E-11: Teacher learning through inquiring, communicating, and partnership

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Teacher learning in university--government--school partnership

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The paper explores teachers’ learning within the context of East China Normal University’s University-Government-School initiative for comprehensive reform of basic education schools. After nearly 20 years of exploration and practice, this initiative, which is called New Basic Education (NBE), has formed a mature guiding model, and has published lots of books and papers on education and teaching. In terms of English teacher learning, in the first semester of cooperation, teachers mainly read relevant theoretical books, and the teaching and research group will also organize teachers to share their experiences. After which the NBE enters “Daily research” and “Node advancement”, “Daily research” means that in addition to completing routine work, the lesson preparation team needs to prepare a seminar in the form of lesson study. “Node advancement” means that the subject community (university experts, regional teaching-research staff and the Symbiosis School teachers) attend the seminar that carried out by the backbone teachers, and give suggestions for the seminar. This event is once a month. After the event, each teacher will write a reflection log. In addition, the lesson preparation will reconstruction of the seminar according the discussion. In September 2017, six schools in a certain area of Guang Dong Province joined NBE. This paper selected a backbone teacher as a case to analyze her learning in this initiative over past year. The core questions of this research are: 1) There are many roles in NBE, such as university experts, regional teaching-research staff, symbiosis school teachers, etc. What role do they play in the case teacher's learning, and what help do they provide? 2) What impact does NBE’s unique teacher training approach have on teacher learning, such as theoretical reading of teachers in the early stages, the daily research and the node advancement, etc.? 3) How does the teacher integrate these different kinds of help? What did she finally get?

The main research object of this study is Lu Mei, an English teacher at DH elementary school (one of the NBE’s cooperative school in Guangdong Province). She is 37 yeas and has 16 years of teaching experience. She is currently a third-grade English teacher with 40 students. The research use a case study method, we collected a variety of data, including the interview information, the video and recording materials and the text materials. All the interviews and recordings were converted into written materials, each node advancement activity was written into a case study. With the help of Cultural-
historical activity theory, we get the following findings: 1) Teacher learning needs to be based on their specific teaching practice and the community of the school, but the intervention of external experts helps the teacher community to break the homogenization voice. The “daily research” and the “node advancement” adopted by NBE is a good way to combine them. 2) In cooperation, teachers need the external force to become their co-creators, help them diagnose the classroom and propose improvement suggestions. In addition, teachers need to rebuild the classroom immediately. Reconstruction is the best place for teachers to combine theory and practice. 3) The theoretical reading and thinking of teachers in the early stage is the foundation of teacher learning, teachers will consciously stand on the theoretical level to think about their classroom teaching, which help teachers to become researchers and thinkers of education and teaching.

**Keywords:** teacher Learning, University--Government--School Partnership, cooperation
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Lesson and learning study - the opportunity to successful communicate the content in algebra

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Students build a powerful understanding of mathematics when they are involved in communication that challenges them to explore and justify their own mathematical idea.

There are extensive concerns pertaining to the idea that students do not develop sufficient communication in algebra and in mathematics more generally. This problem is at least partially related to their algebraic thinking. Although teaching should give students the opportunity to develop their ability to communicate, there are limited research insights as to why some types of communications work better than others, and how and why instruction influences such communication. The focus, in this article, is not on general aspects of communication, but instead on those aspects of the object of learning that the teachers focused on and what aspects the students discerned through the mathematical communication (with a focus on algebra). To do this, a new approach to communication, which has been developed in recent years, is used as a starting point, namely variation theory (Marton & Booth, 1997; Marton, 2015). Variation theory provides a framework that should make it possible to discern and describe differences in how aspects of the algebra content are communicated, because it has an explicit focus on the object of learning and discernment of its aspects. For discernment to occur, students must experience variation. Experiencing variation in certain aspects require opening up dimensions of variation in these aspects.

In this study, an effort was made to examine what aspects of the object of learning the teachers focused on and what aspects the students discerned through the mathematical communication. For this particular focus, two case studies were chosen for analysis, namely two videotaped algebra lessons. In own lesson it is used lesson study and in the second it is used learning study. The aim of both lessons was to give the students the opportunity to discover the need for using variables as a consequence of expressing generalizations. The analysis of the opportunity to communicate was grounded in variation theory. Differences between focused aspects and discerned aspects of the object of learning are described. The results show that the communication that occurred in the two classrooms the students made distinctions in understanding the object of learning. These distinctions were grounded in the collectively performed patterned activity in which students and teacher made their thinking public. The process of making thinking public was characterized by an aspect that was critical for one or more students (A) is focused on by the action of the teacher or other students (B) so that A discerned the aspects focused on by B. Coordination between the aspects focused on by the teacher and discerned by the students provides students with the opportunity to successful communicate the content in algebra. In addition, the structure of the lesson influences the opportunity to communicate aspects of the content. In both lessons the activity used to introduce variables in algebra had the potential to provide the opportunity to communicate algebra in the classroom. However, the way in which some aspects were focused gave the students different opportunities to discern the use of variables in algebra.
References


Keywords: algebra, lesson study, learning study, communication, variation theory
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Cautiously zealous – the experimentation with inquiry-based learning via lesson study

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This paper captures teachers' growth in inquiry-based learning in elementary Science in the context of early implementation of lesson study in a case school. Although the notion of "student as the inquirer" is deeply embedded in the Science curriculum framework in Singapore, embracing and implementing inquiry-based Science lessons at the elementary level was fraught with difficulties for the case school. Our study examines the lesson study experience of a team of Science teachers consisting of both experienced and novice teachers. In the context of high stakes testing with the possibility of school closure, this study examines how teachers negotiate and reconcile their role as "leaders of inquiry". In addition to teachers' interviews pre- and post-lesson study, this paper will also present on the systemic factors that support or inhibit teachers from embracing inquiry-based learning. The development of teachers' pedagogical content knowledge will also be tracked and reported.

Keywords: Elementary Science, Inquiry-Based Learning, Critical Thinking