



IEA PROGRAM

Researching education, improving learning

7th IEA International Research Conference



CONFERENCE: **28-30 JUNE 2017**
WORKSHOPS: **26-27 JUNE 2017**
PRAGUE, **CZECH REPUBLIC**



CHARLES
UNIVERSITY



7th IEA International Research Conference

Faculty of Education, Charles University, Prague

Pre-Conference Workshops: Monday & Tuesday, 26-27 June 2017 10:30-11:00 & 15:00-15:30 Coffee & Tea; 12:30-14:00 Lunch Break			
Workshop 1 Added Value. How IEA Study Participation Can Meet Specific National Research Interests Room 208, Faculty of Education, Charles University Instructor: Sabine Meinck, IEA Hamburg, Germany	Workshop 2 Multilevel Modeling With IEA Data Room 209, Faculty of Education, Charles University Instructors: Agnes Stancel-Piatak, IEA Hamburg, Germany, and Leslie Rutkowski, CEMO, Norway	Workshop 3 Structural Equation Modeling Using IEA Data Room 210, Faculty of Education, Charles University Instructor: Deana Desa, IEA Hamburg, Germany	Workshop 4 Bayesian Statistics With Applications to IEA Data Room 217, Faculty of Education, Charles University Instructor: David Kaplan, University of Wisconsin - Madison, USA

Reception: 27 June 2017, 17:15, Carolinum, Charles University

CONFERENCE

Wednesday, 28 June 2017	Thursday, 29 June 2017	Friday, 30 June 2017
8:00-16:00 Registration	8:30-16:00 Registration	8:30-12:00 Registration
8:30-9:00 Opening Ceremony (Aula)	9:00-10:30 Keynote 2: David Greger (Aula)	9:00-10:30 Keynote 3: Fons Van de Vijver, Jia He & Alena Kulikova (Aula)
9:00-10:30 Keynote 1: Ina Mullis & Michael Martin (Aula)		
10:30-11:00 Tea & Coffee	10:30-11:00 Tea & Coffee	10:30-11:00 Tea & Coffee
11:00-12:30 SESSION 1 A: TIMSS B: ICILS C: ICCS	11:00-12:30 SESSION 4 A: TIMSS B: ICCS Poster Session	11:00-12:30 SESSION 7 A: Methodology B: PIRLS
12:30-14:00 Lunch Break	12:30-14:00 Lunch Break	12:30-14:00 Lunch Break
14:00-15:30 SESSION 2 A: TIMSS B: Policy Panel Session C: ICCS	14:00-15:30 SESSION 5 A: TIMSS B: Methodology Poster Session	14:00-15:30 SESSION 8 A: TIMSS B: TIMSS/PIRLS
15:30-16:00 Tea & Coffee	15:30-16:00 Tea & Coffee	15:30-16:00 Closing Ceremony (Aula)
16:00-17:30 SESSION 3 A: TIMSS B: Methodology/TIMSS C: ICCS	16:00-17:30 SESSION 6 A: Methodology B: Methodology/Policy C: TIMSS	16:00-16:30 Tea & Coffee
Parallel Session Rooms - A: Aula, B: Room 016, C: Room 112 Poster Session: Third floor corridor		

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7th IEA International Research Conference

