Eurasian Journal of Educational Research 98 (2022) 131-146

Eurasian Journal of Educational Research
www.ejer.com.tr

Factors Influencing the Achievement of Learning Outcomes Among Nursing Students: The Mixed-Method Study

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ARTICLE INFO

Article History:

Received: 13 October 2021

Received in revised form: 18 December 2021

Accepted: 27 February 2022

DOI: 10.14689/ejer.2022.98.09

Keywords

Teaching and Learning, Nursing Education, Practicum course, Mixed methods

ABSTRACT

Purpose: This study aimed to explore the perception factors influencing the achievement of learning outcomes (LOs) of the primary medical care practicum course (PMCPC) among the 4th year nursing students, of the Faculty of Nursing (FON), Srinakharinwirot University (SWU), Thailand. **Methods:** The convergent mixed method was used having the quantitative section of a population of 107 nursing students, where data were collected using a set of questionnaires on perceptions, and the achievement of LOs; while the qualitative study has a group of 35 informants, purposively selected, comprising 20 nursing students, eight instructors, and seven preceptors, from whom the data was collected using semi-structured interviews. The quantitative data was analyzed using descriptive statistics and multiple linear regression while the content analysis was sued to analyze the qualitative data, concurrently to confirm the quantitative data. **Findings**: The study found that more than half of nursing students (52.3%) achieved LOs of the PMCPC at a moderate level; the perceptions of nursing students and instructors also influenced the LOs achievement. **Implications for Research and Practices**: A continuous improvement of knowledge and professional and teaching skills of instructors may help students achieve LOs. Furthermore, the follow up of students' self-regulation and learning management competency of instructors are very important information for the course improvement.

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Introduction

The health needs of population have many limitations such as high cost, shortage of health personnel, or high expectations of customers on health services leading health personnel to strive to develop quality health services (Kruk, et al., 2018). To serve customers' health needs, it must be based on academic knowledge of quality health care (Boonpracom, Kunaviktikul, Thungjaroenkul, & Wichaikhum, 2019). In Thailand, the standard of health care is controlled by Thailand Nursing and Midwifery Council (TNMC). The council also regulates nursing education, service, research, and professional advancement. The council defines "professional nursing" as a person who teaches and advises on health, physical care, environment to alleviate disease, primary medical care, immunization, and assist physicians in treatment. To gain the knowledge and skills, the council designates the nurse's competency at each level of nursing education (TNMC, 2018). Consequently, professional nurses will be knowledgeable in nursing science, basic medical science, health assessment, health diagnosis, planning, implementation, and evaluation to provide customers with quality care (Rusli, et al., 2021).

Faculty of Nursing, Srinakharinwirot University (FON, SWU), one of the specialized units of government universities in Thailand, has the mission of producing nursing personnel at the bachelor level, with the aim that nursing personnel to be knowledgeable with professional skills on health care within the context of diverse health and society. Nursing education focuses on "the student as the center of learning," and the curriculum designed upon the concept of outcome-based education (OBE). It gives emphasis on achievement of student learning outcomes (LOs) of the curriculum based on individual differences. The curriculum is systemically developed using the six LOs mandated by the Thailand Qualifications Framework (TQF) namely, 1) Ethics and Morals, 2) Knowledge, 3) Cognitive skills, 4) Interpersonal skills and Responsibility, 5) Numerical Communication and Information technology skills, and 6) Professional Skills (Office of the Higher Education Commission [OHEC], 2017).

The LOs of the theoretical courses in SWU cover five dimensions while there are six dimensions for practicum courses. The information of measurement and evaluation of all courses aim at enhancing students' learning development with the support of instructors. In this paper, the emphasis was placed on the teaching and learning of the Primary Medical Care Practicum Course (PMCPC), for the 4th year nursing students, who practiced in health care settings off the SWU's campus with registered nurses as preceptors. The objective of the course was to enhance nursing students' competencies in patient history taking, physical examination, primary treatment of common symptoms problems, decision making on referral under professional law, ethics, and code of conduct (FON, SWU, 2017).

So far there is no study about LOs on PMCPC in the context of Thailand. To fill this research gap, the following research objectives were framed for this study: First, to explore the achievement of LOs of the PMCPC among nursing students; and second, to study perception factors influencing the achievement of LOs of the PMCPC among nursing students. The current study will prove a pioneering work to study factors influencing the achievement of LOs of nursing students registered for the PMCPC, and to test Astin's I-E-O model in their achievement. Astin's I-E-O model (I=input, E= environment, O =

outcomes) (Astin, 1993) explained the achievement of LOs (O) as the relationship between input (I) which was self-perception and the environment supporting learning (E). This model was adopted as the conceptual framework of this study.

One of the reasons for sampling the PMCPC for this study was that its management of teaching and learning focused on LOs as mandated by OHEC (OHEC, 2017). The process of the course management included 1) preparing practical sites with registered nurses as preceptors, making available cases of customers for study, and safety accommodation; 2) prior preparation for readiness to practice of nursing students by using scenarios, so that instructors learnt regarding student's capacities; and 3) instructors followed up with advice on the issues of academic knowledge, working with the interdisciplinary team, and living with colleagues during the course. It was found that each student showed different achievements of LOs resulting from oneself and the environment. The findings of the study would gear up the nursing students toward improving the LOs and become knowledgeable as well as conversant in practical skills to provide health care to customers.

