

October 2015

## Mathematics Curriculum, Teacher Professionalism, and Supporting Policies in Korea and the United States

### Summary of a Workshop

On July 15–17, 2012, following the 12th International Congress on Mathematical Education in Seoul, Korea, the United States National Commission on Mathematics Instruction (USNC/MI) and Seoul National University held a joint Korea–U.S. workshop on Mathematics Teaching and Curriculum, which was held at Seoul National University after the congress. The workshop brought together 40 mathematics educators including teachers, mathematics education graduate students, mathematicians, mathematics education researchers, and other mathematics education specialists from both countries.

Planned by a joint ad hoc committee, the workshop tackled different aspects of education in both countries: education policy; the interpretation of standards and curriculum guidelines in textbooks, teacher’s manuals, and instruction; and the organization of teaching. This report summarizes the workshop presentations and discussions. A substantial portion of the workshop was devoted to discussions where participants from both countries commented on aspects of the presentations that were notable from their perspectives as teacher, educator, researcher, or mathematician.

Although Korean performance on international assessments has received much attention in the United States, the structure of Korea’s education system is far less well known. This report provides an opportunity to gain a broader and more nuanced understanding of differences in policy, curriculum, and the profession of teaching in the Korean and U.S. education systems.

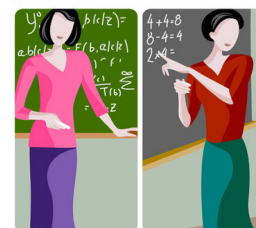
#### PLANNING COMMITTEE ON MATHEMATICS CURRICULUM, TEACHER PROFESSIONALISM, AND SUPPORTING POLICIES IN KOREA AND THE UNITED STATES

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**For More Information** . . . contact the Board on International Scientific Organizations at (202) 334-2807; <http://sites.nationalacademies.org/PGA/biso/index.htm>. Copies of the report are available from the National Academies Press, (800) 624-6242; <http://www.nap.edu>.

MATHEMATICS CURRICULUM,  
TEACHER PROFESSIONALISM, AND  
SUPPORTING POLICIES  
in Korea and the United States

SUMMARY OF A WORKSHOP



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**SUMMARY OF KEY DIFFERENCES IN THE MATHEMATICS EDUCATION SYSTEMS IN KOREA AND THE UNITED STATES  
AS IDENTIFIED BY WORKSHOP PARTICIPANTS**

KOREA	UNITED STATES
<p>The education system is very centralized but has become less uniform regarding differentiated instruction and textbook adoption and development.</p>	<p>The country has many education systems, both state and locally controlled, which operate under different guidelines and with different funding mechanisms.</p>
<p>There is one curriculum for all schools. The recent mathematics curriculum revision has fewer topics, treated in more depth.</p>	<p>At the time of the Workshop, many states had adopted the Common Core State Standards (CCSS) for mathematics, which have fewer topics that are treated in more depth.</p>
<p>The government-affiliated Korea Institute for Curriculum and Evaluation (KICE) is a major textbook developer. KICE employs teachers, mathematicians, and its resident researchers to create textbooks and instructional materials.</p>	<p>Independent authors and textbook publishers are creating revised versions of existing textbooks that they claim are in line with the CCSS. The content is reorganized, but its reduction is not evident. The U.S. has no equivalent of KICE to create textbooks and other instructional materials.</p>
<p>Many organizations provide online teacher training. Their programs and associated credits need to get government approval. For the recent curriculum revision, a government-affiliated institution (Korea Foundation for the Advancement of Science and Creativity) recruited teachers to design and carry out professional development.</p>	<p>The number of professional development providers has proliferated over the last decade. Many are “nonsystem actors” outside of the traditional bureaucracy of education. There is no uniformity in professional development opportunities for teachers in the U.S. In some instances, teachers help to deliver professional development.</p>
<p>Teachers treat the textbook like the Bible.</p>	<p>Teachers pick and choose which parts of the textbook to use.</p>
<p>Teachers share offices with colleagues of the same grade or subject, and meet once a week at minimum.</p>	<p>Teachers are isolated in their classrooms and sometimes act like independent contractors.</p>
<p>They have established their own communities. Each year, teachers are required to do demonstration lessons. There are many funds that promote teacher research. Research groups and individual teachers participate in competitions sponsored by district offices of education. Teachers rotate schools every five years.</p>	<p>Some very strong professional learning communities have existed for at least 30 years, but this is not widespread. American administrators sometimes have to force teachers to participate in grade-level communication.</p>
<p>Students in grade 6, year 3 of middle school, and year 2 of high school must take the national test. The scores have no effect on students. Instead, concern over education achievement is associated with college admissions tests.</p>	<p>Students are tested in grades 3 through 8, and at least once in high school. Consequences vary. In some states/districts if the students do not pass the test, they do not go to the next grade. In others, students’ test scores do not affect them.</p>
<p>Schools judged (according to test scores and school documents) as providing high-quality education get extra funding. Schools with many low-achieving students get other types of government support.</p>	<p>Student test performance can be part of teacher evaluation and evaluation of the principal and other school staff.</p>

**Policy and Global Affairs**

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