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A Development of Teacher Profession Internship System for Pre-Service Teacher in Double Major Bachelor of Education Program

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Abstract

This research synthesizes the teacher profession internship system for pre-service teachers in the 4-year double major program from good practices including components study, prototyping and efficiency assessment in order to propose a guideline for further development and implementation. Research data was collected from 3 sample groups consisting of 16 informants of qualitative data, 135 informants of quantitative data and focus group with 8 experts. Research instruments comprised of interview form, need assessment questionnaire, suitability assessment form and focus group discussion. Qualitative and quantitative data was then analyzed by content analysis and statistics, respectively. The major findings of this research were: 1) Main components of teacher profession internship system from good practices consisting of Goal, Principles, Process, Assessment, Supervision, Partner School and Support System; 2) The mean of overall need assessment of teacher profession internship was .038. In all aspects, the PNI modified values ranged from .023 to .049. The top 3 areas with the highest values were (i) Curriculum and course management at .049 (ii) Other duties as student teacher at .048 (iii) Teacher profession internship process at .043; 3) Teacher profession internship system of the 4-year double major program comprises of 6 components including: Goal, Principle, Input, Process, Output and Supporting System; 4) Efficient Assessment result of the system for teacher profession internship was at the highest level, with average score of 4.90; and 5) Guidelines for implementation consisted of (i) All process school partnership (ii) Hybridity Curriculum Design (iii) Professional Work-Integrated Learning (iv) Process-practice assessment (v) Cooperative Supervision Culture (vi) Belonging and (vii) Proactive Support System.

Introduction

A development of teacher profession internship system is a major emphasis of teacher professional reform, specified by the National Education Act 1999 and its additional amendments (No.4) 2019 (Office of

the National Education Commission, Office of the Prime Minister (2019) , The aims of the reforms are for organization of the system and production process as well as development of teachers with quality and standards appropriate for high-level professionalism,

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improvement of teacher preparation institutions to be ready to prepare and develop new personnel by beginning the internship system from the 1st year in order to continuously develop teaching skills and uplift teachers' spirit (Office of the Secretariat, Education Council, 2017). At present, there are various types of teacher preparation programs responding to requirements of undergraduate students and actual working situation of graduate users in schools. There is development of a double major program of which students are required to study 2 majors as well as perform the teacher profession internship in schools. This is not only a way to increase options for selecting the profession but also to serve current requirements of graduate users who wish to have teachers able to teach multiple subjects or able to teach and provide teaching support in the school (Sasiwuttivat, 2015). This approach is consistent with the work by Pitt and Tepper (2012) and Del Rossi and Hersch (2016) indicating that the double major program is an education program which is worthwhile for education investment and in accordance with workforce market that requires multitasking personnel. It was found that an important element for professional success is a development of student's cross-cutting capacities. However, the double major teacher profession internship has its own context such as preparation for pre-internship, content identification, workload and partner school selecting. Teacher education institutions therefore need to plan and identify components of the teacher profession internship system in order to help students build their competencies essential for teaching in both majors.

From literature reviews, it was found that students in the double major program still lack deep knowledge in their majors because they have to study two major subjects but there are only few modules of such majors, resulting in their academic strength and self-confidence (Sriprasert, 2019; Yarnruksa, 2021). This finding conforms with Sukbunpant, Pattanaprasit, Yoddamnoen, Singas, and Jomkham (2016) which stated that studying in double major program may cause graduates' a reduced vision in specific aspect and lack of accuracy in content of the two majors. Furthermore, Pitt and Tepper (2012) stated that double major students need a development of their capability of integrated learning which is hard to do by themselves. The aforementioned problem reflects that the current process of teacher profession internship has not developed the aimed knowledge, competency, and teacher characteristics to students in the double major program.

teacher characteristics to students in the double major program. This may be due to the management of the double major program, with complications in selecting partner school, identifying content and duration of the internship for both major within one semester. These factors resulted in a heavy workload for student teaching preparation, which may consequently affect their teaching and learning efficiency (Boonrat, 2020).

A study of problem conditions and causes from related researches reflected that the development of effective double major teacher profession internship process requires the development system to study and synthesis good practices of double major teacher profession internships in order to set guidelines for management. Furthermore, designing the process as well as problems that should be prevented, solved, and developed so that the production of double majors student teacher is effective; built upon requirements of students, society, and graduate user, in order to identify important components that help develop students' competency in accordance with professional standard. Such process has to be a working plan that continuously exists in the program implementation process. There has to be integration of all aspects of teaching principles and actual teaching work, an integration between two major subjects for promotion of teaching potential with optimized efficiency, coordination of management, preparation of partner school, and creation of understanding of the double major program to stakeholders (Sukbunpant et al., 2016; Khamtool, 2021).

A conceptual theory that can be employed as a foundation for the development of double major teacher profession internship system, which helps promote students' ability to connect their theoretical knowledge to practice in actual situation and to support creating coordination between teacher education institutions and partner school, is the Hybridity Theory which indicates the middle gap while being blended, or so-called the third space concept, that can solve problems of replacement and cultural negotiation (Bhabha, 1990). As Zeichner (2010) explained, the Hybridity Theory is the theory which denies existence of two domains, such as theory and actual practice, but both domains are related and interconnected. Moreover, Lewis (2012) has employed the third space concept for reducing the gap between implementing theory into actual practice by carrying out the university-school partnership and it was found that this approach helps students link theory to implementation and promote positive attitude while working with mentor teachers and university lecturer.

