

Exploring Teachers' Perceived Beliefs regarding Teaching Practice based on Lesson Study Context^{1,2}

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This study aimed to explore teachers' perceived beliefs regarding teaching practice in the context of three-year Professional Development Project (ProDev) implementing lesson study incorporating Open Approach. The data were collected through questionnaire distributing to the teachers in three schools. Qualitative data were collected through participatory observation on teaching practice and interviewing members of lesson study team. The findings revealed that teacher's perceived beliefs regarding teaching practice could be categorized into three categories according to 3 phases of lesson study as the followings:

- 1) Perceived beliefs related to collaboratively designing research lessons
- 2) Perceived beliefs related to collaboratively observing their friend teaching the research lesson
- 3) Perceived beliefs related to collaboratively doing post-discussion or reflection on the activities of the two phases

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1. INTRODUCTION

There is a complex relationship between beliefs and classroom practices (Wilson & Cooney, 2002). Many researches on teachers' beliefs strongly suggest that the relationship between beliefs and practice is dialectic, not a simple cause-and effect relationship (Thompson, 1992). Because of the complexity of teachers' beliefs system, researchers may find that teachers hold beliefs that appear to be inconsistent with their teaching practice (Philipp, 2007). The key causes for the mismatch between beliefs and practices are as follows; powerful influence of the social context and the teacher's level of consciousness of his or her own beliefs, and the extent to which the teacher reflects on his or her practice of teaching mathematics (Ernest, 1988). Future study should seek to elucidate the dialectic between teachers' beliefs and practice, rather than try to determine whether and how changes in beliefs result in changes in practice (Thompson, 1992).

In Thai context, mathematical problem solving teaching still focuses on drilling exercises, doing computation, or how to merely get the right answers. These activities usually occur in which teacher lectures and students have individual work at their desks (Inprasitha, 2001). This teaching practice reflected upon teachers' beliefs such as learning focuses on remembering and the role of teacher is trying to transfer knowledge to students for remembering (Inprasitha, 2003; Changsri, 2006). This study, teaching practices based on lesson study was not teacher as lecture but teacher must collaborative work with other teacher, researcher and out site expert under lesson study cycle; *collaboratively* design a research lesson, *collaboratively* observe their friend teaching research lesson and *collaboratively* do post-discussion or reflection on teaching based on Inprasitha & Loipha (2007). Lesson study group pushed teachers to examine and reveal their own beliefs and provides an opportunity for educators to air, test, and realign these beliefs (Lewis & Hurd, 2011).

2. LESSON STUDY INCORPORATING OPEN APPROACH

Lesson study is the core process of professional learning that Japanese teachers use to continually improve the quality of the educational experiences they provide to their students (Yoshida, 2005). Lesson study is a simple idea. If you want to improve instruction,

what could be more obvious than collaborating with fellow teachers to plan instruction and examine its impact on students? While it may be simple idea, lesson study is a complex process (Lewis, 2002). Teachers work together in ways that may be unfamiliar. (Lewis & Hurd, 2011). Groups of teachers meet regularly over long periods of time to work on the design, implementation, testing and improvement of one or several “research lessons” (Stigler & Hiebert, 1999). Fernandez & Yoshida (2004) describe the process of lesson study into six steps; collaboratively planning the study lesson, seeing the study lesson in action, discussing the study lesson, revising the lesson (optional) and sharing reflections about the new version of the lesson. Japan’s lesson study is attracting attention around the world (Isoda & Nakamura, 2010). Despite the rapid rate of interest in this approach to professional development, lesson study remains relatively new to countries outside of Japan and most schools and teachers are at the early stages of adoption and implementation of the innovation (Murata, 2011).

In Thailand, lesson study started in 2002 by preparing the context for applying innovation into four areas of implementation;

1. The teacher training program,
2. The graduated study program,
3. In-service teacher training, and
4. Long term teaching professional development which was tried out with the fourth year students practicing their internship in 2002 (Inprasitha, 2011).

