



TIMSS 1999 and the TIMSS Benchmarking Study were collaborative efforts among hundreds of individuals around the world. Staff from the national research centers in each participating country and from each Benchmarking jurisdiction, the International Association for the Evaluation for Educational Achievement (IEA), the International Study Center (ISC) at Boston College, advisors, and funding agencies worked closely to develop and implement the projects. They would not have been possible without the tireless efforts of all involved. Below, the individuals and organizations are acknowledged for their contributions. Given that implementing the studies has spanned approximately four years and involved so many people and organizations, this list may not pay heed to all who contributed throughout the life of the project. Any omission is inadvertent. TIMSS 1999 and the Benchmarking Study also acknowledge the students, teachers, and school principals who contributed their time and effort to the study. This report would not be possible without them.

Funding Agencies

Funding for the international coordination of TIMSS 1999 was provided by the National Center for Education Statistics (NCES) in the U.S. Department of Education, the U.S. National Science Foundation (NSF), the World Bank, and participating countries. Each participating country was responsible for funding local project costs and implementing TIMSS 1999 in accordance with the international procedures. Funding for the overall design, administration, data management, and quality assurance activities of TIMSS Benchmarking was provided by NCES, NSF, and the Office of Educational Research and Improvement (OERI) in the U.S. Department of Education. Valena Plisko, Eugene Owen, and Patrick Gonzales of NCES; Janice Earle, Larry Suter, and Elizabeth VanderPutten of NSF; Carol Sue Fromboluti and Jill Edwards Staton of OERI, and Maggie McNeely formerly of OERI each played a crucial role in making TIMSS 1999 and the Benchmarking Study possible and for ensuring the quality of the studies. Each Benchmarking participant contracted directly with Boston College to fund data-collection activities in its own jurisdiction.

Management and Operations

TIMSS 1999 was conducted under the auspices of the IEA. TIMSS 1999 was co-directed by Michael O. Martin and Ina V.S. Mullis, and managed centrally by the staff of the International Study Center in the Lynch School of Education at Boston College. Although the study was directed by the International Study Center and its staff members implemented various parts of TIMSS 1999, important activities also were carried out in centers around the world. In the IEA Secretariat in Amsterdam, Hans Wagemaker, Executive Director, was responsible for overseeing fundraising and country participation. The IEA Secretariat also coordinated translation verification and recruiting of international quality control monitors. The data were processed centrally by the IEA Data Processing Center in Hamburg. Statistics Canada in Ottawa was responsible for collecting and evaluating the sampling documentation from each country and for calculating the sampling weights. Educational Testing Service (ETS) in Princeton, New Jersey, conducted the scaling of the achievement data.

For the Benchmarking Study, Westat in Rockville, Maryland, was responsible for sampling, data collection activities, and preliminary data processing. National Computer Systems (NCS) in Iowa City, Iowa, conducted the scoring for Benchmarking jurisdictions along with the national scoring effort. All data were processed in accordance with international standards at the IEA Data Processing Center. Scaling of the achievement data was conducted by Educational Testing Service.

IEA Secretariat

Hans Wagemaker, Executive Director Barbara Malak, Manager Membership Relations Leendert Dijkhuizen, Fiscal Officer

International Study Center at Boston College Responsible for TIMSS and PIRLS

Michael O. Martin, Co-Director

Ina V.S. Mullis, Co-Director

- Eugenio J. González, Director of Operations and Data Analysis
- Kathleen M. O'Connor, TIMSS Benchmarking Coordinator
- Kelvin D. Gregory, TIMSS Study Coordinator

Teresa A. Smith, TIMSS Science Coordinator

Robert Garden, TIMSS Mathematics Coordinator Dana L. Kelly, PIRLS Study Coordinator Steven Chrostowski, Research Associate Ce Shen, Research Associate (former) Julie Miles, Research Associate Steven Stemler, Research Associate Ann Kennedy, Research Associate Maria José Ramirez, Research Assistant Joseph Galia, Statistician/Programmer Lana Seliger, Statistician/Programmer (former) Andrea Pastelis, Database Manager Kieran Brosnan, Technology Support Specialist Christine Conley, Publications Design Manager José Nieto, Publications Manager Tom Hoffmann, Internet Communications Manager Mario Pita, Data Graphics Specialist Betty Hugh, Data Graphics Specialist Christina Lopez, Data Graphics Specialist (former) Isaac Li, Data Graphics Assistant Kathleen Packard, Manager, Finance Susan Comeau, Manager, Office Administration Ann Tan, Manager, Conference Administration Monica Guidi, Administrative Coordinator Laura Misas, Administrative Coordinator Rita Holmes, Administrative Coordinator

. . .