In this regard, such concept can be used for arranging the teacher profession internship system in the double major context by linking knowledge and skills of major subject 1 and major subject 2 in order to completely fulfil the teaching of each major as well as linking theoretical knowledge of both major subjects to actual teaching practice in schools, which can improve teaching efficiency of student teachers. However, such theory requires a clear guideline for professional internship that continuously link the theory and actual practice in working places throughout the system so that teachers can learn to achieve the objective of Work Integrated Learning (WIL), which is a blend of professional experiences outside and inside the classroom (Kramer & Usher, 2011). This approach is an experience-based learning that provide students with opportunity to apply knowledge, working skill, specific profession-related skill, and to learn actual working experience before their graduation, as found by Rusznyak and Bertram (2021) that such concept help teacher better understand the science of teaching, design approach, and learning management. Besides, the concept helps to increase knowledge, context response, and ethical principles essential for teaching profession, under supervision and feedback of mentoring teachers. Therefore, the researcher is interested in implementing such concept for system development and proposes a guideline for double major teacher profession internship program.

Objectives

1. To synthesize the teacher profession internship for pre-service teachers of the 4-year double major program from good practices.
2. To study components of the teacher profession internship system for pre-service teachers of the 4-year double major program.
3. To develop the teacher profession internship system for pre-service teachers of the 4-year double major program.
4. To assess efficiency of the teacher profession internship system for pre-service teachers in the 4-year double major program.
5. To propose a guideline to implement the teacher profession internship system for pre-service teachers of the 4-year double major program.

Conceptual framework

The Hybridity Theory is the theory which denies existence of two domains, such as internship and academic knowledge or theory and actual practice, but both domains are related and interconnected. (Zeichner, 2010). This can be utilized for organizing the teacher profession internship which corresponds to the rationale of Work Integrated Learning (WIL) and is a collective effort by partner schools and universities as service providers of teacher education qualifications to ensure career specific and full-rounded learning through the application of theoretical and academic learning with real-life practice of teaching and learning in a variety of school contexts. (Kramer & Usher, 2011; De Beer, Petersen, & Van Vuuren, 2020)

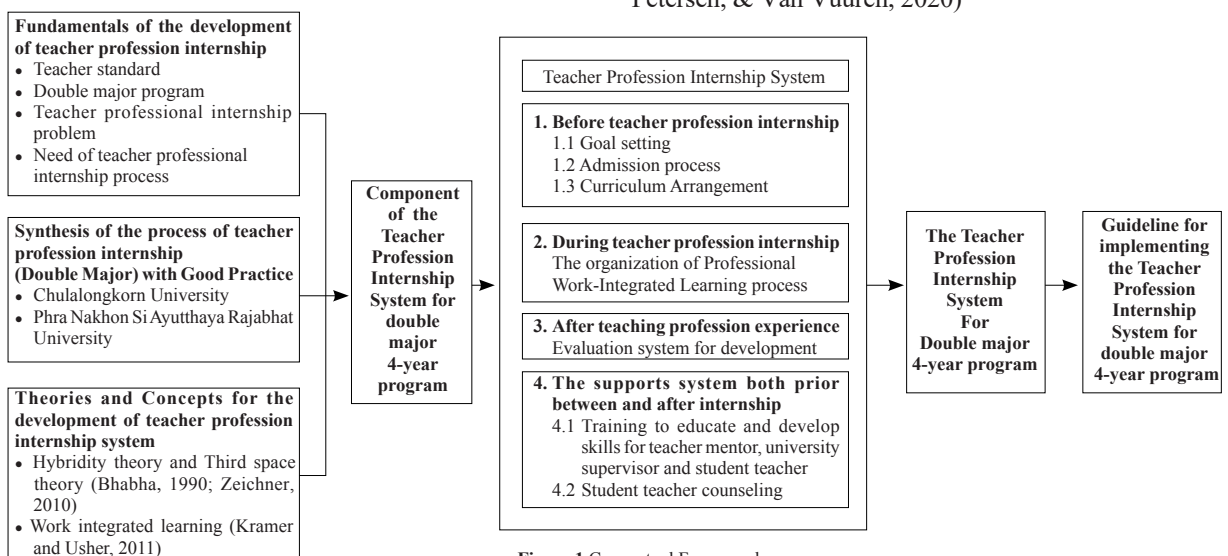


Figure 1 Conceptual Framework

From that concept, the research conceptual framework was formed as shown in Figure 1.

Research Methodology

Research Scope

The researcher has specified the scope of this research in accordance with research objectives, as follows.

Informants are divided into 3 groups as follows.

1. Informants of qualitative data. The researcher selected group of samples by using the purposive sampling method, based on specified criteria and informants' consent, comprising of the following:

1.1 Representatives of teacher education institutions comprising of 1 executive, 3 university supervisors in the double major program, and 3 lecturers.

1.2 Representatives from graduate-users comprising of 2 school executives and 3 mentor teachers. The researcher specified criteria for selection of the school by category of schools, and also schools which volunteer to provide information.

1.3 Experts of teacher profession internship from institutions that produce pre-service teachers in the double major program, totaling 4 representatives of 2 institutions.

2. Informants of quantitative data comprised of the following:

Population was comprised of 329 students in the Bachelor of Education Program with double major who were performing their teacher profession internship in the academic year 2019.; in teacher institution that had the double major program in Bangkok and Ayutthaya Province, Thailand. This group of the population were asked for their opinion of requirements essential for teacher profession internship of the double major program.

