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## Lessons Learned: What International Assessments Tell Us About Math Achievement

Tom Loveless, Editor  
Brookings Institution Press, 2007  
\$26.95, 275 pages

*Reviewed by Katherine Ariemma*

International assessments are most often associated with a rank ordering of nations based on students' mathematical performance on standardized tests. To use a sporting metaphor, these large-scale assessments provide the box scores for each of the participating countries, a snapshot of their comparative performances. These rankings and box scores are barely scraping the surface of the wealth of information embedded in the data these assessments produce. Tom Loveless, editor of *Lessons Learned: What International Assessments Tell Us About Math Achievement*, argues, "International data can be used to investigate important policy questions, to evaluate the impact of particular practices, and to explore why some school systems are more effective than others" (p. 7).

With the globalization of the market economy, many nations are concerned with school effectiveness, education policy, and best practices for instruction because the education of the next generation of laborers directly influences national economies. For this reason it is imperative that the data from international assessments be more than an international ranking system and a series of box scores. We need statistics that paint a more detailed picture than how nations rank in comparison to one another. We need statistics that indicate how best to educate all children and prepare them to be productive workers and global citizens. *Lessons Learned* provides a series of investigations highlighting the depth of information large-scale international assessments can provide the world regarding student achievement and school effectiveness.

*Lessons Learned* is a compilation of papers presented at a 2006 conference hosted by the Brookings Institution. The conference's main goal was to re-examine the Trends in International Mathematics and Science Study (TIMSS), an international comparison of fourth and eighth grade mathematics and science achievement, and other large-scale international assessment data, using secondary analyses to "produce new knowledge on topics in curriculum, instruction, and policy" (p. viii). A selection of the papers presented at

the conference comprises the chapters of this book. While each chapter examines a different topic, they all focus on the information to be gained through continued and creative analysis of TIMSS, Program for International Student Assessment (PISA), and other international assessment data.

This book takes an in-depth look at eight key issues addressed through the re-examination and re-analysis of existing TIMSS and PISA data. The editor chose a representative variety of issues, giving the reader a sense of how much could be learned from large-scale assessments. As data analyses and conference proposals tend to be, the chapters are laden with methodology, statistical models, sampling plans, and technical language commonplace in quantitative research. The authors make thought-provoking points, acknowledge the limitations of their work, and suggest directions for future research. Within the analyses presented in *Lessons Learned*, the reader is presented with seven new ways of exploring the data from international assessments, with most analyses using data from the 2003 administration of TIMSS. Each chapter addresses a different aspect of the assessment data and provides a new analysis of the data set. Authors examine the data in regard to causal influences on educational achievement (chapter 3), the depth and breadth of curriculum (chapter 4), algebra performance by U.S. students (chapter 5), mathematics reform in the United States (chapter 6), the relationship between school size and student achievement (chapter 7), the relationship between technology and mathematical achievement (chapter 8), and the similarities and differences between TIMSS and PISA (chapter 9).

Catholic schools form the world's largest school system; therefore, international comparisons of mathematical achievement are relevant for Catholic school educators and administrators. The accountability movement impacts Catholic schools and requires them to examine the factors affecting student achievement in mathematics. As education becomes a more competitive marketplace, Catholic schools must acknowledge the influence of student achievement, curriculum, and school effectiveness on a school's ultimate success and sustainability. Issues of curriculum, instructional practice, school structure, and technology are important for the future of education and are particularly relevant to Catholic schools that face competition from public and charter schools. Of the eight key issues presented, those of particular concern for Catholic school teachers, principals, and administrators are the analyses of U.S. algebra performance, the lack of focus in mathematics curriculum in the United States, and the relationship between school size and student achievement.

Being well informed is the best way to make decisions regarding aca-

demic and structural policies, and this book could serve as one source of such information for Catholic school administrators. The content is rich and the language is technical, but there is a lot to be learned from the analyses provided in the book. Catholic schools need to be informed about these issues as they compete for students and status in the American educational system.

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