

Learning factors affecting the development of 21st century skills of nursing students

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Abstract

Background: 21st Century skills are important abilities that today's nursing students need to succeed in their careers during the Information Age.

Objectives: This study aimed to examine 1) the 21st century skills of nursing students, 2) the relationship between learning factors and the 21st century skills, and 3) the predictors of the 21st century skills.

Methods: This descriptive study used a stratified random sampling technique to recruit 172 nursing students from Boromarajonani College of Nursing, Sawanpracharak Nakhonsawan. The questionnaires about learning factors and 21st century skills were used to gather the data. The reliability by Cronbach's alpha coefficient was .89 and .87, respectively. Data were analyzed by using Pearson's correlation coefficient, Chi-square, and Stepwise multiple regression.

Results: The findings in this study demonstrated that: 1) the 21st century skills of nursing students were at a good level ($\bar{X} = 3.94$). Their learning & professional skills, ICT skill, and creative thinking & innovative skills were 4.15, 4.12, and 3.66, respectively. 2) The ten learning factors - learning styles, learning motive, self-directed learning, relationships among friends, curriculums, teaching quality, supervision systems, students' activities, learning environment, and classroom atmosphere, were correlated with the 21st century skills of nursing students at a significant level ($r = .54, .56, .60, .54, .62, .57, .53, .51, .44, \text{ and } .63$ respectively, $p < .01$). 3) The predictors were learning environment, self-directed learning, quality of teaching, and learning styles. These four predictors explained approximately 57.30 % of the variance in the 21st century skills of nursing students. The predictive equation was written as 21st century skills = $0.89 + .277$ learning environment + $.210$ SDL+ $.143$ quality of teaching+ $.155$ learning styles.

Conclusions: The findings of this study lead to recommendations that providing nursing students with a good learning environment and promotion of their self-directed learning competency could help them to develop 21st century skills.

Keywords: 21st century skills, nursing students, learning factors

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ปัจจัยสนับสนุนการเรียนรู้ที่มีอิทธิพลต่อทักษะการเรียนรู้แห่งศตวรรษที่ 21 ของนักศึกษาพยาบาล

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บทคัดย่อ

บทนำ: ทักษะแห่งศตวรรษที่ 21 เป็นหัวใจสำคัญของความสำเร็จที่นักศึกษาพยาบาลต้องพัฒนาอย่างต่อเนื่องในยุคสารสนเทศ

วัตถุประสงค์การวิจัย: เพื่อหาปัจจัยสนับสนุนการเรียนรู้ที่ทำนายทักษะการเรียนรู้แห่งศตวรรษที่ 21 ของนักศึกษาพยาบาล

วิธีการวิจัย: การวิจัยเชิงพรรณานี้คัดเลือกนักศึกษาจากวิทยาลัยพยาบาลบรมราชชนนี สวรรค์ประชารักษ์ นครสวรรค์ จำนวน 172 คน เป็นกลุ่มตัวอย่างโดยการสุ่มแบบแบ่งชั้น เก็บข้อมูลโดยแบบสอบถามปัจจัยสนับสนุนการเรียนรู้ และแบบประเมินทักษะแห่งศตวรรษที่ 21 ความเชื่อมั่นของแบบสอบถามเท่ากับ .89 และ .87 ตามลำดับ สถิติที่ใช้คือ ค่าสัมประสิทธิ์สหสัมพันธ์แบบเพียร์สัน และการวิเคราะห์ถดถอยพหุคูณแบบขั้นตอน

ผลการวิจัย: 1) ทักษะแห่งศตวรรษที่ 21 ของนักศึกษาพยาบาล อยู่ในระดับดี ($\bar{x} = 3.94$) โดย ทักษะอาชีพและทักษะการเรียนรู้/ทักษะด้านคอมพิวเตอร์ เทคโนโลยีสารสนเทศและการสื่อสาร/ ทักษะด้านการคิดสร้างสรรค์และนวัตกรรม มีคะแนน 4.15, 4.12 และ 3.66 ตามลำดับ 2) ปัจจัยสนับสนุนการเรียนรู้ คือ พฤติกรรมการเรียน แรงจูงใจในการเรียนรู้ ความสามารถในการเรียนรู้แบบนำตนเอง ความสัมพันธ์ระหว่างกลุ่มเพื่อน หลักสูตรการศึกษา คุณภาพการสอนของอาจารย์ ระบบอาจารย์ที่ปรึกษา กิจกรรมนักศึกษา สภาพแวดล้อมในการเรียนรู้ และบรรยากาศการเรียนรู้ มีความสัมพันธ์กับทักษะแห่งศตวรรษที่ 21 ของนักศึกษาพยาบาล อย่างมีนัยสำคัญทางสถิติที่ระดับ .01 ($r = .54, .56, .60, .54, .62, .57, .53, .51, .44, \text{ และ } .63$ ตามลำดับ) 3) ตัวแปรทำนายทักษะแห่งศตวรรษที่ 21 ของนักศึกษาพยาบาล คือ บรรยากาศการเรียนรู้ ความสามารถในการเรียนรู้แบบนำตนเอง คุณภาพการสอนของอาจารย์ และพฤติกรรมการเรียน สามารถทำนายทักษะแห่งศตวรรษที่ 21 ของนักศึกษาพยาบาลได้ร้อยละ 57.30 สมการทำนายทักษะแห่งศตวรรษที่ 21 ของนักศึกษาพยาบาล คือ ทักษะการเรียนรู้แห่งศตวรรษที่ 21 = .89 + .277 บรรยากาศการเรียนรู้ + .210 ความสามารถในการเรียนรู้แบบนำตนเอง + .143 คุณภาพการสอนของอาจารย์ + .155 พฤติกรรมการเรียน

