

The Development of a Professional Competency Evaluation Model of Nursing Students

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Abstract

Purpose: The purpose of this research was to develop a professional competency evaluation model of nursing students.

Method: It was conducted through a research and development process divided into 4 steps as follows. 1) Studying and analyzing elements and indicators from documents, interviewing experts, focus group and surveying opinions. 2) Drafting a model by 10 experts applying the multi-attribute consensus reaching. 3) Implementing among nursing students, classmates, and teachers. 4) Evaluating by participants engaged in the implementation. The statistics for data analysis comprised mean, standard deviation, median, interquartile range, the Mann-Whitney U test and the Kruskal-Wallis Test.

Findings: The results of the research were as follows. 1) The core competency of nursing students consisted of 7 elements and the functional competency included 4 elements. 2) The model had a structure that the evaluation objectives, expected outcomes, indicators, criteria, evaluators, method, duration, and feedback. 3) It had a discriminant validity and could distinguish different professional competencies of the nursing students. 4) The model was at a high level for all its aspects; feasibility, appropriateness, accuracy, and usefulness.

Conclusion: The model was to develop a professional competency of nursing students.

Keywords: Development, Evaluation Model, Professional Competency, Nursing Students

Introduction

Professional competency is the demonstration of knowledge, capability, attitudes, desired characteristics, and skills for nursing practice in accordance with professional standards which result in safety and satisfaction of service recipients.

Professional competency contains behavioral characteristics that are expressed by an individual

and can be measured and observed. These behavioral characteristics are also commonly expected by the public, the community, and organizations. Professional competency is highly important to professional nurses and nursing students who are in the pre-profession effectively process.

An approach by which the quality in a person can be assured is competency evaluation. This type of evaluation provides knowledge, capability, attitudes, desired characteristics, and necessary skills for nursing practice based on the professional standards. The results from competency evaluation are useful for improving and developing individuals to have better performance¹. Competency evaluation is also a tool to build enthusiasm and motivation in students as well

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as identifying and solving problems they encounter. Competency evaluation can allocate resources to expand scopes and approaches of evaluation². Competency evaluation can help validate a person's performance effectively³. It makes them aware of their own strengths and weaknesses. It reveals self-development progress that leads to better competence.

A review of the previous research reveals a series of problems in competence evaluation as follows. 1) The results from such competence evaluation are unaccepted, unreliable, and biased⁴. After evaluation, evaluated students are not provided with feedback in order to improve themselves⁵. Data obtained from competence evaluation is not applied to promote competency⁶. 2) The summative evaluation model is more emphasized than the formative evaluation model⁷. Mistakes in the implementation of these models are found⁶. 3) Evaluators are not adequately trained in competence evaluation⁵. In summary, both domestic and international competence evaluation have similar problems on results, models, and evaluators.

From the mentioned state and problems above, it was interesting to research and develop a professional competency evaluation model of nursing students. It should be applied to evaluating actual professional competency of nursing students. In so doing, nursing students will be provided with feedback to develop themselves to meet the professional standards. Besides, individual and overall developmental guidelines will effectively be specified. This will help improve teaching and learning management to meet the goals of the educational institutions.

Objectives

The main objective of this research was to develop a professional competency evaluation model of nursing students. The specific objectives of the model were as follows.

- 1) To study and analyze elements and indicators of professional competency of nursing students.
- 2) To develop a professional competency evaluation model of nursing students.
- 3) To study the implementation of the model.

- 4) To evaluate the model.

Material and Methods

Design: A research and development process which was divided into 4 steps as follows.

Step1: Studying and analyzing elements and indicators of professional competency of nursing students from documents and research, interviews with experts, focus groups discussion, opinion surveys from groups of instructors, specialists at practicum training places, fresh registered nurses and 1st- 4th year nursing students. Data analysis was as follows; 1) the content validity was analyzed by means of IOC between 0.67-1.00, 2) the documents, interviews, and focus group discussions were analyzed with content analysis and 3) the questionnaire data was analyzed through mean and standard deviation.