Literature Review

Most previous studies on LOs dealt only with the knowledge domain and prior preparation for readiness to practice. Nursing students have expressed serious concerns about having inadequate knowledge leading to insecurity and going wrong in practice (Gemuhay, Kalolo, Mirisho, Chipwaza & Nyangena, 2019). They urge instructors to prepare them more strongly in the knowledge domain using a variety of teaching techniques as well as providing preceptors in health setting practices of the courses (Thongmeekhaun, Sateuw & Chuakompeng, 2018). Likewise, prior preparation of readiness in laboratory practices and experimentation enhance their competency in a real situation (Solvik & Struksnes, 2018) suggesting that the nursing students require more opportunities for practice and experimentation. This is consistent with (Makule & Kibusi, 2020) which showed an evaluation at the course completion for further development in terms of enhancing practical skills.

Studies have also revealed the perception of nursing students, influencing different LOs (Gemuhay, Kalolo, Mirisho, Chipwaza & Nyangena, 2018; Solvik & Struksnes, 2018; Thongmeekhaun, Sateuw & Chuakompeng, 2019; Mu & Fosnacht, 2019; Supena, Darmuki & Hariyadi, 2021). These studies are the evidence of the fact that there are several aspects that affects LOs including preceptors as a learning environment, prior preparation for readiness to practice and undoubtedly the nursing students as well as instructors who determine the LOs (Solvik & Struksnes, 2018). There are also studies about practicum courses which had been found significantly affecting nursing students' LOs along with courses on general clinical practice. However, these studies were conducted in other countries which have an educational system different from that of Thailand.

The studies from 2000 – 2010 revealed a change in the perception about LOs. The students at the college level were seen advancing with a different preparation of learning, which resulted in an obvious decrease in LOs, as in their perception there was assignment overload makingit hard to achieve LOs (Gerrish, 2000; Lizzio, Wilson & Simons, 2002; O'Shea, 2003; Blum, Borglund & Parcells, 2010). Similar findings are seen in studies that

show students' perception towards the environment of practical health settings and instructors affecting individual differences in LOs (Pimparyon, Roff & Mcaleer, 2000; Shelton, 2003; Sand-Jecklin, 2009; Robertson, Line, Jones & Thomas, 2000).

A few of the current studies (2018-2021) show that perception of oneself (objectives of the course, prior preparation to practice, being supplied with adequate practical knowledge, happiness in practice, and self-confidence) affect different LOs (Hassan, et al.,2021; Hyseni & Hoxha, 2018). The perception of nursing students on prior preparation to practice (knowledge and preparation of solving unexpected problems) affecting their LOs is also suggested in many studies (Kubota, Mukai, Yamada, Yoshino & Okamura, 2021; Mazanec, Ferrell, Malloy, Virani & Cormack, 2021). The perception of nursing students on instructors' expertise affecting different LOs are observed in other studies (Abbott & Palatnik, 2018; Mcmillan, Johnson, Parker, Hunt & Boyd, 2020). A few other studies have showed the perception of nursing students in practical health settings (convenient to travel and safe, available cases of customers, opportunities to practice) affecting LOs (Ahmed, Taha, Al-Neel & Gaffar, 2018; Woo & Li, 2020). However, a few studies showed no effect of the perception of nursing students on practical health settings or their environment on LOs (Chang, Chen & Hung, 2018; Brommelsiek & Peterson, 2020; García-Gámez, et al., 2020).

The Astin's I-E-O Model (Astin, 1993) has been adopted in several studies. The Input (I) is described as different characteristics of students when entering an institution; 2) Environment (E) means surroundings or conditions affecting the development of students that lead to 3) Outcomes (O) after being exposed to such an environment. Astin (1993) based this model on the premise that characteristics of students and instructors lead to different outcomes. It is noticeable in this model that environment is a mediating factor in moving students and instructors in the same direction. Thus, the model explains the relationship of input and environment to outcomes, commonly referred to as achievement of LOs.

Thailand Qualifications Framework (TQF) has mandated LOs of nursing students at the bachelor level into 6 dimensions, namely 1) Ethics and Morals, 2) Knowledge, 3) Cognitive skills, 4) Interpersonal skills, 5) Numerical Communication, and Information technology skills, and 6) Professional Skills. The first five dimensions apply to theoretical courses, and a total of six dimensions requires for those with practicum courses (OHEC, 2017). In compliance with TQF, the FON, SWU has designated six LOs in an updated curriculum (2017) including (1) ethics and morals cover honesty, discipline, punctuality, self-responsibility; (2) knowledge: having knowledge and understanding of primary medical care; (3) cognitive skills: be able systematically critical analysis of data to solve problems, the judgement of utilization of data in the critical analysis process; (4) interpersonal skills: having creative interpersonal relationship to clients, and/or colleagues, capable of working as team leader and team member, and be able to appropriately adapt to diverse situations; (5) numerical communication and information technology skills: be able to apply logic, mathematic and statistic to nursing, use information technology to search data; and 6) professional skills: nursing practice with holistic care, merciful, kind-hearted, and generosity based on law and patients' rights, individuality, and/or cultural diversity.

Conceptual Framework

The studies and their findings related to students' perceptions (practical health settings or their environment) on LOs truly conformed to the concept of Astin's I-E-O Model (Astin, 1993) which was used as the conceptual framework. The **I** in the model referred to nursing students, and their prior preparation for readiness to practice. Nursing students' information covered the information of demographic data and several characteristics as they entered SWU, experiences and tacit knowledge, and family's socioeconomic background. The **E** referred to instructors and practical health settings in the environment. The environment also included the body of knowledge, experiences, and learning inside and outside of the classroom during the student's life. Finally, **O** referred to the achievement of nursing students in the six dimensions in the PMCPC.

