REINFORCEMENT OF PROFESSIONAL LEARNING COMMUNITY PROCESS FOR PROFESSIONAL ETHICS DEVELOPMENT OF STUDENT TEACHERS BY INFORMATION TECHNOLOGY SYSTEM

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Abstract

This research aims to develop the model reinforcing professional learning community through information technology system (E-PLC). The study was sectioned into four stages as follows: The first stage which is investigating the components and guidelines for the E-PLC revealed that the E-PLC consisted of seven components which hold significance at the highest level. The guidelines for each component include 1) principles, 2) objectives, 3) inputs, 4) processes, 5) outcomes, 6) impacts, and 7) success factor. The second stage of constructing the E-PLC model with seven components which was validated by experts, in overall and individual aspect, indicated suitability of the model at the highest level. The third stage of operationalizing the E-PLC model revealed that the model can reinforce PLC, in overall and individual aspect, at the high level; the students' knowledge achievement on constructing PLC showed a higher test score of the post-implementation than that of the pre-implementation of the model at the significance level of .01; and the competence assessment of students in creating PLC, in overall and individual aspects, was rated at a high level. The fourth stage of the E-PLC model's evaluation revealed that the usefulness was rated at the highest level while the feasibility for model implementation was rated at a high level. This study also provides recommendations for application towards Teachers' Council, university, faculty and program, and student teacher. Furthermore, there should be an annual monitoring study of the E-PLC in order to develop a comprehensive framework adjustable to various evolving trends and changes.
Keywords: Professional Learning Community Development, Student Teacher Internship, Teacher Ethics

Introduction

A teacher plays a significant role as a role model for students and is an important factor in improving or decreasing the quality of students. Promoting teachers to reflect on their practices for professional ethics development offers reflective impact on students and helps elevate the professional image of a teacher. Regulation of the Teachers' Council of Thailand on Professional Standards (Version 4), 2019 states that teachers have a direct impact on students, parents, families, communities, and society by training and teaching, giving experiences that promote the holistic development of students in becoming decent human for complete cognitive, psychological, physical and skills development. Those in this profession must hold a high level of responsibility, knowledge and expertise and show performance within the framework of professional standards. The Teachers' Council as a professional organization is in charge of maintaining professional standards. In the past, the Teachers' Council has implemented policies to promote the development of professional ethics among teachers through collaboration with teacher education institutions since 2018 known as the Ethics in Professional Learning Community (E-PLC) delivered via an online platform. The Teachers' Council has designed this project using collaborative learning focusing on experienced teachers as teacher mentors and the final-year student teachers undergoing internship in schools. The project utilizes the Professional Learning Community (PLC) approach for implementation in which teacher mentors are role models for junior teachers and student teachers who are about to enter the teaching profession. This process facilitates a real practice and learning experience of the teaching profession and the development of professional ethics. The teacher's expectations for embedding professional ethics are to nurture the spirit of individuals who are currently teachers or will become teachers in the future. Teachers' Council of Thailand (2021) has thus established 5 principles for professional learning communities including: 1) Shared values and norms 2) Collective focus on students' learning 3) Collaboration 4) Expert advice and study visits 5) Reflection dialogue.

The development of educational quality through professional learning community for teachers has been implemented in various countries, for example, USA, Japan and Singapore. In the United States, the professional learning community model has been utilized in elementary schools such as Missouri Elementary School (Rentfro, 2007), Virginia Elementary School (Burnette, 2002), Texas High School (Phillips, 2003) and California High School (Buffum & Hinman, 2006). These schools have investigated the students' learning needs and their learning preferences. For example, are they disadvantaged if they don't learn? Teachers thus underwent analysis and developed these findings to improve exam scores and assessment results (Hinman, 2007). Thailand established professional learning communities for teachers at the school and at the educational service area office levels. It serves as a platform for exchanging and sharing knowledge underpinning the announcement of the Office of the Teacher Civil Service and Educational Personnel Commission (2019). The guideline provided by the commission require teachers to engage in self-development and professional growth by creating professional learning community (PLC) for teachers' promotion of their academic status.