สรุปผล: การสร้างบรรยากาศที่เอื้อต่อการเรียนรู้ และส่งเสริมทักษะการเรียนรู้แบบนำตนเอง ช่วยให้นักศึกษาพัฒนาทักษะการเรียนรู้แห่งศตวรรษที่ 21

คำสำคัญ: ทักษะแห่งศตวรรษที่ 21 นักศึกษาพยาบาล ปัจจัยสนับสนุนการเรียนรู้

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Introduction

Social changes in the fields of technology, economy, and cultural transformation have come together to give rise to a new form of society in the 21st century. In order to prepare nursing students for all of these changes, educators have to design a curriculum that will help them to develop their 21st century skills and connect with the world. 21st Century skills are important abilities that today's nursing students need to succeed in their careers during the Information Age.¹

In order to prepare health science students to play their role in the 21st century society, World Health Organization claimed that a health education model for 2010-2013 should be transformative education². Furthermore, The Thai Ministry of Education had announced the 12th national education plan (October 1st, 2016- September 30th, 2021) to develop the quality of life of the Thai people. These mean that Thai citizens should have knowledge, skills, and moral integrity with good quality of life and happiness. Learning is about discovery, not the memorization of facts. Instead of passively receiving information, the students would gather information on their own, under the guidance of their teachers. Different learning styles are encouraged. Students have an enhanced sense of motivation and responsibility. They engage in many different types of hands-on

activities, as well as demonstrating learning in many different ways. They also should have 21st Century skills³.

From social and cultural changes of 21st Century, the learning process methodology of nursing study needs to change. The aim of nursing study is to prepare registered nurses who are knowledgeable and well learned workers with 21st Century skills. Due to the fact that there is always an expectation that graduated nurses had to be knowledgeable and skillful. This group of people should have the ability to think clearly and rationally about what to do or what to believe. They also need to have cross-cultural understanding in order to work with all groups of patients. Thus, nursing education needs to have a clear strategy for preparing nurses for the future.⁴

Since 2009, there were many changes in the nursing curriculum of Praboromarajchanok Institute. The new health concepts, social science and humanized care are integrated into the teaching and learning activities across the entire curriculum. The concepts of student centeredness and authentic learning are also included to facilitate the production of knowledgeable and professionally competent personnel with critical thinking, clinical decision making, and lifelong learning skills.⁵ However, findings of a previous study about 21st Century skills of nursing

students in Boromarajonani College of Nursing during 2008-2009 indicated that their critical thinking skills were at fair level.⁶

All of the above, the researchers were interest in a relationship between the learning factors and the 21st century skills of nursing students in Boromarajonani College of Nursing, Sawanpracharak Nakhonsawan. Findings of this study could be baseline information to develop a new learning process methodology promoting 21st Century skills of nursing students.

The present study aimed to examine
1) the 21st century skills of nursing students,
2) the relationship between the learning factors and the 21st century skills, and 3) the predictors of the 21st century skills.

Methodology

A research framework of this descriptive research based on Trilling & Fadel concept of 21st century skills.⁷