For the application and verification of the I-E-O model, the study formulated following four hypotheses:

H1: Perception of nursing would influence learning outcomes of the PMCPC
H2: Perception of prior preparation to practice would influence learning outcomes of the PMCPC
H3: Perception of instructors would influence learning outcomes of the PMCPC
H4: Perception of practical health settings would influence learning outcomes of the PMCPC

Figure 1 exhibits how the Astin's I-E-O model was used in this study to test the perception of nursing students to learning outcomes of the PMCPC:

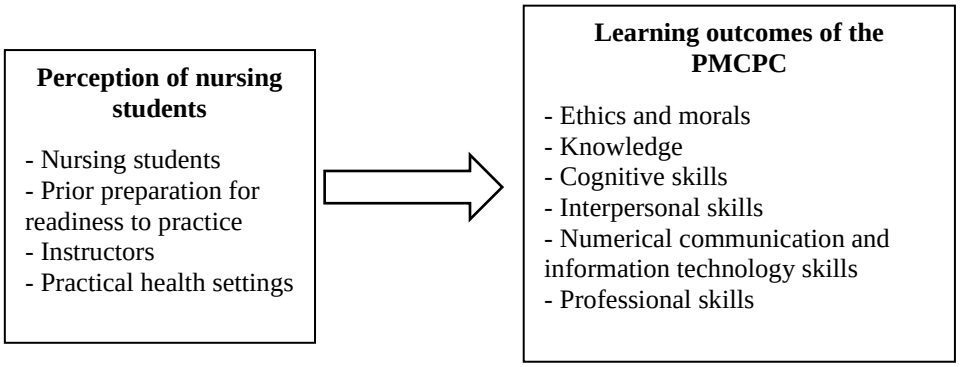

Figure 1: *Conceptual framework*

Method

- *Research Design*

The study used the convergent mixed method research design. Quantitative data and qualitative data were independently and concurrently collected until the completion of the data analysis of each method (Creswell & Plano Clark, 2018). The combination of both methods led to a better understanding of the research objectives. For the quantitative method, a self-administered questionnaire was employed to collect demographic data, nursing students' perceptions, and LOs. For the qualitative method, the in-depth interview of nursing students' perceptions and LOs helped in the triangulation of the quantitative data.

- *Research Sample*

The quantitative part of the research was conducted on a sample comprising a total of 107 4th year nursing students registered in the PMCPC. The qualitative study was administered on a total of 30 participants, including 20 nursing students, eight instructors, and seven preceptors in the practical health settings. The research was carried out from January 2021 to March 2021.

- *Research Instrument*

Two sets of research instruments were used for this study, namely a questionnaire and a semi-structured interview. The questionnaires had three parts: demographic data of nursing students, perception of nursing students, and achievement of LOs. The semi-structured interview included questions related to the perception of nursing students, and the achievement of LOs which the researchers developed from the literature review. Both the questionnaire and the semi-structured interview were approved for index of item objective congruence (IOC) by three experts in the field with a value of 0.70-0.98. The questions were modified as suggested by the experts. Its reliability was tested with a value of 0.89.

- *Data Analysis*

The quantitative data included two sections: (1) univariate analysis to demonstrate data distribution and to narrate demographic data of nursing students, perception of nursing students, and the achievement of LOs of PMCPC. It also used descriptive statistics containing frequency, percentage, mean, standard deviation, highest and lowest score (range); and (2) multivariate analysis to describe the influence of more than two dependent variables. To avoid the problem of multi-collinearity, multiple linear regression was used with the selected variables to enter the equation. With the hypothesis that four perceptions of nursing students would influence LOs of the PMCPC, it was found that each pair of variables should have a value of correlation no more than 0.75. This was counted as the complete analysis. For qualitative data, content analysis was performed and later its findings were triangulated with the descriptive analysis (Schreier, 2014).

Results

Most of the participants of this study were female (94.4%). Almost half of them intended to study nursing because it was easy to get a job (48.6%). In the achievement of grade point average (GPA), 37.4% of them showed between 3.00 and 3.24. The main objective of choosing this profession was its stability and being job oriented. This finding was confirmed by an interview informant:

> [we] *choose to study nursing because this career is stable and easy to get the job after graduation… many of my seniors have recommended it. However, it requires to study hard and earn a high GPA and pass* the *official examination. It is one of the most stable professions. That's why I made the decision to enroll in this faculty, and graduate in nursing* (*nursing student; 2021, interview*)

Regarding the perception of the nursing students, findings reveal that more than half of nursing students (52.3%) perceive the PMCPC at a high level (Table 1). The finding is similar to the finding of the qualitative data, as seen in the following an excerpt of an interview informant:

> [when] we go *to the practice site, we must behave responsibly , fully make use of our theoretical knowledge of high level, because we take with us the seal/name of our university, not only us. This is I always keep in mind…*" (*nursing students; 2021, interview*)

Table 1

Percentage of nursing students, classified by the level of perception (N=107)

Level of perception		Percentage
Low level	(≤ 60 points)	4.7
Moderate level	(61 – 80 points)	52.3
High level	(≥ 81 points)	43.0
Total		**100.0**

