An Activity for Building Teaching Potential Designed on Community of Practice Cooperated with Lesson Study

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Received: May 22, 2023 Accepted: July 7, 2023 Online Published: August 12, 2023

doi:10.5430/jct.v12n4p62 URL: https://doi.org/10.5430/jct.v12n4p62

Abstract

This paper proposes the development of an activity based on the community of practice (CoP) approach in collaboration with lesson study to enhance teaching potential. The CoP approach is utilized to elicit teachers' experiences and facilitate the sharing of teaching guidelines, while the lesson study method enables small groups of teachers to collaboratively design, teach, reflect on, and refine a class lesson. Drawing from semi-structured interviews, classroom observations, documentation, expert field notes, and focus groups, the proposed activity consists of four key components: 1) principle, 2) activity objective, 3) learning activity, and 4) learning evaluation. The learning activity encompasses four steps: educating, innovating, implementing, and reflecting. Each step comprises several sub-activities, with the innovating and implementing steps being iterative. The activity demonstrates a content validity of 0.95 and a suitability rating of 4.88. Furthermore, the participating teachers in this study exhibit increased self-confidence in constructing classroom activities and gained additional pathways for designing effective learning activities. The paper suggests that this approach can effectively foster the acquisition of new knowledge, the development of innovative practices, and the application of effective instructional strategies in the classroom.

Keywords: professional development, teacher competency, community of practice, lesson study

1. Introduction

From the educational management policy perspective of the Basic Education Commission of Thailand, which emphasizes "New Basic Education and Quality Education," there has been a greater emphasis on quality and efficiency in all dimensions, including the quality of teachers and learners. Teachers need to change their roles from being instructors to facilitators, coaches, and co-learners (Panich, 2013). The design of learning experiences that allow learners to think and engage in hands-on activities is of great importance and is crucial in improving the quality of education. In the previous teacher professional development systems, various organizations have prioritized teacher development to focus on student development through extensive training programs. However, a significant challenge arises when teachers return to their schools and face difficult contexts in applying what they have learned. These challenges include issues of time, complexity in planning, analyzing learners, and analyzing lessons in order to design suitable and effective learning activities. Therefore, if teachers have the opportunity to bring their knowledge and expertise to exchange, learn, and co-create suitable innovations within a collaborative context, through teamwork, collaboration, collective effort, and shared learning of teachers, based on a culture of friendly relationships, it will lead to professional development that can transform their own quality towards the quality of learner-centered learning. Presently, it can be observed that the community of practice and lesson study are highly regarded and successful methods for professional development due to their emphasis on collaborative learning and reflective thinking, which are vital in teacher professional development (McLaughlin & Talbert, 2006; Perry & Lewis, 2009). Therefore, this is a starting point for development, starting from teachers directly to learners.

Community of practice (CoP) is an educational concept that emphasizes learning and development through training and real-life practice. CoP are established based on the fundamental principle of sharing and distributing knowledge among its members (Jones et al., 2013). It involves creating groups of people with shared interests to exchange experiences and share knowledge, encompassing both general knowledge (explicit knowledge) and personal

knowledge embedded in individuals (tacit knowledge) (Wenger, 1998; Bennet & Bennet, 2008; Jones et al., 2013). This community provides an inclusive and supportive environment where novice teacher can freely express their concerns, while members of the CoP contribute their valuable insights and guidance. The creation of such communities aligns with the principles of experiential learning, aiming to create suitable environments for learning and self-development by learning from experiences and exchanging knowledge with others in the community. Based on a comprehensive review of previous research, it has been ascertained that the utilization of the CoP framework in the enhancement of teachers' professional capabilities has yielded commendable outcomes. This approach not only facilitates effective learning and skill development for teachers, but also fosters the efficient acquisition and application of knowledge, both within conventional instructional contexts and in more challenging situations. Consequently, such implementation engenders substantial professional advancement among educators within their specific domains of expertise (Wenger et al., 2002; Chalmers & Keown, 2006; Yi, 2022).

