A Guideline of using Lesson Study for Preservice Science Teachers in Thailand

Kanyarat Cojorn, Mahasarakham University, Thailand
Kanyarat Sonsupap, Mahasarakham University, Thailand

The Asian Conference on Education & International Development 2016
Official Conference Proceedings

Abstract
This paper addressed the results of the attempting of using a lesson study in preservice science teacher classroom. The lesson study was implemented for 42-senior science student teachers who enrolled the professional experience subject. The classroom observations, discussion form and semi-structured interviews were used in order to gain the required data. Preliminary findings showed that a process for practical uses in classroom settings consisted of 7 stages as the following: 1) Classroom observation 2) Group gathering and Goal setting 3) Lesson planning 4) Research lesson 5) Lesson discussion and consolidation 6) Lesson implementation 7) Lesson conclusion. Moreover, these can encourage the preservice science teachers achieve the knowledge.

Keywords: Lesson Study, Higher Education

Introduction

The effective teacher not only the person who gives a student conceptual knowledge but also teaches the method to acquiring knowledge. Accordingly, good teacher must be knowledgeable and engaged in thoughtful and challenging work to set the stage for serious lifelong professional learning. Consequently, the teacher education program/curriculum have to move beyond the idea that one can amass adequate knowledge, or ‘‘learn for teaching,’’. The courses have to design to help preservice teachers develop a ‘‘lifelong ability to learn from teaching (Darling-Hammond and Hammerness. 2005). Therefore, the teacher education curriculum must consist of both the course and the course that connect the acquiring knowledge in university coursework and applying that knowledge in the classroom (Feiman-Nemser & Buchman, 1986; Kennedy, 1999). In Thailand, the one of important course of the preservice teacher in the university is the course related practicum in the school which handles for the fifth year student teachers. The goals of these courses are practice students in the actual classroom context. The preservice teachers have to embedded in a school and learn how to be a good teacher. However, the fourth-year student teachers have to enroll the subject related the teacher profession experience and curriculum and instructional design. This subject emphasizes the student teachers familiar with the connection between their coursework and fieldwork. The student teachers who enroll this subject have to practice analyzing learning units, creating course syllabus, developing one-semester and one-academic year lesson plans, implementing lesson plans in classroom, conclusion on the results of implementing lesson plans, and planning for internship in the future. All of these, the preservice teachers are asked to practice for approving that they have a competency to success in the real context in the future. As a result, in this course preservice teachers have to integrate their knowledge they gained from previously course particularly learning theory, teaching learning design, curriculum, psychology, evaluation and assessment method, learning media, classroom management and classroom environment including teacher knowledge for designing their learning activity for the classroom in the actual context. Subsequently, if the teachers taking the lessons study as an instructional method in their class, it is not only let a student achieve the goal of the lesson but also practice them thinking process especially systematic thinking and collaborative problem solving skill.

Today, many persons agree that the highly powerful means of fostering effective teachers is grounding professional development in actual classroom practice. The lesson study is an idea of learning from teaching that happen in the classroom. It is a teacher-led instruction improvement. It involves a group of teachers who want to improve aspects of the learning of their pupils reaching to curriculum aspects that teachers feel could be taught more effectively. Accordingly, lesson study is an efficiency and effectiveness educational innovation for a professional development. The lesson study process, developed from the lesson study approach, is a process in which groups of teachers direct their professional learning in actual contexts to achieve instructional improvement focusing on students’ thinking and learning. It is a strategy which can support the teachers improve theirs lesson with themselves in the actual context through the systematic collaboration work group. Normally, the cyclical process of lesson study consists of planning, observation, reflection, and revision. This process will inspire teachers improving their potential all the time

(Naphaporn Woranetsudathip, 2011). This is a method of professional development in which teachers collaborate with peers and other specialists to improve teaching and learning. These can help develop the learning activities by using brainstorming, discussing with the critical evidence, and reflecting together. In other words, the lesson study is a systematic and collaborative examination of instruction. It is a process of team of people who have been involved in a similar context to improve their teaching gaining more effectiveness and achieving the goals. In addition, it can promote a collaborative learning network, and create a learning community. Accordingly, the lesson study is an innovation that has the potential to improve instruction in many dimensions both in terms of the students' development, dimension of teaching, and the dimension of professional development. The important component of successful teacher education is learning from teaching (Linda Sims and Daniel Walsh, 2009). One of a workable framework that can provide to make it happen is lesson study. Learning with lesson study is the first step out of the theoretical basic of teaching, the apprenticeship of observation, and position them to look at the complexities of teaching with a more investigative lens-a stance that may help them seek out and grow from the support of fellow teachers as they begin their careers.