$\overline{X}$ = 81.24 S.D. = 9.59 Min = 38.00 Max = 100.00

Table 2 reveals that, among 4 dimensions of perception of nursing students, the mean scores of practical health settings were at a high level (84.0%), of instructors and prior preparation for readiness to practice were 81.2% and 79.5% respectively. The lowest scores were for nursing students (79.2%). It was confirmed by the finding of the qualitative data, as seen in the following excerpt from an interview informant:

> "*…most of the nursing students have a certain level of prior preparedness for readiness, especially in terms of academic knowledge. Each nursing student learn the theory of primary medical care, however, some of them cannot apply knowledge to practice. Some nursing students experience a patient who needs treatment, but they cannot apply the knowledge. Some nursing students like to start all over again which reflect inadequate prior preparedness for readiness…*" (instructor; 2021, interview)

Table 2

Mean **(** $\overline{X}$ **)**, *standard deviation* **(***S.D.***)**, *lowest scores* **(***Min***)**, *highest scores* **(***Max***)**, *and percentage of mean scores on the perception of nursing students* **(N=107)**

Perception of nursing students	$\overline{X}$	S.D.	Min	Max	Percentage of $\overline{X}$
1. Nursing students	19.8	2.6	9.0	25.0	79.2
2. Prior preparation for readiness to practice	15.9	2.3	7.0	20.0	79.5
3. Instructors	20.3	2.9	6.0	25.0	81.2
4. Practical health settings	25.2	3.3	15.0	30.0	84.0

Regarding the learning outcomes (LOs), findings showed that more than half of them (61.7%) had achieved LOs of the PMCPC at a moderate level (see Table 3). It conformed to qualitative data which also show that most nursing students achieve LOs without prior preparation for readiness to practice, and inadequate knowledge, competency, and professional skills. However, they learned it from preceptors in each practical health setting resulting in effective practice opportunity, as revealed in the following excerpt from an interview informant:

> "…*in the beginning, nursing students who come to practice were excited. They were often confused and could not ask questions to write a good report. Even history taking was in a roundabout way, they did not really understand. Later, a preceptor advised them how to organize the history taking, and they made very good progress in practice…*" (*preceptor; 2021, interview*)

Table 3

Percentage of nursing students classified by the achievement of LOs of the PMCPC (N=107)

Level of achievement		Percentage
Low level	(≤ 100 points)	9.3
Moderate level	(101 – 119 points)	61.7
High level	(≥ 120+ points)	29.0
Total		**100.0**

$\bar{X}$ = 112.39 S.D. = 13.2 Min = 81.00 Max = 135.00

The next step in this research was the determination of the percentage of 6 dimensions of LOs. It was found that most nursing students (86.0%) had a high mean value of the ethics and morals dimension (see Table 4). It reflected that nursing students paid respect to adults, patients, and appropriate manners. They had limitations in the knowledge of the PMCPC. It was like the results of qualitative data as seen in an interview excerpt:

> "…*most of the nursing students have good attention and they strive for practice. They have high discipline and pay respect to adults. However, the specific knowledge may not be as good as it should be. They missed information on history taking several times, so we often gave advice on some issues. Anyway, they have a high responsibility of their job and profession …*" (*preceptor; 2021, interview*)

Table 4

Mean ($\bar{X}$) *standard deviation* (*S.D.*) *lowest scores* (*Min*) *highest score* (*Max*) *and the percentage of the dimension of Los of the PMCPC* (N=107)

Dimension of LOs	$\bar{X}$	S.D.	Min	Max	Percentage of $\bar{X}$
1. Ethics and morals dimension	21.5	2.8	15.0	25.0	86.0
2. Knowledge	19.9	2.9	15.0	25.0	79.6
3. Cognitive skills	12.1	1.6	9.0	15.0	80.6
4. Interpersonal relationship	17.1	2.2	12.0	20.0	85.5
5. Numerical Communication and Information Technology	20.7	2.7	15.0	25.0	82.8
6. Professional skills	21.0	2.9	15.0	25.0	84.0

To test the Hypothesis 1 of the study, we focused on the factors influencing the achievement of LOs of the PMCPC. The findings showed the correlation of these variables and LOs was not over 0.75. For instance, the perception of nursing students had a positive influence on LOs of the PMCPC with the value of regression coefficient (b)= 1.656. It meant that as nursing students increased 1 unit of perception, the learning outcome of the PMCPC increased by 1.656 and thus H1 was proved.

In case nursing students perceived the achievement of practicum's objective, and they possessed an overview knowledge prior to practice, have appropriate handouts for practice, feel happiness in practice, and have self-confidence in caring for clients, it led to increasing of LOs of the PMCPC. This was like the result of qualitative data that some nursing lacked self-confidence prior to practice. As they entered the practical health setting, with the advice by seniors and having daily review knowledge. Later, they could smoothly apply knowledge to practice with happiness in performing health service, as revealed by an interview informant:

> "…*at first, I am not courageous to do a new thing. I am afraid of missing and being scolded. I am not the first one to do the thing, I let my friend do it first then I follow. However, after practicing I gain more courage to do it by myself because I have learned, and as seniors gave advice and suggestion, I understand more*…" (*nursing student; 2021, interview*)

To test the Hypothesis 2 of the study, the variable of perception of prior preparation for readiness to practice was found with no correlation/influence on LOs of the PMCPC with the value of regression coefficient (b) **=** 1.007**.** It meant that no matter if this perception was increased or decreased. It0020did not influence LOs. Hence, H2 was rejected.

