

# Research on the development of junior middle school mathematics teachers' beliefs – from the perspective of history and pedagogy of mathematics

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*This research intends to explore the development of junior middle school mathematics in-service teachers' beliefs in an online programme based on the history of mathematics. More specifically, explore what is the change of the teachers' beliefs of mathematics and mathematics teaching and how this happen. Questionnaire, reflection task and interview are used to collected data. It can be seen that these in service teacher' beliefs about mathematics change, including their view on the characteristics of mathematics, the history and development of mathematics and the relevance of mathematics to society. Their beliefs about mathematics teaching change too, including their view on the goal and process of teaching, the history in teaching and so on.*

## **Introduction**

The beliefs have an important influence on teaching through such processes as the selection of content and emphasis, styles of teaching, and modes of learning (Ernest, 1989). Every teacher holds notions about what constitutes mathematics and mathematics teaching. Not surprisingly, their view of the teaching of mathematics is, more or less, consistent with the way they experienced learning mathematics (Fruringhetti, 2007). The consequence of this is that their learning experiences may often counter current reform efforts in mathematics education. The teachers need a context, in which they could look at the topics they will teach in a different manner. This context may be provided by the history of mathematics. Does the history of mathematics have an influence on in-service mathematics teachers' beliefs of mathematics and mathematics teaching? If it has, what's the influence?

## **Method**

The training programme online based on the history of mathematics is organized. It lasts about 5 month and 70 in-service middle school teachers volunteer to join in. During the programme, teachers will learn the history of 9 topics in junior middle school curriculum and discuss together, implement if possible. To explore the development of junior middle school mathematics in-service teachers' beliefs about mathematics and mathematics teaching, questionnaire, reflection task and interview are used to collect data. To analyze the data, thematic qualitative text analysis is used. In this process, the categories were created both deductively and inductively.

## **Result**

It can be seen that these in service teachers' beliefs about mathematics change. They believe or believe more deeply that knowledge is interconnected, it is related to our society and life and there is a tortuous development behind. They convince more that mathematics is profound, interesting and amazing. They could argue more for their view than before. There are also some changes in teachers' beliefs about mathematics teaching. About the goal of teaching, the teachers tend to let the students know more about "why" question, know more beyond the textbook to widen their horizon. They tend to inspire their students to think more than before. They also tend to improve their ability to solve problem more. They want their students to feel the tortuous development of mathematics, to feel mathematics is related to our life, to feel the charm of mathematics, to have interest in learning. About the process of teaching, they tend to pay more attention to the process, instead of the result. They tend to inspire students to explore by themselves. They believe more opportunity of exploring should be given. They believe more that activities is worth trying. They think culture should be introduced more in mathematics classroom. Understanding should be emphasized more, not just memory. They also think that they should listen to students, understand them more. They realize there are some reason behind the design of textbook and their way to use textbook could change a little.

## **References**

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