Sample Group was comprised of 135 students in the Bachelor of Education Program with double major who were performing their teacher profession internship in the academic year 2019. This sample size was considered in accordance with a table of sample-size specification created by Karnchanavasee, Pitayanont, and Srisukho (2008) which specifies an appropriate size of 131 samples at 0.95 level of confidence with acceptable error level of 10%. The researcher therefore specified a size of 135 sample in order to prevent loss of data. The research utilized the Stratified Sampling method to come up with sample group, by dividing student teacher from

teacher education institution with double-major program into 3 groups, then sampling was based on field of study by using the student teachers as a random unit at 20% per major.

3. A group of experts in focus group. The experts were in the field of teacher profession internship including representatives of teacher education institutions which has a double major program, representatives from mentor teachers, and university supervisors, by a person with a doctoral degree, majors in curriculum and teaching, and has teaching experience in double major program; or a person with at least 5 years of experience relating to the teacher profession internship in schools. The focus group totaled 8 persons that provided information related to guidelines for implementation of the teacher profession internship system.

Research Instrument

The researcher studied prior research related to teacher profession internship in order to define operational definition and develop instrument which was suitable for research goal (Zeichner, 2010; De Beer, Petersen, & Van Vuuren, 2020). The details of the research instrument consists as follows:

1. Interview Form for synthesizing the teacher profession internship from good practices. This is a form for structured-interview that needed content validity test and use of language by experts. It was found that The Index of Item-Objective Congruence (IOC) was between 0.80 – 1.00. The form was then revised based on experts' recommendation.

2. The need assessment questionnaire for double major teacher profession internship. This consisted of a five-level Likert Scale questionnaire with dual response, totaling 86 questions. The questionnaire's quality was examined by experts and tested with 30 samples. The value of item-based discrimination index was between 0.36- 0.84 while the reliability test for total set of questions showed that the value of α -Cronbach coefficient was 0.85

3. An assessment form for suitability of the teacher profession internship system. This was a five-level Likert Scale form with 10 questions. The form's quality was examined by experts and tested with 30 samples. The value of item-based discrimination index was between 0.31- 0.82 while the reliability test for total set of questions showed that the value of α -Cronbach coefficient was 0.87.

4. Focus group issues related to implementation

of the teacher profession internship system into actual practice. The content validity and use of language was tested by experts. It was found that the index of item objective congruence (IOC) was between 0.80 – 1.00.

Research Procedures

The research procedures were divided into 6 steps, including:

1. Study documents, theories, and research in relation to teacher profession internship, teacher profession standard, double major program, and conceptual theories used as foundation for development of teacher profession internship system, and creation of operational definition.

2. Synthesize the good practices of double major teacher profession internship by studying relevant documents and in-depth interviews with executives from agencies that produce double major student teacher, based on components of the teacher profession internship specified in the research's operational definition.

3. Conduct need assessment questionnaire of persons relevant to teacher profession internship, with focus on essential requirement of double major teacher profession internship in order to specify components of the teacher profession internship system.

4. Develop a system for teacher profession internship by drafting the teacher profession internship system based on conceptual theory and qualitative and quantitative data collected. Then, the system's efficiency was assessed by experts and feedback data was used for system improvement.

5. Produce and draft a guideline and organized focus group discussions to consider the drafted guideline for practical implementation of the teacher profession internship.

6. Analyze data and summarize research result.
Data Analysis

The researcher analyzed qualitative data by using content analysis technique and analyzed quantitative data by using frequency, percentage, standard deviation, and present results of data analysis in the forms of tables and description.

Results

The research results are presented in 5 parts based on research objectives, as follows.

Part 1 A synthesis of double major teacher profession internship from good practices comprising of 7 components, detailed as follows: 1. Goal: Emphasize

the benefits of student teachers as it increases job opportunities. The content of some majors is interrelated and if the teaching is integrated, the efficiency of teaching and teaching practice in schools will be enhanced. 2. Principles: There are 3 concepts that were employed for designing teacher profession internship comprising; Competency-based learning, Curriculum alignment, and Co-working between the teacher education institutions and partner schools. 3. Process: Preparation process Conduct a seminar with the partner school and an orientation for students in order to explain guidelines for the internship, During Teacher profession internship; Year 1 and 2: Main activities are Classroom assistance, teaching observation and reflection, in which the institution shall provide students with internship that covers both education level and context of the school in order to allow students to perceive various contexts of teaching. Year 3: Students are provided opportunities for teaching practice of the double majors in equal proportion, in order to develop students in accordance with the predetermined competencies of each major. Year 4: Main activities are teaching practices, teacher duty practice, classroom research, learning innovation development, and organization of academic project. Post internship: Conduct a seminar for exchange with their university's major supervisor and peers for enhancing essential knowledge before performing teaching profession. 4. Assessment: Focus on objectives of each year. Assessed by executives, mentor teacher, and university supervisor. 5. Supervision: Joint supervision conducted between university supervisors and mentor teachers of the two majors, which help students perceive the overall picture and link of teaching in both majors. 6. Partner school: Primary criteria for selection is a consideration of major subjects which schools is limited, and then the second major shall be considered. 7. The support system: Organizing activities to enhance students' academic strength, problem solving, and self-confidence before internship and organizing training for university supervisors and mentor teachers.

Part 2 Components of the 4-year double major program teacher profession internship system

2.1 Result of need assessment to identify components of the teacher profession internship system for student teachers of the 4-year double major program comprises of following details.

