Task Modification to Facilitate Creativity by Korean Prospective Mathematics Teachers

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Mathematical tasks play a critical role in the teaching and learning of mathematics. Tasks with different natures can provide different opportunities to promote students' mathematical thinking and understanding (Henningsen & Stein, 1997). Teachers can read and evaluate curriculum material focusing on tasks in order to modify them based on current reforms in mathematics education. Creativity is the essence of mathematics (Mann, 2006) and has been one of the main emphases of the Korean mathematics curriculum for decades. Various attempts in the curriculum to enhance student creativity in mathematics have been made.

Attempts to promote creativity education have been made by leading mathematics teachers, and their approaches have been shared for several years in Korea (Lee, 2015). Some of these approaches to promote creativity have included promoting communication among students, practicing activity-based instruction, having students grasp fundamental ideas and knowledge in advance and focus on discussions in class, and planning and implementing storytelling lessons. Textbooks have also been redeveloped to include opportunities for creativity cultivation.

When looking back over the past few years of creativity education in Korean mathematics classrooms, one of the biggest concerns has been that we have not paid much attention to the development of tasks that are appropriate for creativity development. The majority of the tasks for cultivating creativity used in textbooks and classes have not been suitable for cultivating creativity. This is because textbook authors and teachers have attempted to design tasks without fully understanding what to consider in developing a task suitable for creativity education.

In this paper, I aim to determine what points need to be considered in the design of tasks for nurturing creativity. The definition of creativity varies, but I will discuss common and meaningful pursuits for creativity in school mathematics by analyzing some empirical data from the prospective teacher education course I ran in 2016. In order to maintain consistency with the curriculum, task design was aimed at increasing opportunities for creativity while retaining the learning objectives and content of existing textbooks. I will report the patterns that Korean prospective mathematics teachers tend to follow when they modify mathematical tasks in textbooks to facilitate creativity.

References

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