Faculty of Education, Charles University, Prague

Date: Monday, 26 June 2017				
9:00am - 5:30 pm	Workshop 1 Added Value. How IEA Study Participation Can Meet Specific National Research Interests Room 208, Faculty of Education, Charles University Instructor: Sabine Meinck, IEA Hamburg, Germany	Workshop 2 Multilevel Modeling With IEA Data Room 209, Faculty of Education, Charles University Instructors: Agnes Stancel-Piatak, IEA Hamburg, Germany, and Leslie Rutkowski, CEMO, Norway	Workshop 3 Structural Equation Modeling Using IEA Data Room 210, Faculty of Education, Charles University Instructor: Deana Desa, IEA Hamburg, Germany	Workshop 4 Bayesian Statistics With Applications to IEA Data Room 217, Faculty of Education, Charles University Instructor: David Kaplan, University of Wisconsin - Madison, USA
10:30am - 11:00am	Coffee & Tea			
12:30pm - 2:00pm	Lunch Break			
3:30pm - 4:00pm	Coffee & Tea			
Date: Tuesday, 27 June 2017				
9:00am - 15:30pm	Workshop 1 (cont'd) Added Value. How IEA Study Participation Can Meet Specific National Research Interests Room 208, Faculty of Education, Charles University Instructor: Sabine Meinck, IEA Hamburg, Germany	Workshop 2 (cont'd) Multilevel Modeling With IEA Data Room 209, Faculty of Education, Charles University Instructors: Agnes Stancel-Piatak, IEA Hamburg, Germany, and Leslie Rutkowski, CEMO, Norway	Workshop 3 (cont'd) Structural Equation Modeling Using IEA Data Room 210, Faculty of Education, Charles University Instructor: Deana Desa, IEA Hamburg, Germany	Workshop 4 (cont'd) Bayesian Statistics With Applications to IEA Data Room 217, Faculty of Education, Charles University Instructor: David Kaplan, University of Wisconsin - Madison, USA
10:30am - 11:00am	Coffee & Tea			
12:30pm - 2:00pm	Lunch Break			
3:30pm - 4:00pm	Coffee & Tea			
12:00pm - 6:00pm	Conference Registration Faculty of Education, Charles University			
5:15pm - 9:30pm	Welcome Reception Carolinum, Charles University The reception will open with a performance by the renowned Piccolo Choir and Chamber Orchestra at 5:30 pm. Please arrive in good time to enjoy the experience!			

Date: Wednesday, 28 June 2017			
8:00am - 4:00pm	Conference Registration Faculty of Education, Charles University		
8:30am - 9:00am	Opening Ceremony Aula, Faculty of Education, Charles University Representatives of the Charles University, Faculty of Education, Czech Republic, and Czech School Inspectorate, Czech Republic, Anne-Berit Kavli , IEA Chair, and Dirk Hastedt , IEA Director		
9:00am - 10:30am	Keynote 1 20 Years of TIMSS: International Trends in Mathematics and Science Achievement, Curriculum, and Instruction Aula, Faculty of Education, Charles University Invited Speakers: Ina Mullis & Michael Martin , Boston College, USA Chair: Hans Wagemaker , IEA, New Zealand		
10:30am - 11:00am	Coffee & Tea		
11:00am - 12:30pm	Session 1A: TIMSS/PIRLS Aula, Faculty of Education, Charles University Symposium: Changes over Time at the Country Level: Value-Added for Education Policy and Practice Chair(s): Agnes Stancel-Piątak & Trude Nilsen Discussant: Dirk Hastedt (IEA) <i>Presentations of the Symposium</i> Development of Achievement in Compulsory School in the Nordic Countries between 1964 and 2015 Jan-Eric Gustafsson & Sigrid Blömeke Trends in Gender Gaps: Using Twenty Years of Evidence from TIMSS Sabine Meinck & Falk Brese International Gender Gap Trends in Reading over 40 Years – Results from Linking IEA Studies Rolf Strietholt, Isa Steinmann & Monica Rosén Imputation as a Means to Create a Synthetic Pre/Post Design Leslie Rutkowski, David Kaplan & Tyler Matta	Session 1B: ICILS Room 016, Faculty of Education, Charles University Findings from 21st Century Schools Chair: Josef Basl , Czech School Inspectorate, Czech Republic Researching Characteristics Of Resilient Schools - A Latent Profile Analysis Of Schools That Successfully Bridge The Digital Divide Birgit Eickelmann & Mario Vennemann Patterns in Students' School-related and Recreational Computer Use and Their Relations to Computer and Information Literacy – Results for Denmark and Germany Jeppe Bundsgaard & Julia Gerick Does Teacher Professional Development Matter? A Typology of Teachers in the Context of Successful ICT Implementation in Teaching Kerstin Drossel, Birgit Eickelmann Differences Among Learning Areas in the Pedagogical Use of Information and Communication Technologies Julian Fraillon, John Gilbert Ainley & Tim Friedman	Session 1C: ICCS Room 112, Faculty of Education, Charles University Symposium: Teaching Tolerance in a Globalized World Chairs: Andres Sandoval-Hernandez & Maria Magdalena Isac <i>Presentations of the Symposium</i> Measurement Model and Invariance Testing of Scales Measuring Attitudes Towards Diversity in ICCS 2009 Daniel Miranda & Juan Carlos Castillo School Segregation of Immigrant Students Cristobal Villalobos & Ernesto Treviño Influence of Teachers, Families and Schools on Students' Attitudes Towards Diversity Consuelo Béjares & Ernesto Treviño Open Classroom Discussion and Student Attitudes towards Diversity Diego Carrasco & David Torres Class and Status as Predictors of Inclusive Attitudes Towards Immigrants, Minorities and Gender Juan Carlos Castillo & Daniel Miranda

