

Introduction

Students need to develop mathematical understanding to manage successfully in school and society. Mathematics is the foundation for further study in a number of school subjects, most notably the sciences; and mathematics problem solving builds logical reasoning skills that can be applied in many situations. For students' everyday life, today and in the future, mathematics is pervasive, from managing money to cooking and a range of other tasks. For example, mathematics is used to determine lengths of time, put things together (from models to electronics), and calculate quantities of what to buy (from pizza to paint).

The world is becoming increasingly “quantified,” and all students need to be well grounded in mathematical and technological thinking to live a productive life. To be effective future citizens, students need mathematics to understand daily

science. This TIMSS 2011 report summarizes the results of the TIMSS 2011 international mathematics assessment of fourth and eighth grade students in countries around the world. As the fifth assessment in a regular program of student assessment conducted every four years since 1995, TIMSS 2011 provides participating countries with a wealth of information about trends in the mathematics knowledge and skills of their students. At the heart of TIMSS is a wide-ranging state-of-the-art assessment of how well students master the essential mathematics content, concepts, and procedures that countries expect them to learn as they progress through primary and lower secondary school.

Student achievement on the TIMSS 2011 mathematics assessment is summarized in a variety of ways, beginning with trends over time in mathematics achievement overall as well as in its major component areas (e.g., algebra, geometry, etc.). The results also monitor progress toward the TIMSS International Benchmarks of mathematics achievement—advanced, high, intermediate, and low. Recognizing that student mathematics achievement is the result of a complex interplay of factors, the report

