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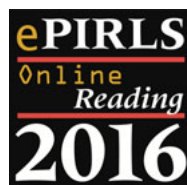
ePIRLS—From Vision to Reality

A CUTTING-EDGE ADVANCE IN ELECTRONIC READING ASSESSMENT

By **CHAD MINNICH**, TIMSS & PIRLS International Study Center, Boston College

Today, effective online reading is an imperative. At work, at home, and for school, the internet has become the primary source for obtaining information. Further, around the world, reading curricula are increasingly emphasizing the importance of online reading. For this new era of online reading, IEA has introduced ePIRLS—a forward-thinking computer-based extension to PIRLS in 2016. ePIRLS provides an opportunity for countries to understand how well their fourth grade students read, comprehend, interpret, and critique online information.

Central to ePIRLS's assessment design is presenting students with engaging school-based research projects, or tasks, in an environment that looks and feels like the real internet. Over the past year, staff at the TIMSS & PIRLS International Study Center and the IEA DPC have been steadily working to develop the content and software functionality of this innovative assessment. The resulting ePIRLS program, which leverages technology previously developed for IEA's ICILS, enables students to



navigate through multiple websites and pages. As students read texts and view images and animations, a teacher avatar prompts them with directives and comprehension questions.

This productive partnership between the TIMSS & PIRLS International Study Center and the IEA DPC was on display at the PIRLS NRC meeting in Dublin, Ireland this past May, where national research coordinators were able to take the actual ePIRLS assessment themselves. Working on their own laptops, NRCs gave meaningful consideration to both the ePIRLS tasks and the functions of the software. At the end of the session, NRCs received ePIRLS USB sticks to share in their respective countries, and feedback on the project's progress has been very positive. At present, preparations are proceeding smoothly for the field test in early 2015. For countries still interested in ePIRLS 2016, there is good news—you still have time to join!

For information on country enrollment, please contact Dr Paulína Koršňáková at the IEA Secretariat (p.korsnakova@iea.nl).



ICILS 2013

INTERNATIONAL RELEASE AND BEYOND

By **JULIAN FRAILLON**, ICILS International Study Center, ACER

On 20 November 2014, the key findings of IEA's International Computer and Information Literacy Study (ICILS)—the first in international research to investigate students' acquisition of computer and information literacy (CIL)—will be released to the public in a joint press conference with the European Commission.

In this study, the ICILS researchers investigated the ways in which young people around the world have developed CIL to support their capacity to participate in the digital age. Researchers assessed almost 60,000 eighth grade students in more than 3,300 schools from 21 education systems. Data were also collected

from almost 35,000 teachers in those schools and from school ICT-coordinators, principals, and national research centers.

The ICILS international report will present the main study findings, providing an overarching comparative perspective on student achievement in CIL, the contexts for CIL education, and how achievement relates to student characteristics and school contexts.

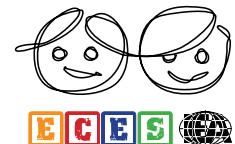
ICILS BEYOND 2014

ICILS provides a baseline for future comparisons of CIL education across countries and the measurement of changes in achievement over time.

Some possibilities for future development include online delivery of the assessment, accommodation of tablet devices, and incorporation of new and relevant software environments such as multimedia or gaming. The key to the future of such research is maintaining a strong link to the core elements of the discipline while accommodating the new contexts in which CIL achievement can be demonstrated.

As of 20 November 2014, the ICILS 2013 international report will be available online at www.iea.nl/icils_2013.html, at <http://icils2013.acer.edu.au/>, and as a Springer open access publication. For information about the press release, please contact Dr Paulina Koršňáková at the IEA Secretariat (p.korsnakova@iea.nl).

IEA in Phase 1 of the Early Childhood Education Study (ECES)



By **JULIANE HENCKE**, ECES International Consortium, IEA DPC



IEA's recently launched Early Childhood Education Study (ECES) aims to explore, describe, and analyze early childhood education provision and its role in preparing children for school and lifelong learning. ECES is envisaged as a two-phase study. Currently the international consortium and participating countries are preparing for the first phase of ECES, which is focused on gathering information at the national and regional level about the wider policy contexts for early childhood education provision from birth to the end of ISCED 0.

During Phase 1, a policy questionnaire will be administered at the end of 2014 to collect data on early childhood education policy, delivery models and providers, access and participation, quality, and expectations for outcomes. A policy report, to be published in 2015, will present the international findings from these data.

Such findings will provide an important basis for the development of ECES in its second phase, if there are a sufficient number of participating countries to support the continuation of the study. Phase 2 is planned to include a comprehensive assessment of early childhood education outcomes as well as surveys of early childhood education settings, practitioners, and parents.

For information on country enrollment, please contact Dr Paulina Koršňáková at the IEA Secretariat (p.korsnakova@iea.nl). Further information about ECES is also available at <http://eces.iea.nl> or by contacting Julianne Hencke at the IEA DPC (eces@iea-dpc.de).