On the other hand, Lesson study is a teacher-oriented and teacher-directed practice where members collectively establish a specific teaching goal and engage in a thorough examination of their teaching practice through careful planning and conducting of lessons (Fernandez, 2002; Lewis et al., 2006). Particularly, lesson study is an approach that focuses on collaborative work among groups of teachers and relevant individuals. Lesson study encourages teachers to actively exchange ideas, share best practices, and challenge their existing beliefs and assumptions about teaching. It involves planning and observing lessons together to improve teaching and learning, aiming to enhance classroom management and student learning simultaneously. Lesson study involves extracting lessons from one classroom to adapt them more effectively in different contexts (Lewis, 2008; Triwaranyu, 2017). This approach is efficient in enhancing teaching methods, improving student learning outcomes, and contributing to professional development (Fernandez & Yoshida, 2004; Lewis, Perry & Hurd, 2009; Alamri, 2020). The findings of previous studies demonstrate the positive impact of employing lesson study as a means of professional development for teachers. Lesson study has been successful in improving various aspects of teachers' professional competence, deepening their pedagogical knowledge, refining their instructional techniques, and developing a deeper understanding of their students' learning needs, involving pedagogical content knowledge (PCK), and their abilities in teaching and learning design. By engaging in lesson study, teachers have the opportunity to engage in collaborative learning and benefit from a mutually supportive environment. Furthermore, lesson study is an effective approach for refining teaching methods and enhancing student learning outcomes, ultimately leading to professional growth within the teaching profession (Leavy & Hourigan, 2016; Cojorn, 2020; Cojorn, 2021).

By combining the concepts of communities of practice and lesson study, teachers can share values and vision including extract and learn from existing knowledge and experiences, fostering a community of practice (Wenger and Trayner, 2015). Lesson study serves as a tool for collaborative planning, observation, and reflection to improve teaching and learning. Integrating these two concepts effectively enhances teachers' capabilities in instructional design and management, leading to improved student learning outcomes (Vandeweghe & Varney, 2006; Shúilleabháin, 2013; Elkomy & Elkhaial, 2022).

However, the implementation of both communities of practice and lesson study for teacher development may face challenges and obstacles. Creating a genuine community of practice and establishing trust among members require significant effort and resources. Similarly, implementing lesson study requires planning, classroom observation, and reflection, which may pose difficulties. Moreover, applying these concepts in different contexts may encounter context-specific barriers, such as organizational culture and acceptance (Blanton & Stylianou, 2009; Shúilleabháin, 2013; Soto et al., 2015).

Therefore, the integration of communities of practice (CoP) and lesson study (LS) in educational settings poses significant challenges but great potential for enhancing teacher professional development and designing effective teaching and learning practices. This study aims to cultivate learning activities by establishing teacher communities to facilitate the exchange of experiences, knowledge, and skills. Furthermore, employing the concept of lesson study as a primary tool for collaborative design, observation, and reflective practice empowers teachers to refine their teaching methods and achieve professional growth. As a result, the synergistic application of both approaches presents a powerful avenue for teacher professional development, fostering collaboration, problem-solving, and self-improvement toward career advancement objectives. This innovative approach exhibits promise for continual professional development within the teaching profession. The objective of this study is to create an activity that enhances teaching potential based on the concept of communities of practice combined with lesson study.

2. Method

2.1 Research Area

It The Schools in the Primary Educational Service Area of Maha Sarakham province, Thailand.

2.2 Research Design

The research methodology employed in this study is a developmental research approach, specifically Type II (Richey and Klein, 2014). This approach consists of four phases: 1) analysis and diagnosis of the current situation and problems, 2) design and development of activity, 3) implementation and evaluation of the activity, and 4) reflection and refinement.

Phase 1: Analysis and diagnosis of the current situation and problems

Research participant: The participants in this study are purposefully selected and included five school principals/vice-principals, as well as teachers and students from five schools where the participating teachers conduct their teaching interventions.

Research Instrument: A semi-structured interview is employed to collect data regarding the current situation, problems, and needs related to instructional management, as well as classroom observations. The research tools are created and assessed for quality through expert evaluation. Based on evaluations from five experts, both tools were found to have a content validity score of 1 and were rated highly suitable with scores of 4.90 and 5.00 respectively. The result indicates that the tools are highly suitable.

Data Collection: The researchers have developed and validated the research instruments then make appointments with the schools to conduct on-site interviews and classroom observations for data collection.

