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Conversations in Lesson study: What Emerges When the Dust Settles

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Research on teaching and teacher education emphasizes the goal of helping teachers become adaptive experts or lifelong learners within learning communities (Shulman 1999, Hammerness et al 2005). This, however, depends on long-term, focused support for research-oriented, inquiry-oriented approaches to learning within schools (Burn & Mutton 2015).

The Lesson Study methodology potentially promotes conversations embedding qualities frequently labeled as 'practical theorizing' (McIntyre 1993), 'clinical reasoning' (Kriewaldt & Turnidge 2013), or 'research-informed clinical practice' (Burn & Mutton 2015). This entails 'rational testing of all ideas in the interfaces between theoretical and practical knowledge' (ibid).

In this paper we explore the content in the post-observation-conversations among colleagues when using Lesson Study, to assess the current and potential outcomes of the method in our context. The study is part of a collaborative project in partnership between the University of Oslo and our network of 21 appointed University schools, where we explore the use of Lesson Study in schools and initial teacher education.

The preliminary trials and records have indicated that teachers find the use of lesson study useful and rewarding, consistent with a lot of research on the use of Lesson study (Lewis et al 2006). Participant teachers in the project report that they 'have never used the time as effectively to talk about teaching' On the other hand, they experience some difficulty when it comes to the use of research methodology during the different phases of the lesson study process. This reveals that Lesson Study simultaneously represents a challenge and a great possibility for developing research-oriented learning communities.

The paper pursues the research question: How can Lesson Study as method professionalize how teachers talk about teaching?

The post-observation conversations in Lesson Study are where planning, observations and implications in the interface between theory and practice are potentially at play. Diving into the content of the post-conversations among teachers provides us with information about how the teachers frame their observations and how they draw conclusions. By analyzing what topics and knowledge resources that are most prominent in the post-observation conversations among teachers, we analyze the current and potential outcomes of using the method. Specifically, we explore:

1) What are the topics conveyed in the post-observations-conversations among teachers?

2) What are the tools and knowledge resources the conversations draw on?

The study has been designed on the basis of records, interviews and participatory observations over a period of two years. In this particular part of the study we conduct a directed content analysis (Braun & Clarke 2006) of three (to five) post-observation-conversations among teachers involved in the project.

The analysis consists of two main phases: First, we pay particular attention to what key features of Lesson study are conveyed in the conversations (Lesson plans, research question, observation schemes, specific observations et cetera). Second, we explore the tools and knowledge resources at play, with specific

regard to how ideas are reviewed and evaluated, and what kind of knowledge resources/tools yield these kinds of reflections.

Data collection is still in progress and we have conducted a preliminary inquiry into the data material to guide the research questions.

We assume a cultural-historical understanding of professional learning, conceptualizing learning as the increasingly informed use of cultural tools. Learning thus takes place in a 'dialectic between person and practice or culture, where individual and collective shape each other and where the professional knowledge and values embedded in practices are important' (Edwards 2017).

The first part of data analysis draws upon key concepts in the Lesson Study method as such. The second part draws upon research literature attempting to define quality in learning communities (Shulman 1999, Burn & Mutton 2015).

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When a University Scholar experienced as a School Teacher: Professional Learning with Lesson Study