Statistics Canada

.

Pierre Foy, Senior Methodologist Marc Joncas, Senior Methodologist Andrea Farkas, Junior Methodologist Salina Park, Cooperative Exchange Student

IEA Data Processing Center

Dirk Hastedt, Senior Researcher Heiko Sibberns, Senior Researcher Knut Schwippert, Senior Researcher Caroline Dupeyrat, Researcher Oliver Neuschmidt, Researcher Stephan Petzchen, Research Assistant Anneke Niemeyer, Research Assistant Juliane Pickel, Research Assistant

Educational Testing Service

Kentaro Yamamoto, Principal Research Scientist Ed Kulick, Manager, Research Data Analysis

Westat

Nancy Caldwell, Vice President and Associate Director, Survey Operations Group Keith Rust, Vice President and Associate

Director, Statistical Group Stephen Roey, Senior Systems Analyst

Project Management Team

Michael Martin, International Study Center Ina Mullis, International Study Center Eugenio González, International Study Center Hans Wagemaker, IEA Secretariat Dirk Hastedt, IEA Data Processing Center Pierre Foy, Statistics Canada Kentaro Yamamoto, Educational Testing Service Eugene Johnson, American Institutes for Research

Sampling Referees

Pierre Foy, Statistics Canada – TIMSS 1999 Benchmarking Keith Rust, Westat – TIMSS 1999 International

Benchmarking Participants

. . . .

Individuals from each Benchmarking jurisdiction were instrumental in conducting the TIMSS Benchmarking Study in their state, district, or consortium. They were responsible for obtaining funding for the project; obtaining cooperation of sampled schools, classes, and students; responding to curriculum questionnaires; reviewing data; contributing to the development of the Benchmarking reports; and coordinating activities with the International Study Center. Jurisdictions would like to acknowledge the following people for their extensive contributions.

. . . .

.

States

. . .

Connecticut

Patricia Brandt Connecticut Department of Education 165 Capital Avenue Hartford CT 06145-2219

Abigail L. Hughes Connecticut Department of Education 165 Capital Avenue Hartford CT 06145-2219

Douglas Rindone Connecticut Department of Education 165 Capital Avenue Hartford CT 06145-2219

Theodore S. Sergi Connecticut Department of Education 165 Capital Avenue Hartford CT 06145-2219

Idaho

Tom Farley Idaho Department of Education P.O. Box 83720 Boise ID 83720-0027

Susan Harrington Idaho Department of Education P.O. Box 83720 Boise ID 83720-0027 Sally Tiel Idaho Department of Education P.O. Box 83720 Boise ID 83720-0027

.

Illinois

Mervin Brennan Illinois State Board of Education 100 North First Street Springfield IL 62777

Carmen Chapman Illinois State Board of Education 100 North First Street Springfield IL 62777

Megan Forness Illinois State Board of Education Assessment E216 100 North First Street Springfield IL 62777

Andy Metcalf Illinois State Board of Education 100 North First Street Springfield IL 62777

Pam Stanko Illinois State Board of Education 100 North First Street Springfield IL 62777

E

Appendix A B C D-

Indiana

Larry Grau Office of the Governor State House 200 West Washington Street, Room 206 Indianapolis IN 46204-2797

.

.

Dwayne James Indiana Department of Education Room 229, State House Indianapolis IN 46204

Stan Jones Commissioner for Higher Education 101 West Ohio Street - Suite 550 Indianapolis IN 46204

Cheryl Orr Indiana's Education Roundtable 101 West Ohio Street - Suite 550 Indianapolis IN 46204

Suellen Reed Superintendent of Public Instruction Room 229, State House Indianapolis IN 46204-2797

Cynthia Roach Indiana Department of Education Division of Assessment Room 229, State House Indianapolis IN 46204-2797

Maryland

Diane Householder Maryland State Department of Education 200 West Baltimore Street Baltimore MD 21201-2595

Mark Moody Maryland State Department of Education 200 West Baltimore Street Baltimore MD 21201-2595

Kathy Rosenberg Maryland State Department of Education 200 West Baltimore Street Baltimore MD 21201-2595

Massachusetts

Jeffrey Nellhaus Massachusetts Department of Education 350 Main Street Malden MA 02148-5023

Sheldon Rothman Massachusetts Department of Education 350 Main Street Malden MA 02148-5023