Data Analysis: The researchers transcribe the recorded interviews and summarize them by analyzing the content and interpreting the meaning. There are also incorporated data from classroom observations in the analysis process.

Phase 2: Design and Development of Activity

The research tools utilized in this phase are documentation and literature review. The researchers study relevant documents and research works relate to teacher development, the concept of communities of practice, and the principles of lesson study. The researchers gather data from the document analysis, research works, and interviews, and synthesized the information. Furthermore, classroom observations are conduct to observe and analyze teaching practices. Base on the findings, activities are developed to enhance teaching potential in instructional design. The quality of these activity drafts was evaluated by five experts to ensure accuracy and appropriateness.

Phase 3: Implementation and Evaluation of the Activity

Research Participant: The research participants consist of five primary school science teachers. These teachers have a maximum of five years of teaching experience and willingly volunteer to participate in the research.

Research Instrument: The group discussion form was constructed and distributed to experts for quality evaluation. The findings revealed a content validity score of 1.00, indicating a high level of congruence with the intended content. Additionally, it found to be highly appropriate, with an average rating of 4.86.

Data Collection: The researchers schedule a meeting with the participating teachers to attend a workshop, aiming to gain an understanding of the collaborative activities that need to be carried out together. The workshop is divided into three phases: 1) Knowledge development and innovation, which was conducted through the first workshop; 2) Implementation of the innovations at the school; and 3) Reflection and feedback, which was conducted through the second workshop. At the conclusion of the activities, the researchers organize group discussions to delve into various topics.

Data Analysis: The researchers extract information from the group discussions and summarize them by analyzing the content and interpreting the meanings in a content analysis.

Phase 4: Reflection and Refinement

The researchers synthesize and integrate the recommendations gathered from the group discussions to develop activity that will enhance teaching potential. The activity is designed to foster the development of students' thinking skills, aligning with the community of practice combine with lesson study for the utilization of comprehensive and highly effective lesson plans.

3. Results

The researchers would like to share the results of their study, which are organized into four sections according to the research process, as outlined below.

Phase 1: Analysis and Diagnosis of the Current Situation and Problems

Current Situation: Based on the study conducted in educational institutions, it indicates that school administrators and teachers emphasize the importance of developing students' knowledge, understanding, and abilities according to the content and performance indicators outlined in the curriculum. Simultaneously, they are also aware of the significance of fostering students' thinking skills. Therefore, teachers are encouraged to engage in continuous training and self-development.

Problem: The school face the challenge of inadequate personnel, resulting in teachers having to teach multiple grade levels and subjects, even if they are not specialized in those fields. This hinders the ability to fully implement the curriculum and prioritize the development of students' thinking skills. An evaluation of the school's quality reveals that students' academic performance is unsatisfactory, and their thinking skills do not meet the standards. Teachers have significant workload beyond teaching, which limit the time available for designing effective teaching strategies. Despite their efforts to promote self-improvement in instructional management, teachers found it difficult and time-consuming to incorporate activities into their teaching practice. Even when teachers have the desire to implement active learning activities, the school's numerous activities and responsibilities prevent them from allocating sufficient time for instructional management. Additionally, the lack of science equipment and laboratories in the school made it challenging to conduct hands-on activities within the context of the school. Furthermore, teachers themselves limit expertise in activity analysis and student analysis, leading to a lack of confidence in selecting activities that foster thinking skills. The majority of teachers focused on knowledge development based on the curriculum or textbook, rather than emphasizing the development of thinking processes. As for the students, they exhibit hesitance in expressing themselves and feel embarrassed to present their opinions in various dimensions. They experience anxiety and fear of providing incorrect answers, leading to reluctance in responding to questions. Moreover, they lack clear and convincing reasoning skills to support their answers, possibly due to a teacher-centered learning approach that predominantly relies on lectures. Consequently, students are unable to apply their knowledge effectively and insufficient analytical and problem-solving abilities.

Need: The school administrators and teachers share the same perspective on the need to develop students' thinking skills, particularly in terms of analysis and integration with reading and writing abilities. In addition, teachers wanted to focus on designing inclusive classroom activities or interdisciplinary approaches, couple with training students in thinking processes, without increasing their workload. Therefore, there is a need to learn how to design learning activities that are easy to implement and can be applied to all subject areas.