Professional Learning Community (PLC) is a collaborative learning process in which educators have a shared commitment to solve ongoing issues related to student learning. It involves continuous problem-solving discussions among the participants to address any challenges or concerns related to the students. Sergiovanni (1994) states that PLC fosters interaction and reduces isolation among teachers to improve student learning outcomes or academic affairs of the school. This aligns with Hord (1977) that teachers' assembly signifies collaborative leadership of teachers in transforming shared values and vision and learning to creatively apply what they have learned together into practice. This congregation is a driving force propelled by the needs and interests of PLC members to learn and develop their professionalization for the students' learning standards (Senge, 1990; Knapp et al., 2003). The transformation of the

learning management quality starts off from "teacher learning" whereby teacher learning envisions improvement and change and developing their own learning management for the benefit of the students (Keiler, 2018).

The School of Education, Phayao University, has participated in the Ethics in Professional Learning Community (E-PLC) project initiated by the Teacher's Council of Thailand since 2018-2021; however, no operational framework has been yet established. The researcher thus pays an interest in developing a model for reinforcement of a professional learning community for ethics development through information technology system. This model serves as a guideline for improving the quality of student teachers and mentor teachers in the networked schools to meet with the standards prescribed by the Teachers' Council.

The principal aim is to develop a model for enhancing professional learning communities through information technology systems (E-PLC) for student teachers in internship program with the following specific objectives. 1) To investigate the components and guidelines reinforcing professional learning community for ethics development through information technology (E-PLC) for student teachers in internship program. 2) To construct E-PLC model through information technology for student teachers in internship program. 3) To operationalize E-PLC model through information technology for student teachers in internship program. 4) To evaluate E-PLC model through information technology for student teachers in internship program

Literature Review
Professional Learning Community (PLC)
According to the Victoria State Government (2021), a professional learning community (PLC) is an approach to enhancing schools where teachers collaborate at the school level to improve student outcomes. PLC schools operate on the fundamental principle that students benefit from the collective efforts of teachers working together. Professional Learning Community (PLC) uplifts school performance by means of teachers working together to improve student outcomes. The PLC concept simply begins with an idea that students learn more when their teachers work collaboratively. The PLC thus paves the way for schools to empower student learning by promoting a culture that is: 1) focusing on continuous improvement by linking the learning needs of students with the professional learning and practice of teachers 2) adhering to professionalism 3) fueling by collaborative expertise.

Dufour et al. (2010) proposes that PLC is an ongoing process in which teachers work together in activating collective inquiry and performing action research to achieve better results for the students' learning. According to Dufour et al. (2010), the key components of a PLC involve: 1) student focus, 2) team collaboration, 3) collective inquiry, 4) action orientation, 5) continuous improvement and 6) results.

Intanam (2010) studied the development of benchmark for creating professional learning community in the school. The results indicated the components and indicators of PLC which consist of 3 components including 1) Factor, 2) Process, and 3) Outcome.

Adae (2018) examined the development of professional learning community model by participatory action research in primary school which consisted of 3 stages including 1) developing individual potential by workshop and action learning; 2) interpersonal potential development consists of 6 steps i.e. (2.1) comprehensive diagnosing problems (2.2) clear determination of focus (2.3) co-planning for problem solving (2.4) operating as planned (2.5) observation of results (2.6) co-reflection for improvement; 3) organization development by getting readiness on all supporting factors such as structure, social and leadership.

Leuanoi (2018) investigated the model for professional learning community administration of world class school which consisted of 3 sections including 1) introduction involves basic principle of professional learning community administration for world class school and its

objectives; 2) content involves leadership, learning and professional development, friendly community, team working, shared vision and community development structure; and 3) success factors.

Code of Ethics

The Teacher's Council promotes the development of professional ethics among teachers by designing collaborative learning between teachers as mentors and student teachers. This includes student teachers who are currently undergoing internships in schools. This approach utilizes the professional learning community which aims to promote mentors as role models for junior teachers and student teachers who are about to embark on their teaching careers. The Teachers' Council adheres to the principle of designing an operating system of professional ethics development for teachers by using the teacher professional code of ethics. The focus is on enhancing self-discipline among teachers and student teachers as well as delivering the best possible services to students.