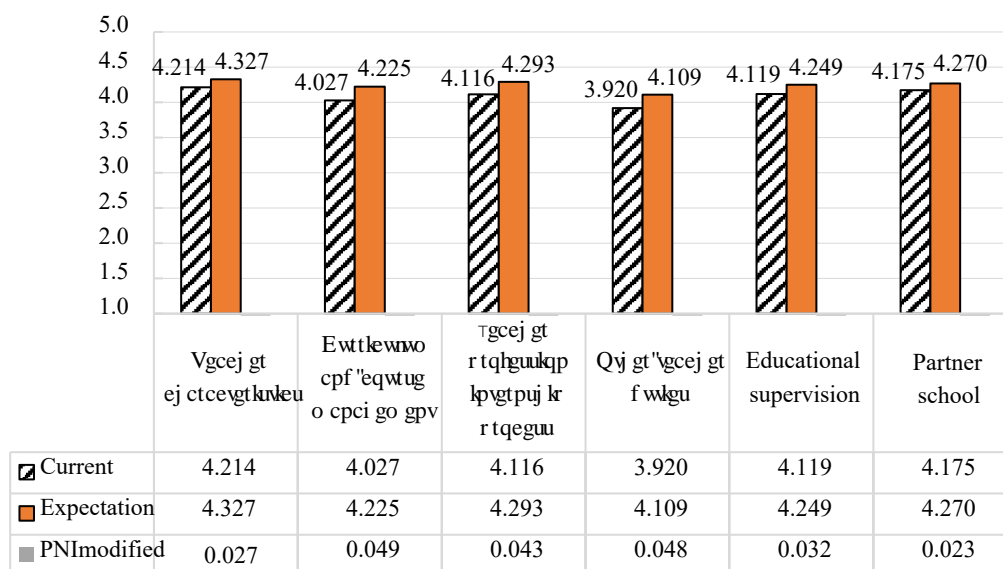


Figure 2 Results of need assessment of teacher profession internship for double major student teachers, (PNIModified) (Overall)

From Figure 2, based on Priority Needs Index (PNI Modified), overall conditions and needs for double major teacher profession internship had an average value of .038. While PNI modified values in all aspects ranged from .023 to .049. The top three were (i) Curriculum and course management at .049 (ii) Other teacher duties at .048; and (iii) the teacher profession internship process at .043.

Results of needs assessment for teacher profession internship for double major student teachers (n = 135 students)

By evaluating the Priority Needs Index value (PNIModified), the highest need of each aspect for teacher profession internship for double major student teachers are as follows. 1) Teacher characteristics aspect requires the responsibility at .040 2) Curriculum and course management aspect requires course management skill to promote the integration of knowledge and expertise of two majors at 0.93 3) Teacher profession internship process requires: a) Pre-internship period: There should be pre-screening system to qualify and select the partner school whose quality and environment is suitable for student teachers at .056 b) During the internship: i) To encourage student teachers to observe teacher and student behavior during the first year at .082 ii) To support the homeroom teacher during the second year at .084 iii) During the third year, to conduct curriculum analysis, development, design, organizing the learning activity, learning media and tools usage and

assessment at .081 iv) Lastly during the fourth year, to be able to apply the knowledge and experience from curriculum to design learning activities suitable for both majors at .068 c) Post-internship period: to organize extracurricular activities to provide the necessary knowledge and skill for double major students to start teaching career at .045 4) Other teacher duties is to organize student camp activities at .104 5) Educational Supervision a) A process that university supervisors and mentors from both majors at .050 b) Proper supervision system provided by the Supervisor to provide sufficient data and information to student teachers at .049 c) Mentor who has knowledge and good understanding on teaching institute's internship approach and assessment at .073 6) Partner school to arrange the teaching schedule with curriculum or class that corresponds to double major student at .066

Part 3 Development of the system for double major teacher profession internship

The system for teacher profession internship for student teachers of the 4-year double major program is comprised of 6 components, with following details:

1. Goal of the system for double major teacher profession internship: To develop capability to integrate the science of teaching and content of major subject, capability to integrate both major subjects with teaching and operating professional teacher tasks, and capability to adapt themselves in various situations with the concern of professional standard.

2. Principle of the system for double major teacher profession internship

2.1 Specifying goal of the teacher profession internship with consideration of professional standard, requirements of partner schools, and identity of double major student teachers.

2.2 Linking the relationship between relevant components in order to create new learning which is an identity of students in the double major program, with 3 patterns of link, including; 1) Linking knowledge of pedagogical science (Space 1) and content of major subject (Space 2), 2) Linking knowledge of the first major subject (Space 1) and the second major subject (Space 2), and 3) Linking theoretical knowledge gained from studies in the university (Space 1) and experience gained from partner schools (Space 2), with emphasis on integrated learning through professional internship until achieving the targeted competencies for efficient organization of teaching and learning (Third Space).

2.3 Organizing the internship process emphasizing on Professional Work Integrated Learning in actual workplace by allowing student teachers face ill-structured problems or situation that stimulate considerate reflection and require theoretical and practical knowledge to resolve or develop new knowledge or skill.

2.4 Using the integrated collaborative coaching process in which mentor teachers and university supervisors jointly specify goals of training, supervision, and assessment that are continuously carried out based on empirical data and a variety of methods, giving feedback and preparing learning environment that support students to gain targeted competencies and increase confidence for rationally solving classroom problems with principles.

2.5 Lesson learned and reflection on results of professional internship and linking knowledge between major subjects with peer students, mentor teachers, and university supervisors from both major subjects, via professional learning community, in order to develop targeted competencies of both major subjects.

3. Input factors are comprised of preparation before sending students to perform their internship in schools which includes arranging of course's subjects, preparing partner schools, university supervisors, mentor teachers, and the database management and support system.