In the context of Thailand, lesson study was distributed in the professional development. Because lesson study emphasizes teachers learned from the actual school context, solve problem, and reflect and share data with other teachers. Subsequently, if the teacher taking the lessons study as an instructional method in their class, it is not only let a student achieve the goal of the lesson but also practice them thinking process especially systematic thinking and collaborative problem solving skill. Since the lesson study focus on group discussion process with reasonable and finally they have to make a consensus together for improving their lesson in every step. These can refer that meanwhile the students teachers do the activity they will practice thinking skill in harmony especially critical thinking skill (Kanyarat Cojorn. 2016). Certainly, lesson study is will be very useful for preparing preservice teachers a prompt for step into their first practicum experience. As aforementioned reason, this study tries to discuss the insights gained from an empirical study that explores the feasibility of using a lesson study in high education level setting.

Research Purpose

The purpose of this research was applying the lesson study into learning process of science student teachers.

Methodology

Participants

The target participants consisted of 1) the instructor who teaching in a course related curriculum and instructional design from the department of curriculum and instruction, Faculty of Education, Mahasarakham university, Thailand, 2) 42 students of 4^{th} science student teachers who enrolled in the Curriculum and Instruction in Science 2 course in the first semester of 2015 academic year of Faculty of Education,

Mahasarakham university. Science student teachers were chosen because science is the area that researchers are familiar with and is the area of researchers' own teaching background especially it is a course which was the researcher responsible.

Research Instrument

The research instruments of this research were as following;

1. An informal interview which question for the problem in teaching process and collected data concerned method or strategies to solve the problem in teaching process.
2. A 5 rating scale questionnaire and open ended question were used as a tool in focus group for finding the Index of Consistency of the lesson study guideline. Moreover, the question was asked the experts' panel related the appropriate of lesson study guideline.
3. A semi-structured interview was asked the science student teachers related the problem, question, and issue that happening during learning with lesson study guideline.

Procedure

The research was a research and development methodology that consistes of 3 phase as following;

Phase I : Study of background and problems in studying pedagogy: this phase was run for collecting the basic data for developing the lesson study guideline as a instructional method. Literature review focus on how student teachers and preservice teachers learning to teach were the start point in this phase. Moreover, the instructors who had a responsible in a course related curriculum and teaching methods courses were interviewed in order to explore student teachers' difficulty in learning pedagogy in the authentic context and there guidance. The instructors states that student teachers had low subject matter knowledge and pedagogical knowledge. The Student teachers could not transfer abstract idea to concrete idea. Furthermore, they could not work collaboratively. They lacked of thinking skills especially the collaborative problem solving and critical thinking skill. They cannot create the suitable activity. They just designed the learning activity familiar with their prior experience. They cannot apply their knowledge that they had learned for constructing the learning activity especially the practicality activity in the actual classroom. The instructors claimed that these problems came from student teachers 'lack of teaching experience. The data were analysed and used as a basic to develop lesson study as a learning process.

Phase II: Development of lesson study guideline: the purpose of this phase is developing the lesson study guideline for applying in the science student teachers classroom. The basic data was gathered not only from the literature review but also the instructors' interview. The gained data was used to develop the lesson study guideline. The guideline was constructed based on the basic of the practice-based form emphasized the student teachers gain their teaching experience, develop their teacher knowledge and practice them the thinking skill in simultaneously. Furthermore, the questionnaire was designed and checked for the structural validation and the appropriateness of language used by experts' panel consisted of 3 educators. The Index of Consistency (IC) of the lesson study guideline was 1.00. Despite the

fact that, the focus group technique was used to identify the appropriate of the lesson study guideline. The result was a very good level (4.67 – 5.00) of appropriate. Moreover, the focus group data let to improve the guideline in the point of 1) the classroom observation should conduct in the classroom of the master teacher, and 2) the role of the instructor should be like a coach in step of lesson planning and research lesson.