The regulation of the Teachers' Council concerning professional ethics 2013 designated standards as the guidelines for professional conduct that education professionals must adhere to maintain and enhance reputation and status of trusted and respected education profession by service recipients and public. Teachers' Council mandated the regulations on professional ethics 2013, authority under Section 9, paragraph one (1), (11), (Jor), and Section 50 of the Teachers and Educational Personnel Council Act 2003, in conjunction with the resolution of the Teachers' Council with the approval of the Minister of Education. The main purpose is to establish professional ethics for education professionals, including themselves, service recipients, fellow professionals, and society. The regulations on professional ethics 2013 consists of 5 key categories. However, this research chooses to deploy only 3 related categories i.e. Category 1-Ethics towards oneself, Category 2-Ethics towards the profession, and Category 3-Ethics towards service recipients.

Information Technology System

According to Zwass (2020), Information System (IS) is a formal, sociotechnical and organizational system designed to collect, process, store, and distribute information. The sociotechnical perspectives of information systems consist of 4 components including task, people, structure (or roles), and technology. Information systems are designed to collect, store and process data for which the data is used to provide information, contribute to knowledge, and facilitate decision making.

Ministry of Education (2021) states that information technology used in administrative tasks aims to ensure efficient and cost-effective management as well as maximize the effectiveness of modern management at all levels which cover the following key aspects: 1) Deployment of innovation and information technology for decision-making: 1.1) Executive Information System (EIS) 1.2) Decision Support System (DSS); 2) Deployment of innovation and information technology for remote management; 3) Creating innovation and information technology for educational institution administration; 4) Establishing data networks through information systems for developing quality of education; 5) Deployment of innovation and information technology in educational management.

Kaewchoti (2007) stated that information technology concerns 2 aspects of technology which consists of computer technology and communication technology. These technologies are integrated for storage, creation and dissemination of information in various platforms such as audio, image and motion picture, text, and numbers for efficiency and effectiveness in regard to accuracy, precision and speed.

Ngam-kanok (2015) mentioned that the use of information technology for education covers the following aspects: 1) computer-assisted instruction 2) web-based instruction 3) multimedia 4) e-book 5) distant learning 6) teleconference 7) video on demand 8) hypertext and 9) Internet.

The synthesis of components for this research on the model reinforcing professional learning community for ethics development through information technology system evolves 7 components which include 1) principle; 2) objectives; 3) input; 4) process; 5) outcome; 6) impact; 7) success factors.

Conceptual Framework

This research integrates concepts and theories to conceptualize the conceptual framework as shown in Figure 1 below. The concepts and theories are 1) Code of Ethics of Teacher Profession 2) Professional Learning Community and 3) Operation System for Reinforcing Teacher Professional Ethics through Information Technology System.
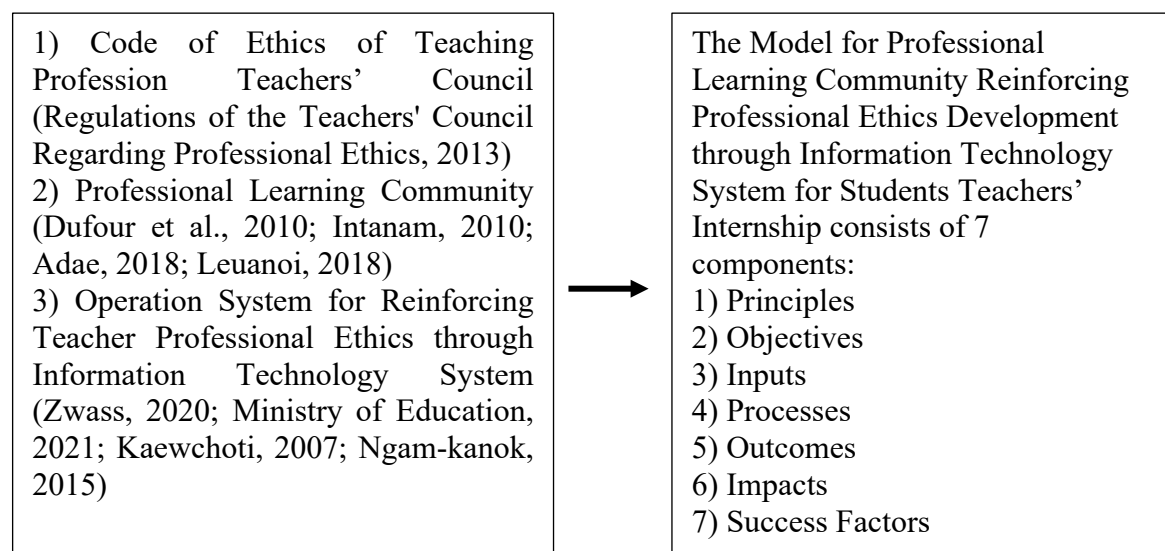
1) Code of Ethics of Teaching Profession Teachers' Council (Regulations of the Teachers' Council Regarding Professional Ethics, 2013)   2) Professional Learning Community (Dufour et al., 2010; Intanam, 2010; Adae, 2018; Leuanoi, 2018)   3) Operation System for Reinforcing Teacher Professional Ethics through Information Technology System (Zwass, 2020; Ministry of Education, 2021; Kaewchoti, 2007; Ngam-kanok, 2015)