4. The process for teacher profession internship with the following details.

4.1 Before Teacher profession internship

The preparation system before the internship is divided into 3 parts as follows.

4.1.1) Identifying an internship school and teaching patterns by considering qualifications of schools based on professional standard, consent of partner school to accept students from both majors, and nature of the double major subjects. The model can be divided into 3 types as follows:

Table 1 The model of teacher profession internship for double major student teachers

Double Major Characteristics	Number of internship schools	Teaching practice model	Teaching practice period
Double major with learning area subject in school	1	Parallel model	Practice teaching 2 majors at the same time, 4-5 hours each.
Major subjects that student teacher always has to interact with students such as primary education, early childhood education, special education, etc.	1	Segmented model	Practice teaching 2 majors half semester each
Majors that have a specific source of professional internship, such as lifelong education, industry and business education and etc.	2	Separated model	Practice teaching 2 majors on scheduled days e.g. 3 days for each major, etc.

4.1.2) Publicizing and organizing seminars for partner school to create understanding of specific character of the double major internship, such as information for consideration to accept students for internship, and prepare plans for internship in accordance with goal of producing double major student teachers.

4.1.3) Organizing seminar for student orientation in order to explain and create understanding of guidelines for carrying out teaching, performing teacher works, scope of internship and assessment, and providing additional knowledge essential for professional internship such as design of learning management, conducting classroom research, working culture in schools, working with teacher spirit, and lesson learned reflection.

4.2 Process during teacher profession internship

The process during the internship is in accordance with criteria of professional standard, which is different based on targeted competencies of each year and can be detailed as follows.

Year 1: Inquirer Teacher Student (IST) (4 hours per week) Allowing students to see operational working in schools, in various levels and contexts. Main activities include observation of general administration

system, observation of teacher's works, classroom observation, study of community context, sources of learning, culture, and reflection that can link the educational theory with the internship.

Year 2: Teaching Assistantship (TA) (5 weeks continuously) Enabling students to perform teacher works and help teachers prepare and teach in the classroom. Main activities include observation of general subject teaching, help teachers in teaching and homeroom teacher, and reflection that can link the educational theory with the internship.

Year 3: Collaborating Teacher (CT) (5 weeks continuously) Developing capability in planning and teaching both major subjects by themselves, under supervision of mentor teacher and university supervisor. Main activities include teaching observation, operational teaching practice of both major subjects and reflection, by encouraging students to link knowledge of both major subjects with their operational teaching in order to create students' targeted competencies for the double majors.

Year 4: Integrated Teacher (IT) Provides integrated teacher profession internship in both teaching of both major subjects and performing teachers' works continuously for 16-20 weeks, with 4-5 hours teaching of each major subject. Main activities include teaching, classroom management, assessment, teacher's works practice, classroom research, learning innovation development, and executing academic project.

4.3 After teacher profession internship comprises 3 parts as follows. 1) Lesson learned and reflective discussion on results of internship. 2) Providing essential knowledge before student teacher perform professional teaching, and 3) Assessment of internship; identifying points for assessment will be different depending on the targeted competencies of each year of study, with emphasis on work performance, behavior, teaching, and relationship with parents and communities. Assessors are comprised of school executives, mentor teachers, and university supervisor from each major subject. Assessment method include observation on development of work performance and teaching.

5. Output (Competencies)

Core competencies that are consistent with the goals of the curriculum and the requirements of partner school are; 1. Connection; Linking pedagogical with major knowledge, linking major knowledge with teaching and linking knowledge of 2 majors 2. Integrated Teaching; Integrated teaching design, integrated teaching practice, integrated assessment and reflection

3. Flexibility and Adaptability; Adaptability, problem solving and communicating and working with learners, teachers, parents and communities.

6. Support System is comprised of a system for student supervision, development of university supervisor and mentor teachers, a system for student support, organization of activities to enhance knowledge, skill and characteristics of teacher, and development of database.

Part 4 Efficiency Assessment of the system for teacher profession internship for Pre-service Teacher of the 4-year double major program

Table 2 Analysis result of Efficiency Assessment of the double major internship system

Assessment item	M	SD	LEVEL
1. Goal of Teacher profession internship system of 4 year double major program	4.80	0.45	highest
2. The principle of Teacher profession internship system	4.80	0.45	highest
3. Input	4.87	0.10	highest
4. The process of Teacher profession internship system	4.91	0.16	highest
5. Output	5.00	0.00	highest
6. The support system of Teacher profession internship system	4.93	0.10	highest
Overall	4.90	0.12	highest

From Table 2, The overall results of the assessment for suitability of the system for teacher profession internship was at highest level, with average score of 4.90. The experts considered that the drafted system for teacher profession internship was complete with clear and systematic process. However, there are additional recommendations as follows: 1) The system principle should include Professional Learning Community (PLC) and research process for use in development of innovative professional internship, 2) Before the teacher profession internship, the teacher education institutions should prepare students' readiness for working culture in schools and working with teacher's spirit, 3) the teacher profession internship in Year 1 should indicate keywords in relation with studies of community contexts, sources of cultural learning, and local wisdom 4) In the assessment part, the point of relationship with parent and community should be included and the proportion for assessment by mentor teachers and university supervisor should be equal, and 5) The aspect of mentor teacher and university supervisor, information of criteria or qualification specified by the Teacher Council should be added. The development of teacher profession internship system is detailed as shown in Figure 3.