Phase 2: Design and Development of Activity

The researchers have developed the activity based on studying research documents on the concept of community of practice and lesson study, along with data obtained from interviews and observations of actual teaching activities. These results in the design of a draft of activities consisting of four components, as shown in Table 1:

Table 1. Description of Each Element of the Developed Activity

Component	
Principle	This presents a framework integrating the concepts of community of practice and lesson study together. This framework is used to develop activities that enhance teacher capacity in instructional design.
Activiy Objective	This involves presenting the aim of the activity, which in this case is to enhance teaching potential to develop students' thinking abilities that are contextually relevant to their own situations.
Learning Activity	This includes presenting a framework of activity composed of four main steps: Step 1: Educating, Step 2: Innovating, Step 3: Implementing, and Step 4: Reflecting. Each step consists of various sub-activities.
Learning Evaluation	This is the process of identifying assessment methods. In this case, the evaluation will be conducted through the teacher's teaching activities, classroom observations, teacher reflections, and assessing the learning outcomes achieved by the students.

The quality assessment conducted by experts found a construct validity value of 0.95 and the highest level of appropriateness with an average value of 4.88. The experts provided a recommendation regarding incorporating technology to support activities, such as classroom observations (i.e., using video clip recording). Therefore, we can summarize an overview of the activity based on the community of practice approach and lesson study, as shown in Table 2.

Table 2. An Activity Draft Combining CoP Approach and Lesson Study

Activity	Sub-Activities
1. Educating: It is a preparatory activity that aims to reinforce and advance knowledge regarding instructional design and the creation of innovative learning methods that align with their specific teaching context. Its purpose is to equip teachers with the necessary readiness to effectively execute learning design activities.	*1.1 Knowing:* Activity designs to review, stimulate, enrich, and extend knowledge regarding innovation and design in teaching and learning activities. *1.2 Practiing*: An activity aims at enabling teachers to apply knowledge gained from the knowledge-enriching activity to create innovations or design teaching and learning activities.
2. Innovating: It involves bringing together a group of teachers who share similar goals and contexts, with the aim of collectively brainstorming, exchanging experiences, skills, and collaborating to create suitable learning innovations in their respective contexts.	*2.1 Eliciting:* A collaborative group activity where teachers gather based on their similar interests and exchange their experiences in creating and utilizing innovations in their teaching and learning approaches. The emphasis is on sharing successful activities and innovations as effective practices for collective learning. *2.2 Designing:* A collaborative activity where teachers collectively decide to engage in creating and designing innovative learning activities
3. Implementing: It is a step where teachers take the learning innovations they have created and apply them in their own contexts, while colleagues and experts observe their classrooms, and give feedback. Therefore, teachers can use this feedback to make adjustments to enhance the effectiveness of their practices.	*3.1 Applying:* The teacher within the CoP utilizes developed learning innovations to be implemented in real classroom settings. *3.2 Criticizing:* Collaboratively observing and analyzing classroom activities led by teachers in a group aims to enhance and address any shortcomings, resulting in more comprehensive and effective teaching and learning practices.
4. Reflecting: It is a gathering of CoP members to reflect on their teaching experiences, learning and sharing together, and extract valuable knowledge and best practices collectively.	*4.1 Reflecting:* It is a collaborative activity where teachers in CoP come together to meet, exchange their experiences in using innovations, reflect on their own practices, and collectively analyze innovations. *4.2 Best Practicing:* The activity facilitates opportunities for teachers to come together, engage in discussions, exchange knowledge about utilizing innovations, and collaboratively identify best practices to apply in the future.

Phase 3: Implementation and Evaluation of the Activity

Following the implementation of the activities with 5 elementary school science teachers, according to the planned workflow of the designated activities, a group discussion is conducted with the participating teachers. It shows that the developed activities are beneficial as they help the teachers stimulate their thinking, exchange knowledge, and generate ideas that can be applied to similar teaching contexts. The group discussion with the teachers reveals several observations on various aspects, including the following:

1. Active participation in learning and hands-on practice contribute to teachers improve comprehension of activities, increase confidence in designing instructional exercises, and a deeper understanding of the advantages and limitations of each activity. This practical experience facilitates teachers' ability to adapt and implement the activities more effectively. Therefore, it is essential to provide teachers with opportunities for practical engagement, going beyond passive learning through lectures alone.

