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Lianghuo Fan[1]
East China Normal University, Asian Centre for Mathematics Education, Shanghai, China
University of Southampton, Southampton Education School, Southampton, UK

Na Li
East China Normal University, Asian Centre for Mathematics Education, Shanghai, China

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How are mathematicians as part of mathematics history represented in contemporary Chinese school mathematics textbooks?[2]

Extended summary[3]

In mathematics textbook research, which has received rapidly increasing attention from researchers over the last two decades or so in different parts of the world due to the important role that textbooks play in teaching and learning (e.g., see Fan et al., 2013; Schubring & Fan, 2018), there have been a number of studies focusing on the history of mathematics in mathematics textbooks (e.g., Eren et al., 2015; Ju et al., 2016; Schorcht, 2018). Some researchers further argued that the topic of mathematicians is an aspect of history of mathematics (e.g., Shen et al., 2013; Wang et al., 2015). However, there have been very few studies looking into the issue about how mathematicians are represented in school mathematics textbooks (e.g., see Castaneda et al., 2019), even though some researchers have argued that introducing mathematicians was a way to use history in mathematics education (cf. Fauvel, 1991).

1 lhfan@math.ecnu.edu.cn

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3 This article is partly based on a presentation made at the *Third International Conference on Mathematics Textbook Research and Development*, which was held in Paderborn, Germany in 2019. Significant modifications were made, and the article also includes new data which were not available earlier. The authors would like to thank Ms Sicheng Xie for her assistance in coding the data during the study.

As part of our efforts to understand how history and culture are manifested in mathematics textbooks, this study is to examine how mathematicians are represented in three series of contemporary Chinese school mathematics textbooks. The following research questions guide the study: 1. How are mathematicians as part of mathematics history represented in the Chinese mathematics textbooks? 2. What are the similarities and differences in the representation of mathematicians among the mathematics textbooks?

Methods and procedures. The following three series of mathematics textbooks were selected for the study.

Series 1: The mathematics textbooks published by Shanghai Juvenile and Children's Publishing House (Grade 1-2) and Shanghai Education Publishing House (Grade 3-9);

Series 2: The mathematics textbooks published by the People's Educational Press;

Series 3: The mathematics textbooks published by Beijing Normal University Press.

After selecting the textbooks, we used the content analysis method and examined all the textbooks with focus on how the topics of mathematicians are distributed in the textbooks in terms of the grade level, mathematical content, the structure of chapters in the textbooks, the nationality and the periods of time.

Findings and discussions. The results show that each series of mathematics textbooks introduced both Chinese and non-Chinese mathematicians in a commendable way, though most of the mathematicians introduced were ancient mathematicians, and all the three series introduced mathematicians each year from Grades 2 to 9, with more attention in the junior secondary stage. There is a high level of consistency in the distribution of the introduction of mathematicians in the three series in terms of mathematics contents, with a high concentration in the topics of "number and algebra" and "shape and geometry", and the structures of the chapters, with most mathematicians being introduced in the reading materials. In comparison, it was found that the PEP textbook series presented a more balanced distribution of the introductions of mathematicians in terms of grade levels, ethnic origins and the timeline of history. For further research, it would be interesting to find out what the reasons are behind the different treatments and how different treatments of the topic of mathematicians would impact the teaching and learning of mathematics in classroom.

Keywords: Mathematics textbooks, Chinese mathematics education, mathematicians in textbooks, history of mathematics, textbook analysis.

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