Kit Viator Massachusetts Department of Education 350 Main Street Malden MA 02148-5023

Lori Wright Massachusetts Department of Education 350 Main Street Malden MA 02148-5023

Michigan

Charles Allan Michigan Department of Education Curriculum Development Program P.O. Box 30008 Lansing MI 48909

Missouri

James Friedebach Missouri Department of Education 205 Jefferson P.O. Box 480 Jefferson City MO 65102-0480

North Carolina

Louis Fabrizio North Carolina Department of Public Instruction 301 North Wilmington Street Raleigh NC 27601-2825

Tammy Howard North Carolina Department of Public Instruction 301 North Wilmington Street Raleigh NC 27601-2825

Oregon

Joanne Flint Oregon Department of Education 255 Capital Street NE Salem OR 97310-0203

. . .

Wayne Neuberger Oregon Department of Education 255 Capital Street NE Salem OR 97310-0203

Pennsylvania

R. Jay Gift Pennsylvania Department of Education 333 Market Street, 8th Floor Harrisburg PA 17126-0333

Frank Marburger Pennsylvania Department of Education 333 Market Street, 8th Floor Harrisburg PA 17126-0333

Lee Plempel Pennsylvania Department of Education 333 Market Street, 8th Floor Harrisburg PA 17126-0333

Charlie Wayne Pennsylvania Department of Education 333 Market Street, 8th Floor Harrisburg PA 17126-0333

South Carolina

Karen Horne South Carolina Department of Education 1429 Senate Street Columbia SC 29201

Susan Agruso South Carolina Department of Education 1429 Senate Street Columbia SC 29201

Lane Peeler South Carolina Department of Education 611-B Rutledge Building 1429 Senate Street Columbia SC 29201 Paul Sandifer South Carolina Department of Education 607 Rutledge Building 1429 Senate Street Columbia SC 29201

.

Teri Siskind South Carolina Department of Education 607 Rutledge Building 1429 Senate Street Columbia SC 29201

Texas

Chris Castillo Comer Texas Education Agency 1701 North Congress Avenue Austin TX 78701

Ed Miller Texas Education Agency 1701 North Congress Avenue Austin TX 78701-1494

Phyllis Stolp Texas Education Agency 1700 North Congress Avenue Austin TX 78701

Districts and Consortia

Academy School District #20

Wendy Crist Academy School District #20 7610 North Union Boulevard Colorado Springs CO 80920

Alisabeth Hohn Academy School District #20 7610 North Union Boulevard Colorado Springs CO 80920

Chicago Public Schools

.

. . . .

Gery Chico Chicago Public Schools 125 South Clark Street Chicago IL 60603

Richard Daley City Hall 121 North LaSalle Street Chicago IL 60603

Joseph Hahn Chicago Public Schools 125 South Clark Street 11th Floor Chicago IL 60603

Phil Hansen Chicago Public Schools 125 South Clark Street Chicago IL 60603

Paul Vallas Chicago Public Schools 125 South Clark Street Chicago IL 60603

Melanie Wojtulewicz Chicago Public Schools 1326 West 14th Place Room 315A Chicago IL 60608

Delaware Science Coalition

Gail Ames Delaware Science Coalition 2916 Duncan Road Wilmington DE 19808

John Collette Delaware Science Coalition 309 Brockton Road Wilmington DE 19803

Julie Cwikla Banks University of Delaware 305 M Willard Hall Newark DE 19716 Valerie Maxwell Appoquinimink School District 118 South Sixth Street Odessa DE 19730

.

.

First in the World Consortium

Elaine Aumiller North Central Regional Education Lab (NCREL) 1120 East Diehl Road, Suite 200 Naperville IL 60563

Blase Masini North Central Regional Education Lab (NCREL) 1120 East Diehl Road, Suite 200 Naperville IL 60563

Paul Kimmelman 1306 Hidden Lake Drive Buffalo Grove IL 60089

David Kroeze First in the World Consortium Northbrook School District #27 1250 Sanders Road Northbrook IL 60062

Fremont/Lincoln/Westside Public Schools

James Findley Westside Public Schools 909 South 76th Street Omaha NE 68114-4599

Marilyn Moore Lincoln Public Schools Box 82889 Lincoln NE 68501-2889

Stephen Sexton Fremont Public Schools 957 North Pierce Street Fremont NE 68025

Terry Snyder Fremont Public Schools 957 North Pierce Street Fremont NE 68025

Guilford County Schools

• •

Lynne Johnson Guilford County Schools 120 Franklin Boulevard Greensboro NC 27401

Diane Spencer Guilford County Schools 120 Franklin Boulevard Greensboro NC 27401

Sadie Bryant Woods Guilford County Schools 134 Franklin Boulevard Greensboro NC 27401