It was like the result of qualitative data that all nursing students attended the whole period of the PMCPC orientation and training. Prior preparation for readiness to practice depended on their concentration and review of the information. In other words, nursing students must have self-perceived and understood the process of practice, as seen in the excerpt from an informant:

> "…*The faculty's orientation makes me understand more. In the beginning, I did not get what to do because of more assignments. I also did not understand the experience of cases and was confused that it was a repeat of the same case or a new case. As I learnt, I could see the difference between a case and a short case, not a case report. The orientation made me understand more*…" (*nursing student; 2021, interview*)

To test the Hypothesis 3 of the study that the variable of perception of instructors had a positive influence on LOs of the PMCPC, the value of regression coefficient (b) was measured **=** 0.930**.** It meant that as nursing students increased 1 unit of perception, LOs increased by 0.930**.** Thus, H3 was accepted.

In case when nursing students had an instructor or counsellor who could explain clearly about the process of practice as well as act as a guide. The instructor also kept on monitoring a student's performance, being a good listener, and helped in solving problems. It led to increasing in LOs. It was similar to the result of qualitative data as seen in the excerpt from the informant:

> "…*instructor asked me often about my understanding of a short case. We turn in the case during the first week of practice. The instructor gave a comment with further advice on the correction. In addition, instruction taught us how to access to database online of the main library and helped with search guidelines for long case group. I dare to say that instructor helped me gain more confidence because I am a kind of anxious person. The instructor approached me consistently; it made me easy to work. He gave me advice and coached me toward viewing different angles …*" (*nursing student; 2021, interview*)

To test the Hypothesis 4 of the study, the perception of the variable of practical health setting was seen with no correlation/influence on LOs of the PMCPC with the value of regression coefficient (b)= 0.605. It meant that no matter the perception of practical health settings increased or decreased. It did not influence the LOs. Hence, H4 was rejected.

From qualitative data, nursing students had a similar perception of practical health settings. The connection to the health care setting was monitored by the instructor in charge of the course, who transferred to nursing students the terms of the objectives of practice and their manners. Thus, there was no difference in nursing students' readiness for practice at any stage of learning, as also seen in an excerpt from the interview informant:

> "…*our practical site is ready in terms of cleanliness and good ventilation, safety, and convenience about Wi-Fi, internet. The instructor contacted us in advance and informed us about the necessary facilities, objectives of the course, and needs. Then the instructor will inform nursing students for mutual understanding in advance. Nursing students were quite well prepared for the practice, almost every class…*" (*preceptor; 2021, interview*)

In comparison with the influence of 4 dimensions of perception of nursing students from the calculated value of multiple regression value, it was found that the achievement of the LOs of PMCPC were mostly influenced by the perception of nursing students **(β =** 0.327**)**, and the perception of instructors **(β =** 0.206**)** (p = 0.01). All analyzed 4 dimensions of perception of nursing students explained statistically significant variation of LOs (p = 0.01), with the explanation of variation 57.1 % **(R^2 =** 0.571**) (see** Table 5**)**.

Table 5

Factors influencing the achievement LOs of the PMCPC

Independent variables	b	Beta (β)	Sig	Priority of influence
Perception on				
1. Nursing students	1.656	0.327	0.005	1
2. Prior preparation for readiness to practice	1.007	0.118	0.117	
3. Instructors	0.930	0.206	0.033	2
4. Practical health settings	0.605	0.151	0.129	
a	11.072			

R^2 = 0.571 F= 33.928 Sig of F = 0.000 n = 107

Discussion

This study aimed to explore perception factors influencing achievement of LOs in the PMCPC. First, while exploring the achievement of LOs of the PMCPC among nursing students, FON, SWU, the finding showed that most of the nursing students achieved all 6 dimensions of LOs of the PMCPC at a moderate level (61.7%). It can be explained that most of them had inadequate preparation of readiness before practice in terms of knowledge, competence, and professional skills. However, they had learned from good model preceptors during practice. Thus, it enhanced the efficiency of their practice. In addition, their perception of themselves led them to judge their capability so that they could clearly set their goals for the practice. In terms of the perceptions of instructors, nursing students accepted instructors' ability in guidance. They could also consult instructors as soon as they ran into barriers during practice. It was found that most nursing students (86.0%) had a high mean value of ethics and morals dimension. It could be explained that they went to practice in the real situation on behalf of the faculty. They worked with preceptors and staff of health care settings and patients that they must protect the reputation of the institution.

Second, to study perception factors influencing achievement LOs of the PMCPC among nursing students, FON, SWU. findings showed that factors influenced achievement of LOs were the perception on nursing students (β= 0.327)**,** and the perception on instructors (β = 0.206) (p = 0.01**)**. In terms of perception of themselves, nursing students perceived showed high competence resulting in achieving high LOs and vice versa. This finding conformed to previous studies that asserted that when nursing students perceived their own competence, they are able to control their mood or set the goals to be achieved (Bosveld et al., 2021; Liang, DiVeronica, Gelmon, Terndrup & Hasan, 2021). However, some nursing students were still in the process of finding themselves as they lacked self-confidence, were unable to make the decision in the situation leading and made errors during practice (Lee & Ahn, 2020; Stone, Cooke & Mitchell, 2020; Cheraghi, Hooshangian, Doosti-Irani & Khalili, 2021).