Step2: Drafting a professional competency evaluation model of nursing students and its handbook. The multi-attribute consensus reaching (MACR) among the 10 experts was administered to examine the appropriateness and the feasibility of the model and its elements, competencies, indicators, and criteria. A tool was constructed to assess the appropriateness and the feasibility of the model and its elements, competencies, indicators, and criteria. It was a close-ended questionnaire in the form of 5-rating scale. The content validity of the questionnaire was analyzed by IOC with an IOC between 0.75-1.00. The data from the questionnaire was analyzed for the appropriateness and the feasibility of the model. It was analyzed through median compared with the criterion for interpretation using the midpoint. The Kruskal-Wallis test was conducted to analyze the data from the MACR among the 10 experts. The data (qualitative) from the MACR was analyzed with content analysis.

Step3: Implementing the professional competency evaluation model of 40 1st- 4th year nursing students (10 students from each year level), 40 classmates, and 20 evaluating teachers. The purpose was to examine the discriminant validity, strengths and weaknesses, and problems upon using the model and its handbook. The instrument was a professional competency evaluation form of 1st- 4th year nursing students. It was a close-ended

evaluation form in the form of 5-rating scale. For the data analysis, the differences in the competence scores from the 2 groups of nursing students were tested with the Known-Group technique using the Mann–Whitney U test.

Step4: Evaluating the model of 1st- 4th year nursing students by 40 participants engaged in evaluation. The purpose was to examine the feasibility, appropriateness, accuracy, and usefulness of the model itself. The instrument was a form to evaluate the model of 1st- 4th year nursing students and the handbook was a 5-rating scale evaluation form. The data from these evaluation forms was analyzed through mean, standard deviation, and content analysis.

Findings

Step1: Results of the study and analysis of the elements and the indicators of the professional competency of nursing students as follows.

1. Core competency, which is defined as the essential competence a person must have or perform in order to achieve the goals, was consisted of 7 elements were as follows; ethics and the code of ethics and laws, professional characteristics, communication and language usage, interpersonal relationship, leadership and teamwork, self-adjustment, and information technology and digital literacy

2. Functional competency, which is defined as the competence that reflects the knowledge, skills, and characteristics specifically required for a job (Job-based), was consisted of 4 elements were as follows; professional knowledge, cognitive skills, research and innovation, and nursing and midwifery practices as presented in Table 1.

Step2: Results of the construction of the professional competency evaluation model of nursing students and its handbook

The elements of the constructed professional competency evaluation model of nursing students and

its handbook were the objective of the evaluation, items of evaluation, indicators and criteria, evaluators, the methods of evaluation, the period of evaluation, and provision of feedback as presented in Figure 1.

Step3: Results of the implementation of the professional competency evaluation model of nursing students.

The implementation was conducted between 2 groups of nursing students. Group 1 included students who were recognized for their high levels of knowledge, abilities, characteristics, and studiousness based on average academic achievement or awards received from the faculty, the university and organizations. Group 2 included general students. There were differences at a statistically significant level of .05 in 7 elements between the 2 groups; ethics and the code of ethics and laws, professional characteristics, communication and language usage, interpersonal relationship, leadership and teamwork, self-adjustment, and information technology and digital literacy. There were differences at a statistically significant level of .01 in 4 elements; professional knowledge, cognitive skills, research and innovation, and nursing and midwifery practices. This was indicated that the evaluation model had a discriminant validity in all the elements. Group 1 possessed higher competency than group 2 as presented in Table 2.

