

Enhancement of High Competency Pre-Service Teachers in the Digital Age

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Abstract

The objective of this research was to study the enhancement of high competency pre-service teachers in the digital age. This project contained 3 sub-projects; 1) the research and development on the innovation and active learning management to enhance the competency of innovators of learners in the digital era, 2) the process in cultivating high-performance pre-service teachers with teacher spirituality and public mind in the digital society, 3) the enhancement on the competency of coaching teachers through PLC and Coaching processes to promote learning management competency of the pre-service teachers in the school for teacher professional development. This was the mixed method research having the sample group of 30 students of the Faculty of Education, Suan Sunandha Rajabhat University, and the teachers in the school for teacher professional development. Both quantitative and qualitative data were collected and analyzed to synthesize all 3 sub-projects. The research findings revealed that 1) the model for the enhancement of pre-service teacher production to have high competency in the digital era consisted of 5 components; principles, objectives, process of high competency teachers including the development of learning management for students to be skilled in using technology and innovation in learning management, cultivating pre-service teachers to have teacher spirit and public mind and developing coaching teachers in the school for teacher professional development, developing the teaching profession to have competency in guiding students with quality. 2) The assessment on the appropriateness, usefulness, accuracy and possibility was entirely at the highest level.

Keywords: Pre-service teachers, model, competency, Rajabhat University, digital age

Introduction

As every country in the world is currently encountering economic and social changes gravely and rapidly, various countries have to be prepared in dealing with this volatility. The key factors that will enable each country to drive and develop effectively are “people”, which are considered the core of the country’s development. Therefore, it is necessary to elevate the quality of people to have higher competency. The Organization for Economic Co-operation and Development (OECD) stated that the quality of an education system depends on the quality of teachers as teacher quality is the most important factor in student learning quality (OECD, 2014). This agreed with Cochran-Smith, the President of the American Association for Educational Research (AERA) stating, “The quality of teachers depends on the quality of the teacher preparation policy” (Cochran-Smith, 2008). At present, the Thai government has the policy to enable Thailand 4.0 model which is an innovation-driven economy model for Thailand to be stable with wealth and sustainability under the context of the Industrial Revolution according to the 20-year national strategic plan. The strength is built from inside along with connecting to the global community according to the concept of sufficiency economy driven through the civil state mechanism. The government prioritizes the preparation of Thai people in the 4.0 era as the first agenda in driving Thailand 4.0 policy (Suwit Maesinsee, 2017). As a result, the Faculty of Education under the Higher Education Institution which is the main institution responsible for producing teachers is very necessary to develop the country’s education. Teacher, whose main duty is to cast youth into Citizen 4.0, is therefore considered the profession that is important for the development of the country according

to the Thailand 4.0 policy. The production and development of teachers in Thailand has changed and evolved all the time but still not keeping up with the time. The rapid changes in the modern world and teacher production are still inconsistent with the needs of society, quantity and quality of the teaching staff. It lacks cultivating teacher spirit and improving teaching skills. The curriculum has few courses on teaching content and knowledge. The system of vocational experience is not of quality, etc. (Secretariat of the Education Council 2018, Apipha Prachayapruek, 2017). In elevating the quality of education, it must go back to the upstream which is the teacher production system, especially the production of graduate teachers of the Faculty of Education, Rajabhat University, which is a university for local and community development playing a role in the development of pre-service teachers to have professional competency responding the needs of countries that are moving towards the digital age. When the pre-service teacher graduates become a teacher, they must be able to develop learners to have knowledge and 9 learning skills of the 21st century. Thus, it is very necessary to produce highly competent graduate teachers to be the role model and leader of change in society. Rajabhat University is an institution that produces teachers which is important for the country in production and development of teacher graduates to become qualified teachers. When teachers have knowledge, competency, and spirit of being teachers, they will be able to manage learning for students to be competent according to the goals of quality education management. The production and development of teachers in Thailand has always changed and evolved. However, it did not keep up with the changes fast speed of the new world resulting in the problems in the production of teachers both in terms of quantity and quality. There are more graduates from teacher production courses than the number of teachers recruited each year. In addition, there are fewer examinations for new teachers in some fields than the required recruitment rate. Despite the government's policies and programs to attract talent good people entering the teaching profession to solve such problems, it still cannot affect the quality of learners thoroughly. Therefore, the researches are studied and the solutions are sought to get teachers with high performance to develop learners as the innovators (Office of the Education Council Secretariat, 2018). Faculty of Education, Rajabhat University, plays a very important role in producing teacher graduates to be highly competent and uplift the quality of graduate teachers to be teachers who are well versed in the content, science of teaching, with teacher professional content knowledge. This was correspondent with Phreuk Siribanphithak (2018) stating that the high-performance teachers for Thailand 4.0 are in 6 aspects; 1) General knowledge and ability, 2) Professional knowledge and understanding, 3) Professional skills, 4) Attitude and Values, 5) Professional practice, and 6) Professional Engagement. This agreed with the professional standards of teachers that focus on teacher competency skills in teaching, learning skills of learners, class management skills, professional development skills including the development of teachers' digital competency (Teachers Council, 2021). Thus, the researchers were interested in studying the enhancement of the production of high competency model pre-service teachers of the students of the Faculty of Education, Suan Sunandha Rajabhat University, in order to develop pre-service teachers to have competency in proactive learning management to create innovators for learners. They will have the capacity to be a teacher in terms of spirituality as a teacher public mind and development of the teaching professional experience training process of coaching teachers to have competence in coaching students and teachers in the school for teacher professional development.