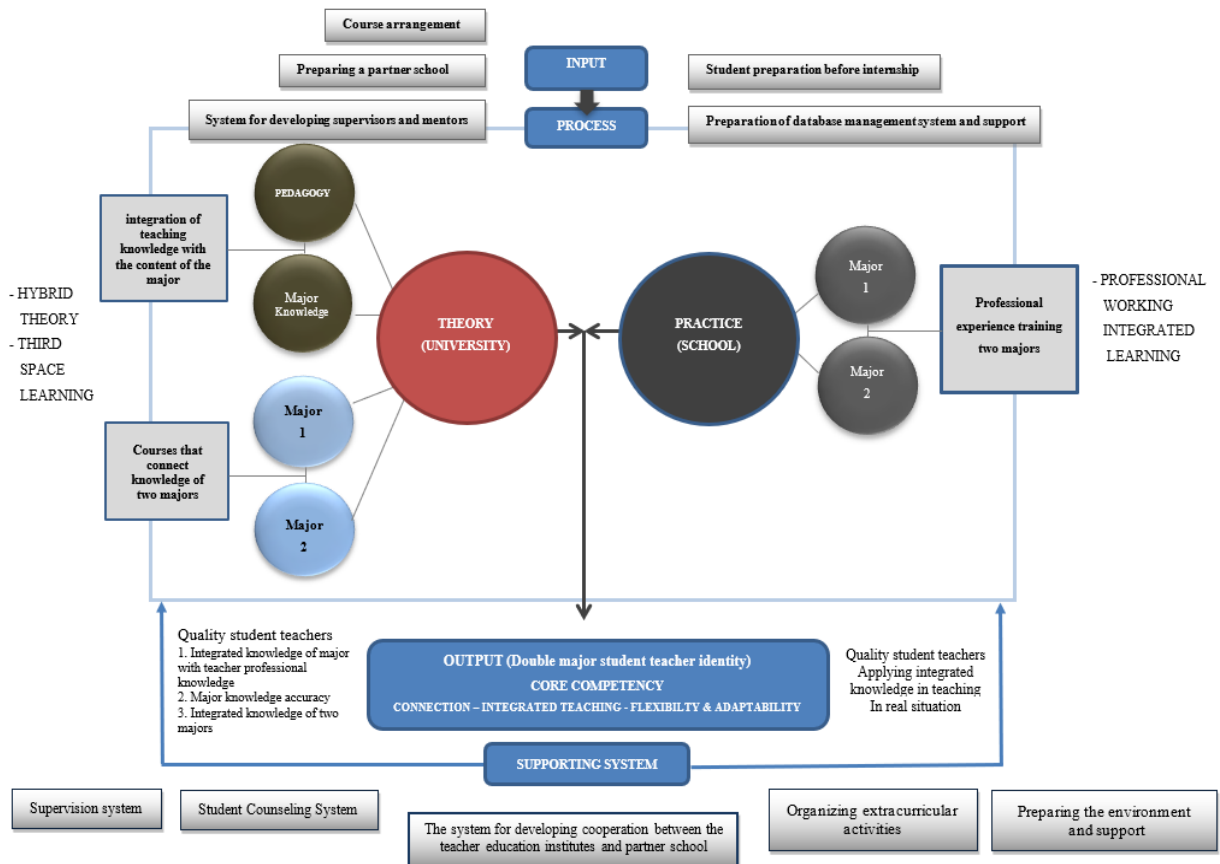


Figure 3 Chart of the teacher profession internship system for pre-service teacher of the 4-year double major program

Part 5 Proposal of guidelines for applying the system for double major teacher profession internship for development and practical implementation

From the synthesis of good practice, the study of system components through a need-assessment analysis and system assess efficiency result by experts. The researcher therefore created a guideline for applying the system for development and practical implementation as follows:

1. All-process School Partnership is specification of policy for internship with emphasis on co-working between teacher education institutions and schools during the whole process of internship; starting from specifying requirements of the double major, targeted competencies, training process, assessment, and supporting system.

2. Hybridity Curriculum Design is specification of structure, content, experience, and duration of internship with consideration of links for each subject in

the course and practice process, connection between two major subjects, and targeted competencies required to provide for students in each year-level.

3. Professional Work Integrated Learning is to design a process for professional internship by using various methods with emphasis on integration learning and actual practice in professional context under supervision of mentor teachers and university supervisors of both major subjects.

4. Process-practice Assessment is focused on assessment for development with emphasis on joint assessment between teacher education institutions, partner school, and communities.

5. Cooperative Supervision Culture is development of supervision culture that emphasizes co-working between mentor teacher and university supervisor, and between mentor teachers and university supervisors from both major subjects, in order to create cooperation for sustainable development.

6. Senses of Belonging is to encourage sense of belonging and joint responsibility of internship school, and develop the system and network for motivation and development of internship schools and mentor teachers.

7. Proactive Support System is development of a system for providing consultation and assistance, organizing additional activities that promote integration of knowledge from both major subjects, and developing an online database system which can connect data and communication between students, teacher education institutions, and internship schools.