ICCS 2016

EVOLUTION OF A STUDY AND NEW TRENDS FOR CITIZENSHIP EDUCATION

By **RALPH CARSTENS**, ICCS 2016 International Project Coordination Center, IEA DPC

Building on IEA studies in 1971 and 1999 that helped to establish the empirical foundations of civic education, IEA initiated the International Civic and Citizenship Education Study (ICCS) in 2009, a comparative research program investigating the ways in which young people are prepared to undertake their roles as citizens in the 21st century.

ICCS 2016 is the second cycle in the framework of ICCS. It will link directly to the 2009 cycle in order to monitor trends in civic outcomes in terms of students' knowledge, attitudes, and engagement, as well as respond to persisting and recent challenges of educating young people in an interconnected world, where the contexts of democracy and civic participation continue to change considerably. Thus the 2016 assessment will be expanded to address issues related to global challenges and threats, environmental sustainability, and the use of new social media, among other aspects.

The study's evolution to investigate these forward-looking questions comes at a time of increasing attention in the worldwide education dialogue on Global Citizenship Education (GCE) and Education for Sustainable Development (ESD). Both GCE and ESD aim at empowering learners of all ages to become proactive contributors to a more just, peaceful, tolerant, inclusive, secure, and sustainable world.

Currently a number of international organizations and initiatives are exploring questions about the nature and integration of GCE and ESD into formal, non-formal, and informal education settings and about their monitoring and evaluation. These include the recently convened Experts Advisory Group (EAG), established by UNESCO to aid the

drafting of a guiding GCE framework with age-specific topics and learning objectives; the Measurement Ad-Hoc Team (a subgroup of EAG), focused on measurement issues in the context of the post-2015 education agenda; the Global Citizenship Education Working Group of the Learning Metrics Task Force 2.0; and a workshop, "Monitoring and Reporting Frameworks of ESD Beyond 2014," at the upcoming World Conference on Education for Sustainable Development (Aichi-Nagoya, Japan, November 2014). ICCS has been discussed prominently in such initiatives—both as a blueprint for measuring civic and citizenship education outcomes and their contexts at local, national, regional, and global levels, and as a potential partner for collecting high quality data in the years to come.

For information on country enrollment, please contact Dr Paulina Koršňáková at the IEA Secretariat (p.korsnakova@iea.nl). Further information about ICCS 2016 is also available at <http://iccs.iea.nl/> or by contacting Ralph Carstens at the IEA DPC (iccs@iea-dpc.de).

Presenters of the research seminar (from left to right): Barbara Malak-Minkiewicz, Ralf Maslowski, Wiel Veugelers, Judith Torney-Purta, Bryony Hoskins, and Anu Toots. Rome, Italy, December 2013.



News from a Research Seminar

LESSONS LEARNED FOR UNDERSTANDING CIVIC AND CITIZENSHIP EDUCATION

By **MARIA MAGDALENA ISAC**, European Commission, Joint Research Centre (JRC), Econometrics and Applied Statistics

On 2–4 December 2013, the Econometrics and Applied Statistics Unit of the European Commission's Joint Research Centre (JRC) organized a research seminar, "Lessons Learned for Understanding Civic and Citizenship Education: An International Overlook." The event was hosted by the University of Roma Tre in Rome and organized in close cooperation with IEA, the Italian National Institute for Educational Evaluation (INVALSI), and the Groningen Institute for Educational Research (GION) of the University of Groningen. The seminar welcomed about 100 participants from 13 countries, including academics and other professionals from universities, school systems, government agencies, and the private sector.

The highly interactive keynote lectures and paper sessions focused on conceptualizing civic and citizenship education outcomes, examining existing empirical evidence—including data from IEA CIVED and ICCS—on the impact of civic and citizenship education on these outcomes, strengthening the research base through methodological improvements to national and international surveys (e.g., improved attitudinal measures, longitudinal studies, and contextualized research), and exploring further avenues for research and evidence-based policy and practice. A poster session provided an opportunity for young researchers to present their dissertation projects and receive feedback from experts, joining together the current and future generations of researchers in the field.

Abstracts and presentations from the research seminar can be downloaded from <https://ec.europa.eu/jrc/en/event/conference/cce-research-seminar>.

TIMSS and PIRLS 2011 Data

ENABLING DEEPER ANALYSES IN PARTICIPATING COUNTRIES

By **PIERRE FOY**, TIMSS & PIRLS International Study Center, Boston College

A major purpose of IEA's TIMSS and PIRLS assessments is to collect a rich array of data for researchers to conduct in-depth analyses relevant to their own national contexts to support specific educational improvement efforts.

In 2011, a historic circumstance underscored the unique value of the TIMSS and PIRLS data—for the first time, data collection of these two international assessments coincided. The combined TIMSS and PIRLS 2011 study was the first at the primary school level that enabled countries to assess the same fourth grade students in three fundamental curricular areas—mathematics, science, and reading.