Objective of the research plan

To elevate the production of high competency pre-service teachers towards the Thai education in the digital age of the students of the Faculty of Education, Suan Sunandha Rajabhat University.

Concepts, theories, related researches, and research conceptual framework

Teacher profession concepts and teacher production related to the researches were as follows. For the teacher competency, from the study of competency standards of Thai teachers, ASEAN teachers, teachers in the European Union, and teachers in the United States, it was found that the competencies required for teachers were as follows; 1) having knowledge, understanding and being able to apply knowledge in the taught subjects and related subjects, 2) learning management, 3) evaluation of results, 4) learning environment management, 5) having knowledge in psychology and student development, 6) having skills of language, culture, communication, leadership, teamwork, advanced thinking, 7) having knowledge, skills and attributes necessary for teacher's profession such as being a teacher, having ethics, self-development and professional development,

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having basic knowledge, studying educational philosophy, education policy, quality assurance of education and building relationships with communities (Apipha Prachayapruek, 2018; EU, 2013; SEAMEO INNOTECH, 2009; CCSSO, 2013). For the production of teachers in foreign countries, there are two kinds of teacher-producing courses in Finland; 1) the classroom teacher curriculum that produces teachers to teach grades 1-6 (elementary level) and kindergarten, and 2) the course teacher curriculum that produces teachers to teach grades 7-9 in the comprehensive school and upper secondary school in general, vocational fields, and adult education (Rossukon Marakornmanee, 2010). In Singapore, the main institute responsible for producing teachers is the National Institute of Education (NIE) supervised by the Nanyang Technological University. Other roles including conducting educational research for curriculum development and teaching, setting directions and policies for the Ministry of Education and schools (Office of the Education Council Secretariat, 2018). Currently, NIE offers 4 types of teacher production courses (NIE, 2009), namely Bachelor of Education for being an elementary school teacher, Bachelor of Arts (Education) and Bachelor of Science (Education) for teachers in primary and secondary school level, Certificate Program in Education for being teachers in primary and secondary school level and post-bachelor's degree certificate programs. In addition, in 2009, NIE developed the 21st century teacher education model for preparing new teachers and professional development of teachers.

The concept of professional standards for teachers is the Regulations of the Teachers Council on Professional Standards (No. 4) B.E. 2562 defining the standards of knowledge and professional experience, standards of performance, standards of conduct as follows:

1. The standards of knowledge and professional experience means the requirements related to knowledge and experience in learning management or educational management which educational professionals including those who want to practice professional education. There must be sufficient that can be used in professional practice.

2. The performance standards mean specifications related to characteristics or performance behavior and job development which educational professionals including those who want to practice professional education must comply to achieve the objective and learning goals or educational management as well as having to practice and develop one's own skills or continually higher proficiency.