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The Model for Professional Learning Community Reinforcing Professional Ethics Development through Information Technology System for Students Teachers' Internship consists of 7 components: 1) Principles   2) Objectives   3) Inputs   4) Processes   5) Outcomes   6) Impacts   7) Success Factors

Figure 1 Conceptual Framework

Research Methodology

This mixed-method research employed quantitative and qualitative approach which are divided into 4 stages as follows.

Stage 1: Investigating components and guidelines reinforcing professional learning community for professional ethics development through information technology system for student teacher's internship program. This stage is sectioned into 2 steps.

1) Investigating the components of the model. The samples, selected by purposive sampling, were 40 lecturers from educational institutions participating in the E-PLC project initiated by the Teachers' Council. The investigating issue was the significance level of components of the model reinforcing professional learning community. The questionnaire was used to collect opinion data which is sectioned into 2 parts. Part 1: Demographic data by checklist and the data from this part is analyzed for frequency and percentage. Part 2: Opinion towards the significance of the components of the model reinforcing professional learning community by 5-rating scale. Cronbach Alpha was used to determine the reliability of the questionnaire with coefficient results at 0.89. The data from this part is analyzed for mean and standard deviation.

2) Investigating the guidelines reinforcing professional learning community by an in-depth interview with 5 informants including dean and chair of program who are involved in the pre-service teacher internship program, and 3 lecturer supervisors. A semi-structured interview was administered to address the issues on whether or not there is the use E-PLC in developing teacher professional ethics? What are guidelines, strengths and weaknesses for development? The data were analyzed by content analysis and summarized for conclusion.

Stage 2: Constructing the model reinforcing professional learning community for teacher professional ethics development through information technology system of student teacher's internship program.

In this step, the data from stage 1 were used to draft the model and evaluate the suitability by means of focus group discussion with 11 experts which include 3 experts in student teacher internship, 3 school administrators, 3 teacher mentors, and 2 lecturer supervisors. The data from focus group discussion was used to modify the drafted model and reviewed by experts using the 5-rating scale evaluation form for suitability validation of the model.

Stage 3: Operationalizing the model by using the model approved by the suitability assessment in Stage 2 to pilot study with student teachers for their internship semester in academic year 2021. This stage is sectioned into 3 steps.

1) Examining the model by distributing questionnaires to 319 students to investigate their opinion towards the model. The questionnaire is sectioned into 2 parts. Part 1: Demographic data by checklist. The data from this part is analyzed for frequency and percentage. Part 2: Opinion towards the model by 5-rating scale questionnaire. Cronbach Alpha was used to determine the reliability of the questionnaire with the coefficient results at 0.87. The data from this part is analyzed for mean and standard deviation.

2) Assessing students' knowledge on building professional learning community for teacher professional ethics development through information technology system by pre- and posttest and the data was analyzed by t-test.

3) Evaluating students' competence in creating professional learning community for teacher professional ethics development through information technology system by recruiting 787 participants which include 319 student teachers, 319 teacher mentors, 100 school administrators, and 49 lecturer supervisors. This evaluation form is sectioned into 2 parts. Part 1: Demographic data by checklist. The data from this part were analyzed for frequency and percentage. Part 2: Opinion towards the competence on creating professional learning community by 5-rating scale questionnaire. Cronbach Alpha was used to determine the reliability of the questionnaire with the coefficient results at 0.83. The data from this part is analyzed for mean and standard deviation.