2. Engaging in knowledge exchange and collaborative learning within a CoP opens up new perspectives, teaching

management techniques, example activities, implementation guidelines, and awareness of potential challenges. However, it is essential to encourage all group members to truly extract valuable knowledge. Prior to the knowledge-sharing activities, it may be beneficial to introduce additional exercises that foster trust and build confidence, empowering everyone to fearlessly exchange their viewpoints.

3. Designing and implementing effective learning activities may not be achieved in a single attempt, thus requiring repetition or the use of multiple activities to enhance student development. Therefore, it is crucial to engage in brainstorming sessions and collaborative activity design within the CoP. Additionally, closely observing the classroom and collectively analyzing the lessons learned will lead to satisfactory outcomes. This reflective process allows for the generation of new ideas and the formulation of best practices together.

4. The successful execution of all activities relies on the collective effort, teamwork, trust, and confidence within the CoP, as well as continuous and open exchange of ideas. Hence, it is important to have effective communication methods, including in-person discussions and the utilization of online platforms such as Google Meet, Zoom, and Line, to facilitate seamless communication among participants.

5. Coming together as a group is critical for achieving success. The group should consist of members who share common interests and similar experiences, and within the group, there must be open and honest communication, constructive discussions, and a high level of trust and confidence among members. Therefore, communication among group members should be friendly and understanding, with the understanding that it is meant to build and not to accuse or criticize.

Phase 4: Reflection and Refinement

Based on the group discussions with teachers who implemented the developmental activities to enhance their teaching potential, following the community of practice incorporating with lesson study, it points out that the main issues should be further refined to make the activities more effective. The key elements remain the same, including 1) principle, 2) activity objective, 3) learning activity, and 4) learning evaluation. The learning activity process consists of four steps: learning, innovating, implementing, and reflecting. However, adjustments are made to the sub-activities in the innovating and implementing step to create a continuous and cyclical practice that can be repeated frequently, as agreed upon by the practitioner communities in each area. This leads to the development of students' competencies. Consequently, they collaborate to reflect and summarize good practices, which are depicted in Figure 1.

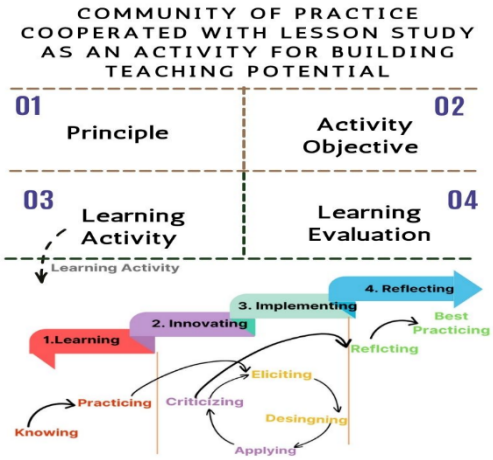

Figure 1. An Activity Designed to Build Teaching Potential through the Integration of CoP and Lesson Study

4. Conclusion and Discussion

The results of developing activities to enhance teaching potential in designing teaching and learning based on the community of practice and lesson study revealed four components: 1) principle, 2) the activity objectives, 3) learning activity, and 4) learning evaluation. Furthermore, the learning activity consists of four steps: Step 1 - Educating with sub-activities such as Knowing and Practicing; Step 2 - Innovating with sub-activities namely Eliciting and Designing; Step 3 - Implementing with sub-activities such as Applying and Criticizing; and Step 4 - Reflecting with sub-activities including Reflecting and Best Practicing. These sub-activities in Steps 2 and 3 should be continuous

