

# TIMSS and PIRLS—Informing Educational Policy for Improved Teaching and Learning

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Evidence of underperformance often spurs educational reform. Over the past 16 years, the TIMSS and PIRLS internationally comparative student achievement data have been critical to policy-makers for both monitoring and improving education systems around the world.

At a minimum, TIMSS and PIRLS have enabled participants to consider their international standing and achievement levels, and to gauge their overall educational health. However, once results are disseminated, policy makers and the public typically reflect on specifics in their national mathematics, science, and reading curricula. Following these discussions, some form of action often is taken to identify and/or address areas of potential weakness in a country's educational system.

More and more countries rely on TIMSS and PIRLS results as an integral part of their country's educational improvement strategy. This is especially true with countries that have data across multiple years of assessment because these multiple assessments act as effective monitors of change in the educational system. Among the many participant countries currently using TIMSS and PIRLS results to inform policy considerations, a few examples are:

- ◆ Hong Kong—In contrast to its top-performance in mathematics and science in TIMSS 1995 and 1999, Hong Kong's PIRLS 2001 reading results were closer to the international average. These relatively disappointing findings were widely discussed in the government and Legislative Council, particularly because serious efforts to improve language education had been implemented vigorously since 1994. Subsequently, an ambitious series of talks and workshops widely disseminated the PIRLS results to schools, which began incorporating PIRLS reading skills into their curriculum. Talks and workshops were also given to more than 5,000 parents on how to set up a good home

reading environment. In 2004, the Territory-wide School Assessment adopted the PIRLS framework for the Chinese reading comprehension examination. In PIRLS 2006, Hong Kong was a top-performing country and confident that reforms in language education were moving in the right direction.

- ◆ Norway—Since 2000, participation in international studies has been a strategic component for quality improvement in Norwegian schools, emphasizing: basic skills in reading, mathematics, and science; increased education for teachers; and the National Quality Assessment System. Norway uses TIMSS and PIRLS results, as well as results from other international studies, to evaluate the skills and competence of Norwegian students in relation to other countries, to develop benchmarks, and to set national policy. For example, the PIRLS 2006 results led to an early start for reading instruction, early interventions for weak learners, and continued emphasis on reading through the entire primary level.
- ◆ New Zealand—The Ministry of Education uses TIMSS and PIRLS primarily for system-level monitoring and evidence-based policy development. The Ministry’s Statement of Intent for 2011-12 and 2016-17 each include the goal of improved student literacy and numeracy achievement compared with other countries, explicitly based on student achievement in TIMSS and PIRLS. TIMSS and PIRLS have been used to improve educational outcomes, specifically through the Ministry’s Iterative Best Evidence Synthesis Programme. Recently, TIMSS and PIRLS achievement were reviewed to determine alignment with new National Standards introduced into primary schools in 2010.
- ◆ The Russian Federation—Since 2005, TIMSS and PIRLS participation has been included in the Federal Program of Education Development budget and use of TIMSS and PIRLS data has intensified in the past five years. For example, the work in developing the new educational standards for the primary school (scheduled to be introduced prior to the end of 2011) specifically included analyzing and making recommendations based on the 2011 Frameworks for TIMSS and PIRLS.
- ◆ The Republic of South Africa—TIMSS performance in 1999 and 2003 informed a number of reform initiatives throughout RSA’s educational system and served to direct resources for science and mathematics education. The Ministry of Education’s goals include performance on TIMSS as a way of determining whether reform interventions have been successful. TIMSS data inform the department of education about

areas of weakness deserving attention and TIMSS results are used as a benchmark to measure school effectiveness.

Because TIMSS and PIRLS are trend studies monitoring changes in achievement on regular bases, the assessments are effective vehicles for seeing whether increases or decreases in achievement occur after modifying educational policies. Once a nation identifies a phenomenon or issue and implements steps to remedy the situation, subsequent assessments may be then help determine whether particular reform efforts are having an impact.

## About TIMSS and PIRLS

For the past 20 years, TIMSS (Trends in International Mathematics and Science Study) has measured trends in mathematics and science achievement at the fourth and eighth grades. It has been conducted on a regular 4-year cycle since 1995, making TIMSS 2011 the fifth assessment of mathematics and science achievement trends. TIMSS Advanced, which measures trends in advanced mathematics and physics for students in their final year of secondary school, was conducted in 1995 and 2008, and is scheduled for 2015 (with the sixth assessment of TIMSS). For the past 15 years PIRLS (Progress in International Reading Literacy Study) has measured trends in reading comprehension at the fourth grade. First assessed in 2001, PIRLS has been on a regular 5-year cycle since then. Most recently, PIRLS was expanded in 2011 to include prePIRLS, which is a less difficult version of PIRLS. Both TIMSS and PIRLS were assessed in 2011, when the cycles of both studies came into alignment.

In general, participating countries use TIMSS and PIRLS in various ways to explore educational issues, including: monitoring system-level achievement trends in a global context, establishing achievement goals and standards for educational improvement, stimulating curriculum reform, improving teaching and learning through research and analysis of the data, conducting related studies (e.g. monitoring equity or assessing students in additional grades), and training researchers and teachers in assessment and evaluation.

TIMSS and PIRLS results are disseminated through reports and via the web through a well-documented international database for within and across country research.