12:30pm - 2:00pm	Lunch Break		
2:00pm - 3:30pm	<p>Session 2A: TIMSS Aula, Faculty of Education, Charles University</p> <p>Symposium: Changes In Achievement Over Time As A Function Of Changes In Contextual Factors. Chair(s): Trude Nilsen & Agnes Stancel-Piątak</p> <p><i>Presentations of the Symposium</i> Changes In Mathematics Performance From 2011 To 2015 In Norway And Sweden As A Function Of Teacher Professional Development Jan-Eric Gustafsson & Trude Nilsen</p> <p>Changes In Teacher Quality And School Climate Influencing Changes In Achievement From 2011 To 2015. Trude Nilsen, Jan-Eric Gustafsson & Kajsa Yang Hansen</p> <p>Are Changes In The Socio-demographic Achievement Gap In Mathematics A Function Of Changing Opportunity To Learn? A Cross-country Comparison Between TIMSS 2011 To 2015 Kajsa Yang Hansen, Jan-Eric Gustafsson, Trude Nilsen & Monica Rosén</p>	<p>Session 2B: Policy Room 016, Faculty of Education, Charles University</p> <p>Panel Discussion on the Use, Benefits and Impact of IEA Studies Within Participating Countries Chair: Josef Basl</p> <p>Using IEA Studies to Enhance National Assessment in France Thierry Rocher</p> <p>Good Practices and Lessons Learned from IEA Studies: How Insights from International Assessment Can Help Teachers Carmen Tovar Sánchez</p> <p>Using IEA Studies to Improve Norwegian Education Liv Sissel Grønmo</p>	<p>Session 2C: ICCS Room 112, Faculty of Education, Charles University</p> <p>Perceptions, Attitudes, Identity and Competencies Chair: Christian Christrup Kjeldsen</p> <p>Perceptions Of Student Influence And Participation At School Among Lower Secondary Students: Results From ICCS 2009 Wolfram Harald Schulz, John Ainley & Julian Fraillon</p> <p>Historical Legacies and Democratic Orientation among Adolescents in Established and Aspiring Democracies: A Cross-cultural Comparison Based on ICCS 2009 Natallia Sianko & Mark Small</p> <p>Findings Related to Student Identity Using the Large-scale Civic Education Datasets Ryan T. Knowles</p> <p>The Influence Of Students' Citizenship Competences On Their Political And Civic Participation In Early Adulthood Edwin Slijkhuis</p>
3:30pm - 4:00pm	Coffee & Tea		
4:00pm - 5:30pm	<p>Session 3A: TIMSS Aula, Faculty of Education, Charles University</p> <p>Focus on Curricula Chair: Carmen Tovar Sánchez</p> <p>The Globalization of Science Curricula - a Thematic Report Using IEA TIMSS Data Emily Jane Jones & Oliver Stacey</p>	<p>Session 3B: Methodology Room 016, Faculty of Education, Charles University</p> <p>Multilevel Analysis Chair: Oliver Neuschmidt Discussant: Leslie Rutkowski</p> <p>School Potential for Mitigating Social Inequalities in Selected European Educational Systems: Evidence from TIMSS 2015 Agnes Stancel-Piątak & Nadine Radermacher</p>	<p>Session 3C: ICCS Room 112, Faculty of Education, Charles University</p> <p>Students' Engagement Chair: Ralph Carstens Discussant: Bruno Losito</p> <p>Religious Engagement, Attitudes Toward Religion and Society, and Expected Future Political Participation Among Young People Wolfram Schulz & John Ainley</p>