Step 4: Results of the evaluation of the professional competency evaluation model of nursing students

The 40 participants engaged in this evaluation were those who implemented the evaluation model such as nursing lecturers, specialists at practicum training places, and nursing students and their classmates. The scope of the evaluation covered; the feasibility, appropriateness, accuracy, and usefulness. It was found that all these elements were rated at a high level of standard; feasibility ($\bar{x} = 3.90$, S.D.=0.68), appropriateness ($\bar{x} = 4.05$, S.D.=0.62), accuracy ($\bar{x} = 3.95$, S.D.=0.65), and usefulness ($\bar{x} = 4.15$, S.D.=0.58) as presented in Table 3.

Table1 : The elements and the indicators of the professional competency of nursing students

Elements	Indicators	Opinion		
		$\bar{X}$	S.D.	Level
1) Core competency - ethics and laws	8	4.41	0.08	Good
- professional characteristics	5	4.37	0.01	Good
- communication and language usage	3	4.39	0.01	Good
- interpersonal relationship	3	4.36	0.02	Good
- leadership and teamwork	5	4.36	0.02	Good
- self-adjustment	2	4.37	0.01	Good
- information technology and digital literacy	3	4.35	0.03	Good
2) Functional competency professional knowledge	12	4.40	0.65	Good
- cognitive skills	3	4.39	0.66	Good
- research and innovation	4	4.38	0.66	Good
- nursing and midwifery practices	9	4.34	0.70	Good

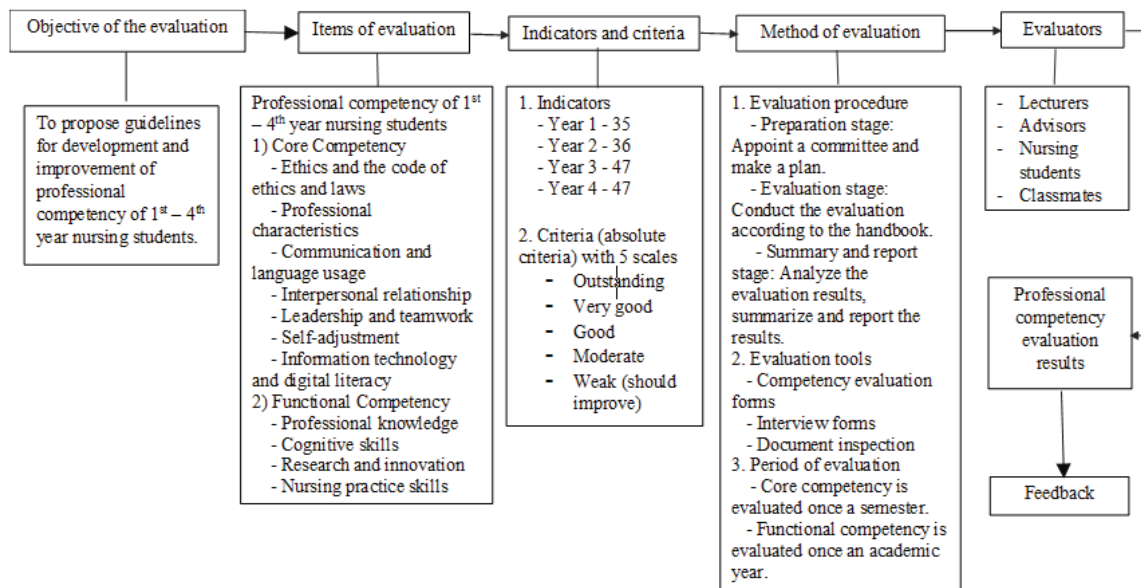
**Figure 1: Professional competency evaluation model of nursing students**

Table2 : The results of professional competency analysis of nursing students between group 1 and group 2