In 2006, the Center for Research in Mathematics Education has been implementing lesson study in the *Professional Development Project (ProDev)*. Unlike the Japanese lesson study, this project modified Japanese lesson study by incorporating Open Approach and emphasizing on “a unique collaboration” in every phase of lesson study cycle. This unique collaboration is comprised of school teachers, the 5th year undergraduate student doing their one year teaching practice at schools, graduate students, and mathematics educators, all from Khon Kaen University. This lesson study team then participated in collaboratively designing research lesson, collaboratively observing their friend teaching the research lesson, and collaboratively doing post-discussion or reflection on the activities of the two phases (Inprasitha & Loipha, 2007). According to these 3 phases of lesson study, Open Approach as a teaching approach is incorporated in the second phase as the following steps:

1. Collaboratively designing research lesson at least once a week; lesson study team designs research lessons by trying to apply the materials and subject matters to be taught in terms of open-ended problems. Then, those open-ended problems were transformed as mathematical activities by using 4–5 simple instructions. The instructions focused on the students’ understanding of the problem situations by themselves

either as an individual or a group based on the type of activity. In this phase, members of lesson study team participating in designing research lesson shared in designing materials to be appropriate with the students' activities or ages which based on collaboration of teachers who know their students' nature in classroom while the rest of members of lesson study team provide ideas about research issues. Moreover, they also collaborated in sequencing the teachers' questions by focusing on the question words "what, why, how" in order to stimulate and investigated the students' work as well as reasons of what they did themselves.

2. Collaboratively observing their friend teaching the research lessons at least 2–4 hours per week; the research lessons was taught in the classroom by the subject teacher of that grade using Open Approach as in the following steps; posing Open-ended problems, students' self- learning through problem solving, whole- class discussion and summary through connecting students' ideas. Classroom observation focused on students' responses to open-ended problems and students' ways of thinking.
3. Collaboratively doing post-discussion or reflection on the activities of the two phases once a week; all members of lesson study team and other teachers in the school attended the regular meeting and then following by reflecting upon their teaching practices. The teacher and observers discussed the things they had observed the research lessons, especially in the students' participation in activities, students' thinking, as well as problem situations.

3. CONTEXT OF A CASE–STUDY

It was until in the academic year 2007, the case-study school participated in the project. In the initial phase of the project, the Center for Research in Mathematics Education provided a workshop on lesson study and Open Approach for the teachers in the school. In this workshop, the participating teachers were offered opportunities to express their views on how to apply the gained concepts in the school. According to their opinions, the following concerns were revealed:

- 1) Difficulty in the rearrangement of the regular teaching schedules to allow at least one teacher to observe the class in the 1st grade and 4th grade levels which were subject to introduce lesson study and incorporating open approach,
- 2) Difficulty in the class participation and observation due to limited number of school's teachers,
- 3) They worry that they could not design research lesson, in which open-ended problems were emphasized, and

- 4) They worry that their students could not gain learning achievement nor obtain class content.

After they participated in the workshop, the school implemented the project on June 26, 2007. The implemented activities were as follows.

1) Collaboratively designing research lesson

Every Thursday after reflection session, a case-study teacher, observing teacher, graduate students and mathematics educators collaborated in designing lesson plan with emphasis on open-ended problems in the form of short instruction. The process of designing the materials has patterned the Japanese mathematics textbook. It was noted that the case-study teacher played a dominant role in providing comments on the developed directions for suitability on students' ways of thinking.



Previously, in the academic year 2007, when the collaborative research lesson was designed, it caused some problems and these were: conducting the reflection session has taken pretty long. This was resulted in the delay of designing lesson and producing teaching material, which took as late as 7.p.m. Thus, in the academic year 2008, the phase of designing research lesson was rescheduled to Tuesday starting from 3 p.m. The lesson study team was comprised of the case-study teacher, an internship mathematics students and graduate students. Lesson plans were collaborated and coordinated in considering the directions and problems arising from thinking information and direction interpretation of the students gathered in the academic year 2007. However, in the academic year 2008, the lesson plan had given emphasis on the prediction of students' concepts and on asking questions at the right time to stimulate the students' way thinking.