Having data on the same students provides an opportunity to conduct a range of investigations of the important home and school characteristics that influence early learning, while controlling for extraneous factors. To facilitate this research, a special international database was created and made available for free on the TIMSS & PIRLS International Study Center website. This combined TIMSS and PIRLS 2011 database provides the most appropriate basis for studying relationships among fourth grade reading, mathematics, and science teaching and learning.

In order to illustrate the potential of the special TIMSS and PIRLS 2011 database, as well as to promote secondary analysis, the TIMSS & PIRLS International Study Center compiled a report looking at the culture of educational excellence. In the resulting report, *TIMSS and PIRLS 2011: Relationships Among Reading, Mathematics, and Science Achievement at the Fourth Grade—Implications for Early Learning*, researchers applied a variety of modeling techniques to examine the interrelationships among the underlying components of home and school learning environments. Anticipating that the primary value of this unique TIMSS and PIRLS 2011 database will be realized through in-depth national research, this report includes four very different analyses.

The first of these analyses examines the relationships among students' achievement in the three subjects, presenting graphical "profiles in achievement" relative to the TIMSS and PIRLS benchmarks. The second chapter presents an analysis of the reading demands of TIMSS mathematics and science items, the impact of these demands on achievement in these subjects, and the interconnectedness of curriculum, instruction, cognitive processing, and reading ability. In the third chapter, multilevel modeling is used to explore the characteristics of effective schools in reading, mathematics, and science. Finally,

for the fourth chapter, researchers from Sweden adopted a path modeling approach to investigate the effects of parental education and student gender on mathematics, science, and reading achievement and the mechanisms through which these factors influence achievement in the three subjects.

Beyond presenting these four analyses, the *Relationships Report* underscored that there is scope for more elaborate models in various national contexts. Indeed, further research with the TIMSS and PIRLS 2011 data is underway in many countries. Recently, research conducted by a team of researchers at the Dortmund Technical University focused on school effectiveness, extending analyses into the German context. The research, recently presented at the European Conference on Educational Research (ECER 2014) in Porto, Portugal, was conducted by Daniel Scott Smith, Heike Wendt, and Daniel Kasper. Using the TIMSS and PIRLS 2011 database, the researchers examined the relationship between school composition and student achievement in Germany. The investigation first replicated the findings from the *Relationships Report*, which established a positive relationship between home resources for learning and student achievement in Germany. Next, building on research conducted on a broader range of characteristics demonstrated to have relationships with achievement at the school level in Germany, the researchers developed a new "social index" for social background. Based on a model of cultural capital, economic capital, and social capital, this new index had an even stronger relationship with achievement for fourth graders in Germany.

As these German researchers show, analyses using the combined TIMSS and PIRLS 2011 data make it possible to apply a variety of modeling techniques to explore important issues in specific country contexts. It is hoped that the *Relationships Report* will continue to inspire many others to mine this valuable resource for further research on the contexts for early achievement in reading, mathematics, and science.



For more information and access to the TIMSS and PIRLS 2011 reports and data: Visit www.iea.nl/timss_2011.html, www.iea.nl/pirls_2011.html, and <http://timssandpirls.bc.edu>.

Disseminating and Promoting PIRLS and TIMSS

THE SPANISH EXPERIENCE

By **ISMAEL SANZ LABRADOR** and **JOAQUÍN M. VERA MOROS**, National Institute for Educational Assessment (INEE)

In 2012, the results of TIMSS 2011 and PIRLS 2011 were released to a worldwide audience. Spain participated in both studies at the fourth grade, and the National Institute for Educational Assessment (INEE)—the government agency responsible for coordinating international assessments in Spain—aimed to publicize these results as widely as possible, with a special focus on teachers, school principals, and educational administrators.

INEE has coordinated several events in recent years to disseminate the TIMSS and PIRLS findings. We share some examples of these dissemination activities and events below.

Different groups of prominent researchers analyzed the TIMSS and PIRLS 2011 data for Spain, examining the contextual factors that could be considered to influence student performance, such as the structure of the family educational environment, socioeconomic level, pre-school attendance, and family reading habits. This research was published as a series of papers in a 2013 report, *PIRLS–TIMSS 2011 International Study on Progress in Reading Comprehension, Mathematics and Sciences. IEA. Volume II: Spanish Report. Secondary Analysis* (www.mecd.gob.es/inee/Ultimos_informes/PIRLS-TIMSS.html).

In November 2013, INEE organized a national TIMSS and PIRLS symposium in Madrid to analyze the international and Spanish results in depth (www.mecd.gob.es/inee/Informaciones-de-interes/Congreso-PIRLS-TIMSS.html). For two days, about 300 education professionals listened to presentations of experts on educational assessment, among them Barbara Malak-Minkiewicz and Andrés Sandoval-Hernández (both representing IEA), and researchers on TIMSS and PIRLS, including Jan Bietenbeck (Spanish Centre for Monetary and Financial Studies), Norberto Corral (University of Oviedo), José Saturnino Martínez (University of La Laguna), and José Ignacio García



Oliver Neuschmidt (IEA) at the Symposium on International Assessments of Educational Systems, Logroño, Spain, May 2014.