3. The standards of conduct means professional ethics established as a model for conducting oneself. The educational professionals included those who want to practice professional education must adhere to for maintaining and promoting honor and reputation and the status of educational professionals in order to be trustworthy to service recipients and society which will bring honor and professional dignity.”

The concept of student competency from research by Phreuk Siribanphithak (2018) revealed that high competency teachers for Thailand 4.0 consisted of 6 core competencies; 1) General Knowledge and Ability, 2) Professional knowledge and understanding, 3) Professional skills, 4) Attitude and Values, 5) Professional Practice, 6) Professional Engagement. From the concept synthesis, the researchers accordingly developed the research conceptual framework as follows:

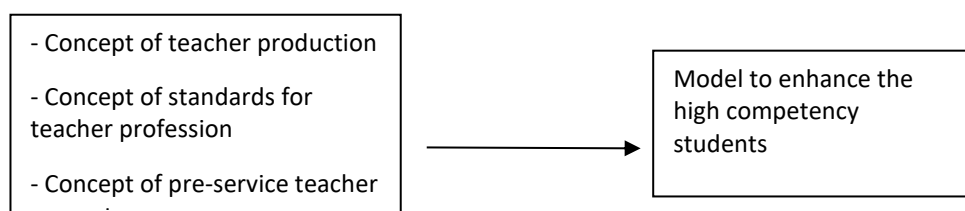


Figure 1 Research conceptual framework

RESEARCH METHODOLOGY

The project of enhancement of high competency pre-service teachers in the digital age of the students in the Faculty of Education, Suan Sunandha Rajabhat University, contained 3 sub-projects. Each had the research methodology as follows:

Project No.	Project Name	Research methodology
Sub-project No. 1	Research and development on the innovation and active learning management to enhance the competency of innovators of learners in the digital era	Research and Development (R&D)
Sub-project No. 2	Process in cultivating high-performance pre-service teachers with teacher spirituality and public mind in the digital society	Research and Development (R&D)
Sub-project No. 3	Enhancement on the competency of coaching teachers through PLC and Coaching processes to promote learning management competency of the pre-service teachers in the school for teacher professional development	Research and Development (R&D)

This project is related to the 3 sub-projects. The research conducted in the first stage enabled all 3 sub-projects to be completed with quality in order to develop the competency of pre-service teachers. Therefore, the researchers would like to present the diagram of the **linkage of the sub-projects in the research plan** as follows:

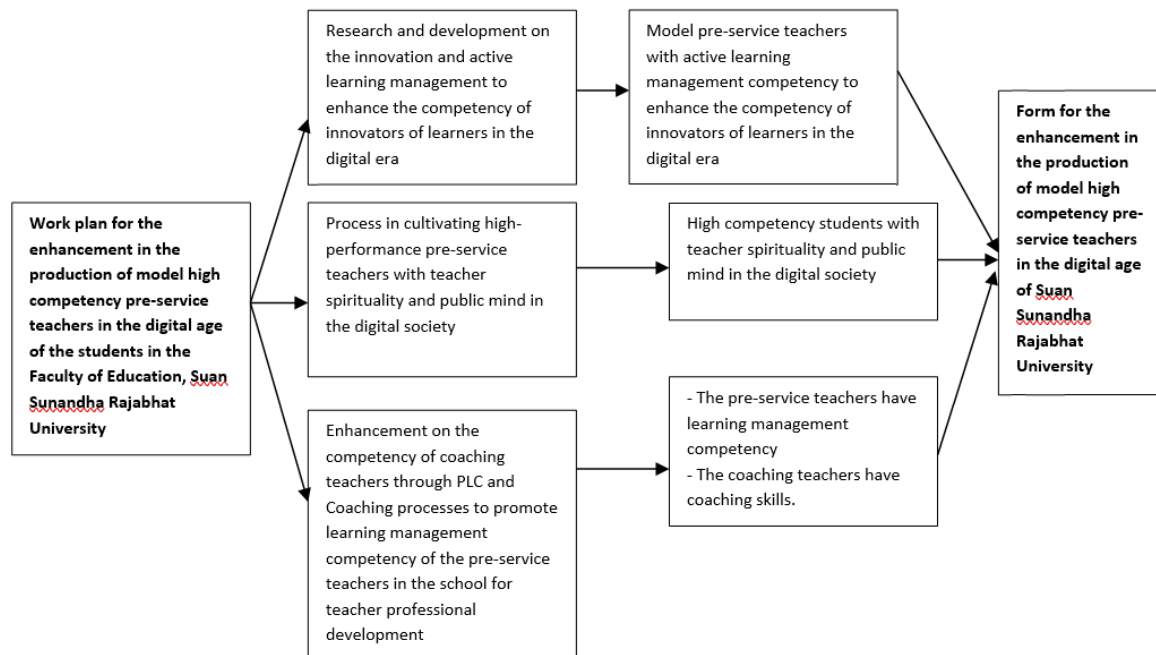


Figure 2 Linkage of the sub-projects in the research plan

Scope of research project

The population used in the research consisted of 420 students of the Faculty of Education, Sunandha Rajabhat University. The sample group consisted of 30 pre-service teachers of the Faculty of Education, Sunandha Rajabhat University, the 2nd year in English, the 1st year in Mathematics, 30 persons of the 4th year pre-service teachers registered for teachers’ professional experience course, in the second semester of the academic year 2020 and 30 coaching teachers using the simple random sampling method.

Operational process of the research plan

The researchers conducted the research according to the research and development process consisting of 3 phases as follows:

The first phase was the study of information, concepts, theories from papers and researches by synthesizing the conditions of active learning management competency, spiritual competency of teachers and the public mind in the digital age of students and the competency of coaching teachers through PLC and Coaching processes with the analysis on the documents, textbooks, and related researches both domestic and abroad. This included the interviews with teachers of the teacher professional group and lecturers of 10 subjects using simple random sampling and interview forms to use the obtained data to analyze the contents.

The second phase was the development of model for enhancing the production of model high competency pre-service teachers in the digital era for students of the Faculty of Education, Suan Sunandha Rajabhat University consisting of:

Step 1: Drafting an elevation model in producing high competency pre-service teachers in the digital era of students of the Faculty of Education, Suan Sunandha Rajabhat University. The researchers used the results of the synthesis of the 3 sub-projects to form a model consisting of principles, objectives, model development process, implementation, conditions, and success of the model.

Step 2: Focus Group Discussion by 12 experts, namely 1) teachers competency experts, 2) academicians in teacher competency, 3) teachers of the Faculty of Education. The specific selections was used to determine the criteria for selection on those who were knowledgeable and work on teacher competency of students.

Step 3: Examine the model quality for enhancing the production of high competency pre-service teachers in the digital era of students of the Faculty of Education, Suan Sunandha Rajabhat University, through 5 experts to assess the suitability and conformity of the model to be modified before being used in the actual experiment with the Index of Conformity (IOC) 0.60 – 1.00.

The third phase was to examine and present the model for enhancing the production of high competency pre-service teachers in the digital era of students of the Faculty of Education, Suan Sunandha Rajabhat University.

Step 1: Examine the model by distributing the questionnaires using the Rating Scale in 5 levels according to the Likert Five Rating Scale in order to examine the model of enhancement on the production of high competency pre-service teachers in the digital era of students of the Faculty of Education, Suan Sunandha Rajabhat University. The audit standards were in 4 aspects; 1) usefulness, 2) feasibility, 3) suitability, 4) validity with 345 faculty members of the Faculty of Education, Rajabhat University, by opening Taro Yamane's table with the confidence level of 95 percent using the Multi-Stage Random Sampling. The questionnaires were returned by 345 persons representing 100%. The obtained questionnaires were analyzed using basic statistics, i.e. mean (\bar{X}) and standard deviation (S.D.).

Step 2: Improve, modify and present the enhancement on the production of high competency pre-service teachers in the digital era of students of the Faculty of Education, Suan Sunandha Rajabhat University.

Data collection

For the data collection, the researchers collected the data as follows:

1. Studying from related researches and papers to obtain information about the model of enhancement on the production of high competency pre-service teachers in the digital era of students of the Faculty of Education, Suan Sunandha Rajabhat University, both qualitative data and quantitative data.

2. Field Studies: The researchers used questionnaires, interviews, and focus group discussions and experiments to collect truthful information most accurately.