Perception of nursing students on instructors reflected that when nursing students had a good perception of instructors, it would lead to achieving high LOs in the course. Previous research showed that instructors with high ability, follow up and provide consulting to improve learning skills of students (Štemberger, 2020; Valaitis, et al., 2020; Chen, Sun & Jao, 2020). In addition, instructors with high ability and experience could transfer efficiently their knowledge as well as problem-solving methods. Other studies also pointed out that characteristics of instructors included communication skills, endeavor to understand students, habits, personality, and ability to affect practice performance of students; especially when students ran into unsolved situations during practice (Timizar-Le Pen, Marchand, Léocadie & Rothan-Tondeur, 2020; Nes, et al., 2020).

Perception towards prior preparation for readiness to practice had no influence on achievement LOs. In terms of perception of prior preparation for readiness to practice, the orientation program of the course made them comprehend what they had to do. It was confirmed in the study that preparation of academic skills such as training or provision of course manual resulted in indifference to the context of the course (Kubota, Mukai, Yamada, Yoshino & Okamura, 2021; Mazanec, Ferrell, Malloy, Virani & Cormack, 2021).

Finally, the perception of practical health setting had no influence on achievement LOs. Practical health settings were in both urban and rural areas and the context of the health care delivery system was unalike. It could be explained that nursing students perceived indifference of experiences from practical health settings due to previous notification by instructors to the sites. Consequently, each practical health setting recognized the objectives of the course. Additionally, preceptors of practical health settings proved as good role models for nursing students. This conforms to studies that showed factors affecting the practice ability of nursing students (Chang, Chen & Hung, 2018; Brommelsiek & Peterson, 2020; García-Gámez, et al., 2020).

Conclusion, Implications, and Limitations

It can be concluded that the achievement of the LOs in the PMCPC were at a moderate level. The factors influencing the achievement were the perception of nursing students and instructors. Moreover, the nursing students who believed in their own abilities and potential could create a goal for themselves. The instructor's competence and good pedagogy could also assist nursing students with advice when they encountered a problem in practicum. Last, but not the least, the findings of this study showed evidence that the concept of Astin's I-E-O model would be able to explain LOs, especially among nursing students enrolled on the PMCPC of nursing students. The findings also showed that two out of four dimensions of perception of nursing students influenced LOs thus accepting the concept of Astin's I-E-O model.

The study recommends that nursing students need to acquire self-regulation abilities in order to achieve successful continuous learning. For instructors, they should consistently develop their knowledge and soft skills to enhance their efficiency as the role of facilitators of the course, particularly, in consulting. The uncontrollable factor of the COVID-19 proved as a big limitation of the study. It shortened the time duration of practice which affected achievement of LOs. It is therefore required that future studies should focus on appropriate questionnaires and criteria fitting to such contingent situations.

References

Abbott, J. I. & Palatnik, B. R. (2018). Students' perceptions of their first accounting class: implications for instructors, *Accounting Education, 27*(1), 72-93. https://doi.org/10.1080/09639284.2017.1381032

Admi, H., Moshe-Eilon, Y., Sharon, D., & Mann, M. (2018). Nursing students' stress and satisfaction in clinical practice along different stages: A cross-sectional study. *Nurse education today, 68*, 86–92. https://doi.org/10.1016/j.nedt.2018.05.027

Ahmed, Y., Taha, M. H., Al-Neel, S., & Gaffar, A. M. (2018). Students' perception of the learning environment and its relation to their study year and performance in Sudan. *International journal of medical education, 9*, 145–150. https://doi.org/10.5116/ijme.5af0.1fee

Astin, A. (1993). *What matters in college? Four critical years revisited*. San Francisco: Jossey-Bass.

Blum, C., Borglund, S. & Parcells, D. (2010). High-Fidelity Nursing Simulation: Impact on Student Self-Confidence and Clinical Competence. *International Journal of Nursing Education Scholarship, 7*(1). https://doi.org/10.2202/1548-923X.2035

Bosveld, M. H., van Doorn, D. P. C., Stassen, P. M., Westerman, D., Bergmans, D. C. J. J., van der Horst, I. C. C., & van Mook, W. N. K. A. (2021). Lessons learned: Contribution to healthcare by medical students during COVID-19. *Journal of Critical Care, 63*, 113 – 116. https://doi.org/10.1016/j.jcrc.2020.09.015

Brommelsiek, M., & Peterson, J. A. (2020). Preparing Nurse Practitioner Students to Practice in Rural Primary Care. *The Journal of nursing education, 59*(10), 581 – 584. https://doi.org/10.3928/01484834-20200921-08

Boonpracom, R., Kunaviktikul, W., Thungjaroenkul, P., & Wichaikhum, O. (2019). A causal model for the quality of nursing care in Thailand. *International nursing review*, *66*(1),130 – 138. https://doi.org/10.1111/inr.12474

Chang, L., Chen, S. & Hung, S. (2018). Embracing diversity and transcultural society through community health practicum among college nursing students. *Nurse Education in Practice, 31*, 156 – 160. https://doi.org/10.1016/j.nepr.2018.05.004

Chen, S. L., Sun, J. L., & Jao, J. Y. (2020). A predictive model of student nursing competency in clinical practicum: A structural equation modelling approach. *Nurse education today, 95*, 104579. https://doi.org/10.1016/j.nedt.2020.104579

Cheraghi, F., Hooshangian, M., Doosti-Irani, A., & Khalili, A. (2021). The effect of peer support approach on communication skills of nursing students in pediatric clinical setting. *Nurse education in practice, 52*, 102984. https://doi.org/10.1016/j.nepr.2021.102984

Creswell, J. W., & Plano Clark, V. L. (2018). *Designing and Conducting Mixed Methods Research (3rd ed.)*. Thousand Oaks, CA: SAGE.