Stage 4: Evaluating the model by recruiting 100 participants from 10 institutions including administrators, teachers and student teachers from the Faculty of Education. The instrument was evaluation form consisting 2 parts. Part 1: Demographic data of evaluators by checklist. The data from this part were analyzed for frequency and percentage. Part 2: Opinion towards usability and feasibility for the use of the model by using a 5-rating scale questionnaire. Cronbach Alpha was used to determine the reliability of the questionnaire with the coefficient results at 0.81. The data from this part was analyzed for mean and standard deviation.

Research Findings

E-PLC Model

The investigation of components and guidelines reinforcing professional learning community for teacher professional ethics through information technology system of student teacher's internship revealed that the opinion of lecturers from universities participating in the E-PLC project initiated by the Teachers' Council, overall, showed the significance at the highest level (M = 4.83, SD = 0.39). The individual aspects analysis showed that all aspects held the significance at the highest level.

The interview results for the guidelines reinforcing professional learning community for professional ethics development through information technology system of student teacher's internship program consisted of 7 components.

1) Principle: Determine clear conceptual framework of teacher professional ethics according to the Teachers' Council standards.

2) Objectives: Determine clear target groups in developing professional ethics for student teachers in each academic year.

3) Input: Input data via online platform, allocate budget for operation, cooperate with internship school networks, determine clear roles for teacher mentors, administrators, supervisors and PLC members.

4) Process: Determine clear working platform, design simple and operationalizable working protocols, setup exchange forum for best practice schools to decode lesson learned by other schools, offer training for accessing online resources to the involved people such as teacher mentors, administrators and lecturer supervisors from universities.

5) Results: Answer objectives of the model by focusing on teacher spirit and teaching pedagogy.

6) Impact: Focus on benefits of students, school, teacher mentors and universities.

7) Success Factors: Present new discovery, success and sustainability from using the model.

The construction of model reinforcing professional learning community for professional ethics development through information technology system of student teacher's internship was presented into 2 parts.
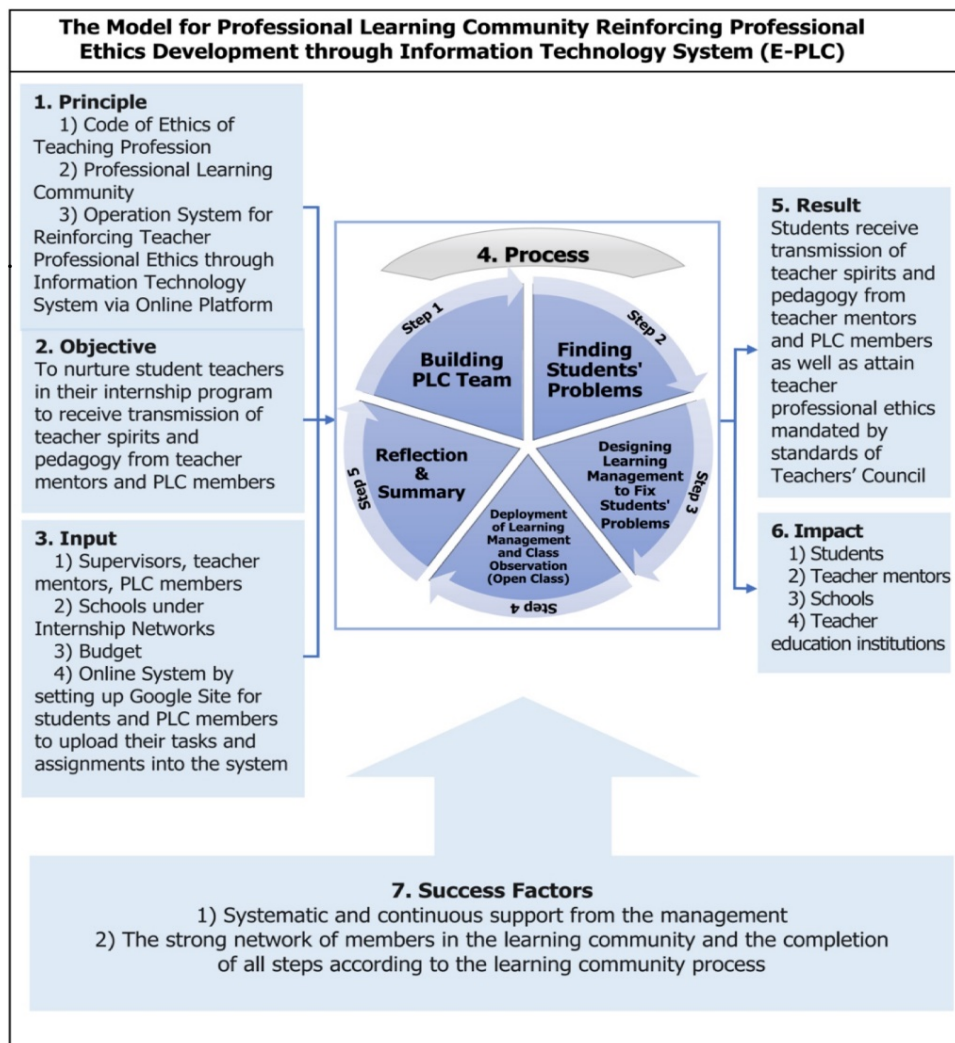
1) The constructed model is shown in Figure 2.