3. Collecting data to examine the development of model for enhancing on the production of high competency pre-service teachers in the digital era of students of the Faculty of Education, Suan Sunandha Rajabhat University

3. Data Analysis

The researchers took the information from the interviews, group discussion, and questionnaires to analyze and create new knowledge. The analysis on the research results will be based on the following theoretical analysis models:

1. Qualitative Data Analysis, i.e. applying the results of the study on related papers and researches, interviews and group discussion to analyze the data by using the content analysis method.

2. Quantitative Data Analysis including the assessment results on teacher competency in the digital age of students and the assessment of student satisfaction with the model and model verification. The data were analyzed by using descriptive statistic methods such as frequency, percentage, mean, standard deviation, and t-test for dependent Samples.

RESEARCH FINDINGS

1. The model for enhancing the production of high competency pre-service teachers in the digital era of students of the Faculty of Education, Suan Sunandha Rajabhat University, from the 3 sub-projects consisted of principles, objectives, development process, model for enhancing the production of high competency pre-service teachers, and implementation of the model. The conditions for the model success were; 1) the innovative model of active learning management to enhance the competence and innovator of learners in the digital era with 5 components; principles, objectives, learning management process, knowing of Active Learning, model implementation, and model success conditions. The Active Learning management process consisted of 4 elements; competency of students as teachers and innovators in the digital era, learning management process in the form of Active Learning, activities to enhance the capacity of teachers and innovators in the digital era, and performance assessment in being teacher and innovator in the digital age. 2) The process to cultivate the high-performance pre-service teachers who have teacher spirit and public mind in the digital society consisted of; Step 1 of preparation, Step 2 of development, Step 3 of design, Step 4 of organization of activities, Step 5 of reflection, Step 6 of evaluation. 3) The model of enhancement on the competency of coaching teachers through PLC and Coaching processes to promote learning management competency of the pre-service teachers in the school for teacher professional development consisted of 3 steps; 1st Step of Orientation preparation and goal setting, 2nd Step of development on coaching skills of coaching teachers according to the teaching method of the Buddha, 3rd Step 3 of practicing the coach according to the teaching method of the Buddha, 4th Step of supervision to follow up creatively. The researchers would like to present the model for enhancing the production of high competency pre-service teachers in the digital era of students of the Faculty of Education, Suan Sunandha Rajabhat University, as follows:

Section 1 Principles

Producing high competency model pre-service teachers in the digital era is critical to the teaching profession of students who need to change their thinking, adjust teaching methods to develop one's skills as a teacher according to the Teachers Council's professional standards. This is a behavior that students must express the application of knowledge, skills and characteristics related to learning management that integrates information technology, digital technology and communication as the tool in learning management. It allows learners to participate in the learning process and develop students to become innovators including various competencies in learning management. The students are encouraged to have essential skills in accordance with the context and needs of the digital society. Therefore, the pre-service teachers need to be cultivated for the competency of teacher in the digital era until it becomes their own character. They should also receive the experience training and coaching from the coaching teachers in the school for teacher professional development. This can lead to the practice and professional practice to improve the quality of learners in the future.

Section 2 Objectives

The objectives of the model for enhancing the production of high competency pre-service teachers in the digital era of students of the Faculty of Education, Suan Sunandha Rajabhat University, were as follows:

1. To cultivate the students to have high competency according to the Teachers Council's professional standards in the learning management, teacher spirit, and public mind.
2. To develop the coaching competency of the coaching teachers in the school for teacher professional development

Section 3 Model development process

Regarding the process in developing the model for enhancing the production of high competency pre-service teachers in the digital era of students of the Faculty of Education, Suan Sunandha Rajabhat University, the analysis was from the 3 sub-projects as follows:

1) The model of innovative Active Learning management to enhance the competency and innovator of learners in the digital era with 5 components; principles, objectives, learning management process, knowing of Active Learning, model implementation, and model success conditions. The Active Learning management process consisted of 4 elements; competency of students as teachers and innovators in the digital era, learning management process in the form of Active Learning, activities to enhance the capacity of teachers and innovators in the digital era, and performance assessment in being teacher and innovator in the digital age.