	Session 3A contd	Session 3B contd	Session 3C contd
	<p>Curricula Harmonization? A Study Using Data from National Research Coordinators Stefan Johansson & Kajsa Yang-Hansen</p> <p>Measuring the Amount of Mathematical Theory Needed to Solve Test Items in TIMSS Advanced Mathematics and Physics Arne Hole, Liv Sissel Grønmo & Torgeir Onstad</p> <p>Variables Affecting of Developing Higher-order Thinking Competences in Science Masoud Kabiri & Abdol'azim Karimi</p>	<p>The Effects of Student-level and School-level Factors on 8th Grade Turkish Students' Mathematics Achievement Mustafa Aydin</p> <p>Multilevel Analysis of Binary Response Data in Mathematics and Science of Grade 9 Learners in South Africa Rene Ehlers, Gretel Crafford, Cas Prinsloo & Lolita Winnaar</p> <p>The use of multilevel modeling to assess the mathematics achievement of Grade 9 learners in South Africa for the TIMSS 2015 data Gretel Crafford, Rene Ehlers, Agnes Stancel-Piątak, Cas Prinsloo & Lolita Winnaar</p>	<p>The Impact of Classroom Socioeconomic Composition Effect on Czech Youth's Civic Knowledge and Engagement Aleš Kudrnáč</p> <p>Can Schools Engage Students? A Multiple Perspective, Multidimensional School Climate Research In England And Ireland. Dorien Sampermans, Ellen Claes</p>

Date: Thursday, 29 June 2017			
8:00am - 4:00pm	<p>Conference Registration Faculty of Education, Charles University</p>		
9:00am - 10:30am	<p>Keynote 2 What Do IEA Studies Mean for Eastern European Countries' Education Systems and Educational Research? Aula, Faculty of Education, Charles University</p> <p>Invited Speaker: David Greger, Charles University, Faculty of Education, Czech Republic Chair: Anne-Berit Kavli, IEA Chair</p>		
10:30am - 11:00am	<p>Coffee & Tea</p>		
11:00am - 12:30pm	<p>Session 4A: TIMSS Aula, Faculty of Education, Charles University</p> <p>Symposium: Instructional Quality Chairs: Heike Wendt & Trude Nilsen Discussant: Sigrid Blömeke</p> <p><i>Presentations of the Symposium</i> Instructional Quality: Catalyst or Catch in the Strive for Quality and Equity in Education across Germany, Norway, and Flanders (Belgium) Kim Bellens, Jan Van Damme, Bieke De Fraine, Wim Van Den Noortgate, Heike Wendt & Trude Nilsen</p>	<p>Session 4B: ICCS Room 016, Faculty of Education, Charles University</p> <p>Politics and Civics Chair: Bruno Losito Discussant: David Rutkowski</p> <p>Classroom Discussions and Political Tolerance Towards Immigrants: The Importance of Mutual Respect and Responsiveness Lies Maurissen, Carolyn Barber & Ellen Claes</p> <p>Political Cultures as Context of Civic and Citizenship Education Max Rånge & Mikael Sandberg</p>	<p>Session 4C: Poster Session Third Floor Corridor, Faculty of Education, Charles University</p> <p>The winner of the Constantinos Papanastasiou Poster prize will be announced during the Closing Ceremony.</p> <p>For a full list of poster presentations, please see the conference program.</p>

