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Title: Supporting three Thai primary mathematics teachers to engage with mediation strategies: the role of reflection
Institute: Thesis (Ph.D.) National Institute of Education, Nanyang Technological University
Year: 2019
Abstract

Research shows that quality teacher-student interactions play an important role in helping students develop meaningful understanding of mathematics. In Thailand, the transmission approach is still the norm. One result of such an approach is that students adopt passive learning strategies. The transmission approach can appear superficially effective when short-term recall is required, but it is less effective for longer term learning. Because it encourages the rote memorising of disconnected rules or algorithms, which are often misapplied and quickly forgotten and often take no account of students’ prior knowledge and misunderstandings, it leads to instrumental rather than relational understanding of mathematical concepts. In Thailand, the efficacy of teachers’ teaching mathematics is being questioned particularly when Thai primary students’ performance in international comparative studies such as Trends in International Mathematics and Science Study (TIMSS, 1995, 2011) for primary 4 students and Programme for International Student Assessment (PISA, 2009, 2012) were below the international benchmarks. This concern was further compounded by Thai students’ consistently poor mathematics performance at the primary 6 national level examinations.

Students’ performance is highly tied to teachers’ quality of teaching. The quality of teacher-student interactions plays an important role in the teaching and learning of mathematics and research argues that it is important to enhance the quality of teacher-student interactions. The skills involved in teaching do not come naturally. For example, teachers need to know how to ask questions to help students explain, clarify or justify their methods of solution.

This thesis proposes a 3-stage professional development programme to help three Thai primary mathematics teachers change from the transmission approach to one
that involves more teacher-student interactions. From the literature, seven mediation strategies clustered around three themes were selected for teachers to experiment in their teaching. At Stage 1, the Workshop Stage, with the aid of videography, the teachers were offered examples of these strategies that they could use in their teaching. At Supported Implementation Stage 2 and Independent Implementation Stage 3, teachers tried to apply these strategies. At each stage, teachers were asked to reflect on their use of the strategies. Only at Stage 2 did the researcher interact with the teachers’ reflections.

The findings showed time was necessary for these teachers to experiment with change. Over the seven lessons, these teachers’ use of selected strategies of their choice improved and this was coupled with improvement in the quality of their reflections. With time and their reflections, these teachers gained greater insights into their implementation of the strategies. Their initial experimentations did not result in immediate positive outcomes, but, given time and reflections, they became more skilful in their use of selected strategies. The teachers were committed to adopt these mediation strategies because they perceived certain positive changes in their students’ behaviour, an unintended finding of this study. This study showed that more time should be invested at the Workshop Stage to ensure that the teachers develop accurate knowledge of the strategies. Furthermore, the teachers valued the support offered by the researcher as facilitator in the Supported Implementation stage.