Figure 2 E-PLC Model

Component 4 Process: Students must input data from 5 steps into Google Site setup by their affiliated university for teacher mentors and E-PLC members to share their thoughts through this online platform according to their internship calendar.
Step 1: Building PLC Team (Students: Designing PLC team structure)
Step 2: Finding students' problems (Students and teacher mentor work together to analyze students' problems.)
Step 3: Designing learning management plan to fix the student's weaknesses (Students design learning management plan to fix the student's weaknesses; teacher mentors review, comment and give suggestions for revision.)
Step 4: Implementing the learning management plan (Open Class) (Students deploy learning management plan for organizing learning activities and PLC members perform class observation via face-to-face or online platforms.)
Step 5: Reflection & Conclusion (Students reflect their thoughts towards their own learning activities while the E-PLC members offer suggestions within 3 aspects i.e. strengths, improvements and recommendations.)
Component 6 Impact: Students earn knowledge from quality teachers i.e. teacher mentors and pre-service teachers performing their internship. They attain quality as prescribed by the curriculum standards including knowledge, skills and desirable characteristics.
Teacher mentors illustrate integration of professional ethics into real teaching practice in the classroom as role models for student teachers.
Schools promote educational personnel to achieve professional ethics development and gain access to networking for reinforcement of desirable characteristics of in-service teachers and pre-service teachers in their internship program.
Universities expand networking between institutions producing teachers, institutions recruiting teachers, and institutions developing teachers in reinforcing desirable characteristics of in-service and pre-service teachers.
2) Validation of the model by focus group discussion of experts for suitability assessment, in overall and individual aspect, indicated the highest level of suitability in all aspects.
Operationalization of the Model
The questionnaire results on the model reinforcing professional learning community, in overall and individual aspects, were rated at the high level. The test scores on knowledge of professional learning community for professional ethics development through information technology system were shown in Table 1 below.

Table 1 Students' test scores on knowledge of building professional learning community for professional ethics development through information technology system

Scores	n	M	SD	t	df	sig
Pre-implementation	319	13.13	16.09	48.38	318	0.00**
Post-implementation	319	24.67	5.26			

** 0.01

Table 1 reported the students' test scores on knowledge of building professional learning community before and after implementation which indicated that the pre-implementation showed mean score at 13.13, S.D. 16.09 while the post-implementation showed mean score at 24.67, S.D. 5.26. The mean scores comparison revealed that the post-implementation showed higher mean than that of pre-implementation at the significance level of .01.
The competence evaluation of students in building professional learning community for professional ethics development through information technology system, in overall and individual aspects, revealed high level of students' competence in building professional learning community.

The Model Evaluation
The Model Evaluation by school administrators, teachers and students of Faculty of Education revealed the results as shown in Table 2 below.

