A Comparison of Middle School Mathematics Curricula in Turkey, Singapore and South Korea within the Context of Pedagogical Content Knowledge

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Extended Summary

Purpose

The objectives of this paper was to compare the contents of selected three middle school mathematics curricula from Turkey, Singapore and South Korea within the scope of pedagogical content knowledge (PCK). While Turkish curriculum was recently updated in 2013, the revisions of South Korean curriculum made in 2009 and introduced in 2011, and Singaporean curriculum was updated and implemented in 2013. These national curricula were included to examine in the present study. The collected data relevant to the mathematics curriculum were analysed, and the differences and similarities between national curricula were identified.

Method

This paper is a kind of international comparative study in which the horizontal approach was preferred. This approach is a subject that assists to ascertain the differences and similarities and clarifies the reality that seem similar between two or more education systems in various countries, and puts forward valuable recommendations about the ways to inform students. For this purpose, a comparative education study including the contents of 7 and 8 grade mathematics curricula from Turkey, Singapore and South Korea was examined and the differences and similarities between mathematics curricula in three countries were identified. The evidence about the contents of selected three middle school mathematics curricula and education systems has been gathered from relevant books, articles, thesis and the official authorities, via the Internet sites of the official authorities, and by the review of relevant literature. Mathematics education curricula

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in three countries has been analyzed by using document analysis of qualitative analysis.

Results

In this study, the curricula of the above mentioned countries was examined by taking into account of components of pedagogical content knowledge such as the diversity of students’ understanding, the construction of students’ mathematical knowledge, students’ difficulties and misconceptions. It was observed that all three national curricula take into account students’ differences. The fundamental goal of the three countries’ middle school mathematics curriculum is that “all students can learn mathematics” and this emphasized that providing appropriate learning environment and necessary guidance, each student can learn mathematics. These curricula concentrated on the construction of students’ mathematical knowledge and generally conceptual learning. Attention is given to the application of mathematical skills in everyday life. In addition to this, it was observed that South Korea’s program pay more attention to the creative thinking skills. The three countries of the curricula highlighted on the instructional strategies and representations which are as components of pedagogical content knowledge. However, the all responsibilities were given to teachers due to not providing details about how to do. Assessment and evaluation considering as an important component of pedagogical content knowledge should be seen as a part of the educational system within three countries’ national mathematics curriculum. In addition, it is stated that different assessment and evolution methods in accordance with the modern educational system should be used in the teaching and learning process. When examining 7 and 8 grade national mathematics curriculum, the learning area of function is only existed in South Korean program. Other learning areas in mathematics education is consistent with all countries.

Discussion and Conclusion

According to findings of the study, it was determined that curricula of Turkey, Singapore and South Korea have showed similar characteristics. The preparation of Turkish mathematics curriculum has been affected by twelve countries educational system including Singapore. Three national curricula has been given more responsibility to teachers. Here we come across the idea of PCK. In addition, they were found to have similar expectations from teachers in the context of pedagogical content knowledge. Compare to two other countries, it was thought that the content-related pedagogical knowledge courses given less space in teacher education programs in Turkey is contradicted with having same expectations from teachers.

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