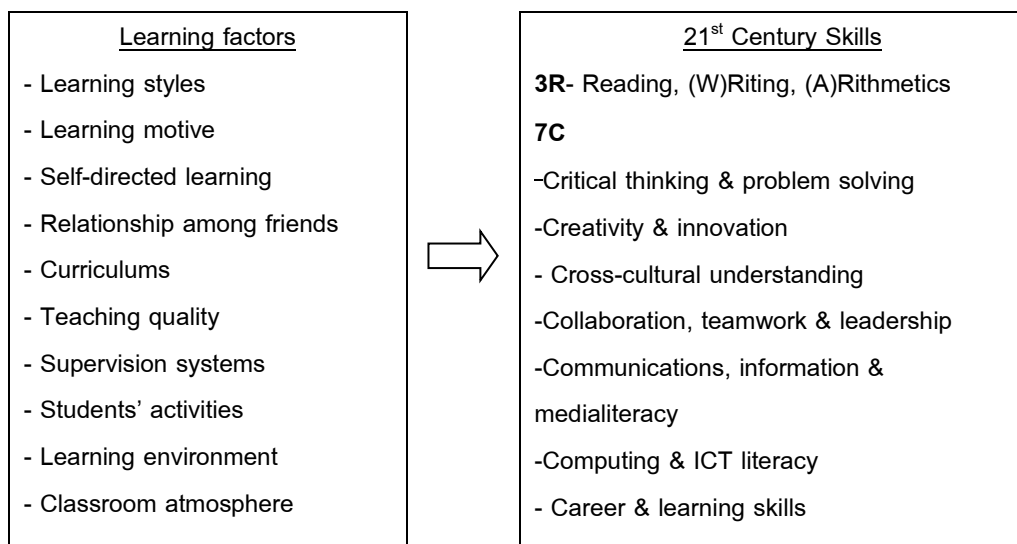


Diagram 1. Research Framework

Research Tool

A questionnaire was used to gather data from 172 participants over July 2018. This questionnaire was composed of 3 parts:

Part 1. Socio-demographic data: there were 4 multiple choice questions about gender, age, academic year, and grade

point average.

Part 2. The questionnaires about learning factors by Jaratsri Petchkong⁸ composed of 10 items and 76 questions. The details of each item are present as follows:

There were 10 questions for students' learning styles, 10 questions for learning motive, 11 questions for self-directed learning, and 8 questions for relationship among friends. Furthermore, there were 8 questions for teachers' teaching quality, 9 questions for curriculums, 5 questions for supervision systems, 5 questions for students' activities, 5 questions for learning environment, and 5 questions for classroom atmosphere.

All questions were 5-Rating Scale. Scoring values were customizable, but would typically be as follows;

- 4.50 - 5.00 = Exceptional
- 3.51 - 4.49 = Exceeds expectations
- 2.51 - 3.50 = Meets expectations
- 1.51 - 2.50 = Development Required
- 1.00 - 1.50 = Improvement Required

Part 3. The questionnaires about 21st century skills of nursing students by Kamolrat Turner⁹ based on Trilling & Fadel concept of students' 21st century skills had 8 items with 63 questions. The details of each item are present as follows:

There were 11 questions for 3R- Reading, (W)riting, (A)rithmetics, 8 questions for critical thinking & problem solving, 6 questions for Creativity & innovation, 4 questions for Cross-cultural understanding, 9 questions for Collaboration, teamwork & leadership, 8 questions for Communications, information & media literacy, 7 questions for

Computing & ICT literacy, 10 questions for Career & learning skills.

All questions were 5-Rating Scale. Scoring values were customizable, but would typically be as follows;

- 4.50 – 5.00 = Excellent
- 3.51 – 4.49 = Very Good
- 2.51 – 3.50 = Good
- 1.51 – 2.50 = Fair
- 1.00 – 1.50 = Poor

Reliability and validity of the questionnaire

Content validity of the questionnaire was done by 3 experts (IOC=0.8). It was piloted in a group of 30 students having similar characteristics to the potential participants. The questionnaire was revised several times before data collection taking place. The reliability by Cronbach's Alpha Coefficient was .89 and .87.

Populations and Participants

Populations in the present study included 741 nursing students from Boromarajonani College of Nursing, Sawanpracharak Nakhonsawan. They were studying in the second term of academic year 2017. There were 249 students in the 1st year, 192 in the 2nd year, 165 in the 3rd year, and 135 in the 4th year.

Participants: the process of sample selection in this study was based on stratified random sampling. A sample size was calculated by using Power Analysis.¹⁰

The intended power of the test was .80 and the significance level of the test was .01. The potential participants in this study were 172 nursing students.

Ethical considerations

The study was approved by the Research Ethics Committee of Nakhon Sawan provincial public health office No. NSWPHO-027/61 on 29th June 2018.

Data collection

Potential participants were approached by the researchers in a classroom. They were given information about the research project, the purposes of the study, what they would be asked to do, the possible outcomes of participating in the study, anonymity and confidentiality, and the right to withdraw at any time without negative repercussions. All participants were given an opportunity to ask or discuss unclear points with the researchers. After that, the researcher left potential participants to make a decision about participation. Then, they returned to ask for their decision. Informed consent was obtained from all participants before they start filling the questionnaires. The researchers gave potential participants 30 minutes to fill their own questionnaires. After that they returned to collect and check a completion of the questionnaire.