2) Collaboratively observing their friend teaching the research lesson

The research lessons would be taught in classroom by a case-study teacher in 1st grade

which was carried out for four times a week. Teaching was conducted in a sequential order. First, the case-study teacher posed the open-ended problem by either mounting or writing the instructions on the blackboard, including introducing teaching materials. Thereafter, the students were allowed to be involved in problem solving or doing group activities; meanwhile, the case-study teacher walked around, observing actions of the students during the activity interaction. The case-study teacher approached the students to repeat the directions in the event that the students were thought that they didn't understand the instructions. Moreover, the case-study teacher kept stimulating the students to collaborate in solving the problems. Then, at the end of the class, the teacher let the students present their work by telling what they had done. Next, after the presentation by every single of group, the case-study teacher again made a summary of the current lesson taught and learnt. In fact, the lesson summary of the case-study teacher was mainly based on the content of the materials used regardless of connecting students' concept.

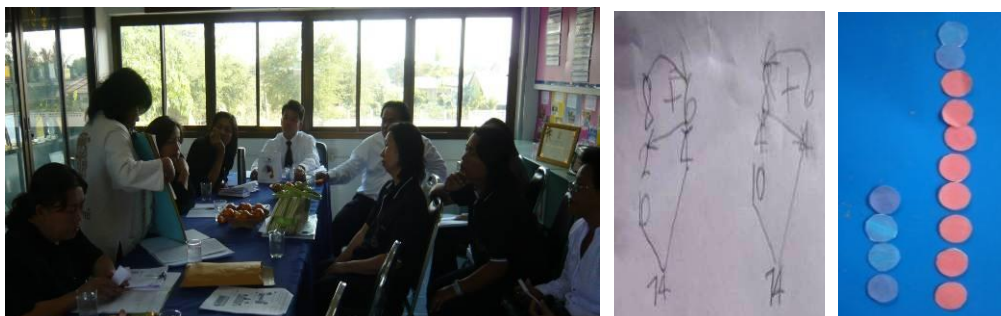


In this phase, all of the observers underwent observation and recording the activities performed by the students. Contents of the observation included the students' problem interpretation, problem solving, presentation and group process. The period of time spent by the observers was different *i.e.* the observing teacher participated in class observation at least once a week; the school coordination (graduate student) did from Monday to Thursday; the researcher (graduate student) did every Tuesday and Thursday; and the principal and a mathematics educator attended once a month.

3) Collaboratively doing post-discussion or reflection on the activities of the two phases

The post-discussion or reflection on the activities of the two phases was organized on Thursday, starting from 3 p.m. This phase was led by the principal. The reflection was initiated by the teacher (an internship mathematics student or a teaching teacher), followed by the observing teacher, and graduate students. All of the school's members were

involved in this phase, while a mathematics educator as the supervisor for the internship mathematics students participated in reflection session twice in a semester.



In the academic year 2008, the internship mathematics students as class teachers analyze the teaching management regarding the objectives, interesting points and approaches for further development. They also reflected the points that had been adjusted to suit to the students' ability. Meanwhile, the case-study teacher, as an observing teacher, took this chance to provide reflection on teaching practice. It was found that the case-study teacher could precisely observe students' activity interaction. In addition, the mathematics educator could indicate such arising problems in the classroom as problem posing, teachers' role, and students' thinking process. The mathematics educator also suggested in construction open-ended problems, designing of teaching materials and methods in predicting students' concepts.

4. METHODOLOGY

The questionnaire was distributed to all in-service teachers of three project schools; Koo Khum Pittayasan School, Chumchon Ban Chonnabot School and Ban Bung Neum Bung Kraui Noon School, during 2007 and 2008 academic year. 43 of 59 respondents were received from questionnaire distribution among teachers participating in the project at least one year and a half. It consisted of 5 open-ended questions and background related questions (gender, age, grade of teaching and subject of teaching). An example of open-ended question was "What is your opinion about professional development based on lesson study?"