(Pablo de Olavide University). Representatives of regional educational authorities also shared their viewpoints about the importance of international assessments for improving the education system.

In strong collaboration with the regional government of La Rioja, INEE helped organize a symposium on international assessments (Logroño, May 2014) to familiarize teachers with the major international studies conducted by IEA (PIRLS, TIMSS, and TIMSS Advanced) and the OECD (PISA). Workshops provided an opportunity for teachers to work with the released assessment items from these studies and consider how to integrate them in classroom activities. Oliver Neuschmidt from the IEA DPC gave a lecture during the symposium, along with Diana Toledo (OECD), Ildefonso Corral (University of Murcia), and Jenaro Guisasola (University of the Basque Country).



Barbara Malak-Minkiewicz and Andrés Sandoval-Hernández (IEA) (left and right, respectively) at the PIRLS-TIMSS Symposium, Madrid, Spain, November 2013.

INEE has a special interest in promoting the use of released items from international assessments in teachers' daily work. For this reason several workshops, like the ones described above, have been developed in recent years. Another such workshop was carried out in the context of a seminar on the theoretical framework, development, and didactic use of PISA, TIMSS, and PIRLS (Comillas, Cantabria, September 2013). It

Carmen Tovar (INEE) describes a released item from PIRLS during a seminar in Comillas, Spain, September 2013.



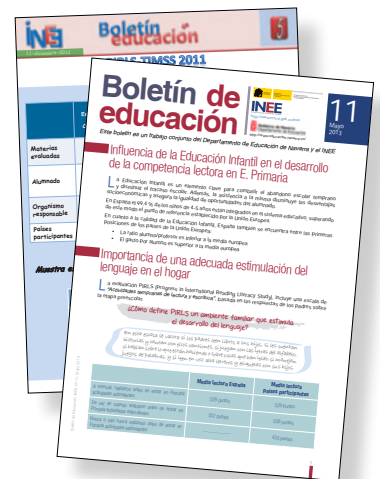
was organized together with the Department of Education of the Regional Government of Cantabria and the University of Cantabria.

The development of an online course for teachers, "International Assessments of the Educational System," represents another culmination of this effort. The course is being carried out by the Ministry of Education of Spain, of which INEE is a part. In the course, teachers learn about the process of developing cognitive test items for international surveys. INEE has also participated in a seminar on international educational assessment studies, which was directed at students in education and organized by the College of Education of the University of Alcalá.

The national and international reports, published results from secondary analyses, released items, and other materials related to educational assessments in Spain are posted on the official INEE website (www.mecd.gob.es/inee).

Four-page bulletins provide a quick overview of the key aspects and highlights of these studies (www.mecd.gob.es/inee/Boletin-de-educacion.html).

> INEE Bulletins 5 and 11 on results from PIRLS and TIMSS 2011.



Academic Visits at RandA

By **ANDRÉS SANDOVAL-HERNÁNDEZ**, IEA RandA

The IEA's Research and Analysis Unit (RandA) fosters international collaborative research in educational evaluation by offering academic visits. The visiting researcher program provides an opportunity for researchers, post-graduate students, and others working in the field of educational assessment to collaborate and work directly with IEA research staff by exchanging ideas, sharing expertise, and developing joint projects. Academic visits typically last between one week and two months (longer stays are considered on a case-by-case

basis), and take place at the IEA Data Processing and Research Center based in Hamburg, Germany.

Visitors of RandA have explored various issues related to international large-scale assessments and their methodology.

Project topics of former visitors include:

- Education success and inequality in disadvantaged schools;
- Mitigating political inequalities in schools; and
- Student achievement and parental involvement in education.

Visitors are provided with an academic mentor for the duration of their stay and have direct access to the IEA datasets. A work desk with a PC, internet access, ICT services, and office supplies are also provided. We look forward to new applications!

For more information, please contact RandA staff (randa@iea-dpc.de) or visit www.iea-dpc.de/fields-of-work/research-and-analysis-unit-randa.html.

IEA Awards

THOUGHTS FROM THE CHAIR OF THE AWARDS COMMITTEE

By **DAVID F. ROBITAILLE**

The IEA Awards Committee currently has three members: the chairperson of IEA (Anne-Berit Kavli), a member of the Technical Executive Group (Larry Hedges), and me, the current chairperson of the Publications and Editorial Committee.