Phase III: Implementation of lesson study guideline: the lesson study guideline was implemented as an instructional process in my classroom for seeking to resolve perceived shortcoming of the guideline. Especially, I try to find the effective strategies to support my students' initial teaching experience. The period of implementation was 4 months. The student was asked to work in pair for observing classroom and practicing teaching before approaching the second step of the lesson study guideline for seeking there really provoking problem. Subsequently, the lesson study guideline had carry step by step until completely which after finished of each step the students had asked to the classroom for sharing. Every period of sharing the researcher has to participate for observing, debriefing and verifying the accuracy and monitoring the students. The focus group was conducted to collect data related the problem of using lesson study as a learning process of preservice science teachers. The data was analysed and used to improve the lesson study.

Data Analysis

The data analysis was carried out using the qualitative analysis, collected from interview, and open-ended question, analyse content and generate categories and themes for describing the problem, resolution, guideline of lesson study and students view of using lesson study in the classroom.

Results

Regarding the information from expert panel and the literature review, the lesson study process consist of 7 stages ;1) Classroom Observation 2) Group Gathering and Goal Setting 3) Lesson Planning 4) Research Lesson 5) Lesson Discussion and Consolidation 6) Lesson Implementation 7) Lesson Conclusion as showed in figure1.

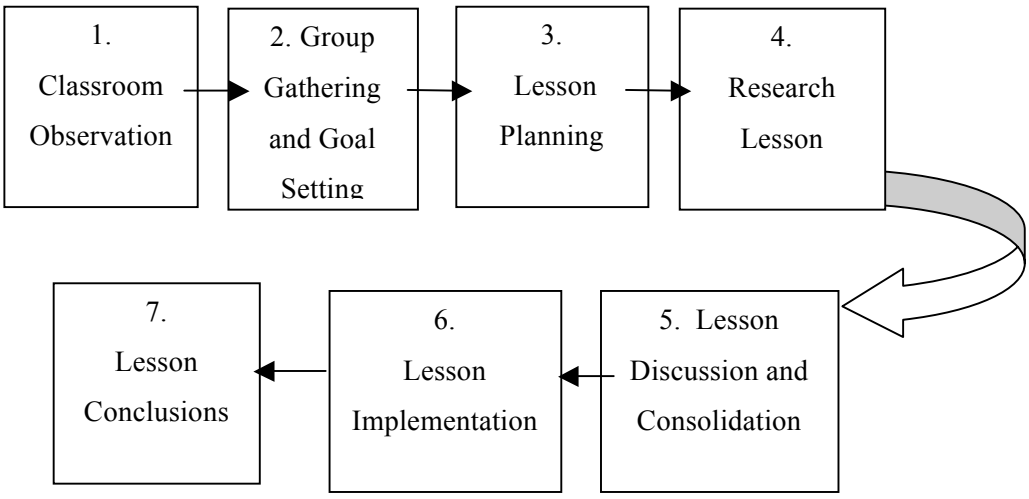

Figure 1: The preliminary of lesson study guideline for preservice science teacher.

Stage I: Classroom Observation: this stage emphasised the student to familiar with the context of a classroom in the school. They have to observe the teaching process, the activity, problem which appears while doing the activity. This stage the student teachers have to practice the classroom observation method and analyse the main point of the problem that encounter in the classroom.

Stage II: Group Gathering and Goal Setting: this stage the preservice science teachers who interested in the similar problem have to form a team and identify the problem then set the target to learn together. They have to share their reasonable problem to the team while open mind and tolerate others. The team have to think critical to make a team target together.

Stage III: Lesson Planning: this stage the each team of preservice science teachers have to brainstorming, sharing, and discussing for designing and constructing the learning activity and lesson plan. This process focus on the reconsider in the learning design of the preservice science teachers including practice them to investigate and inquire the data for sharing in team. Moreover, they have to practice the appraised evidence or argument with reasonable to make the effective lesson plan together.

Stage IV: Research Lesson: this stage some preservice science teacher in each group has to implement the lesson plan in the classroom. Others come to the classroom for observing their peer classroom meanwhile execute the lesson plan for collecting data and evaluation.The preservice science teachers have practice the teaching process in the school context and enhance them observing, collecting data, evidence, and problems while running the activity .

Stage V: Lesson Discussion and Consolidation: this stage addresses the group reflection. The collected data which each person gain from classroom observation have to share, discuss, and brainstorm for making the conclusion of teaching including reflect the problem that occurred in the classroom**.** Then, they have to brainstorm to solve the problem and concentrated on how to solve the problem. Moreover, they have to discuss the instruction witnessed and what it taught them about the goal they set out to explore. They have to examine their lesson plan and inquire and investigate the more information again for consolidation for reaching the goal they set. Moreover, they have to come together for brainstorming for revising the lesson plan and making others.This process the preservice science teachers have to enhance critical thinking through criticism the collected data, expression their opinion, inquire more information, evaluation the alternative solution, decision making to select the solution for revising a lesson plan together.

