D-12-1 PP-151

Abstract Number: **20037**

Snapshots of Productive Teacher Noticing during Kyouzai Kenkyuu with Support from a Knowledgeable Other

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A major reason why teachers fail to learn from the processes of Lesson Study is the failure to engage adequately in kyouzai kenykuu' the investigation of instructional materials' which is a critical process in Lesson Study (Yoshida & Jackson, 2011). In particular, teachers have to pay particular attention to details pertaining to mathematical concepts, students' learning difficulties, and the connections between their teaching approaches and students' thinking (Lee & Choy, 2017; Takahashi & McDougal, 2016). However, noticing students' thinking about mathematical concepts require much effort and can be challenging, even for experienced teachers (Lee & Choy, 2017). One way to engage teachers in more productive kyouzai kenykuu is to tap the expertise of a Knowledgeable Other, someone outside the planning team with expertise in content and teaching, during the planning process (Watanabe & Wang-Iverson, 2005). Takahashi and McDougal (2016) highlight a strong evidence base for the critical role which Knowledgeable Others play during post-lesson discussions, but how they can support teachers during kyouzai kenykuu is less clear. This paper examines how teachers engage in kyouzai kenykuu with support from a Knowledgeable Other through the lens of teacher noticing. Mathematics teacher noticing can be conceptualized as a set of three inter-related skills: attending to, interpreting, and deciding to respond to student thinking (Jacobs, Lamb, & Philipp, 2010), and is seen as a component of teaching expertise. In this paper, I draw on transcripts of Lesson Study discussions from a larger study on Lesson Study for Learning Community, and present snapshots of what and how a group of eight Grade 4 schoolteachers notice as they work through kyouzai kenykuu with the support of a knowledgeable other. Findings suggest that Knowledgeable Others may play a critical role in supporting teachers to engage in more productive kyouzai kenykuu. More specifically, Knowledgeable Others can support teachers' efforts by redirecting their attention to the mathematically significant opportunities through appropriate questions and prompts. In addition, I will discuss some implications and further suggestions for future implementations of Lesson Study.

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Uncovering Teacher's Questions in Guiding Students in Learning Science: Applying Transcript-based Lesson Analysis to Research on Hydrostatic Pressure Concept Formation

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In science lesson, teacher's questions related to a concept enhance students to construct their scientific cognitive thinking. By asking questions, the teacher and the students collaboratively establish a dialogue and create exploration activity to guide students to the constructive understanding. Teacher's questions guide students to a specific conclusion and help them to focus on the lesson problem. This research investigates a science lesson regarding hydrostatic pressure concept in a public junior high school in Indonesia. One of the hydrostatic pressure phenomenon is the pressure we feel on our ears due to the weight of the water above us when we dive into the water. That phenomena might be difficult for students to understand qualitatively or quantitatively. As direct experience involving students' senses which is an effective way to learn a physics concept, in the lesson on this research, students was using equipment which was developed by teacher team in the school to help students visualize hydrostatic pressure concept. The aims of this research are to find out how teacher's questions guide the students to learn the hydrostatic pressure and how the students respond to the questions. To meet the purposes, this study employs a qualitative research design embracing the characteristics of a case study design by using transcript based lesson analysis. Transcript based lesson analysis was conducted by using the transcript of the lesson video and carefully analyze every teacher and students' dialogue during the lesson. By lesson analysis, teacher and students' dialogue, activity, and the lesson itself can be seen in detail. The results of this research reveals that the teacher's questions could reconfirm students' prior knowledge which has relation to hydrostatic pressure concept; guide student to do the experiment during the lesson; and also teachers' questions could construct students' knowledge regarding the essential concept of hydrostatic pressure comprehensively. However, this research also finds out the difference of questions timing influence how students responded.

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A Contribution from Lesson Analysis in the Visualization of Interpretation of Verbatim Records in Classroom Activities

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Materials used for lesson analysis include word protocols or verbatim records of classroom communication that are transcribed in chronological order from audio recordings. From the methodology point of view, one of the most important tasks is making the process of interpretation of verbatim records visually understandable. This presentation aims to develop a descriptive method for verbatim records and signs called 'intermediate factors' in our research which visualize the interpretation process of verbal records. The author uses children's remarks to develop signs to show relations between words and general concepts. The signs as well as the relations among them are called 'intermediate factors' in our study.

Qualitative and quantitative research methods were employed for data collection. The approach included a review of the literature on the method of lesson analysis, as well as classroom observation and the taking of ethnographic notes, interviews of teachers, teaching analysis, plus an examination of other relevant school documents.

The procedure for analysis consisted of eight steps: 1) division of the lesson process into several parts, 2) quantity arrangement, 3) selection of remarks, 4) rearrangement of the remarks, 5) interpretation, 6) identification of meaning units, 7) description of remarks by the use of intermediate factors, and 8) abstraction of pedagogical factors through an interpretation of the transcribed text.

The following conclusions were derived from this case analysis: (1) the relationships between units of analysis can be described by use of symbols that indicate the interpretation of the interpreter, (2) the interpretation of the interrelationships between analysis units of remarks can be visually indicated, in the way that two different interpretation on the one and the same remark can be described or inscribed by using two sets of forms, and (3) an interpretation involves a compression of information and abstraction, but the capability to reference or revert to the original material source used for interpretation might be required.