Item	Group 1 (N=20)		Group 2 (N=20)		U	p
	Mean Rank	Sum of Ranks	Mean Rank	Sum of Ranks		
1) Core competency						
- ethics and laws	12.25	98.00	4.75	38.00	2.00	.002
- professional characteristics	11.88	95.00	5.13	41.00	5.00	.016
- communication and language usage	11.63	93.00	5.38	43.00	7.00	.009
- interpersonal relationship	11.44	91.50	5.56	44.50	8.50	.013
- leadership and teamwork	11.44	91.50	5.56	44.50	8.50	.013
- self-adjustment	11.63	93.00	5.38	43.00	7.00	.009
- information technology and digital literacy	11.63	93.00	5.38	43.00	7.00	.009
2) Functional competency						
- professional knowledge	12.25	98.00	4.75	38.00	2.00	.002
- cognitive skills	11.63	93.00	5.38	43.00	7.00	.009
- research and innovation	11.88	95.00	5.13	41.00	5.00	.016
- nursing and midwifery practices	12.25	98.00	4.75	38.00	2.00	.002

Table3 : the evaluation of the professional competency evaluation model of nursing students

Item	Nursing teacher			Mentor teacher			Student			Classmate			Total		
	$\bar{x}$	S.D.	Level	$\bar{x}$	S.D.	Level	$\bar{x}$	S.D.	Level	$\bar{x}$	S.D.	Level	$\bar{x}$	S.D.	Level
feasibility	3.93	0.42	Good	3.73	0.59	Good	3.90	0.44	Good	4.07	0.40	Good	3.91	0.46	Good
appropriateness	4.08	0.53	Good	3.80	0.57	Good	3.88	0.61	Good	4.07	0.55	Good	3.96	0.57	Good
accuracy	4.02	0.44	Good	3.78	0.54	Good	3.93	0.44	Good	4.09	0.39	Good	3.95	0.45	Good
usefulness	4.10	0.57	Good	3.90	0.74	Good	4.00	0.47	Good	4.50	0.53	Good	4.10	0.57	Good
Total	4.04	0.48	Good	3.79	0.57	Good	3.91	0.50	Good	4.09	0.45	Good	3.96	0.50	Good

Discussions

The discussions covered 4 key issues related to the research results as follows:

1. The results of the elements and the indicators of nursing students.

1)The core competency with 7 elements were as follows:

- Ethics and the Code of Ethics and Laws: It indicated respect for individual rights, respect for others, awareness of legal responsibility, and maintaining professional standards.⁸

-Professional Characteristics : It indicated conduct of good professional personality, a role model of health, appropriate behavior to persons and situations, professional development for advancement and dignity.⁹

-Communication and Language Usage : It indicated the ability to use language skills such as speaking, reading, and writing for effective communication, and promoting to happy and successful collaboration.¹⁰

- Interpersonal Relationship : It was concerned with building positive and constructive relationships with others, expressing opinions logically, and managing emotion appropriately.¹¹

- Leadership and Teamwork : It was concerned with cooperation, building relationships with others to support learning and to enhance relationships, and helping and supporting others to reach a common goal of success.¹²

- Self-adjustment : It represented the ability to adapt to different situations both personally and as a group and building relationships effectively.¹³

- Information Technology and Digital Literacy : It revealed the ability to use computer technology to search for health information and related knowledge and to use information technology to present academic works effectively and ethically.¹⁴

1.2 The functional competency with 4 elements were as follows:

- Professional Knowledge : It concluded that nursing students with a good command of nursing knowledge may lead to suitable problem solution and plans for effective and safe patient care.¹⁵

- Cognitive Skills : It represented the ability to apply knowledge, experience, and decision to situations or problems using a systematic connection of new ideas to achieve goals effectively.¹⁶

-Research and Innovation : It indicated the ability to apply research findings or conduct research for self-development, to consider correctness and appropriateness of research related to study and to

comply with researcher's ethics.⁹

- Nursing and Midwifery Practicum : It indicated the ability to practice nursing and midwifery for safety and satisfaction of service recipients under laws and professional ethics in both simulations and real situations.¹⁷

2. The results of the construction of the professional competency evaluation model of nursing students.

The objective : This was set as the first element of this evaluation model as it would provide a clearer direction for the whole evaluation to guide the development and improvement and items of evaluation.¹⁸