Stage VI: Lesson Implementation: the preservice science teachers come to their classroom and implement other lesson plans, while other group members look on their peer classrooms again. The teaching skill, classroom observation, and data collection have over again.

Stage VII: Lesson Conclusion: all member of a group have to come together again for analyzing the gained data and giving a feedback from conducting the lesson plan in the classroom. The debate should concentrate on lesson plan evaluation. They have to criticize the strength and weakness and give their opinion to make a comments or suggestions that could lead to improved teaching and learning also constructing the effective lesson plan.

Considering in the data from the focus group of preservice science teachers, the response from many preservice science teachers indicated that the problem they encountered during learning through the lesson study process was the teamwork related giving a reasonable opinion for solving problem together. There were a problem in timing, the responsibility of a group member, and the efficiency of group discussion process. The quotes were as follow:

Regarding the timing, most of preservice science teachers stated that they do not have enough time and it is hard to find the accordingly time to make a group meeting. The quotes were as follow:

"I have to enroll many subjects which different from friends cause I can't join the group meeting many time. As a result, I don't understand my role and make me hard to participate in the next step of the guideline"

preservice science teacher# I

"My class timetable is the same as the timetable of the implemented class make me can't observe the classroom with my colleagues. Consequences, when I participate the group meeting T can't share idea or brainstorming with others.

preservice science teacher # II

Regarding the responsibility of a group member, some of preservice science teachers stated that they encounter with the problem if some member group lack of the responsibility. The quotes were as follow:

"It is a hard work to share ideas, brainstorming and discussion with member group since some member groups lack the responsibility when I have. Therefore, in the discussion process or give ideas to construct the lesson plan or generate ideas to solve the problem in our group don't have alternative choice. We can't discuss. My friends always tell me like whatever you say."

preservice science teacher# III

"In our group we always divide the responsibility to all members for taking a time for investigation before discussion. However, I find that some member group can't give ideas because he didn't have information. As a sequence, our work was interrupt. We have to repeat the investigation again before proceed the next steps that I think it is a waste time and make me fretful"

preservice science teacher # IV

Regarding the efficiency of group discussion process, some of preservice science teachers stated that they do not be acquainted with learning through the discussion process and brainstorming. The quotes were as follow:

"I lack of the confident to share my opinion since I am not a good student. I afraid that my ideas are denied if I offered."

preservice science teacher # V

"I don't acquaint with the discussion process. Usually, it makes me nervous because I don't know what things I should share in the group meeting or sometime I don't have the information to share with others. "

preservice science teacher # VII

Regarding the information from focus group, the lesson study guideline was redesign to get more practically. The improved lesson study guideline consist of 7 stages ;1) Classroom Observation 2) Group Gathering and Goal Setting 3) Lesson Planning 4) Research Lesson 5) Lesson Discussion and Consolidation 6) Lesson Implementation 7) Lesson Conclusion which including writing a reflective journal in every step as showed in figure 2.

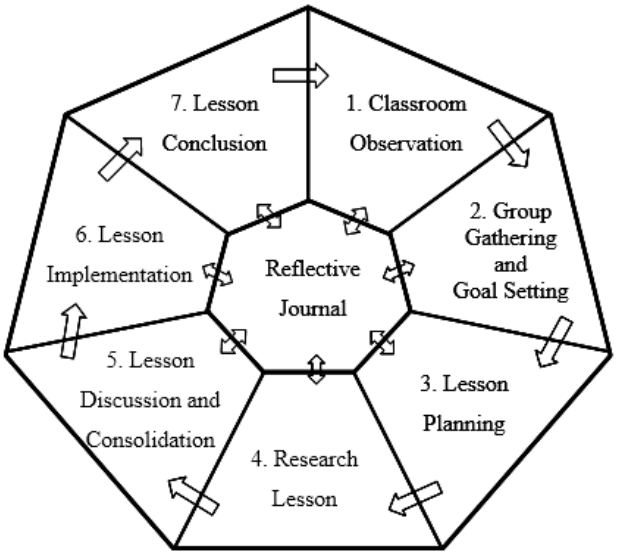

Figure 2: The lesson study guideline for preservice science teacher.

