

Foreword



There is almost universal recognition that the effectiveness of a country's educational system is a key element in establishing competitive advantage in what is an increasingly global economy. Education is fundamentally implicated not only in a country's economic and social development, but also in the personal development of its citizens. It is considered one of the primary means whereby inequities, social and economic, can be reduced. Attendant on this growing recognition of the importance and centrality of education has been the recognition, worldwide, of the importance of regular monitoring of educational performance and its antecedents.

How and on what basis policymakers, administrators, and teachers make decisions in the educational arena, and how and on what information educational systems are shaped lie at the heart of international comparative studies of education like TIMSS (Trends in International Mathematics and Science Study). As a pioneer in the field, the International Association for the Evaluation of Educational Achievement (IEA) has been conducting comparative studies of educational achievement in a number of curriculum areas, including mathematics and science, for nearly 50 years.

Conducted in 59 countries around the world, TIMSS 2007 represents the fourth cycle of IEA's study of the mathematics and science performance of fourth grade and eighth grade students. This report provides extensive information on the performance of students in mathematics and science as well as sub-domains in these curricular areas. It also provides information about students' competence in managing mathematics and science challenges

which have differing cognitive demands. For policymakers, the TIMSS 2007 report contains a wealth of information about key instructional, curricular, and resource related variables that are fundamental in understanding the teaching and learning process. This extensive information about trends in students' achievement and the contexts for teaching and learning mathematics and science should help ensure that TIMSS continues to be widely recognized as the most influential study of its type. The information should be of great value in guiding educational decision making and practice in the areas of mathematics and science around the world.

TIMSS is an enormous undertaking, well into its second decade of operation and involving activities spanning the globe. Clearly, projects of this magnitude are not possible without the dedication, skills, cooperation, and support of a large number of individuals, institutions, and organizations around the world. The trend data in this report represent years of technically demanding work involving many, many people, far too numerous to name here. IEA, however, is deeply grateful to each and every person who contributed to the possibility and creation of the TIMSS results reported herein.

IEA is particularly indebted to the remarkable group of professionals at the TIMSS & PIRLS International Study Center, Lynch School of Education, Boston College who have been charged with the overall leadership of this project. The contributions from the staff of the IEA Data Processing and Research Center and the IEA Secretariat, as well as from IEA's consortium partners, Statistics Canada and Educational Testing Service, are also central to the success of this project and for their support I am extremely grateful. The TIMSS 2007 project coordinators, assessment designer/developers, psychometricians, sampling statisticians, statistical programmers, and production specialists are among the most expert and experienced in the world. Most important, however, has been the continued leadership and direction of the TIMSS Executive Directors, Drs. Ina Mullis and Michael Martin, whose contributions are central to the success of this project.

Projects of this size are also not possible without considerable financial support. I am particularly grateful for the financial support from IEA's major funding partners, including the U.S. National Center for Education Statistics, the World Bank, the United Nations Development Program, and the many self funding countries without which this project would not have been possible. I also wish to thank Boston College and the National Foundation for Educational Research for their continued support.

As always, critical to the success of this project has been the willingness of participating countries to commit to a common set of protocols. Also, TIMSS would not have been possible without the participation of the many teachers, students, and policymakers around the world who gave freely of their time in the interest of advancing our common understanding of mathematics and science achievement. On behalf of all who benefit from the use of the information provided by TIMSS, we remain thankful for this commitment.

Finally, TIMSS relies on the National Research Coordinators and their colleagues whose responsibility it was to manage and execute the study at the national level. These individuals and their national teams made this project a success and for this they deserve our thanks and appreciation.

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