and practiced in a cyclical manner. It is evident that the developed components resemble the guidelines for teacher development activities proposed by The Alberta Teachers' Association (2016), which emphasize collaborative thinking, peer recommendations, self-reflection, and classroom observations to provide continuous support for teachers. Additionally, the professional development activities in all four steps are systematically structured with clear steps to facilitate teacher development and continuous guidance and supervision in real contexts, enabling effective application. This is in line with the concept of developing teacher professional activities outlined by Dunne (2002), Reimers (2003), and Loucks-Horsley et al. (2010). The use of the community of practice and lesson study as the foundation for designing activities focuses on enabling teachers to acquire knowledge through experiential exchange, knowledge sharing among fellow practitioners, and applying knowledge collaboratively in designing teaching and learning activities. It includes guidance, self-reflection, and promotes a continuous learning culture that fosters personal development and produces positive learning outcomes for students. Furthermore, teacher professional development, through self-reflection and collaborative learning within the community of practice, also promotes lifelong learning and continuous educational development (Ishii, 2017), aligning with Shúilleabháin's research (2013), which found that developing teacher professional models based on the concept of building a community of practice and lesson study can enhance teachers' knowledge and understanding in both content and instructional methods. Additionally, it helps teachers gain confidence in designing teaching and learning activities, which in turn leads to improved student learning outcomes. In summary, integrating the community of practice concept with lesson study can enhance teachers' development in terms of content knowledge, understanding, and instructional approaches, ultimately contributing to the improvement of student learning outcomes. Additionally, within the context of small schools, a community of practice and lesson study can serve as a valuable mechanism to support teachers in various aspects. In small schools, teachers may encounter constraints in accessing comparable resources and ideas as their counterparts in larger schools. However, by embracing activities based on the community of practice and lesson study, these limitations can be mitigated. Such activities offer a platform for resource sharing, encompassing essential components like lesson plans, assessment tools, and innovative teaching strategies. Consequently, the community of practice enables teachers to bridge the resource gap and enhance their pedagogical repertoire. Moreover, a collaboration among teachers, encouraging them to share learning experiences. By actively participating in the activities, teachers can benefit from the wisdom and expertise of their peers, facilitating a reciprocal exchange of ideas and constructive feedback. This collaborative environment nurtures professional growth and provides opportunities for reflective practice, ultimately elevating the quality of teaching and learning. In small schools, where limited staff numbers, esspecailly within a similar teaching area; may hinder the availability of support and mentorship, a community of practice can play a pivotal role in filling this void. By fostering a culture of mutual support, the activities create a conducive space for teachers to seek guidance, share challenges, and receive constructive input. Wannagatesiri et al. (2014) points out that the professional development programs for both pre-service and in-service teachers should be adjusted to provide support for teaching and learning in small school settings, specifically addressing the requirement for qualified teachers who can effectively teach in multigrade classrooms. This support network serves as a valuable resource for professional development, facilitating the improvement of teaching practices. Furthermore, a community of practice ensures that teachers remain abreast of educational trends and advancements. Small schools may face difficulties in accessing external professional development opportunities that are more readily available in larger institutions. However, the developed activities provide a platform for teachers to exchange knowledge and stay updated on emerging educational research, innovative instructional techniques, and pedagogical advancements. Collaborative learning enabling teachers to enhance their expertise through interactions within a community of practice (Pan & Chen, 2023). This continuous learning equips teachers with the necessary tools to adapt and refine their teaching approaches in response to evolving educational landscapes.

5. Recommendations

5.1 Recommendations for Applying Research Findings

• Adjust and customize activity details: When applying research findings, it is important to modify and adjust the specific details of the activities to be suitable and toward the objectives of the activities. Especially in the first steps of activity, a well-designed content structure is required that facilitates the development of essential and necessary knowledge.

• Foster a practitioner community: It is important to create a community of practitioners who share similar ideas and goals and work together in the same direction. This community should engage in activities that foster strong relationships, trust and mutual support among its members.

• Provide friendly communication training: Effective communication is essential for the success of the implementation. Emphasize on active listening, constructive dialogue, and utilize technology to facilitate efficient communication processes.

5.2 Recommendations for Future Research

• Study the development of teacher professional development activities within the framework of a community of practice, along with the integration of technology-enhanced learning. The research should focus on creating a systematic approach that facilitates convenience in implementing activities.

• Conduct in-depth research to examine the outcomes of implementing teacher professional development activities based on the concept of a community of practice, combined with lesson study. The research should aim to explore the application of these activities in real-life contexts.

Acknowledgements

This research project was financially supported by Mahasarakham University.

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