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## Identifying Lesson Study Design Features for Supporting Effective Teacher Learning

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### Objective

Benefits of teacher collaboration have been empirically demonstrated in the U.S. by prior research that revealed the association between teacher collaboration and student achievement growth (Authors, 2016; Goddard, Goddard, & Tschannen-Moran, 2007; Ronfeldt, Farmer, McQueen, & Grissom, 2015). However, we know little about what specific elements or design features of collaborative learning activities promote teacher learning and how the process of professional growth occurs through collaboration.

This study focused on three key design features of lesson study' duration, facilitator orientation, and material quality' and examined the relationship among these design features, teacher participation in an effective inquiry process (studying, lesson planning, gathering data, and analyzing and discussing student responses and teaching effectiveness), and teacher learning outcomes measured by perceived changes in knowledge, self-efficacy, and expectation. Based on survey data collected from 87 teachers in 24 teacher groups who engaged in mathematics lesson study during the 2015-16 academic year in Florida, we addressed the following research questions:

1. What are the variations in design features (duration, facilitator orientation, and material quality) and teacher participation in an effective inquiry process in mathematics lesson study?
2. How are design features associated with teacher learning outcomes measured by perceived changes in knowledge, self-efficacy, and expectation, mediated by teacher participation in an effective inquiry process?

### Methods and Data Sources

To administer the teacher survey, we gathered a list of teachers who participated in mathematics lesson study during the 2015-16 academic year from six districts in Florida. A link to a Qualtrics online survey was sent to 110 teachers, and 87 teachers in 24 lesson study groups completed the survey with a response rate of 79%. We conducted descriptive statistics and path analysis to examine our research questions.

### Results and Conclusion

We found a major variation in the design features of lesson study reported by the teachers, and that facilitators' focus on student thinking, higher material quality, and longer duration of learning activities are significantly associated with teacher participation in an effective inquiry process, which in turn is associated with perceived changes in knowledge, self-efficacy, and expectation for students. However, the facilitators' focus on active participation of teachers was not significantly associated with teacher participation in an

effective inquiry process or any of the teacher learning outcomes. Simply promoting active engagement among teachers without a deliberate focus on student thinking is not likely to change teachers' beliefs about teaching and student learning, which influence the quality of instruction and student learning. Investing in important design features of teacher collaboration is one important step for maximizing the potential benefits of a collaborative, inquiry-based learning process for supporting teachers' professional growth.

#### References

Goddard, Y. L., Goddard, R. D., & Tschannen-Moran, M. (2007). A theoretical and empirical investigation of teacher collaboration for school improvement and student achievement in public elementary schools. *Teachers College Record*, 109(4), 877-896.

Ronfeldt, M., Farmer, S. O., McQueen, K., & Grissom, J. A. (2015). Teacher collaboration in instructional teams and student achievement. *American Educational Research Journal*, 52(3), 475-514.

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## Commonalities and Variations in Junior High Math Teachers' Perspectives on Lessons According to Their Life Histories

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### Introduction

Teachers develop their perspectives on lessons and improve their class designs and judgments about classes by lesson study through collaboration with colleagues and researchers (e.g. Sakamoto, 2011). In lesson study, teachers come to understand other teacher's interpretations of lessons and correlate it with their interpretations (e.g. Sakamoto & Akita, 2008). Nevertheless, it is difficult to understand the interpretations of others because teachers' interpretations are based on their own perspectives on lessons (e.g. Sakamoto, 2010; Yamazaki, 2012). For understanding other teachers' interpretations, it is important to understand the relationship between their perspectives on lessons and their interpretations and to understand their perspectives on lessons behind their interpretations. This study investigated teachers' perspectives on lessons. For understanding others' perspectives on lessons, teachers should understand other people based on their life history (Schutz & Luckmann, 2015). However, most perspective studies do not have such viewpoints. This study analyzed teachers' perspectives on lessons from their life history. Furthermore, perspectives on lessons could be influenced by the subject they are teaching and the students' age. This study analyzed junior high school mathematics teachers' perspectives on lessons by referring to the variation theory (Marton, 2015) and by taking each teacher's identity into consideration.

### Methods

Semi-structured interviews were conducted with four junior high school math teachers. The questions included 'what are your objectives for mathematics classes?' 'How do you design your mathematics classes?' and 'when and why did you set the objective and develop the design?' among others. Moreover, additional questions were asked to get more detailed content. To maintain research ethics, we used fictitious names of teachers and partially modified information to prevent examinees from being specified, to the extent that the discussion would be unaffected.

### Results

Commonalities and variations in junior high math teachers were investigated with reference to the variation theory, and three commonalities were identified: (1) there are two domains that are commonly considered important; ways of presenting tasks and ways of dealing with children that are bad at math, (2) teachers have a concrete image of lessons behind their perspectives, which are created by lessons they experienced or observed before, and (3) teachers' perspectives on lessons are affected by their educational experience. Moreover, three types of variations were identified: (1) varied experiences that developed their perspectives: One teacher might have developed his/her perspective by observing his/her senior teacher's lesson when he/she was a new teacher, whereas another teacher might have developed his/her perspective

through his/her transfer to a higher-level school. (2) varied educational experiences: One teacher who was bad at math at school deals with children that are bad at math by developing an environment where children can ask whatever they did not understand, whereas another teacher who was good at math attempts to give opportunities for children to develop an interest in math. (3) different strengths of teachers: For example, a teacher with much knowledge on teaching materials regard the development of interesting teaching materials as important.

### Discussion

Factors creating commonalities and varieties in perspectives about lessons were indicated. Moreover, effects of the subject, such as junior high mathematics, on perspectives on lessons were suggested. Findings of this study would provide viewpoints for understanding perspectives on lessons that teachers unconsciously refer to when interpreting lessons. It is suggested that in the future, viewpoints for understanding other teachers' interpretations should be investigated by examining correlations between interpretations and lesson perspectives.

## The Use of Three Ways Conference to Optimize Performance Assessment for Prospective Biology Teachers to Strengthen School University Linkage

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This study is to investigate how 'three ways conference' introduced by UPI can improve the link of school teachers and university educator in supervising prospective biology teachers as performance assessment techniques. Three ways conference model enables university supervisor and school supervisor to work collaboratively during teaching practice in certain semester every academic year. Pattern of agreement among school supervisors, prospective teachers and university supervisors was decided first (frequency and distribution). Six supervisors teachers from five schools involved and played important role in assessing the prospective teacher's progress by various techniques to overcome each constraint (weaknesses). Prospective biology performances are observed and given feedback step by step to achieve their highest performance by reducing their constraint individually under school and university supervision. Even though the formative assessment technique used in most schools still emphasizes on teaching achievement, especially the achievement obtaining from grade (testing), improvement did happen due to the use of three ways conference. Effective teachers have learning objectives for their students and use assessments to see the progress. This research focuses on the effectiveness of assessment techniques used against the intended objectives to be achieved by teachers in class room using open lesson as part of lesson study strategy. Three subject-based open lessons from five different schools observed by prospective teachers in each school during open lesson. Teacher supervisors and university supervisors observed the open lesson and assessed their improvement through the reflection. The three observed lessons were analyzed qualitatively and presented descriptively. Research finding shows that three lesson plans which have appropriate assessment technique were minimum number for university supervisor to detect improvement in teaching performance shown by prospective teachers; by having agreement from the beginning through three ways conference introduced to prospective biology teachers and school supervisors, the direction of supervision can be followed by each component of 'professional group' In other words performance assessment introduced through three ways conference had been experienced by the whole components to improve beginners in engaging and entering professional world in teaching with clear reference.