Jersey City Public Schools

Richard DiPatri Jersey City Public Schools State District Superintendent 346 Claremont Avenue Jersey City NJ 07305

Adele Macula Jersey City Board of Education 346 Claremont Avenue Jersey City NJ 07305

Aldo Sanchez-Abreu Jersey City Board of Education 346 Claremont Avenue Jersey City NJ 07305

Patsy Wang-Iverson Mid-Atlantic Eisenhower Consortium Research for Better Schools 444 North Third Street Philadelphia PA 19123

Miami-Dade County Public Schools

Joseph Burke Miami-Dade County Public Schools 1500 Biscayne Boulevard Room 327T Miami FL 33132 Gisela Feild Miami-Dade County Public Schools 1500 Biscayne Boulevard Suite 225 Miami FL 33132

.

Joseph Mathos Miami-Dade County Public Schools 1450 Northeast 2nd Avenue #931 Miami FL 33132

Vilma Rubiera Miami-Dade County Public Schools 1500 Biscayne Boulevard Suite 225 Miami FL 33132

Alex Shneyderman Miami-Dade County Public Schools 1500 Biscayne Boulevard Suite 225 Miami FL 33132

Constance Thornton Miami-Dade County Public Schools 1500 Biscayne Boulevard Suite 327 Miami FL 33132

Michigan Invitational Group

Robert Dunn Michigan Invitational Group Michigan Department of Education 658 Grat Strasse Manchester MI 48158

Montgomery County Public Schools

Marlaine Hartzman Montgomery County Public Schools 850 Hungerford Drive, Room 11 Rockville MD 20850

John Larson Montgomery County Public Schools 850 Hungerford Drive, Room 11 Rockville MD 20850

Naperville Community School District 203

Russ Bryan Naperville Community School District 203 203 West Hillside Road Naperville IL 60540

.

Lenore Johnson Naperville Community School District 203 203 West Hillside Road Naperville IL 60540

Jack Hinterlong Naperville Community School District 203 203 Hillside Road Naperville IL 60540

Donald E. Weber, Ed.D Naperville Community School District 203 203 West Hillside Road Naperville IL 60540

Jodi Wirt Naperville Community School District 203 203 Hillside Road Naperville IL 60540

Project SMART Consortium

Dennis Kowalski Strongville City School 13200 Pearl Road Stongsville OH 44136

Terry Krivak c/o Ohio Aerospace Institute 22800 Cedar Point Road Cleveland OH 44142

Anne Mikesell Ohio Department of Education 25 South Front Street, 5th Floor Columbus OH 43215

Linda Williams Mentor Exempted Village 6451 Center Street Mentor OH 44060 Paul R. Williams Project SMART Consortium Beachwood City School District 24601 Fairmount Boulevard Beachwood OH 44122

. . .

.

. .

. . .

Rochester City School District

Ann Pinnella Brown Rochester City School District 131 West Broad Street Rochester NY 14614

Cecilia Golden Rochester City School District 131 West Broad Street Rochester NY 14614

Corinthia Sims Rochester City School District 131 West Broad Street Rochester NY 14614

Southwest Pennsylvania Math and Science Collaborative

Nancy Bunt 2650 Regional Enterprise Tower 425 Sixth Avenue Pittsburgh PA 15219

Marcia Seeley 2650 Regional Enterprise Tower 425 Sixth Avenue Pittsburgh PA 15219

Lou Tamler 2650 Regional Enterprise Tower 425 Sixth Avenue Pittsburgh PA 15219

Cynthia A. Tananis University of Pittsburgh 5P26 WWPH School of Education Pittsburgh PA 15260

National Research Coordinators

The TIMSS 1999 National Research Coordinators and their staff had the enormous task of implementing the TIMSS 1999 design. This required obtaining funding for the project; participating in the development of the instruments and procedures; conducting field tests; participating in and conducting training sessions; translating the instruments and procedural manuals into the local language; selecting the sample of schools and students; working with the schools to arrange for the testing; arranging for data collection, coding, and data entry; preparing the data files for submission to the IEA Data Processing Center; contributing to the development of the international reports; and preparing national reports. The way in which the national centers operated and the resources that were available varied considerably across the TIMSS 1999 countries. In some countries, the tasks were conducted centrally, while in others, various components were subcontracted to other organizations. In some countries, resources were more than adequate, while in some cases, the national centers were operating with limited resources. Of course, across the life of the project, some NRCs have changed. This list attempts to include all past NRCs who served for a significant period of time as well as all the present NRCS. All of the TIMSS 1999 National Research Coordinators and their staff members are to be commended for their professionalism and their dedication in conducting all aspects of TIMSS.