I began my term as chair of the IEA Awards Committee in 2005, and made my first report to the General Assembly at its 46th annual meeting in Helsinki that year. Over the past ten years, there has been a steady growth in the number of applicants for these annual awards: from lows of 3 or 4 applicants in some of the earlier years, to

14 in 2014. This indicates to me that the availability of these awards is becoming increasingly well known in educational and academic circles, and that they are seen as highly prestigious. The committee appreciates the support of General Assembly representatives who make a contribution to this success story by publicizing the existence and availability of the IEA awards in their own countries.

Each applicant for the Bruce Choppin Award has completed and defended a thesis or dissertation, and each applicant for the Dick Wolf Award has published a paper in a refereed journal

or monograph. All of the applicants for the IEA awards each year are strong candidates, and this makes the task of identifying winners particularly difficult. So, as the number of applicants increases, the task of the Awards Committee becomes increasingly difficult, and not in a linear fashion.

It has been a pleasure and an honor for me to chair the Awards Committee over the past ten years. I am happy to see that responsibility pass into the highly capable hands of Tom Loveless from the United States, who will assume the position of chair of the committee following this year's General Assembly.

2014 IEA AWARD WINNERS



Dr Rolf Strietholt,
Bruce Choppin Award
for his dissertation
(doctoral level):

"Using the World as an
Educational Laborato-

ry" Revisited: Methodological Foundations for Utilizing Recent and Older International Large-scale Studies for Educational Effectiveness Research

Rolf Strietholt is a postdoctoral researcher at the Institute for School Development Research, Technische Universität Dortmund, where he explores how international comparative studies can be used for educational effectiveness research. During several research stays at the University of Gothenburg, he became familiar with older IEA studies including the Six Subject Survey from the 1970s. These experiences inspired his doctoral work on linking older and recent IEA studies like PIRLS. Currently, he focuses on how these trend data can be used to describe trends in educational inequalities in order to evaluate policy effectiveness from an educational justice perspective.



Francisco Cerón
Acevedo, Bruce
Choppin Award for
his thesis (master's
level): *Cross National*
Differentiation in School

Systems and Achievement: Compositional Effects and Contextual Factors in Case of Chile

Francisco Cerón Acevedo is a Ph.D. candidate at the Amsterdam Institute for Social Science Research (AISSR), University of Amsterdam. His Ph.D. research examines the impact of institutional context on educational opportunities and student achievement over time within the school systems of Chile and across countries. Previously he was a researcher at the National Assessment Office, Chilean Ministry of Education. He has taught undergraduate courses in data analysis and research design/methodology. He holds a master's degree in social policy (research) from the London School of Economics and Political Science and a master's degree in sociology from the Pontifical Catholic University of Chile.



Dr Kajsa Yang
Hansen and Dr Ingrid
Munck, Richard Wolf
Award: *Exploring the*

measurement profiles of socioeconomic background indicators and their differences in reading achievement: A two-level latent class analysis, IERI Mono-
graph Series: Issues and



Methodologies in Large-Scale Assessments Volume 5

Kajsa Yang Hansen is an associate professor in the Department of Education and Special Education, University of Gothenburg. Her research interests involve educational quality and equity issues, as well as quantitative methods focusing on measurement and statistical analysis of large-scale survey and register data. She has participated in several research projects based on secondary analysis of PIRLS and TIMSS data. Currently, Yang Hansen is involved in projects investigating the effects of educational reforms

in Sweden and the impact of organizational differentiation on educational equality across countries.

Ingrid Munck is Professor Emerita at the Department of Education and Special Education, University of Gothenburg. Her research specialties include measurement methodology and modern modeling methods applied to youth and adult survey data in order to advance quality

in secondary analysis and comparative research. She received the first Choppin award in 1984 for her dissertation, *Model Building in Comparative Education with the LISREL Approach*. Currently, Munck is involved in a research project on measurement invariance to refine attitude scales for comparability across many countries/groups using an integrated CIVED and ICCS 2009 database, with qualified trend analysis across cohorts.

Congratulations Rolf, Francisco, Kajsa, and Ingrid!

To apply: For the Bruce H. Choppin and Richard M. Wolf Memorial Awards, IEA invites submissions of high quality empirical research that makes use of IEA data. The next submission deadline for both awards is 31 March 2015. Please visit www.iea.nl/awards.html for specific application requirements.

Two Generations of Creators of Latent Variable Modeling Software

PROGRESS AND EXPERIENCES OF A TEAM OF IEA RESEARCHERS

By **INGRID MUNCK** and **KAJSA YANG HANSEN**, University of Gothenburg

IEA's online data repository and tools for data documentation, analysis, and visualization are valuable resources to support researchers. Nowadays it is the available software that sets the limits for what we can achieve in terms of high quality comparative research. We want to present our experiences as modelers of IEA data and share some late-breaking news for the future of secondary analysis within the framework of latent variable modeling.

Over the years, working with large-scale survey data has been a 'risky' endeavor. In order to reach meaningful conclusions when performing statistical analysis of such data, it is crucial to consider both sampling and measurement errors, while also handling missing and multilevel data in an appropriate way. The theoretical foundations are given in textbooks and the reports that accompany each IEA study; however, it has been difficult to accomplish this in practice because appropriate statistical modeling software was not always available, sufficient, or easily accessible.