All data were anonymised. Each participant was assigned a code known only

to the researchers. The personal details were stored separately.

Data analysis

Frequency, Percentage, mean, standard deviation, Pearson's correlation coefficient, Chi-square, and Stepwise multiple regression were selected to analyse the data.

Results

Findings in the present study demonstrated that:

1. Most of the sample were female (97.10%), male (2.90%) and had grade point average between 2.51 – 3.00 (43.00%).

2. The learning factors were at good level ($\bar{X} = 3.92$). There were supervision system ($\bar{X} = 4.18$), quality of teaching ($\bar{X} = 4.11$), and learning environment ($\bar{X} = 3.62$) respectively.

3. The 21st century skills of nursing students were at good level ($\bar{X} = 3.94$). Their learning & professional skills, ICT skill, and creative thinking & innovative skills were 4.15, 4.12, and 3.66 respectively.

4. The learning factors- learning styles, learning motive, self-directed learning, relationship among friends, curriculums, teaching quality, supervision systems, students' activities, learning environment, and classroom atmosphere- were correlated with the 21st century skills of nursing students at the significant level of .01 ($r = .54, .56, .60, .54, .62, .57, .53, .51, .44, \text{ and } .63$ respectively).

Table 1 Pearson's product moment correlation coefficient between learning factors were correlated with the 21st century skills of nursing students

Factors	21 st century skills
	r
Learning styles	.54**
Learning motive	.56**
Self-directed learning	.60**
Relationship among friends	.54**
Curriculum	.62**
Teaching quality	.57**
Supervision systems	.53**
Students' activities	.51**
Learning environment	.44**
Classroom atmosphere	.63**

*p < .05, **p < .01

5. The predictors were learning environment, self directed learning, quality of teaching, and learning styles. These 4 predictors explained approximately 57.30 % of the variance in the 21st century skills of

nursing students. The predictive equation was written as 21st century skills = .89 +.277 learning environment +.210 SDL + .143 quality of teaching +.155 learning styles.

Table 2 The predictor variables

Variables	r		t
	b	Beta	
Constant (a)	.89		4.31**
Learning environment	.277	.37	6.04**
Self directed learning	.21	.26	3.59**
Teaching quality	.14	.18	2.88**
Learning styles	.155	.17	2.42*
F	58.37**		
R ²	.58		
Adjust R ²	.57		

*p < .05, **p < .01

Discussion

Findings in the present study revealed that learning factors were correlated with the 21st century skills of nursing students. The predictors were learning environment, self-directed learning, teaching quality, and learning styles. The first predictor was learning environment. It significantly increased the learning outcomes of nursing students. A good relationship between students and lecturers could arouse students' interest and motivation to the lectures which was a key of success in education. These also relieved students' stress from attending long lectures and could create enjoyable learning environments.¹¹ In order to create friendly learning environment, lecturers had to be sensitive to students' reaction and develop new learning process methodologies to response to their needs. It would help students to achieve their greatest potential.¹²

A significant correlation between self-directed learning and the 21st century skills of nursing students had also been reported in previous studies in Thailand.¹³ They demonstrated that self-directed learning could promote students' information and media literacy skills as they had to find information from many different resources. These also promoted students' life-long process of learning.¹⁴⁻¹⁵

Teaching quality was one of the important predictor variables of nursing

students' 21st Century skills. Teachers were important human resources affecting the development of national youth. Again, they were an important factor affecting the quality of education. For this reason, they had to adapt themselves to a global change and to develop their 21st Century skills¹⁶.

Previous research¹⁷ also supported this study's reports of teaching quality. They found that lecturers' teaching quality affected nursing students' learning outcomes. Nursing students expected that their lectures should have learning process methodology with friendly environments. They should always feel free to ask their lecturers for some more advice.

Learning styles are important factors promoting students' learning skills. Similar findings were found in many studies about students' learning outcomes in Thai. They revealed that students' learning styles directly affected their learning outcomes. Students attending classes regularly and always questioning would have better understanding about the subjects. These also helped them to develop their critical thinking, communications and information retrieval skills.¹⁸⁻¹⁹

Conclusions

Findings in the present study revealed that predictors were self-directed learning, learning styles, learning environment, and teaching quality. These 4 predictor variables explained approximately 57.30 % of the

variance in the 21st century skills of nursing students.

The most important predictor variable was learning environment. This led to recommendations that providing nursing students with a good learning environment, promoting their learning style, and self-directed learning could help them to develop their 21st century skills. Moreover nursing lecturers should develop learning process methodology focusing on students' need along with traditional teaching. These would help the students to develop their learning and 21st century skills.

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