., Nammuang, S., Lumrod, N., & Hoikum, A. (2018). Effects of problem-based learning on course achievement among baccalaureate nursing students. *Journal of Nursing Science, 36*(4), 28-38.

Candela, L. (2011). Taxonomies and critical thinking in curricular design. In: Keating, S.B. (Ed.), *Curriculum Development and Evaluation in Nursing* (pp.71-86). New York: Springer Publishing Company.

DeYoung, S. (2003). *Teaching strategies for nurse educators*. Upper Saddle River, NJ: Prentice Hall.

Garbarino, J. T., & Lewis, L.F. (2020). The impact of a gerontology nursing course with a service-learning component on student attitudes towards working with older adults: *A Mixed Methods Study. Nurse Education in Practice, 42*:102684. doi: 10.1016/j.nepr.2019.102684. Epub 2019 Dec 4. PMID: 31931303.

Introntakun, K. (2014). The integration process of experiential learning, coaching, and positive development for developing the competency and pride in the profession of nursing students. *Kuakarun Journal of Nursing, 20*(2). Retrieved May 23, 2022, from https://he01.tci-thaijo.org/index.php/kcn/article/view/17459.

Institute of Academic Development. (2018). *GPAS 5 Steps*. Bangkok: Institute of Academic Development.

Kosawanon, S., Rungamornrat, S., & Panbangpra, S. (2015). Effect of case study teaching method on critical thinking in nursing students. *Journal of Nursing Science, 33*(3), 99-108.

Kunaviktikul, W. (2015). Teaching and learning in the discipline of nursing in the 21st Century. *Nursing Journal, 42*(2), 152-156.

Kusol, K., Somrak, K., Thuethong, C., & Hongsum, T. (2017). Effects of problem-based learning to enhance learning outcome in accordance with Thai Qualifications Framework for higher education of nursing students in the subject of leadership and nursing management. *Journal of Nursing and Education, 10*(3), 39–55.

Magnavita, N., & Chiorri, C. (2018). Academic stress and active learning of nursing students: A cross-sectional study. *Nurse Education Today, 68,* 128-133.

Michel, N., Cater. J. J., & Varela, J. (2009). Active versus passive teaching styles: An empirical study of student learning outcomes. *Human Resource Development Quarterly, 20*(4), 397-418.

Murray, R. (2018). An overview of experiential learning in nursing education. *Advance in Social Sciences Research Journal, 5*(1): 1- 6.

Nawsuwan, K., Singhasem, P., & Naksrisang, W. (2017). Essential competencies of registered nurses for the care of the elderly in an aging society. *Nursing Journal of the Ministry of Public Health, 27*(1), 1-11.

Office of the Higher Education Commission. (2017). *Thai Qualifications Framework for Higher Education (TQF: HEd) 2009*. Bangkok: Office of the Higher Education Commission.

Okuyana, C. B., Alkaya, S. A., Ayaz, S., & Sairanen, R. (2018). Finnish and Turkish nursing students' attitudes toward the elderly people. *Journal of Gerontology & Geriatric Research*, *7*(3), 476.

Po Ngern, W., Sithsungnoen, C., Nilapun, M., & Poomraruen, A. (2021). The effect of using the model to enhance the quality of teaching Based on learning according to GPAS 5 Steps to enhance students' learning skills in Thailand 4.0 of the elementary education. *Journal of Research and Curriculum Development, 11*(1), 22-35.

Salin, S., Hautsalo, K., Vänni, K., Seitsamo, S., & Yli-Koivisto, L. (2020). Finnish nurse students' attitudes towards older adults and the teaching of gerontological nursing – a survey study. *Nurse Education Today, 88*, 1-6.

Sangsongrit, N. (2016). Mind mapping: Critical thinking and clinical teaching. *Journal of The Thai Red Cross College of Nursing, 9*(1), 11-18.

Sinsawad, P. (2021). Learning management to develop cognitive skills of nursing students. *Journal of Research and Curriculum Development, 11*(2): 36-47.

Srihawong, P., Vanichwatanavorachai, S., & Nancharut, P. (2020). The development of critical thinking abilities of eighth grade students taught the Gpas. *Journal of Legal Entity Management and Local Innovation, 6*(6), 315- 329.

Suapumee, N., Naksrisang, W., & Singhasem, P. (2015). Effectiveness of the dengue hemorrhagic fever prevention and control program in community using a participatory learning process. *Nursing Journal of The Ministry of Public Health. 25*(1), 12-20.

Suttipong, P., Suttharangsee, W., Kongsuwan, V., Mamah, P., & Christraksa, W. (2015). Learning outcomes and teaching learning strategies in mental health and psychiatric nursing course as perceived by the second year nursing students. *Songklanagarind Journal of Nursing, 35*(2), 191-204.

The Working Group for the Promotion and Development of the Educational Quality Assurance System of Srinakharinwirot University. (2017). *Srinakharinwirot university quality assurance curriculum.* Bangkok: Quality Development Department, Srinakharinwirot University.

Untachai, T., Rojsaranrom, S., Saikaew, S., Nillapun, M., Kuharuengrong, N., Rojsaranrom, P., et, al. (2020). *The participatory action research to improve learning quality using active learning under GPAS 5 steps approach for increasing multiple intelligences and 21st century competences to Thailand 4.0.* Retrieved May 23, 2022, from http://www.iadth.com/downloadfile/0001.pdf