	<p>Session 4A contd Relations between Instruction Quality, School Climate, and Student Outcomes Trude Nilsen, Ronny Scherer, Heike Wendt & Jan Van Damme</p> <p>Exploring the Relation between Teacher Qualification and Instructional Quality Heike Wendt & Raphaela Porsch</p> <p>Mathematics Achievement Gaps of Low- and High-Performing Students: A Comparison Cross-Nationally and Over Time David Christopher Miller & Frank Torres Fonseca</p>	<p>Session 4B contd The Impact Of School Factors On Civic Knowledge In Mexican Students Citlalli Sanchez-Alvarez, Ramses Vazquez-Lira, Maria Teresa Melendez-Irigoyen, Gilberto Guevara-Niebla & Eduardo Backhoff-Escudero</p>	
12:30pm - 2:00pm	Lunch Break		
2:00pm - 3:30pm	<p>Session 5A: TIMSS Aula, Faculty of Education, Charles University</p> <p>Using TIMSS for National Monitoring Chair: Thierry Rocher Discussant: Josef Basl</p> <p>Comparing results of TIMSS and the Hungarian National Assessment of Basic Competencies Ildikó Balázs, Ildikó Szepesi</p> <p>TIMSS, TIMSS Advanced and the Grades: Exploring the Consistency Between the National Assessment System in Sweden and the TIMSS-Studies Oscar Oelrich, Maria Axelsson & Matilda Ankargren</p> <p>Discriminant Analysis of High and Low 4th Grade Performers in Math and Science in the United Arab Emirates: Lessons Learned from TIMSS 2015 Masood Badri, Rabaa Al Sumaiti, Ali Al Yafei, Lassaad Essafi, Khaled Temsah, Mohammed Mazheruddin, Asma Al Rashedi & Guang Yang</p>	<p>Session 5B: Methodology Room 016, Faculty of Education, Charles University</p> <p>Symposium: Towards Improved Measures of Socioeconomic Status in Low- and Middle-income Countries Chair: Wolfram Schulz</p> <p><i>Presentations of the Symposium</i> Measures of SES in Economics, Education, Health and Psychology Raymond Adams, Syeda Kashfee Ahmed, Dan Cloney, Katherine Dix, Tim Friedman, Petra Lietz, Alla Routitsky & Ursula Schwantner</p> <p>Quality of SES Measures Raymond Adams, Syeda Kashfee Ahmed, Dan Cloney, Katherine Dix, Tim Friedman, Petra Lietz, Alla Routitsky & Ursula Schwantner</p> <p>Towards a Global Scale of Household Wealth Katherine Dix, Tim Friedman, Dan Cloney, Petra Lietz, Alla Routitsky, Ursula Schwantner, Raymond Adams & Syeda Kashfee Ahmed</p>	<p>Session 5C: Poster Session Third Floor Corridor, Faculty of Education, Charles University</p> <p>The winner of the Constantinos Papanastasiou Poster prize will be announced during the Closing Ceremony.</p> <p>For a full list of poster presentations, please see the conference program.</p>

3:30pm - 4:00pm	Coffee & Tea		
4:00pm - 5:30pm	<p>Session 6A: Methodology Aula, Faculty of Education, Charles University</p> <p>Reviewing Measures Chair: Norman Verhelst</p> <p>Gauging the Measurement Property of Opportunity to Learn in TIMSS and PISA Kajsa Yang Hansen & Rolf Strietholt</p> <p>An Examination of Measurement Invariance in ICCS Questionnaire Scales across Groups with Different Levels of Civic Knowledge Julian Fraillon, Eveline Gebhardt & Wolfram Schulz</p> <p>Effect Size Measures for Multilevel Models: Definition, Interpretation, and TIMSS Example Julie Ann Lorah</p> <p>Motivational Scales In TIMSS 2011 Math: Negative Wording Correlates With Reading Achievement Michalis P. Michaelides</p>	<p>Session 6B: Methodology/ Policy Room 016, Faculty of Education, Charles University</p> <p>Predictors and Predicting Chair: Jan-Eric Gustafsson Discussant: Pierre Foy</p> <p>Individual and Compositional Effects In Primary Schools: Predicting The Acquisition Of Mathematics Achievement? Mario Vennemann & Birgit Eickelmann</p> <p>Predicting Students' Achievements in Computer and Information Literacy through the School Management Features of ICT – An International Perspective Noga Magen-Nagar</p> <p>Optimizing Prediction in International Large-Scale Assessments: A Case-study using PIRLS David Kaplan & Chansoon Lee</p> <p>Canadian School Administrators' Interpretations of Large-scale Assessment Statistics Darryl Milburn Hunter</p>	<p>Session 6C: TIMSS Room 112, Faculty of Education, Charles University</p> <p>Gender Studies Chair: Elena C. Papanastasiou, Discussant: Jana Strakova</p> <p>Are Girls Better at Reading than Math? Gender Differences in Achievement Profiles Silvia Salchegger & Katrin Widauer</p> <p>Gender, Self-concept and Mathematics and Science Performance of Grade 9 Students in South Africa Debra Lynne Shepherd</p> <p>Different Gender Differences in Pre-university Mathematics: Comparing the Student Achievement from TIMSS Advanced and Scores from the National Mathematics Examination Barbara Japelj Pavešić & Gašper Cankar</p>
6:30pm - 9:30pm	<p>Conference Dinner</p> <p>More detailed information will be provided at registration. Guides will be on hand to accompany participants from the conference to the dinner location.</p>		