Dos Santos L. M. (2019). Rural Public Health Workforce Training and Development: The Performance of an Undergraduate Internship Programme in a Rural Hospital and Healthcare Centre. *International journal of environmental research and public health, 16*(7), 1259. https://doi.org/10.3390/ijerph16071259

Faculty of Nursing, Srinakharinwirot University. (2017). *TQF2, Bachelor of Nursing Science Program (revised program)*. Retrieved 30 July 2021, from http://academic.swu.ac.th/Portals/43/20.pdf

García-Gámez, M., Morales-Asencio, J. M., García-Mayor, S., Kaknani-Uttumchandani, S., Martí-García, C., Lopez-Leiva, I., León-Campos, Á., Fernandez-Ordoñez, E., García-Guerrero, A., & Iglesias-Parra, R. (2020). Adverse events encountered during clinical placements by undergraduate nursing students in Spain. *Nurse education today, 91*, 104480. Advance online publication. https://doi.org/10.1016/j.nedt.2020.104480

Gemuhay, H. M., Kalolo, A., Mirisho, R., Chipwaza, B., & Nyangena, E. (2019). Factors Affecting Performance in Clinical Practice among Preservice Diploma Nursing Students in Northern Tanzania. *Nursing research and practice, 2019*, 3453085. https://doi.org/10.1155/2019/3453085

Gerrish K. (2000). Still fumbling along? A comparative study of the newly qualified nurse's perception of the transition from student to qualified nurse. *Journal of advanced nursing, 32*(2), 473 – 480. https://doi.org/10.1046/j.1365-2648.2000.01498.x

Hassan, S.u.N.; Algahtani, F.D.; Zrieq, R.; Aldhmadi, B.K.; Atta, A.; Obeidat, R.M.; Kadri, A. (2021). Academic Self-Perception and Course Satisfaction among University Students Taking Virtual Classes during the COVID-19 Pandemic in the Kingdom of Saudi-Arabia (KSA). *Education Science, 11*(3), 134. https://doi.org/10.3390/educsci11030134

Hustad, J., Johannesen, B., Fossum, M., & Hovland, O. J. (2019). Nursing students' transfer of learning outcomes from simulation-based training to clinical practice: a focus-group study. *BMC nursing, 18*, 53. https://doi.org/10.1186/s12912-019-0376-5

Hyseni, D. Z. & Hoxha, L. (2018). Self-esteem, study skills, self-concept, social support, psychological distress, and coping mechanism effects on test anxiety and academic performance. *Health Psychology Open, 5*. https://doi.org/10.1177/2055102918799963

Kubota, R., Mukai, J., Yamada, M., Yoshino, Y., & Okamura, N. (2021). Evaluation of a New Home Patient Services Practicum for Community Pharmacy Students in Japan. *Pharmacy (Basel, Switzerland), 9*(3), 120. https://doi.org/10.3390/pharmacy9030120

Kruk, M. E., Gage, A. D., Arsenault, C., Jordan, K., Leslie, H. H., Roder-DeWan, S., Adeyi, O., Barker, P., Daelmans, B., Doubova, S. V., English, M., García-Elorrio, E., Guanais, F., Gureje, O., Hirschhorn, L. R., Jiang, L., Kelley, E., Lemango, E. T., Liljestrand, J., Malata, A., … Pate, M. (2018). High-quality health systems in the Sustainable Development Goals era: time for a revolution. *The Lancet Global Health*, *6*(11), e1196 – e1252. https://doi.org/10.1016/S2214-109X(18)30386-3

Lee, H. Z., & Ahn, S. M. (2020). The Influence of Learning Self-efficacy, Confidence in Performance of Fundamental Nursing Skills and Satisfaction with Practicum on Nursing Students' Satisfaction in major. *Journal of Digital Convergence, 18*(4), 251 –262. https://doi.org/10.14400/JDC.2020.18.4.251

Liang, S., DiVeronica, M. J., Gelmon, S. B., Terndrup, C. P., & Hasan, R. (2021). The Experiential Improvement Curriculum: Teaching Improvement Science to Preclinical Medical Students in Primary Care. *PRiMER (Leawood, Kan.), 5*, 12. https://doi.org/10.22454/PRiMER.2021.622810

Lizzio, A.J., Wilson, K.L., & Simons, R. (2002). University Students' Perceptions of the Learning Environment and Academic Outcomes: Implications for theory and practice. *Studies in Higher Education, 27*, 27 - 52. https://doi.org/10.1080/03075070120099359

Makule, C. Y. & Kibusi, M. S. (2020). Nursing Student's Perceptions on Formative Assessment Procedures and its Effects on Midwifery Module Performance: A Cross-Sectional Study among Diploma Nursing Students in Tanzania. *International Journal of Nursing Education, 12*(1), 136 – 141. https://doi.org/10.37506/ijone.v12i1.3723

Mazanec, P., Ferrell, B., Malloy, P., Virani, R., & Cormack, C. (2021). Preparing Advanced Practice Registered Nursing Students to Provide Primary Palliative Care. *Nurse educator, 46*(4), 221 – 224. https://doi.org/10.1097/NNE.0000000000000928

Mcmillan, L.R., Johnson, T.L., Parker, F.M., Hunt, C.W., & Boyd, D.E. (2020). Improving Student Learning Outcomes through a Collaborative Higher Education Partnership. The International Journal of Teaching and Learning in Higher Education, 32, 117-124. Retrieved February 15, 2022, from https://eric.ed.gov/?id=EJ1259548