2) The process to cultivate the high competency pre-service teachers with teacher spirit and public mind in the digital age consisted of ; Step 1 of preparation, Step 2 of development, Step 3 of design, Step 4 of organization of activities, Step 5 of reflection, and Step 6 of evaluation.

3) The model to enhance the coaching competency of the coaching teachers with the activities of PLC and coaching in the school for teacher professional development consisted of 4 steps; 1st Step of Orientation preparation and goal setting, 2nd Step of development on coaching skills of coaching teachers according to the teaching method of the Buddha, 3rd Step 3 of practicing the coach according to the teaching method of the Buddha, 4th Step of supervision to follow up creatively.

Section 4 Model application consisted of preparation, implementation, and evaluation of results

Section 5 Conditions of model success consisted of 1) the environment of each student, 2) availability of the facilities, media, and equipment, 3) support from the executives of the University and the Faculty of Education, 4) cooperation from the teachers, parents, executives of the educational institute, and teachers in schools.

The researchers proposed the new knowledge from the research findings on the model for enhancing the production of high competency pre-service teachers in the digital era of students of the Faculty of Education, Suan Sunandha Rajabhat University, from the 3 sub-projects as the Semantic Model as belows:

Enhancement on the production of high competency pre-service teachers of Suan Sunandha Rajabhat University

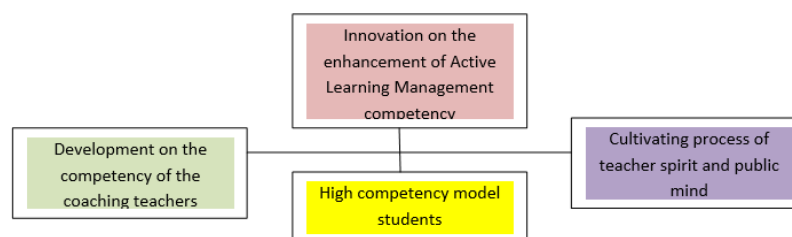


Figure 3 Enhancement on the production of high competency pre-service teachers of Suan Sunandha Rajabhat University

Sub-project No. 1 Research and development on the innovation and active learning management to enhance the competency of innovators of learners in the digital era

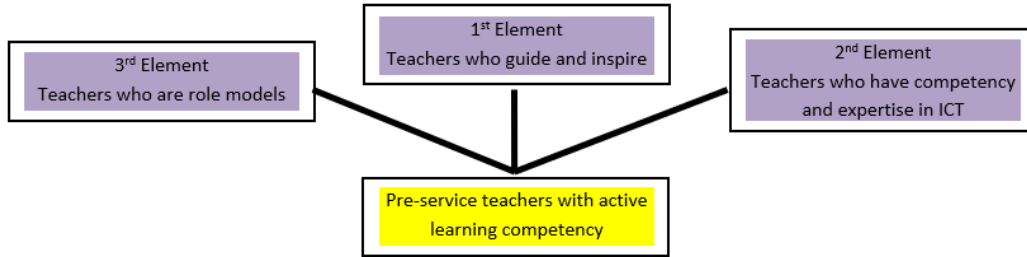


Figure 4 Model of innovation in Active Learning management to enhance the competency of innovators of learners in the digital era

Sub-project No. 2 Process in cultivating high-performance pre-service teachers with teacher spirituality and public mind in the digital society