Date: Friday, 30 June 2017	
8:00am - 12:00pm	<p>Conference Registration Faculty of Education, Charles University</p>
9:00am - 10:30am	<p>Keynote 3 Response Styles from a Cross-Cultural Perspective: TIMSS and PIRLS Aula, Faculty of Education, Charles University</p> <p>Invited Speaker: Fons J. R. van de Vijver, Tilburg University, The Netherlands Chair: Dirk Hastedt, IEA, Germany</p>
10:30am - 11:00am	Coffee & Tea

<p>11:00am - 12:30pm</p>	<p>Session 7A: Methodology Aula, Faculty of Education, Charles University</p> <p>Symposium: Embracing Heterogeneity in International Large Scale Assessments Chair: Leslie Rutkowski, CEMO, Norway</p> <p><i>Presentations of the Symposium</i></p> <p>Back To The Drawing Board: Can We Compare Background Scales? David Rutkowski & Andres Sandoval Hernandez</p> <p>The Impact of Collapsing Choices in Categorical MG-CFA: A Look at Model Fit and Reliability Leslie Rutkowski, Dubravka Svetina & Yuan-Ling Liaw</p> <p>Bridging Validity & Evaluation to Help Understand ILSA Utility, Value, and Meaning For Various Stakeholders Maria Elena Oliveri, David Rutkowski & Leslie Rutkowski</p> <p>ilsasim: An R Package for Simulating Large-Scale Assessment Data Tyler Ma</p>	<p>Session 7B: PIRLS Room 016, Faculty of Education, Charles University</p> <p>Interrogating Conceptual Information Chair: Andrea Netten, IEA, The Netherlands</p> <p>The Effect of Access to Text on Bilingual Language in Education Models: Exploring Higher-order Reading Comprehension Performance in prePIRLS 2011 Nelladee McLeod Palane & Sarah Howie</p> <p>Reading Instruction through Curriculum Reform in Hong Kong: An Evaluation of its Impact and the Escalation of PIRLS Reading Attainment Sau Yan Hui, Hung Wai Rex Ng, Yue Celinda Zhu</p> <p>Social Interaction Determinants of South African Reading Literacy Achievement: Evidence from prePIRLS 2011 Surette van Staden & Annika Bergbauer</p> <p>Exploring Complexity in Defining Higher-order Reading Comprehension in prePIRLS 2011 Nelladee McLeod Palane, Celeste-Marie Combrinck & Sarah Howie</p>
<p>12:30pm - 2:00pm</p>	<p>Lunch Break</p>	
<p>2:00pm - 3:30pm</p>	<p>Session 8A: TIMSS Aula, Faculty of Education, Charles University</p> <p>Focus on Teaching Chair: Ina Mullis Discussant: Michael Martin</p> <p>Teachers' Efficacy, Parents' Involvement, and Students' Schooling Attitude as Determinants of School Achievement. A case of UAE 4th Graders in TIMSS 2015 Masood Badri, Guang Yang, Rabaa Al Sumaiti, Asma Al Rashedi, Lassaad Essafi, Khaled Temsah, Ali Al Yafei & Mohammed Mazheriddin</p> <p>Relations Between Collective Teacher Efficacy, Disciplinary School Climate and Student Achievement in TIMSS 2011 Anna Toropova, Stefan Johansson, Eva Myrberg & Monica Rosén</p> <p>Robustness Of Results About Teacher Effects Across Subjects, School Levels, Outcomes And Countries Sigrid Blömeke & Rolf Vegar Olsen</p>	<p>Session 8B: TIMSS/PIRLS Room 016, Faculty of Education, Charles University</p> <p>Comparing (Sub)Populations Chair: Jana Strakova, Charles University, Faculty of Education, Czech Republic</p> <p>Differential Effectiveness for Residents and Immigrants in the Gulf States: An Analysis Based on Creemers' Comprehensive Model of Educational Effectiveness Using TIMSS 2015 Oliver Neuschmidt & Julia Tölle</p> <p>The Role of Linguistic Demands in Testing Mathematics: an Exploration of Differences between Students with Different Linguistic Backgrounds in TIMSS 2015 R. Annemiek Punter, Martina R.M. Meelissen, Theo J.H.M. Eggen & Cees A.W. Glas</p> <p>Applying the Pseudo-Panel Approach to International Large-Scale Assessments: A Methodology for Analyzing Subpopulation Trend Data Martin Hooper</p> <p>Examining Patterns of Non-responses in Cyprus and the USA in TIMSS 2015 Elena C. Papanastasiou</p>