The items : It covered behavioral attributes derived from knowledge, skills, motivation, individual attributes, and self-concept. It belonged to the core competency and the functional competency.¹⁹

Evaluators : In evaluating the professional competency of the nursing students, there were different parties of evaluators including the nursing teachers, the mentor, and the students, and to make it more reliable.²⁰

Indicators and criteria : Prior to the evaluation, the indicators and criteria were specified to provide the evaluators with guidelines so that they could perform the evaluation in accordance with the indicators and criteria. Also, the indicators and criteria were used as guidelines for self-development and performance improvement.²¹

The methods: It included observation, interview, and review of documents. The main instrument for data collection was the 5-rating scale evaluation form. It should measure real conditions.¹⁸

The period : The core competency was evaluated once a semester whereas the functional competency was evaluated once an academic year. This was to monitor and reflect the student behavior on a regular basis for effective improvement.²²

Provision of feedback: It provided feedback in 2 dimensions with 4 notification patterns; individual results of evaluation, overall results of evaluation, good results of evaluation, and weak results of evaluation. It was a factor that reflected and modified the student behavior effectively.²³

3. The results of the implementation of the professional competency evaluation model of the nursing students.

The result revealed that group 1 and group 2 of the 1st- 4th year nursing students had differences in the professional competency at a statistically significant level of .05. This indicated that the evaluation model had a certain discriminant validity as it could distinguish different professional competencies of the nursing students. This was consistent with Boonchom S²⁴., proposing that after a model is developed, its validity is tested. Even though the newly developed model is invented on theories, concepts, models, and past research findings, it is just a hypothetical model that needs to be implemented in both experimental and real situations. The testing results will help decide whether or not the developed model is appropriate or effective as intended.

4. The results of the evaluation of the professional competency evaluation model of nursing students.

The scope of the evaluation covered the 4 elements; feasibility, appropriateness, accuracy, and usefulness. It was found that all these elements were rated at a high level of standard. This finding may be due to the fact that the evaluators agreed that the evaluation was interesting. The evaluation model was developed through a process systematically. The evaluation varied in the methods, the instruments, and the sources of the evaluators. This resulted in the reliability of the model and those involved in the evaluation were satisfied and able to utilize the evaluation model. This finding was consistent with Rattana B.²⁰ stating that an evaluation model development process comprises 4 stages : investigating and synthesizing problems and needs for development, specifying and examining quality which requires experts from specific fields, implementing in the target groups, and evaluating results for further improvement., and accuracy was found.

Conclusion

The professional competency evaluation model of the nursing students in this research had a conceptual framework based on the stakeholder-based approach. For this reason, educational institutions should carefully consider further parties of evaluators to conduct the

evaluation. In so doing, accurate information will be obtained. To succeed in conducting such a professional competency evaluation model, educational institutions should educate personnel responsible for evaluation and stakeholders about evaluation knowledge and skills, data collection and analysis, interpretation, summary and report of evaluation results.

Conflict of Interest: Nil.

Source of Funding: Self.

Ethical Clearance: This study was identified as exempt from Rajabhat Mahasarakham University and Rajabhat Chiyaphum University ,Thailand, Review Board.

References

1. Chruden, H.J. and Arthur W. Sherman Jr. Personal Management. Ohio : Ohio Western, 1968.
2. Casio, W.F. Managing Human Resources: Productivity, Quality of Work Life, Profits. (3rded.). New York: McGraw-Hill, Inc, 1995.
3. McKenna, B., Nevo, D., and Stufflebeam, D.L. The School Professional's Guide to Improving Teacher Evaluation System. Center for Research on Educational Accountability Teacher Evaluation : Western Michigan University Evaluation Center, 1994.
4. Fraser, L.E. and Streshly, W. Lack of Accuracy Feedback, and Commitment in Teacher Evaluation. *Journal of Personal Evaluation in Education*. 1994; 8(1): 47-57.
5. Scriven, M. A Unified Theory to Teacher Evaluation. *Studies in Education Evaluation*. 1995; 21: 111-129.
6. Mo, K.W., Connors, R. and McCormick, J. Teacher Appraisal in Hong Kong Self-Managing Secondary School : Factors for Effective Practices. *Journal of Personnel Evaluation in Education*. 1998; 12 : 19-42.
7. Scriven, M. A Unified Theory to Teacher Evaluation. *Studies in Education Evaluation*. 1995; 21: 111-129.
8. National Institute of Education, Singapore.: A teacher education model for the 21st Century. Singapore, 2011.