Besides from quantitative analysis of questionnaires, the qualitative analysis was used for analysis teaching practices of one teacher whom the researcher had observed her teaching practice at Ban Bung Neum Bung Krai Noon School twice a week for the entire 2007 and 2008 academic years. Data collection involved participatory observation on

teaching practice of one teacher twice a week through one academic year, interviewing that teacher and other teacher in lesson study team and field note from a case-study teacher and researcher.

Data analysis was conducted based on the cycle of lesson study. Perceived beliefs in this study refers to those beliefs regarding teaching practice in which teachers gradually become conscious of after they participated in professional development project implementing lesson study incorporating open approach. Three categories of beliefs were used in this study as the followings:

- Perceived beliefs related to collaboratively designing research lesson.
- Perceived beliefs related to collaboratively observing their friend teaching the research lesson
- Perceived beliefs related to collaboratively doing post-discussion or reflection on the activities of the two phases

5. RESULTS

The method of content analysis was used in analyzing the data. From the teachers' responses, their perceived beliefs regarding teaching practice could be classified into three categories at followings:

1) Perceived beliefs related to collaboratively designing research lesson

During the process of collaboratively designing research lesson, teachers were aware that they were provided more chance to prepare their research lessons than they were used to be and they had planning the lessons in advance both of materials and classroom activity to be appropriate with their students. They become conscious of they had more chance to share their idea for revision and develop lesson plan. They also were aware that collaboratively planning the lesson could produce an effective lesson. The following quotes are excerpted from the teachers' responses about collaboratively designing research lesson:

T1: "Lesson study is a practical approach for improving teachers' teaching practice. In particular, participating in lesson study process provide them a chance to acknowledge other people's ideas which is the central issue for the improvement which in turn improve their professional development. For example, 'collaboratively plan' helps correcting the lesson plan more perfectly."

T2: "Teachers do team working and are able to share their ideas among them for developing the lessons."

2) Perceived beliefs related to collaboratively observing their friend teaching the research lesson

During the process of collaboratively classroom observation, teachers become conscious of what the defects in the lesson or problem posing were. They also become conscious of what students were doing in the lesson and students ways of thinking. The following quotes are excerpted from the teachers' responses about collaboratively observing their friend teaching the research lesson:

T3: "Traditionally, one teacher teaches his/her lesson without other teacher observing the lesson. In contrast, the second phase of lesson study, other teachers or lesson study team's members observe the research lessons for later discussion in the reflection phase. This helps the lesson study team notice problem and deflects of the research lessons, as well as, helps anticipating students' ideas."

T4: "Observation from the classroom provides teachers or team to understand students' behaviors, in which traditional teaching cannot be provided."

3) Perceived beliefs related to collaboratively doing post-discussion or reflection on the activities of the two phases.

During this process teachers recognized what the defect in the lesson and what part of teaching practice could be improved. They also recognized their friend's critiques and various ideas from other people. The following quotes are excerpted from the teachers' responses about collaboratively doing post-discussion or reflection:

T5: "A teacher teaching the lesson learns his/her own teaching roles from other people's perspective, which could be used for teaching improvement and for professional development fostering students' learning."

T6: "Reflection is literally and metaphorically a mirror reflecting how one teacher organizes classroom activity, providing merit and weakness for further development."

6. CONCLUSION

It was found that this modified Japanese lesson study provides a chance, which teachers never has before, for participating teachers to reflect upon their teaching practices and their existing beliefs. This point of view is consistent with Philipp's idea (2007), through reflection, teachers learnt new ways to make sense of what they observe, enabling them to see differently those things that they had been seeing while developing the ability to see things previously unnoticed. During the process of lesson study, teachers become conscious of the activities under the cycle of lesson study. Those perceived beliefs should be considered as the critical stage before they can change their beliefs and associated beliefs about their teaching practices.

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