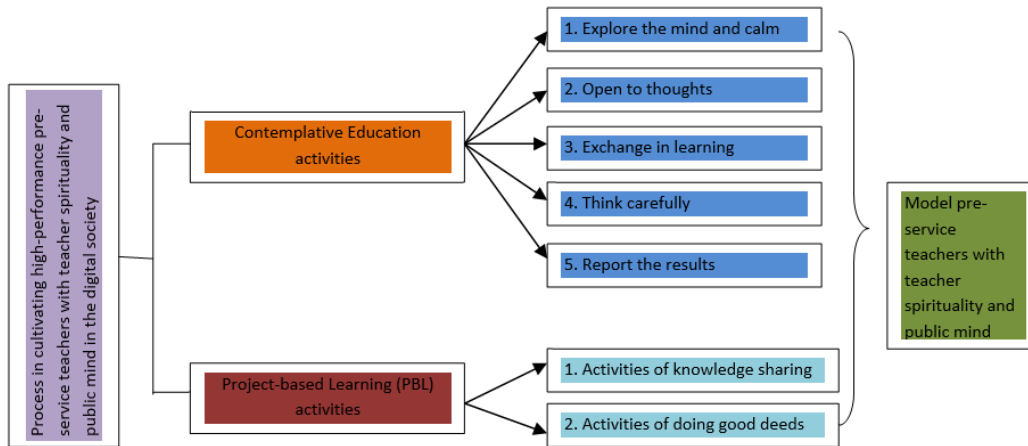


Figure 5 Process in cultivating high-performance pre-service teachers with teacher spirituality and public mind in the digital society

Sub-project No. 3 Enhancement on the competency of coaching teachers through PLC and Coaching processes to promote learning management competency of the pre-service teachers in the school for teacher professional development

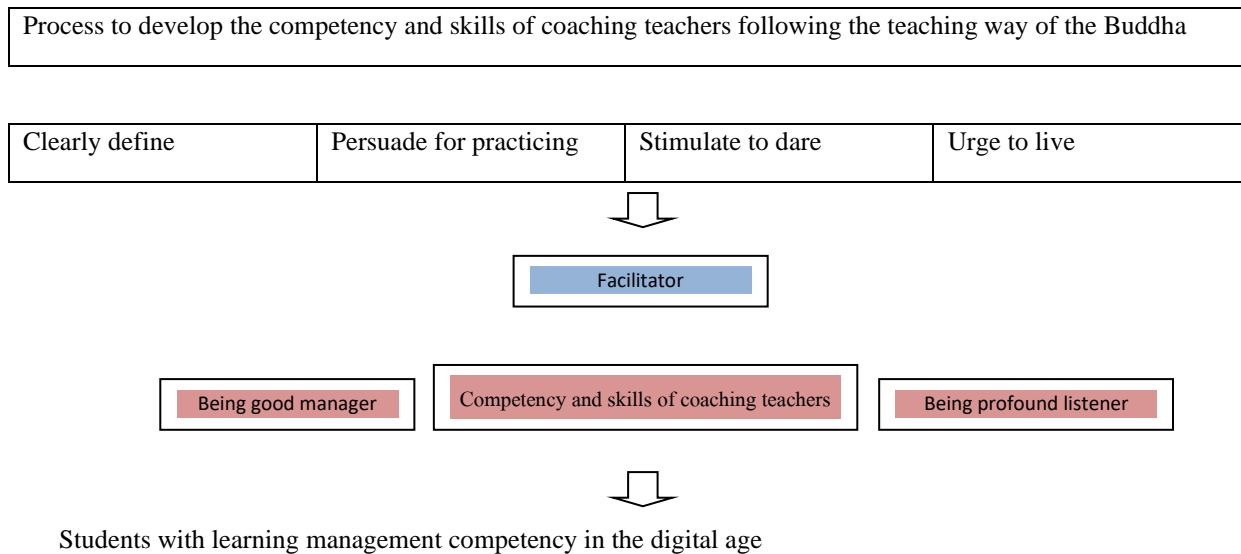


Figure 6 Model to enhance the competency of coaching teachers with PLC and Coaching process to promote the learning management competency of the pre-service teachers in the school for teacher professional development

2. The results of assessment on the appropriateness of the model in the aspects of suitability, usefulness, accuracy, and possibility were entirely at the highest level.