The LISREL software was the first tool to bring in latent measurement models with error variables separated from the structural model, linking the latent variables referred to as structural equation modeling (SEM). The theoretical foundation for multi-group SEM was developed by Karl Jöreskog in the late 1960s during his time as a visiting scholar at ETS in the United States (Jöreskog, 1971).

Since then, great progress has been made by many individuals in the development of SEM software. Bengt Muthén,



Prof Bengt Muthén and Prof Karl G. Jöreskog in dialogue about Mplus at the Department of Statistics, Uppsala University, Sweden in 2010 (Photo: Ingrid Munck).

inspired by the LISREL program and his Ph.D. advisor Jöreskog, developed with his team the *Mplus* latent variable modeling program, with the aim of bridging the gap between theory and practice in the application of new statistical methods for secondary analysis (www.statmodel.com). Each new version adds features in a more efficient environment for modern modeling methods (M3) for the IEA research community.

Here we will share some insights on research into the influence of socioeconomic status (SES) on achievement in a 40-year perspective. Creating a measure for SES was an early focus of IEA researchers who sought to explain differences in achievement. In the Six Subject Survey of the 1970s, a so-called 'home handicap index' was created for between-student regression analysis based on indicators derived from student home background data. Although this methodology did not take measurement error into account—and therefore underestimated its importance—the main message in media

reports at the time was that SES is the most powerful predictor of achievement overall.

Nearly ten years later, multi-group SEM analysis was carried out for the first time on IEA data: LISREL modeling of SES and reading literacy as predictors of science achievement in England, Hungary, and Sweden (Munck, 1979). As it was not yet possible to conduct multilevel analysis taking into account the hierarchical structure of school data, analysis of within-school variance served to ensure comparability across school systems.

In the late 1980s and early 1990s, Muthén developed a two-level SEM technique (see, e.g., 1989, 1991), which allowed for the interdependency of the hierarchical data structure and produced correct standard error estimates. Muthén's maximum likelihood (MUL) estimator with multiple imputation was also implemented in *Mplus*, allowing for the correction of missing data biases.

A series of studies applied this procedure to measure SES with a set of home possession items from the IEA Reading Literacy Study and TIMSS 1995 (see, e.g., Yang, 2003). These studies analyzed SES as a multi-dimensional property that affects academic achievement at both individual and aggregated levels. The SES measurement model was validated with IEA data from 24 countries, and the latent structure of SES was found to differ across countries. Such differences are reflections on country-specific social, cultural, and economic factors, and on differences in the availability of SES data.

In our Dick Wolf award-winning paper (Yang Hansen & Munck, 2012; see page 7 in the newsletter), we used *Mplus* Version 6 to carry out a two-level latent class analysis on PIRLS 2006 data to identify different categories of SES profiles (rather than treating SES on a continuum from low to high), taking into consideration the complex structure of the database.

A challenge for IEA today in the design of home background instruments is to find new and complementary SES indicators that mirror the reality of a changing world. The most powerful overall indicator to date—number of books at home—needs to be considered in light of the increasing use of e-books and online reading. However, at the same time, it is necessary to keep indicators of the past constant in order to trace the effect of SES on achievement and measure change across cohorts. We have learned what modeling analysis requires: a set of at least three reliable indicators to measure a predictor like SES and to adjust for measurement error. In practice this remains a challenge but is possible with latent variable software and appropriately designed survey instruments.

It is striking how far the tools for latent variable modeling have progressed. Among the many features of *Mplus* Version 7.2

(spring 2014) are causal inference, Bayesian SEM, and multi-group factor analysis alignment — a new method for refining scales across many countries to analyze overtime changes (Asparouhov & Muthén, 2014). Ongoing research on pooled data from CIVED and ICCS 2009 has established the comparability of refined aligned scores on youth attitudes to immigrant rights across cohorts by country and gender (Munck, Barber, & Torney-Purta, 2014).

The whole process of analysis is demanding, from preparing the input files and coding *Mplus*, to interpreting the output, to drawing conclusions and noting limitations. There is no shortcut and we need to work together to pool our skills for success. Learning by doing through examples has been our strategy; let's share our experiences ahead!