9. The Thailand Nursing and Midwifery Council .Announcement of the Nursing Council on the Core Competencies of graduates with bachelor's, master's, and doctoral degree in nursing. The Thailand Nursing and Midwifery Council.2018;2: 1-21.
10. Batool Nehrir,Zohreh Vanaki,Jamileh Mokh tari Nouri,Seyyed Mohammad Khademol hosseini and Abbas Ebad. Competency in nursing students : A systematic review. International Journal of Travel Medicine and Global Health.2016;4(1):3-11.
11. Charisi Srikul Siripanno. Development of competency evaluation criteria for professional nurses. Journal of the Royal Thai Army Nurses. 2015; 16(3):123-130.
12. Carrie L. Cormack, Elizabeth Jensen, Catherine O. Durham, Gigi Smith and Bonnie Duma. The 360-degree evaluation model : A method for assessing competency in graduate nursing students: A pilot research study. Nurse Education Today journal. 2017, 64(2018),132-137.
13. Kusuma Jai Sabai. Development of an evaluation model : Student competencies bachelor of education program Rajabhat University in the upper southern region [Doctoral dissertation]. Ramkhamhaeng University Nakhon Si Thammarat branch,2014.
14. National League for Nursing. Diversity and Cultural Competence: Keystone to Nursing Education.2015; NLN Report, Summer, 3-8.<http://www.nln.org/docs/default-source/nln-reports/summer>
15. Amy H. Lee, Carol Kelley, Celeste M. Alfes, Linda K. Bennington and Mary A. Dolansky. Cultural competency of graduating BSN nursing students. Nursing Education Perspectives.2017; 3(5): 278-285.
16. Carrie L. Cormack, Elizabeth Jensen, Catherine O. Durham, Gigi Smith and Bonnie Duma.The 360-degree evaluation model : A method for assessing competency in graduate nursing students: A pilot research study. Nurse Education Today journal.2017; 64(2018):132-137.
17. Olfat A. Salem, Ahmad E. Aboshaiqah, Murad A. Mubarak and Isabelita N. Pandaa. Competency based nursing curriculum : Establishing the standards for nursing competencies in higher education. Open Access Library Journal.2018; 5(10): 1-8.
18. Borich, G.D. The Appraisal of teaching : concept and process. Massachusetts : Addison-Wealey,1977.
19. Thean thongkaew. Competency : Principles and practice. Suan Dusit Rajabhat University,2013.
20. Ratana Bua Son. Direction, area, assessment. (3rd edition). Nakhon Sawan, Rimping Limited Partnership printing,2012.
21. Tassanarong Jarumethichon, Boonchom S. and Nuchwana L. The Developing of the Primary School Teacher Competencies Assessment Model in Office of the Basic Education Commission. Educational Evaluation journal , Maha Sarakham University,Thailand.2017;22(1):95-103.
22. Rungruedee Klaharn and Pornthip Chaiyaso. Development of a competency evaluation system for nursing students. Journal of the Royal Thai Army Nurses.2014;14(2):48-58.
23. Glass, G.V.,. Standards and criterias. Journal of Educational Measurement.1978;15:237-266.
24. Boonchom Srisaart. Preliminary research. (8th edition). Bangkok: Suwe Riisas,2010.