Discussion

1. The result of a synthesis of double major teacher profession internship from good practices found that the goal and principle of internship of the double major was to help students learn from a variety of experiences for both of the two major subjects, able to adjust themselves in various situations and increase opportunities for their profession, which corresponds to a study by Lam (2015) which found that the double major program is becoming more popular among academic institutions and students because the program can produce graduates that meet requirements of graduate users and the society. It increases employment opportunities and professions in the future. The program also saves time and cost for education as it takes the same duration as other programs but increases opportunities for work. In the aspect of professional internship, students need to carry out internship based on competencies targeted for each year of study in both majors at the same time. As such, students have to learn about time management during teaching and actual work. This conforms to a study by Richard and Tepper (2012) in which students of the double major reflected that studying double major subjects enabled them to think differently in various ways and find more creative ways to perform the assigned tasks. In this regard, it may be resulted from the fact that students have to carry out teacher profession internship for both major subjects simultaneously so that they have to prepare their readiness, both in content and teaching of both major subjects, altogether with learning of time management and adjusting themselves to work with others. Furthermore, management of internship of the double major has a complicate process because it requires internships of both major subjects with various patterns of organization, which needs cooperation from several

parties. This conforms to Richard Laster and Whitney (2011), stating that studying double majors is uneasy because students need time to manage complicated study timetable and to exert their efforts and more time for their internship in order to gain expertise in both subjects. As such, double major student's professional internship needs cooperation from those involved in designing and making decision of professional internship in their majors, together with creating understanding for students, university supervisor, and partner schools to understand the roles under their responsibility.

2. From research result, it was found that the first 3 essential requirements for double major teacher profession internship are the aspect of course's subject arrangement, the aspect of other teaching work, and the aspect of teacher profession internship process. Regarding the course's subject arrangement, it was found that the most essential requirement is an arrangement of subjects that promote integration of knowledge and skill of two majors and the link between theory and teaching, which conforms to the research results of Prachyapruit (2018); Thanaphatchottiwat, Wattanatorn, Parnichparinchai, and Prachanban, (2015), and Phompun, Thongthaw, and Zeichnerl (2013) which found that design of activities for teacher profession internship still lacked connection between theoretical learning and practical implementation. This was observed from separate organization of activities between theoretical subjects, responsible by teacher education institutions, and practical subjects, responsible by partner schools, but there is no activity that encourage students to apply theoretical knowledge into the actual classroom. Moreover, there is essential requirement of subject arrangement that encourage students to link the content of both major subjects. This conforms to Sukwan (2021) stating that the double major program was not previously designed to have the workload that encourage students to apply knowledge of both major subjects into teaching. As such, the teacher education institutions should clearly specify the workload that students can link knowledge from both major subjects. Regarding performing other works of the teacher, it was found that the first three essential requirements included organizing student camp activities, organizing academic projects/community services, drafting and typing of official documents, which are important tasks for teachers. However, it was found that most students could not effectively perform teacher's work and duties. In addition,

they were not aware that the professional internship does not comprise only teaching but also performing teacher duties in schools. As stated by Asawatrakulwong (2021), some student teachers still do not understand that the professional internship is comprised of teaching and performing the assigned teacher duties which creates frustration among the student teachers at work. Therefore, teacher education institutions should prepare student teachers so that they are ready for teaching and performing teacher duties, and should explain all workloads to students before their internship.

Regarding the process before internship, it was found that the most essential requirement was that the teacher education institution needs to carefully select partner schools with understanding of the pattern for double major internship, which corresponds to statements by Sriprasert (2019), regarding the process before the internship, that the teacher education institution needs to carefully select internship partner schools with understanding of the pattern for the double major internship and can accommodate internships for students from the two majors. Regarding the process during internship, for students in year 1 and year 2, the most essential requirement is to promote observation of teachers' and students' behavior, and training for class teacher assistance, which conforms to the College of Education (2018) which requires student teachers in year 1 and 2 to practice observing teachers, students, school environments, participation in lesson preparation, and class teacher assistance. For year-3 students, the most essential requirement is a course analysis, development of study units, planning, designing, and arrangement of learning activities, media and assessment utilization, which conforms to the study result of the Office of the Secretariat, Education Council (2017) which found that the quality of graduated teachers still lacked skill, knowledge, capability, and competency required by professional teacher standard in course development, teaching arrangement, and student evaluation and assessment, which affect quality and efficiency of teaching and learning arrangement as well as quality of students. This conforms to Pennsylvania Teacher Candidate (2021) which specified competencies of student teacher with emphasis on transferring knowledge of content and science of teaching, teaching design, evaluation and assessment design, and reflection of students' learning. For students in year 4, the most

essential requirement is an application of knowledge to design learning activities for both major subjects. As Prasomsuk et al. (2021) mentioned the capability for teaching in the 21st Century is the need to be capable of integrating teaching, knowledge, and able to teach crosscutting contents in order to improve students' learning. Regarding the process after internship, it was found that teacher education institutions should organize additional activities in order to prepare essential knowledge, skill, and characteristics for students of double majors before they start their teaching profession in schools.

3. From research result, the professional internship system was found to be the most appropriate. That is because the system was developed on the basis of studies of requirement, systematic thinking, beginning with identification of purposes, study of relevant principles, study of problem conditions, identification of system components, grouping and relationship of components, system plan arrangement, assessment and system improvement, which accumulate information of important components for development of teacher profession internship system, which meet requirements of relevant parties. This conforms to Khammanee (2021) who stated that to develop the system effectively, as targeted, system thinking is required to identify targets, important components, and relationship between components. Important components should be comprised of at least 3 parts including input, process and product. Main purpose of such system is to develop student teachers with ability to integrate the science of teaching and content of double major subjects, ability to integrate both major subjects in learning management and operating teacher profession, and ability to adjust themselves in various situations through Work Integrated Learning which emphasizes student teachers to train in accordance with the targets specified for each year of study in both majors. This conforms to Abery, Drummond, and Bevan (2015) who studied Work Integrated Learning, which provides opportunity for students to explore and expand theoretical concept throughout learning in order to apply for real-life situation. It was found that such a concept enables students to apply theoretical knowledge into professional internship through learning of experiences and reflection. Similarly, Bouwer, Venketsamy, and Bipath (2021) found that use of the Work Integrated Learning together with development of practical community and reflection will enhance working experience and prepare teachers to be

ready for future teacher profession with capability and confidence.