Table 2 Evaluation results on usability and feasibility of the model implementation (n = 100)

Item	Usability			Feasibility		
	M	**SD**		**M**	**SD**	
1) Principles	4.52	0.56	Highest	4.58	0.53	Highest
2) Objectives	4.37	0.58	High	4.28	0.65	High
3) Inputs	4.61	0.62	Highest	4.48	0.67	High
4) Processes	4.55	0.70	Highest	4.40	0.80	High
5) Results	4.50	0.59	High	4.31	0.69	High
6) Impacts	4.58	0.64	Highest	4.53	0.64	Highest
7) Success Factors	4.57	0.52	Highest	4.55	0.61	Highest
Total	**4.53**	**0.60**	**Highest**	**4.45**	**0.66**	**High**

Table 2 reported that school administrators, teachers and students of Education Faculty rated usability of the model at the highest level (M = 4.53, SD = 0.60) while feasibility of the model was rated at the high level (M = 4.45, SD = 0.66).

Conclusion and Discussion
The reinforcement of professional learning community for professional ethics development through information technology system of student teacher's internship evolves issues for discussion as follows.
Component 1: Principles involve an operation system for professional ethics development that integrates the framework of teacher's professional ethics and professional learning community operated through information technology system via online platform. This agrees with Barber (2009) in that 1) quality education is not prevailed without quality teacher 2) instructional development is the pathway for developing learning achievement 3) successful learning management requires learning opportunity for every student 4) strong leadership at the school level promotes success factors (Yamkasikorn, 2021). The Teacher's Council mandated the guidelines for the implementation of the Ethic in Professional Learning Community (E-PLC) project to enhance the teachers' professional ethics development through an information system. This supports teacher education institutions in improving the preparation of future teachers. Montree Yamkasikorn, chair of the committee responsible for promoting the professional learning community to enhance professional ethics through information system of Teachers' Council of Thailand (2021), stated that Professional Learning Community (PLC) and the promotion of teacher professional ethics focus on ethics towards service recipients. The quality of education will greatly improve if teachers work together and have a strong teacher spirit. The advancement of information technology and speedy data connectivity has transformed the world very rapidly. It is crucial for teachers to change their learning approaches and teaching practices in order to drive the quality of education at the classroom, schools, school clusters, and the national level. The educational reform will succeed through the transformation of learning.
Component 2: Objectives aim to nurture the teacher spirit and pedagogical competence for student teachers by teacher mentors and the PLC members. Every student teacher must undergo a preparation process to meet the criteria of the Teacher's Council. This is to ensure readiness in terms of knowledge, skills, and a resilient mindset to overcome challenges and achieve professional success according to the standards of the teaching profession.

The use of professional learning community (PLC) by means of using teacher mentor as leaders in mobilizing PLC for knowledge creation and understanding, and practical aspects of the teaching profession within the context of each educational institution. This will truly make teacher mentor aware of their role as role models for student teachers, providing guidance and advice during internship. This promotes the development of professional competence of mentor teachers and administrators, supervisors, and learning management as a whole (Yamkasikorn, 2021).

Component 3: Inputs involve 1) Supervisors i.e. teacher mentors and PLC members; 2) Internship school networks; 3) Budget; 4) Online system by Google Site for student teachers and PLC members to upload their tasks and assignments into the system. Preparation of those factors is a requirement prescribed by the Teacher's Council for participating educational institutions to reinforce professional learning community for teacher's professional ethics through information technology system. The emphasis is placed on student teachers in their final year of the curriculum for their readiness to enter the teaching profession as mandated by the Teacher's Council's Professional Standards (4th Edition) 2019. These standards include knowledge and professional standards, performance standards, and professional conduct standards which indicated that "Student teachers are required to pass teaching practice in an educational institution according to the curriculum of the education degree program for a period of not less than 1 year, and meeting the criteria for evaluation of teaching practicum as prescribed by the Teacher's Council in the following methods and conditions: 1) Teaching practicum during studies, and 2) Teaching practicum in an educational institution in the specific subject area." Teacher education institutions must perform according to these conditions thoroughly to meet the standards prescribed by the Teacher's Council (Criteria and Methods of Testing and Assessment of Teacher Professional Competencies (2nd edition), 2021).