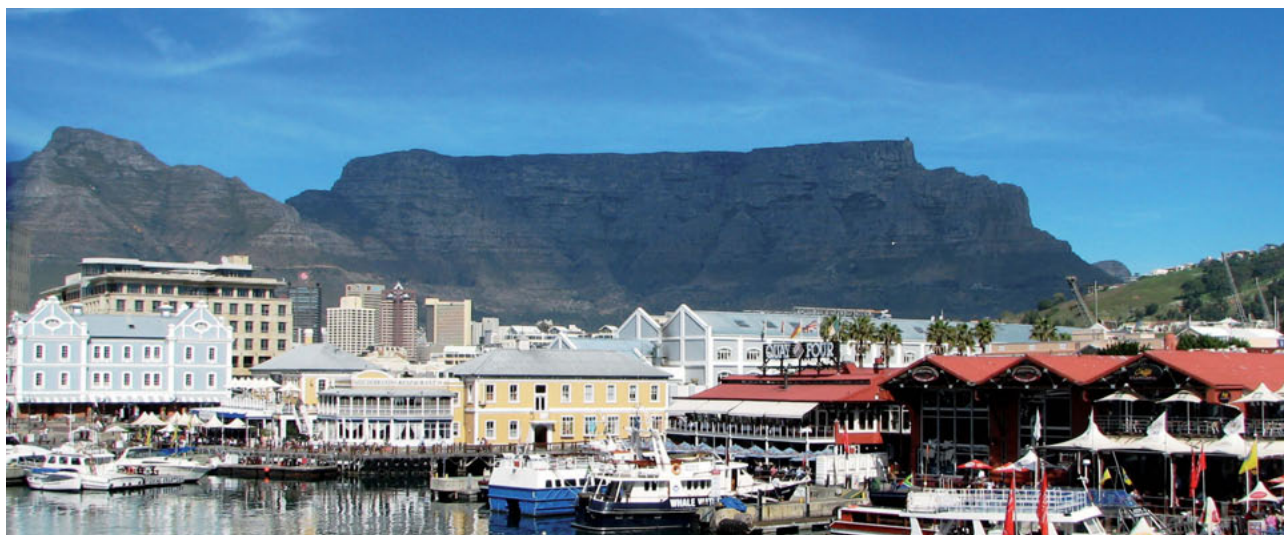
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6th IEA International Research Conference

24–26 JUNE 2015
CAPE TOWN, SOUTH AFRICA



Call for Proposals

IEA invites proposals that report secondary/in-depth research results based on IEA data to its 6th International Research Conference (IRC) on 24–26 June 2015!

Founded by the late Dr Constantinos Papanastasiou in 2004, the IRC provides an international forum for all those working with IEA study data to exchange ideas and information on critical educational issues in a comparative and global context. A variety of topics can be explored through secondary analysis of the IEA datasets: within-country and cross-country studies of factors behind teaching and learning outcomes, analysis of changes in education and educational achievement over time,

and the design and methodology of large-scale assessments, as well as emerging implications of research for policy and practice.

The IRC-2015 is being organized in collaboration with the University of Pretoria in South Africa. The program will feature three distinguished keynote speakers: Dr Marguerite Clarke (World Bank), Prof Sarah Howie (University of Pretoria), and Prof David Kaplan (University of Wisconsin–Madison).

For more information and to submit a proposal: Visit www.iea.nl/irc-2015.html. The submission deadline is 1 December 2014.

Pre-Conference Workshops

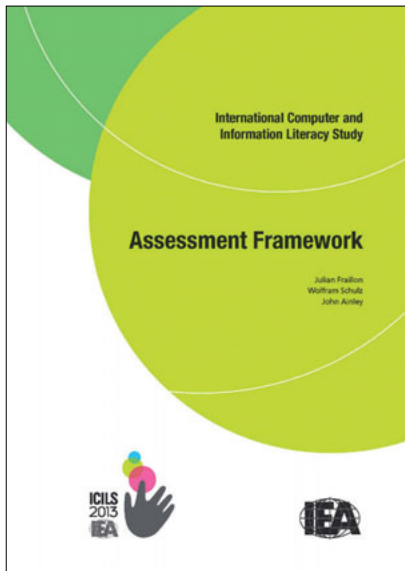
22–23 JUNE 2015
CAPE TOWN, SOUTH AFRICA

The aim of the IRC-2015 training workshops is to enhance understanding of—and provide practice in—working with data from international large-scale assessments such as those conducted by IEA. Four different workshops will be offered:

- Introduction to IEA databases and IDB Analyzer
- Using HLM with international large-scale assessment data
- Assessment designs, item response theory, and proficiency estimates
- Using the IEA international datasets for informing policy and practice

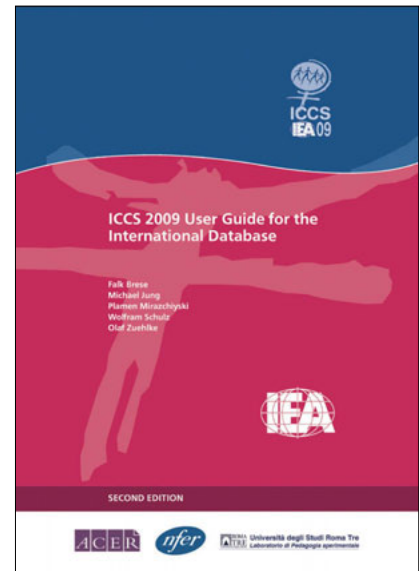
For more information: Visit www.iea.nl/irc-2015_workshops.html.
Registration opens on 20 February 2015 (registration fee 100 euros).

