

## Lesson Study as Conduit for Group Mentoring

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Lesson Study is a collaborative professional development that encourages teachers to reflect on their lesson planning and teaching. One of the features of Lesson Study is the role of a knowledgeable other who provides insights into the research lesson during post-lesson discussion. Lesson Study in Japan often includes a knowledgeable other who gives final comments at post-lesson discussion and another knowledgeable other to provide instructional support during the planning phase (Watanabe & Wang-Iverson, 2005). While final comments from the former helps teachers to connect the lesson with the aims of instructional programme, the latter is a content coach during the planning phase.

Despite the highlights on the role of knowledgeable others in contributing insights during planning and post-lesson discussions, there is a lack of research on the work of knowledgeable others in the lesson study literature (Takahashi, 2014). This paper aims to contribute to the existing body of knowledge through a study that lesson study is a conduit for group mentoring. With deep expertise in content and teaching, the knowledgeable other can also mentor the group of teachers during lesson study. Mentoring is a collaborative inquiry whereby individuals make meaning of knowledge within a social context and as a result of interactions with others (St George & Robinson, 2011). As co-learners with their teachers, mentors play key roles to draw teachers' attention to key concepts in mathematics and student thinking.

The main question in this paper is to examine mentoring conversations during the post-lesson discussions and its impact on teaching. The research lessons are on a Secondary One Mathematics topic on ratios involving rational numbers. The two research lessons were co-designed by six teachers in the lesson study. Due to constraints, the knowledgeable other also facilitated the post-lesson discussions and mentored teachers in the concepts of ratio and how students perceived the relationships between the quantities in a given ratio. After the first post-lesson discussion, the improved lesson was taught by another teacher. This was again followed by a post-lesson discussion led by the same knowledgeable other cum mentor.

Audio-recordings of post-lesson discussions and video-recordings of research lessons were transcribed to study the impact of mentoring conversations on teachers' reflections of their teaching actions, mathematical concepts and students' thinking about the concepts of ratio. Data analysis showed that mentoring by the knowledgeable other empowered teachers to realise that a resource video which was used to illustrate the concept of ratio caused students' misconception in simplifying ratio. Through mentoring conversation, the teachers discovered the source of misconception and changed the way they illustrate the concept of ratio.

In this lesson study, the teachers collaborated to co-design lesson and shared their observations of student learning. However, as a team, they were not aware that the way in which the resource video was used will cause students' misconception until the knowledgeable other pointed the underlying mathematical concepts that were portrayed in the resource video. A teacher's journal reflected that 'e wanted to incorporate

the video as an introductory trigger to engage the students - yet, we did not notice that they may be forming misconceptions as they watched the video!' Another teacher highlighted that the knowledgeable other 'alue-added to our discussions' These findings suggest that lesson study is a conduit for group mentoring to improve teaching and learning. Our study also revealed that group mentoring enhances teachers' capacity to connect instructional decisions to interpreting student thinking and learning.

## Multiple Layered Development of Theory of Action in School Reform: A Case Study of School as Learning Community in Japan

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The aim of this study is to illuminate multiple layered development of theory of action in school reform, based on a case study of school as learning community in Japan.

Donald A. Schön and Joseph P. McDonald explored theory of action in school reform (Schön and McDonald, 1998). They defined theory-of-action as an analytical tool that aims to help practitioners reflect upon and make explicit the knowledge that shapes what they do. The theory-of-action approach is not a theory that directly leads school reform initiative. They emphasized that the approach was a tool that helped them inquire into and learn from their own practice.

School-as-learning-community is one of the theoretical strategy of school reform in Japan (Sato, 2000). The strategy had priority to lesson study that reflected students' actual learning in lesson. This style of lesson study was founded on Japanese educational tradition. Japanese teachers and educational administrators have made efforts to construct school as learning community through trial and error for 20 years.

This study illuminated development of theory of action in school reform, mainly examining teachers' journals that traced the school as learning community in Japan. Publication of teachers' journal is one of the unique professional culture in Japan: the journal is an arena where they discuss problems of school reform. This examination based on the journals, various observational data and relevant school and classroom documents that was obtained through our intensive fieldwork to the school site.

This study focused on multiple development of theory of action in three years: the development of discourse included supervisors and administrators from outside the school and the school leader, the diverse middle leaders, teachers and students inside the school.

This study tries to provide suggestions to deepen our understandings of development of theory of action in school reform and to support the school reform.

## The Improving Strategies of "4S" Class Lesson Study Based on Cultivation of Core Quality for Chinese Pupils

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In 2016, China announced the overall frame of the development of Chinese students' core quality. It takes cultivating students that are all-round developed as the core, which includes three aspects, six core qualities of students and eighteen basic points. The writer thinks that the key to achieving the goal of cultivating students' core quality lies in the class and the improvement of classroom teaching based on the cultivation of students' core quality. In the way of analyzing teaching cases and comparison, the writer will put forward the ways to improve 4S classroom teaching and the implementation strategy of it based on the cultivation of pupils' core quality according to his exploration of primary school classroom teaching for more than ten years. 4S class put forward in this paper refers to class that is lively, close to real life and productive. Its implementation strategies are as follows. First, instruct students to study actively rather than passively; Second, instruct students to switch from acquiring knowledge to learning to seek knowledge; Third, instruct students to change from closed learning to open learning; Last but not least, make students' learning style change from homogeneous learning to critical learning.