Australia

Susan Zammit Australian Council for Educational Research (ACER) 19 Prospect Hill Road Private Bag 55 Camberwell, Victoria 3124

Belgium (Flemish)

Jan Van Damme Afd. Didactiek Vesaliusstraat 2 B-3000 Leuven

Appendix

Christiane Brusselmans-Dehairs Jean-Pierre Verhaeghe Vakgroep Onderwijskunde Universiteit Gent Henri Dunantlaan 2 B-9000 Gent Ann Van Den Broeck Dekenstraat 2 Afd. Didactiek B-3000 Leuven

Bulgaria

Kiril Bankov Faculty of Mathematics and Informatics University of Sofia 1164 Sophia

.

Canada

E

Alan Taylor Applied Research and Evaluation Services (ARES) University of British Columbia 6058 Pearl Avenue, Burnaby, BC v5H 3P9 Richard Jones Education Quality & Accountability Office (EqAO) 2 Carlton Street, Suite 1200 Toronto, ON M5B2M9

.

• •

. . . .

. . . .

Jean-Louis Lebel Direction de la sanction des etudes 1035 rue De La Chevrotiere 26 etage Quebec GIR 5A5

Michael Marshall University of British Columbia Faculty of Education, Room 6 2125 Main Mall Vancouver, BC v6T1Z4

Chile

Maria Inès Alvarez Unidad de Curriculum y Evaluación Ministerio de Educación Alameda 1146 Sector B, Piso 8

Chinese Taipei

Jau-D Chen Dean of General Affairs National Taiwan Normal University 162, East Hoping Road Section 1 Taipei, Taiwan 117

Cyprus

Constantinos Papanastasiou Dept. of Education University of Cyprus P.O. Box 20537 Nicosia CY-1678

Czech Republic

Jana Paleckova Institute for Information of Education (UIV) Senovazne nam.26 111 21 Praha 1

England

Graham Ruddock National Foundation for Educational Research (NFER) The Mere, Upton Park Slough, Berkshire SL1 2DQ

. . . .

.

.

Finland

Pekka Kupari University of Jyvaskyla Institute for the Educational Research P.O. Box 35 SF – 40351 Jyvaskyla

Hong Kong, SAR

Frederick Leung The University of Hong Kong – Dept. of Curriculum Faculty of Education, Room 219 Pokfulam Road Hong Kong, SAR

Hungary

Péter Vari National Institute of Public Education Centre for Evaluation Studies Dorottya u.8, Pf 701/420 1051 Budapest

Indonesia

Jahja Umar Examiniation Development Center Jalan Gunung Sahari Raya – 4 Jakarta Pusat Jakarta

Iran, Islamic Republic

Ali Reza Kiamanesh Ministry of Education 196, Institute for Education Research Keshavaraz Boulevard Tehran, 14166

Israel

Ruth Zuzovsky Tel Aviv University School of Education Center for Science and Technology Education Ramat Aviv 69978

Acknowledgments

Italy

•

. . .

Anna Maria Caputo Ministerio della Pubblica Istruzione Centro Europeo Dell 'Educazione (CEDE) 5- Villa Falconieri Frascati (Roma) 00044

.

Japan

Yuji Saruta Hanako Senuma National Institute for Educational Research (NIER) 6-5-22 Shimomeguro Meguro-ku, Tokyo 153-8681

Jordan

Tayseer Al-Nhar National Center for Human Resources Development P.O. Box 560 Amman, Jordan 11941

Korea, Republic of

Sungsook Kim Chung Park Korea Institute of Curriculum & Evaluation(KICE) 25-1 Samchung-dong GhongRo-Gu, Seoul 110-230

Latvia

Andrejs Geske University of Latvia IEA National Research Center Jurmalas Gatve 74/76, Room 204A Riga LV-1083

Lithuania

Algirdas Zabulionis National Examinations Center Ministry of Education and Science M. Katkaus 44 Vilnius LT2051

Macedonia, Republic of

Appendix

Anica Aleksova Ministry of Education and Science Bureau for Development of Education Ruder Boskovic St. bb. 1 000 Skopje

Malaysia

.