Mu, L., & Fosnacht, K. (2019). Effective Advising: How Academic Advising Influences Student Learning Outcomes in Different Institutional Contexts. *The Review of Higher Education 42*(4), 1283 – 1307. https://doi.org/10.1353/rhe.2019.0066

Nes, A. A. G., Fossum, M., Steindal, S. A., Solberg, M. T., Strandell-Laine, C., Zlamal, J. & Gjevjon, E. R. (2020). Research protocol: Technology-supported guidance to increase flexibility, quality, and efficiency in the clinical practicum of nursing education. *International Journal of Educational Research, 103*, 101628. https://doi.org/10.1016/j.ijer.2020.101628

Office of the Higher Education Commission. (2017). *Manual for the Internal Quality Assurance for Higher Education Institutions 2014 : Office of the Higher Education Commission (OHEC)*. Retrieved February 20, 2022, from https://qm.kku.ac.th/downloads/hbMUA14en1.pdf

O'Shea, E. (2003). Self-directed learning in nurse education: a review of the literature. *Journal of advanced nursing, 43*(1), 62–70. https://doi.org/10.1046/j.1365-2648.2003.02673.x

Pimparyon, P., Roff, S.R., & Mcaleer, S. (2000). Educational environment, student approaches to learning and academic achievement in a Thai nursing school. *Medical Teacher, 22*, 359 – 364. https://doi.org/10.1080/014215900409456

Pitcher, G. (2015). *Theory of Perception.* Princeton: Princeton University Press. https://doi.org/10.1515/9781400873050

Robertson, M., Line, M.A., Jones, S.C., & Thomas, S. (2000). International Students, Learning Environments and Perceptions: A case study using the Delphi technique. *Higher Education Research & Development, 19*, 102 – 89. https://doi.org/10.1080/07294360050020499

Rusli, K. D. B., Tan, A. J. Q., Ong, S. F., Speed, S., Lau, Y., & Liaw, S. Y. (2021). Home-based nursing care competencies: A scoping review. Journal of clinical nursing. 1 – 15. https://doi.org/10.1111/jocn.16169

Sand-Jecklin, K. (2009). Assessing nursing student perceptions of the clinical learning environment: refinement and testing of the SECEE inventory. *Journal of nursing measurement, 17*(3), 232–246. https://doi.org/10.1891/1061-3749.17.3.232

Schreier, M. (2014). *Qualitative content analysis.* In U. Flick the SAGE handbook of qualitative data analysis. SAGE Publications, Inc.

Shelton, E. N. (2003). Faculty support and student retention. The Journal of nursing education, 42(2), 68–76. https://doi.org/10.3928/0148-4834-20030201-07

Solvik, E., & Struksnes, S. (2018). Training Nursing Skills: A Quantitative Study of Nursing Students' Experiences before and after Clinical Practice. *Nursing research and practice, 2018*. 8984028. https://doi.org/10.1155/2018/8984028

Štemberger, T. (2020). Educational Research Within the Curricula of Initial Teacher Education: The Case of Slovenia. *Center for Educational Policy Studies Journal*, *10*(3), 31 – 51. https://doi.org/10.26529/cepsj.871

Stone, R., Cooke, M., & Mitchell, M. (2020). Exploring the meaning of undergraduate nursing students' experiences and confidence in clinical skills using video. *Nurse education today, 86*, 104322. https://doi.org/10.1016/j.nedt.2019.104322

Supena, I., Darmuki, A., & Hariyadi, A. (2021). The Influence of 4C (Constructive, Critical, Creativity, Collaborative) Learning Model on Students' Learning Outcomes. I*nternational Journal of Instruction, 14*(3), 873 – 892. https://doi.org/10.29333/iji.2021.14351a

Thailand Nursing and Midwifery Council (TNMC) (2018). *The announcement of the competency of graduated on bachelor, master, and doctoral degree in nursing; advanced training program/approved documents of nursing and midwifery specialty. Nonthaburi: TNMC The Ministry of Public Health.* (Printed in Thai) Retrieved 30 July 2021, from https://www.tnmc.or.th/images/userfiles/files/004.pdf

Thongmeekhaun, T., Sateuw, S. & Chuakompeng, A. (2018). Perception of Students and Preceptors towards Clinical Skills Regarding Basic Medical Treatment among Nursing Students, Boromarajonani College of Nursing, Songkhla. *Nursing Journal of The Ministry of Public Health, 27*, 131 – 143. https://he02.tci-thaijo.org/index.php/tnaph/article/view/112272

Timizar-Le Pen, T., Marchand, C., Léocadie, M., & Rothan-Tondeur, M. (2020). Reflective writing: Implementation and learning perception from students and teachers of French nursing schools. *Nurse education in practice, 49*, 102921. https://doi.org/10.1016/j.nepr.2020.102921

Valaitis, R., Gaber, J., Waters, H., Lamarche, L., Oliver, D., Parascandalo, F., Schofield, R., & Dolovich, L. (2020). Health TAPESTRY: Exploring the Potential of a Nursing Student Placement Within a Primary Care Intervention for Community-Dwelling Older Adults. *SAGE open nursing, 6*, 1 – 12. https://doi.org/10.1177/2377960820909672

Woo, M., & Li, W. (2020). Nursing students' views and satisfaction of their clinical learning environment in Singapore. *Nursing open, 7*(6), 1909–1919. https://doi.org/10.1002/nop2.581