The reflective journal was embedded in to every step of lesson study guideline. The preservice science teachers were assigning to write reflective journal in every step of lesson study guideline. This method was using for reflect themselves. Moreover, it is useful for mentoring the teamwork of each group and gathering the issue that they can consult the teacher who is a facilitator in every step.

Conclusion and Discussion

Lesson study is a teacher-driven and teacher-directed professional learning model. Meanwhile, the important characteristics to drive lesson study successfully are; the lessons are planned collaboratively over a period of time; the taught lessons are observed by others, the lessons intend to bring to life particular goal of learning; the lessons are recorded; and the lessons are discussed and shared with others (Lewis, 200b). As a result, the power of group has more effect to the effective of the lesson

study guideline. Many things in lesson study including brainstorming, sharing, discussion, come up with the collaborative process. If in their group can proceed the collaborative process well, they will have more opportunity to be successful in their tasks. As the important factor effects the successful of lesson study process was the powerful of group (Kanyarat Cojorn, 2016). Therefore, a grouping process should come up with their intention. Moreover, students should spent more time to make themselves clearly in discussion process such as how they should do in discussion process, what the data they should have for share in the group. For more effectively in discussion process, the instructor should make the preservice student teachers a readiness to learning with lesson study guideline specifically what is the lesson study, how is the fruitful of lesson study, how is discussion process, and describe the things they have to do while learning with lesson study guideline. Considering in the problematic about the effective of group discussion, the scaffold of discussion through prompts such as "what if" and "did you notice" observations should be suggest to them. The facilitators also held concerns about the readiness of the preservice student teachers to engage in meaningful, substantive discussions about content and pedagogy with limited prior experience. Therefore, if an instructor should be a professional in lesson study, the lesson study will easy to be productively. This was supported by Fernandez et al. (2003) when they stated "lesson study…must include room for knowledgeable coaches who can stimulate the thinking of groups so they can rise beyond their own limitations". Additionally, the data from this study indicate that the lesson study guideline have a powerful learning strategies which can help the preservice student teachers get more a adequacy knowledgeable particularly teacher knowledge, content knowledge, general pedagogical knowledge, curriculum knowledge, pedagogical content knowledge, knowledge of learners and their characteristics, knowledge of educational contexts and knowledge of educational ends, purposes, and values, and their philosophical and historical grounds (Shulman. 1987), and skills to the step of internship in the school.

Acknowledgement

This research was financially supported by faculty of Education Mahasarakham University and Mahasarakham University Development Fund.

References

Darling-Hammond, L. (2005). Constructing the 21st century teacher education. **Journal of Teacher Education**, 57, 300–314.

Feiman-Nemser, S., & Buchman, M. (1986). The first year of teacher preparation: Transition to pedagogical thinking. **Journal of Curriculum Studies**, 18, 239–256.

Fernandez, C., Cannon, J., & Chokshi, S. (2003). A US–Japan lesson study collaboration reveals critical lenses for examining practice. **Teaching and Teacher Education**, 19, 171–185.

Kanyarat Cojorn. (2016). Lesson study: The strategy to enhance critical thinking ability of pre-service teacher, **Journal of Education Naresuan University**. 18(1), 218-2229.

Kennedy, M. (1999). The role of preservice teacher education. In L. Darling-Hammond,& G. Sykes (Eds.), **Teaching as the learning profession: Handbook of policy and practice**. San Francisco: Jossey-Bass.

Lewis,C. (2000b). **Lesson Study: The core of Japanese professional Development**. Invite address to the SIG on Research in Mathematics Education, AERE: New Orleans.

Lewis,C.C.,& Tsuchida, I. (1998). A lesson is like a swiftly flowing river. **American Educator, 12(17)**. 50-52.

Linda Sims and Daniel Walsh. (2009). Lesson Study with preservice teachers: Lessons from lessons. **Teaching and Teacher Education**, 1, 86-99.

Naphaporn Woranetsudathip.(2011). Lesson Study: A New Concept for Teacher Professional Development. **KKU Research Journal,** 1(2), 86-99.

Shulman, L. S. (1987). Knowledge and teaching: Foundations of the new reform. **Harvard Education Review,** 57(1), 1–22.

Stephen Marble. (2007). Inquiry into Teaching: Lesson study in Elementary Science Methods. **Journal of Science Teacher Education,** 18, 935-953.

Contact email: kanyarat.c@msu.ac.th