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Designing Pre- and Post-tests: Experiences from 16 Learning Study Projects in Hong Kong

Yuefeng Zhang, *The Education University of Hong Kong*

KaNgai Li, *The Education University of Hong Kong*

Adopting a phenomenographic approach, Learning Study utilises diagnostic approaches to identify students' ways of understanding before teaching to tailor-make teaching to cater for students' needs and after teaching to evaluate the effectiveness of pedagogical designs in research lessons. Yet in the existing publications, there was little discussion on the methodology of designing and analysing pre- and post-tests in Learning Study to ensure the test validity and reliability. This paper reports a study that attempted to fill the knowledge gap by analysing the pre- and post-tests adopted in 16 Learning Study projects in Hong Kong (4 from each of the four key learning areas, i.e., Chinese, English, mathematics and science, 2 from primary schools and 2 from secondary schools respectively in each area). It reviewed the frameworks of test validity and reliability by Heffner (2014) and designed a comprehensive checklist of test validity and reliability for analysing the 16 sets of pre- and post-tests in terms of purposes, contents, structures, types of questions and ways of test analysis. It was found that the application of Variation Theory helped identify the critical features and their structure, which enhanced construct and content validity of the tests. The use of pilot tests and team meetings promote Inter-Rater Reliability. Observations of teaching and pre- and post-lesson interviews were often employed to triangulate with test data to increase the credibility of evaluation. The paper concludes with recommendations for developing valid and reliable pre- and post-tests for diagnostic purposes in schools.

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Design-based Study on Unit Teaching

Hui Liu, *Zhejiang University*

With the transition from the industrial age to the information age, classroom teaching needs to shift from depending on instruction to developing students' abilities. The purpose of learning is not "memory" but "migration". Students should learn to use knowledge to solve problems, which we call the authentic learning ability. That requires us to overcome the idea of accumulation of sessions in the traditional classroom teaching. Regarding the lesson as a unit is prone to fragmented knowledge teaching. Keeping in mind a "unit", teachers can have a whole picture in their teaching. In the overall unit teaching process, we follow the reverse design principle of the UbD (understanding by design) model, that is, the expected results evaluate the evidence the idea of learning plan, which will achieve the integration of the goal, evaluation and teaching. Unit teaching includes the creation of the target unit problem situation, the development of the corresponding assessment of continuous system, the comprehensive use of teacher counseling, cooperative learning and self-learning strategies, so as to promote the students in-depth study. The design-based unit teaching consists of the "design practice feedback redesign" spiral iterative cycle. We chose a lesson study on "calculation of rational number" in Hanzhou Sijiqing Secondary School as a case to conduct the study and collect both qualitative and quantitative evidence. From the data form the students and teachers ,we explored 'what are the elements of unit teaching' "What is the difference from the traditional teaching to the unit teaching" and "How can we make the unit teaching more effective?" and other questions. With feedbacks from practice, we improved the unit teaching design to create a unit design template and a list for activating students thinking.

Key words: unit teaching design-based research

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Developing Teacher Educators and School Teachers through Collaborative School-based Action Research

Yuya Tokushima, *Kyoto University*

Shuichiro Nakanishi, *Kyoto University*

Hideki Tsugihashi, *Kyoto University*

Mamoru Onuki, *Kyoto University*

Yuki Fukushima, *Kyoto University*

Terumasa Ishii, *Kyoto University*

Kanae Nishioka, *Kyoto University*

The Japanese lesson study, where the teacher takes the centre stage, has garnered attention from abroad as an effective methodology for the professional development of teachers and for forming professional learning communities. Yet, in order to implement this kind of lesson study at a school or to have it function effectively, the support of teacher educators who are also educational-practice researchers from outside the school is important. If so, how can we prepare teacher educators so that they can support school-based lesson study and teacher growth?

This presentation introduces a collaborative lesson study (Project TK) between the Seminar of Educational Methods at the Graduate School of Education, Kyoto University, and Takakura Elementary School in Kyoto, as well as discusses the aforementioned question. This action research is a collaborative effort between researchers, graduate students aiming to become teacher educators, and school teachers. It is a project that has continued for more than fifteen years, whose goal is lesson and school improvement. The basic concept is to ‘develop the children, the teachers, and the graduate students’ As it is a part of graduate education, the study also functions as a programme for the professional development of teacher educators.

The graduate students meet in groups regularly to continuously assist the teachers in the process of planning units, lesson observations, and lesson reflections as well as to support them by way of making counter-suggestions for unit plans and offering feedback from lesson observations. Through this, they learn how to conduct research and are given the opportunity to author research papers. From the perspective of Takakura Elementary, the graduate students are part of the team, and the collaborative lesson study has become part of the day-to-day routine.

This presentation gives an overview of Project TK and its history. Next, we will consider how practice can be improved and in what way the involved teachers and graduate students undergo professional development, based on actual examples from the collaborative lesson study. Finally, we will suggest a growth model for graduate students in their capacity as teacher educators and educational-practice researchers.