Component 4: Processes involve the 5 steps of professional learning community. The implementation of these steps is closely aligned with the current and future learning behaviors where learning can take place anywhere and anytime, and anything can be used as materials for education. However, effective learning must coexist with consistent practice (Khiat, 2017). Self-directed learning is crucial as it enables learners to acquire knowledge effectively. Also, providing support for self-directed learning helps adult learners learn and perform well in assessments. This concurs with Nemec (2011) who reported that supporting self-directed learning is an effective learning method for efficient time management ability of the learners. Also, Gureckis & Markant (2012) mentioned that learners learn better when they have the opportunity to exchange experiences under their own control. Ministry of Education (2017) states that professional learning community is a process of generating transformative change through learning from the collaborative work of individuals who come together to work and support one another. Its objective is to develop the learning of students collectively by setting learning goals, monitoring and reflecting on individual and holistic outcomes through learning exchange, critical analysis, collaborative work and harmonious effort. It emphasizes and promotes a holistic approach to learning processes. Dufour et al. (2010) points out that professional learning community is an approach that teachers and students work together in a cycle of collaboration, questioning, and performing action research to achieve improved learning outcomes for students. It is believed that the key to enhancing student learning embeds is integrating the students' learning and the work of teachers.

Component 5: Outcomes enable student teachers to receive the transfer of the teacher's teaching spirit from mentor teachers and E-PLC members. After implementing this model, student teachers pass their internship evaluation and obtain professional teaching licenses with a 100% success rate. This may be attributed to the clear and systematic processes of the model and its implementation on an online platform, diverse academic activities and experiences of E-PLC members. These might offer indirect effects that foster professional growth of student teachers

as they have the chance to review lessons multiple times that instill strong commitment to the ethics of teaching. This is consistent with Sooksumlee (2012) who asserts that teacher competence is developed through cultivation of knowledge from learning and practice which draw connections between pedagogical subjects, major field subjects, analytical and critical thinking. This results in a rigorous curriculum on academic and management aspects. The current trend for curriculum design and management follows an Outcome-Based Education (OBE) approach. This ensures that graduates meet the standards set by the Teachers' Council and are recognized within the professional community. Therefore, teacher education institutions, lecturers, and student teachers are equipped with strategies to reinforce confidence and effectively produce qualified teachers according to the Teachers' Council standards. Teacher education institutions also have concrete processes and operational models in place to develop professional ethics for teachers.

Component 6: Impacts of implementing the model allow students to learn from high-quality teachers i.e. teacher mentors and student teachers. The teacher mentors have a chance to integrate professional ethics and being a role model for the best classroom instructional practice. The schools get qualified teachers underpinning the standards of the Teachers' Council. The universities offering teacher education can earn access to a network of teacher education institutions, teacher users and teacher developers can uplift desirable characteristics of in-service teachers and pre-service teachers. The outcomes of the model can create concrete image of collaboration in the production and development of teachers that aligns with the National Educational Reform (2018-2022), the 3rd reform activity focusing on establishing a high-quality teacher and educational personnel production system.

Recommendations for Application

Teachers' Council: 1) Communicate and foster understanding of the responsible agencies such as educational service area office and provincial education office regarding their roles to develop student teachers, mentor teachers, and school administrators. 2) Allocate an online operating system that is easily accessible and user-friendly, suitable for the context of internship institutions. 3) Establish platforms to showcase the best practices of pre-service teacher institutions participating in the project in order to expand the impact of teacher professional ethics development for wider recognition.

University: 1) Provide facilities for digital infrastructure, operating systems, and online systems. 2) Support faculty members to understand the system of teacher production and development, supervising, and to foster collaboration and support in producing teacher graduates according to the Teachers' Council standards.

Faculty and Program: 1) Support the expansion of operations in congruence with the number of students. 2) Require assessing readiness of school networks under student teachers' internship program to prepare an online operating system ready for various contexts and situations before deployment of the model.

Student Teacher: 1) Coordinate in joining activities to ensure quality in accordance with the professional standards prescribed by the Teachers' Council. 2) Use effective approaches to build confidence and readiness for a teaching profession based on the Teachers' Council standards.

Recommendations for Further Studies

The study should be conducted to monitor the outcomes of implementing the professional learning community model to reinforce professional ethics through information technology system (Ethics in Professional Learning Community: E-PLC) on an annual basis. This continuous study aims to develop a comprehensive framework adjustable to various evolving trends and changes. Additionally, research on the collaboration of teacher education institution networks should be conducted to examine the model implementation. The focus should address

each component of the framework to enhance the effectiveness and efficiency of professional ethics development among teachers at all levels for holistic improvement of the system.

Acknowledgements

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