

**SYM-03**

Abstract Number: 20331

**Mathematics Lesson Study Around the World: Theoretical and Methodological Issues**Stéphane Clivaz, *Lausanne University of Teacher Education*Akihiko Takahashi, *DePaul University*KimHong Teh, *SEAMEO RECSAM*Jacob Bahn, *University of Copenhagen*Klaus Rasmussen, *University of Copenhagen*

Lesson study and learning study (LS), as forms of teacher professional development, have been introduced and experimented around the world, with teachers at all levels of education and in initial teacher education. In some countries, LS have become a regular part of teaching activities across the curriculum. However, these models of teacher collaboration have been most prevalent in mathematics, both in practice and research. During the International Congress on Mathematical Education (ICME 13, 2016), a group discussed theoretical and methodological issues about mathematics LS around the world. A Springer ICME monograph emerged from these discussions (Quaresma et al., in press) and will be presented. Introduction and conclusion will be made by Akihiko TAKAHASHI and Stéphane CLIVAZ, who wrote the synthesis chapter of this monograph. This common part will include a brief description of Japanese LS and how it has made impact on shifting mathematics education in Japan. Then, move to describe initial attempts of LS implementations outside Japan using several cases from the chapters in this book and summarize several success and challenges among those attempts. A new level of challenges for scaling up LS to nationwide project will be described and Collaborative Lesson Research will be discussed as a potential proposal for outside Japan to entry LS. Two other contributions will present two chapters: one offering insight into Malaysian experiences with introducing LS and one proposing theoretical approaches to modelling and analysing LS. The first one will be presented by Kim Hong TEH. This chapter discusses the experiences of promoting and implementing LS, with related issues and challenges encountered in Malaysian schools. The Japanese model of LS was first introduced in 2004 to Malaysian mathematics teachers as small scale research projects and postgraduate student dissertations. It was in 2011 that LS gained the interest and attention of the Malaysian Ministry of Education [MOE]. The Teacher Education Division of the MOE implemented professional learning communities and LS was identified as the core collaborative approach to improve teaching and learning. Although some Malaysian schools have been introduced to LS since 2004, there was a lack of tangible reports regarding the impact and success of LS implemented. Unofficial reports revealed that very few schools were able to sustain the LS practices. Thus we highlight the issue of sustainability, analyse the possible challenges and constraints faced in an effort to sustain the LS practice. Based on our own experiences and reviews of related literatures, we propose some feasible suggestions on how to sustain LS in schools. The second chapter will be presented by Jacob BAHN and/or Klaus RASMUSSEN. LS refers to certain well-established professional development practices for teachers in Japan. Over the past 30 years, the phenomenon drew the attention of scholars in other countries, and their writings have inspired several “movements” of LS

implementation. As scholars observe both successes and difficulties in these endeavors, the need arises for finer methods to characterize and monitor the processes and objects which go into what is broadly referred to as LS. This brief presents an overall characterization of LS in terms of the notion of paradidactic infrastructure, in relation to specific adaptations of two related theoretical frameworks (Anthropological Theory of the Didactic and Theory of Didactic Situations). We argue that the use of these frameworks can help sharpen researchers' understanding of LS as a phenomenon. We exemplify the use of these tools with cases from our own work on pre- and in-service teacher development in Denmark.

Quaresma, M., Winsløw, C., Clivaz, S., Ponte, J. P., Ni Shuilleabhain, A., & Takahashi, A. (Eds.). (in press). *Mathematics lesson study around the world: Theoretical and methodological issues*: Springer.