Besides, such system also emphasizes on linking a relationship between relevant components in order to promote new learning which is an identity of students teacher in the double major by linking knowledge of teaching science and content of the major subjects, linking knowledge of the first major and the second major, and linking between theoretical knowledge gained from university studies and experience gained from practice in schools, under teaching process by mentor teacher and university supervisor, and considerate reflection on the result of internship, with an emphasis on integrated learning through professional experience, until achieving targeted competencies. This conforms with the research of Lewis (2012) which applied the concept of third space for reducing the gap between application of theory into practice during the internship which can be carried out by the cooperative partnership between university and school in order to solve problem of students being unable to link theory into practice. It was found that such concept has enabled students to link application of theory to actual practice and promote positive attitude during co-working between mentor teacher and university supervisor, in which they can provide academic support to each other. Similarly, Childre and Van Rie (2015) studied training of mentor teacher by using hybridity model for promoting cooperation in student teachers development and promoting quality of professional internship. The research result found that use of such pattern helped to create awareness of the necessity of professional internship and responsibility of associate teacher, which can be applied for development of sustainable pattern for professional internship and preparation of personnel for teacher profession internship.

4. According to educational research for solution on how to apply the internship system into practice and development, we might be able to elaborate into 2 topics as follows.

4.1 Based on the proposal to formulate the internship policy by collaboration between teacher education institutions and partner school as All-process School Partnership, teacher education institutions therefore should invite representatives from partner school into policy formulation committee to seamlessly cooperate and be aligned on the agreed internship system. Both parties should also agree on clear roles and responsibility, time-frame, as well as developing a

platform to integrate and sharing the information in order to timely communicate among all stakeholders which would create sustainable cooperative culture. As Sukbunpant, Pattanaprasit, Yoddamnoen, Singa, and Jomkham (2016) stated that the double major program has a consideration on intensity of specific science for course development, there should be invitation to experts and relevant educational agencies to provide information, indicate requirements for double major graduate users, and provide consultation in all process of development. Also, there should be regular meetings between both major subjects periodically. Moreover, teacher education institutions must also cultivate the sense of belonging to partner school by emphasizing the importance of internship, adding the result or evaluation as the Key Performance Indicator (KPI), incentivize the activity as a qualification for applying higher educational title, and lastly supporting the research fund to develop the cooperation between teacher education institutions and partner schools. As Herzberg (1959) mentioned, the Two-Factor Theory deals with the morale building of workers. by focusing on motivating factors This is to create incentives for performing work, such as recognition and respect, achievement, advancement and Hygiene factors; such as status, security, and relations with others. This is in line with research from Puapuang (2020) to motivate, support, create security, building pride towards teacher for being a part of the institution and educational system.

4.2 Based on the proposed guidelines, the teacher education institutions should design the curriculum with due regard to the linkage of the courses with the internship process. The connection between the two majors and performance goals in each year. Teacher education institutions should properly design the curriculum based on connectivity between double-major requirements, both before and after internship. The process should also be designed based on actual teaching situation as well as assessing work process, result of team-work effort, output/lessons based on students' experience reflection by using a variety of methods and using the information obtained from the assessment to develop. According to De Beer, Petersen, and Van Vuuren (2020), Learning in practice provides student teachers with an understanding of the exigencies required from a professional qualified teacher. The value of Work Integrated Learning is that it enables student teachers to experience the expected connection between theory and practice, and this may result in an increased interest in both

partners schools and Higher Education Institutions involved in teacher education program. Such internship system should also have a proactive support system for student teachers, mentors and supervisors by establishing a system of consulting and assistance and extra-curricular activities that promote the integration of knowledge of both majors; as Sriprasert (2019) stated that teacher education institutions need to prepare their readiness and student supporting system by providing essential knowledge and skills for student teachers before carrying out their internship as well as strengthen confidence to partner schools.

Research Suggestions

Recommendations for application of research result

From the research result which found that the developed system is appropriate for application in development of student teachers in double major program, there are recommendations for teacher education institutions to apply the research results as follows.

1. Provide preparation for double major students concerning content's accuracy, integration ability, and capability to adjust themselves and problem resolution in various contexts.

2. There should be a research and development of the model for teacher profession internship between teacher education institutions and the partner schools under the concept of Cooperative Work Integrated Learning in order to coordinate cooperation in producing quality teachers and meet requirements of graduate users.

3. Creating academic cooperation and understanding of specific character of double major internship for partner schools and all relevant parties in order to ensure that all of the stakeholders have the knowledge towards the same operational guideline.

4. Creating a mechanism for development and support for partner schools, and promote participation in design of teacher profession internship.

Suggestions for future research

1. There should be a research-based development of system for teacher profession internship in order to prepare for management that can efficiently support students' learning.

2. There should be research and development for a model for organizing preparation activities, both in academic aspect and living skills, for double-major students, and a support system and assistance for students

during the professional internship periods.

3. There should be a research and development of reskill/upskill programs which promotes integration of knowledge from both majors in order to enable graduated student teachers in double major or in-service teachers in small schools and primary school teachers in need of teachers, who can teach multiple subjects, to revise and create knowledge and skill in the science of connection and integration in order to increase student's efficiency in learning management.

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