DISCUSSION OF RESULTS

1. According to the results of development in the enhancement of production of the high competency model pre-service teachers of the Suan Sunandha Rajabhat University, it was found that the model synthesized from the 3 sub-projects created the innovative learning management. The process in cultivating the students and the process in developing the competency of the coaching students led to the approach for enhancing the production of the high competency model teachers at the upstream, middle stream, and downstream. From the process of cultivating, practicing, and raising the coaching skills of teachers and coaches, it enabled students to have higher levels of competence in active learning management, teacher spirit and public mind. As a result, the students in educational institute were inspired to study and were encouraged to develop skills as innovators according to the aim of organizing education in the digital era. This agreed with Prit Siribanphithak (2018) conducting the research on the development of mechanisms to drive the production system and develop high-competency teachers for Thailand 4.0. It was found that the teacher education institutes should accelerate and modify the development of faculty members of the Teacher Education Institute in terms of teaching methods or a paradigm in organizing teaching suitable for the 21st century. It is the ability to create innovations, teaching and learning to enable learners to create innovations due to research results as well as listening to the opinions of qualified teachers. It was found that high-performing teachers should have desirable competency and abilities to develop learners. This was consistent with Wilailuck Langka (2020) who has studied about the process of cultivating teacher attributes in the decade that changes the learning of students of education. It was found that the characteristics of being a teacher with love and faith in the teaching profession, teacher's ideology, teacher's spirit, emotional control, exemplary behavior of good teachers as a group, and teacher's characteristics with the most gaps should be promoted. 2) The process in cultivating teacher characteristics consisted of 4 steps including 4 cultivating courses starting from the first 2 courses applied to the first-year pre-service teachers. The first course was used as the "Inspiration to Be a Teacher" course and the second course was the "Development of the pre-service teacher's mind". For the second year, the third course was used as the curriculum of "Teacher Identity". For the third year, the fourth course was used as the "Spirit of Teacher" course. 3) The Cultivation Process was on the teacher attributes to have quality in the dimension, accuracy, suitability, and feasibility. The

usefulness was at a high level. It was also found that after participating in 4 courses, the pre-service teachers had motivation to become teachers. The teacher's attributes, teacher's identity, and the spirit of being a teacher was 70 percent higher than the criteria with statistical significance at the .01 level.

1. The results of the evaluation of the developed model were appropriate and consistent. All components were appropriate to the greatest extent. This was correspondent with Lakkhana Chairit (2019) studying the teaching skill development model of teachers according to Buddhist Educational Administration Principles of Border Patrol Police School. It was found that there were four components of the model; 1) Principles, 2) Objectives, 3) Process to implement, 4) Conditions for success. It was aligned with Wareerat Kaewurai (2011) studying and developing the model of learning management for quality improvement of learners to the society of virtue, wisdom and learning. It was found that the elements of the developed model consisted of the background and importance of the model. The concepts/theories were used as the base in developing the principles of principles, pattern, objectives, format, content/learning content, learning management process according to the form or process of learning activities. Another important aspect of the format is the proactive competency-based learning management process that integrates the STEM education approach consisting of 1) components of teacher competency in the digital age, 2) proactive competency-based learning management process to develop teacher competency in the digital age, 3) assessment of teacher competency in the digital age. This agreed with Thissana Khaemane (2019) stating the competency-based learning that "focuses on practice". It provides a set of contents, knowledge, skills, attitudes and attributes necessary to achieve the desired competencies at the level that learners can actually do. The knowledge has been integrated in various sciences related to the operation of a particular task in order to be used until success in the teacher's performance. This was correspondent with Raimon Efendi, Jalius Jama, and Asmar Yulastri (2019) researching the Development of Competency Based Learning Model in Learning Computer Networks. It was found that the developed competency-based learning model can facilitate learners to be active, creative, and able to develop learners' knowledge about computer networking to improve. It was in alignment with Sachiwan Thapwasu (2017) studying the spiritual development strategies in being a teacher to promote professional teachers of students in the Faculty of Education, Suan Sunandha Rajabhat University. It was found that the students had a high level of overall and individual teacher spirit. As for the guideline for developing the spirituality of a teacher, it should instill a sense of being a teacher first. The emphasis should be put on building knowledge through practice that is consistent with 21st century skills and being a professional teacher with dynamics to keep up with the changing sciences, to monitor the progress of the teaching profession with strategies to develop teacher spirit as well as promoting professional teacher. It consists of 4 main strategies and 12 secondary strategies. Therefore, the effectiveness of developing high-performing model students in the digital era should be coordinated by the Ministry of Higher Education, Science, Research and Innovation, and Ministry of Education. Faculty of Education, Rajabhat University, should support to promote the upgrading of pre-service teacher production in other competencies and guidelines for developing coaching teachers in vocational training schools. In addition, there should be practical training with students, teachers and coaching teachers to develop the competencies necessary to cope with rapidly changing situations.

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