

DEVELOPING KOREAN MATHEMATICS EDUCATION STANDARDS FOR FUTURE GENERATIONS

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We live in a time of accelerating changes such as the development of artificial intelligence based on big data, the entry of intelligent information society and hyper-connected era. The changes in mathematics education are needed for students to adapt to social and technological changes and have competencies that can lead the future society. Korean Ministry of Science and ICT (2018) suggested the development of Korean mathematics education standards for future generations. The purpose of the study is to develop the Korean Mathematics Education Standards (KMES) for future generations supported by Korean Ministry of Science and ICT.

KMES were developed through literature review, the expert advisories, the focus group interviews and a survey from June to November in 2021. The expert advisories were conducted three times with 9 experts in science and technology, social sciences, mathematics, and mathematics education, as well as those in the media field. The focus group interviews were conducted four times with 10 mathematics and mathematics education experts. The learner profile for the future society and mathematical competencies developed were validated through a survey conducted on 295 mathematics curriculum stakeholders.

The learner profile for the future society pursued by mathematics education was established as creative global citizens with mathematical competencies. The concept of mathematical competencies in KMES is the ability to understand mathematical knowledge necessary for the future society, to form it through a mathematical process, and to recognize and practice mathematical values. Mathematical competencies include three dimensions of knowledge, process, and action. Mathematical knowledge includes numbers and quantification, changes and relationships, shapes and spaces, data analysis and predictions, mathematics and science/technology, and mathematics and society/culture. Mathematical process includes problem solving, reasoning, connection, communication, creativity, and computational/algorithmic thinking. Mathematical action includes agency, flow, resilience, collaboration and openness, enjoying the mathematical culture, and global citizenship. The results of this study can be utilized in the development of mathematics education standards and mathematics curricula in many countries.

Reference

Korean Ministry of Science and ICT (2018). *The 4th Science and Technology Master Plan (2018~2022): The Innovation and Challenges of National Science and Technology for 2040*. Sejong.