Azmi Zakaria Ministry of Education Level 2,3 &5 Block J South Pusat Bandar Damansara, Kuala Lumpur 50604

.

Moldova, Republic of

Ilie Nasu Ministry of Education and Science University "A. Russo" Str. Puschin 38 Balti 3100

Lidia Costiuc 1 Piata Mazzi Adunazi Nationale Chisinau

Morocco

Mohamed Fatihi Direction de l'Evaluation du Systeme Educatif Innovations Pedagogiques 32 Boulevard Ibn Toumert Place Bob Rouah, Rabat

Netherlands

Klaas Bos University of Twente Centre for Applied Research in Education(OCTO) P.O. Box 217 7500 AE Enschede

New Zealand

Megan Chamberlain Ministry of Education CER Unit-Research Division 45-47 Pipitea Street Thorndon, Wellington

Philippines

E

Ester Ogena DOST-Science Education Institute 3F PTRI Blg Bicutan, Taguig Metro Manila 1604 Vivien Talisayon Institute Of Science & Mathematics Education Development University of the Philippines UPISMED Diliman, Quezon City

.

Romania

Gabriela Noveanu Institute for Educational Sciences Evaluation and Forecasting Division Str. Stirbei Voda 37 Bucharest Ro-70732

.

Russian Federation

Galina Kovalyova Center for Evaluating the Quality of Education Institute of General Secondary Education ul. Pogodinskaya 8 Moscow 119905

Singapore

Cheow Cher Wong Research and Evaluation Branch Ministry of Education 1 North Buona Vista Dr /мое Building Singapore, Singapore 138675

Slovak Republic

Olga Zelmanova Maria Berova spu-National Institute for Education Pluhova 8, P. O. Box 26 Brastislava 830 00

Slovenia

Barbara Japelj Educational Research Institute Ljubljana Gerbiceva 62 Ljubljana 1000

South Africa

Sarah Howie Human Sciences Research Council 134 Pretorius Street Private Bag x41 Pretoria 0001

Thailand

.

Precharn Dechsri Institute For the Promotion of Teaching Science & Technology (IPST) 924 Sukhumvit Rd. Ekamai Bangkok 10100

.

Tunisia

Ktari Mohsen Ministere de l'Education Boulevard Bab-Bnet Tunis

Turkey

Yurdanur Atlioglu Educational Research and Development Directorate Gazi Mustafa Kemal Bulvani No 109/5-6-7 Maltepe, Ankara 06570

United States

Patrick Gonzales National Center for Education Statistics United States Dept. of Education 1990 K Street, NW Room 9071 Washington, DC 20006

TIMSS 1999 Advisory Committees

The International Study Center at Boston College was supported in its work by advisory committees. The Subject Matter Item Replacement Committee was instrumental in developing the TIMSS 1999 tests, and the Questionnaire Item Review Committee revised the TIMSS questionnaires. The Scale Anchoring Panel developed the descriptions of the international benchmarks in mathematics and science.

Subject Matter Item Replacement Committee

Mathematics

Antoine Bodin, France Anna-Maria Caputo, Italy Nobert Delagrange, Belgium (Flemish) Jan de Lange, Netherlands Hee-Chan Lew, Republic of Korea Mary Lindquist, United States David Robitaille, Canada

Science

Hans Ernst Fischer, Germany Galina Kovalyova, Russian Federation Svein Lie, Norway Masao Miyake, Japan Graham Orpwood, Canada Jana Strakova, Czech Republic Carolyn Swain, England

Special Consultants

Chancey Jones, Mathematics Christine O'Sullivan, Science

Questionnaire Item Review Committee

Im Hyung, Republic of Korea Barbara Japelj, Slovenia Trevor Williams, United States Graham Ruddock, England Klaas Bos, Netherlands

Scale Anchoring Committees

Mathematics

Anica Aleksova, Republic of Macedonia Lillie Albert, United States Kiril Bankov, Bulgaria Jau-D Chen, Chinese Taipei John Dossey, United States Barbara Japelj, Slovenia Mary Lindquist, United States David Robitaille, Canada Graham Ruddock, United Kingdom Hanako Senuma, Japan Pauline Vos, The Netherlands

Science

Audrey Champagne, United States Galina Kovalyova, Russian Federation Jan Lokan, Australia Jana Paleckova, Czech Republic Senta Raizen, United States Vivien Talisayon, Philippines Hong Kim Tan, Singapore