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Lesson study is a school-based teacher professional development approach that founded in Japan. Lesson study is an instrumentational improvement approach that places teachers in the center of professional activity with their interests and desire to better understanding student learning (Murata, 2010). Lesson study is an important process toward implementing new educational ideas and theory in to teachers' everyday practice. Although recently many university scholars conduct lesson study in teaching course and set up the project for helping and conducting in-service teachers do lesson study, but also it is not easy for scholar to understand what teacher needs, think, understand, do, struggle or learn. The purpose of the research was to investigate professional learning with lesson study when an university scholar engaged as a school teacher. Framework of teacher learning through lesson study (Murata, 2011) and Lesson Study and Open Approach (Inprasitha, 2016) were conducted in this research. The study employed self-study research methodologies. The participant of the study was a lesson study team of Ban Nam Prae Public School, Chiang Mai, Thailand, composed with one principal, four school teachers, two student teacher and our research team. One second grade class involved in the lesson study research. One of research team played a role as school teacher who taught the learning unit of addition in vertical form for 12 lessons consecutively. Data collected from lesson plans, classroom teaching video recordings, photographs, interviewing, focus group and students' written works. Data were analyzed by protocol analysis and content analysis. The research showed that a university scholar experienced as a school teacher working through lesson study activities composed with 1) Plan : determine goals for student and development the lesson plan focusing on problem solving based -task design and instructional materials , 2) Do: the researcher taught students and our team observed and collected data on students' problematic and ideas on addition in vertical form and 3) See : lesson study team used the data to reflect on student's way of thinking and their ideas to solve the problem and some on teaching practices. Professional learning among working with lesson study team was 1) knowledge development: increasing specific content knowledge about the idea of units utilized in addition of number in vertical form, knowledge about content and student learning on addition in vertical form and pedagogical knowledge about how to orchestra students' mathematical discourse and appropriate using instructional materials to promote students' thinking, 2) community development: understanding motivation and difficulties in working lesson study; content , interpreting textbooks, curriculum materials, teaching practices in details, promoting sense of efficacy, collegial capacity and collaboration and professionalism and 3) material development: learning to do kyozaikenkyu, making more systematic problem-solving lesson plan and curriculum materials studies, manipulatives and worksheets. Both engaging lesson study activities and professional learning together in lesson study team leaded to give students' opportunities of learning mathematics by and for themselves and improved classroom teaching practices among school teachers in our team continually.

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The Development of Web-based Science Teachers Community Program to Enhance High School Students Critical Thinking Skills in West Java Indonesia

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Programs for teachers' professional development in Indonesia to get certified teachers are needed in a short time. Mostly government programs of professional training only took about one month.Many certified teachers need to continuous professional development (CPD) throughqualified state universities of teacher training program. Really the wide space of Indonesia and limited amount of those universities, caused teachers' CPD was very limited and expensive, especially for science teachers. The socialization of lesson studies that have been done in several schools in Indonesia was too expensive, because obstacle in time and space of faculty members give CPD to schools. Indonesia University of Education as a state university iniciate to developa vehicle of teachers' community that cheaper in wide spread area using web-based programme in West Java. The study through mixed methods embedded experimental design start from creating an infrastructure of information communication technology(ICT), creating a teachers community, and implement the system. After that teachers' community used an effective communication by on-line discussion and video conference. Sample of research include science teachers of 6 cities in West Java, consists of Bandung, Tasikmalaya, Garut, Sumedang, Cianjur and Sukabumi. Through a lesson study teachers community produced lesson plans to be implemented in real class. As a case study it has been socialized a learning program based-on interactive multimedia to increase students' critical thinking skills based-on graduate student' research in Chemistry Education of UPI. It was a challenge to science teacher education community to create an ICT-based lesson, because of their limited skills in computer programming. Chemistry topic has been choosen was rate of reaction. It has been developed in ICT-based lesson to increase students' critical thinking skills. Teacher in the community used a downloaded web-based ICT media in the Chemistry topic and link it to their power point tranparancies to develop students critical thinking skills based on students' mental model as a combined media. As an experimental mode design implemented to a private school in Bandung. The lesson had been connecting to the teachers in other cities in West Java by real time connection (using Skype) in their own classes. Results show for the real class (embedded quasi experimental design) that the ICT-based lesson has been developed 35 high school students' critical thinking skills in 'elementary clarification' and 'inference' indicators, The data analysis using inferential statistics ($p= 0.005$). Because the program using Skype connection look too expensive, it has been suggested to use smart-phone connection for teachers' community in other cities out of Bandung as on-line lesson study of teachers CPD to certified teachers (in-service) and a plan of on-line program of FPMIPA -UPI for teachers' development for un-certified teachers (pre-service) to get low cost program.