Recent IEA Publications



< *The ICILS assessment framework details the construct for computer and information literacy that underpins the ICILS study design.*

> *The second edition of the ICCS user guide for the international database includes a further set of released items in Supplement 5.*



Brese, F., Jung, M., Mirazchiyski, P., Schulz, W., & Zuehlke, O. (2014). *ICCS 2009 user guide for the international database* (2nd ed.). IEA: Amsterdam.

Brese, F., & Mirazchiyski, P. (2013). *IERI monograph series: Issues and methodologies in large-scale assessments. Special issue 2: Measuring students' family background in large-scale international education studies*. Hamburg: IEA-ETS Research Institute.

Foy, P. (2013). *TIMSS and PIRLS 2011 user guide for the fourth grade combined international database*. Chestnut Hill, MA: TIMSS & PIRLS International Study Center, Boston College.

Fraillon, J., Schulz, W., & Ainley, J. (2013). *International Computer and Information Literacy Study: Assessment framework*. IEA: Amsterdam.

Martin, M.O., & Mullis, I.V.S. (Eds.). (2013). *TIMSS and PIRLS 2011: Relationships among reading, mathematics, and science achievement at the fourth grade—implications for early learning*. Chestnut Hill, MA: TIMSS & PIRLS International Study Center, Boston College.

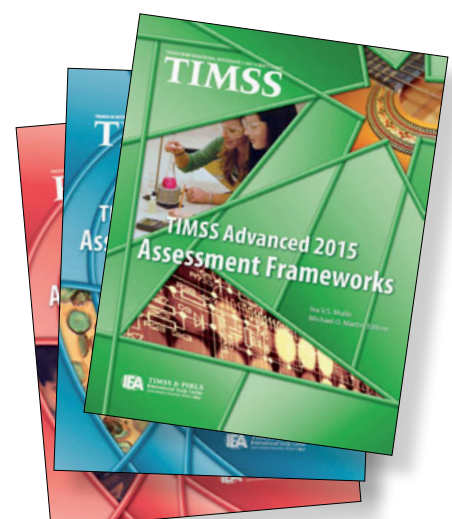
Mullis, I.V.S., & Martin, M.O. (Eds.). (2013). *PIRLS 2016 assessment framework*. Chestnut Hill, MA: TIMSS & PIRLS International Study Center, Boston College.

Mullis, I.V.S., & Martin, M.O. (Eds.). (2013). *TIMSS 2015 assessment frameworks*. Chestnut Hill, MA: TIMSS & PIRLS International Study Center, Boston College.

Mullis, I.V.S., & Martin, M.O. (Eds.). (2014). *TIMSS Advanced 2015 assessment frameworks*. Chestnut Hill, MA: TIMSS & PIRLS International Study Center, Boston College.

Schulle, J., Ingvarson, L., & Holdgreve-Resendez, R. (Eds.). (2013). *TEDS-M encyclopedia: A guide to teacher education context, structure, and quality assurance in 17 countries. Findings from the IEA Teacher Education and Development Study in Mathematics (TEDS-M)*. Amsterdam: IEA.

Tatto, M.T. (Ed.). (2013). *The Teacher Education and Development Study in Mathematics (TEDS-M): Policy, practice, and readiness to teach primary and secondary mathematics in 17 countries. Technical report*. Amsterdam: IEA.



Call for Proposals

THEMATIC REPORT ON IEA PIRLS DATA



IEA invites proposals for a thematic report based on secondary analysis of IEA's Progress in International Reading Literacy Study (PIRLS) data. The general theme for this report is exploration of the influence of the home setting—home literacy activities, home–school relations, and pre-school attendance—on learning outcomes. The deliverable for the project will be a report of 80 to 150 pages.

The aim of the thematic report is to deepen our knowledge and understanding of the influence of home supports for learning on

student achievement. Possible questions to be explored could include:

- What is the relationship between early literacy activities and student achievement, attitudes, and dispositions at Grade 4? How do such relationships vary across participating countries and over time?
- What is the nature of parent–school interactions across participating countries and what impact do they have on learning outcomes for students?
- What influence does preschool participation have on learning outcomes? How can policy

strategies encourage preschool attendance and parental involvement in early reading acquisition, and what are the implications for schools working with parents from low SES households?

Proposals will be reviewed on the basis of methodological quality, research and policy relevance, and budget. Tenders must be received by the IEA Secretariat no later than 3 November 2014 at 13:00.

The full tender specifications and requirements under **call no. IEA 01/09-2014** can be viewed at www.iea.nl.



NEWSLETTER

OCTOBER 2014 | #42

COLOPHON

EDITOR Alana Yu

PUBLISHER IEA Secretariat, Amsterdam, The Netherlands

DESIGN zBreedte, Castricum, The Netherlands

ISSN 0925-8418

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