<p>3:30pm - 4:00pm</p>	<p>Closing Ceremony Aula, Faculty of Education, Charles University</p> <p>The winner of the Constantinos Papanastasiou Poster Prize will be announced during the Closing Ceremony.</p> <p>We also invite you to participate in a group photo of all delegates!</p>
<p>4:00pm - 4:30pm</p>	<p>Coffee & Tea</p>

COMMITTEES

The IEA IRC-2017 is organized by IEA in cooperation with the Czech School Inspectorate and the Charles University's Faculty of Education in Prague. The scientific committee will review submissions, together with additional experts, to ensure a useful and relevant program. The organizing committee includes staff from IEA and the Czech hosts, with the IEA Secretariat serving as the conference secretariat.

Scientific committee

John Ainley, Australian Council for Educational Research, Australia

Sigrid Blömeke, University of Oslo, Norway

Wilfried Bos, TU Dortmund University, Germany

Henry Braun, Boston College, USA

Kadriye Ercikan, University of British Columbia, Canada

Pierre Foy, Boston College, USA

Julian Fraillon, Australian Council for Educational Research, Australia

Eugenio Gonzalez, Educational Testing Service, USA

Martin Goy, TU Dortmund University, Germany

David Greger (Chair), Charles University in Prague, Czech Republic

Jan-Eric Gustafsson, University of Gothenburg, Sweden

Dirk Hastedt, IEA Executive Director

Seamus Hegarty, IEA Honorary Member

Martin Hooper, Boston College, USA

Sarah Howie, University of Pretoria, South Africa

Marc Joncas, IEA Technical Expert Group Member, Canada

Andris Kangro, University of Latvia, Latvia

David Kaplan, University of Wisconsin–Madison, USA

Eckhard Klieme, German Institute for International Educational Research, Germany

Pekka Kupari, University of Jyväskylä, Finland

Dominique Lafontaine, University of Liège, Belgium

Rainer Lehmann, Humboldt-Universität zu Berlin, Germany

Frederick K.S. Leung, University of Hong Kong, Hong Kong SAR

Fou-Lai Lin, National Taiwan Normal University, Chinese Taipei

Marlaine Lockheed, Princeton, USA

Bruno Losito, Roma Tre University, Italy

Michael O. Martin, Boston College, USA

Sarah Maughan, AlphaPlus Consultancy, UK

Ina V.S. Mullis, Boston College, USA

Elena Papanastasiou, University of Nicosia, Cyprus
Valena White Plisko, Independent Consultant, USA
Tjeerd Plomp, University of Twente, the Netherlands
Monica Rosén, University of Gothenburg, Sweden
David Rutkowski, University of Oslo, Norway
Leslie Rutkowski, University of Oslo, Norway
Wolfram Schulz, Australian Council for Educational Research, Australia
Jana Straková, Charles University in Prague, Czech Republic
Anu Toots, Tallinn University, Estonia
Judith Torney-Purta, University of Maryland, USA
Jouni Välijärvi, University of Jyväskylä, Finland
Norman Verhelst, Eurometrics, the Netherlands
Hans Wagemaker, IEA Honorary Member, New Zealand

Organizing committee

Josef Basl, Czech School Inspectorate, Czech Republic
Tomáš Bederka, Charles University, Faculty of Education, Czech Republic
Roel Burgers, IEA, the Netherlands
Sandra Dohr, IEA, the Netherlands
Dominik Dvořák, Charles University, Faculty of Education, Czech Republic
Paulína Koršňáková (Chair), IEA, the Netherlands
Veronika Laufková, Charles University, Faculty of Education, Czech Republic
Sabine Meinck, IEA, Germany
Andrea Netten, IEA, the Netherlands
Hana Novotná, Czech School Inspectorate, Czech Republic
Eva Potužníková, Charles University, Faculty of Education, Czech Republic
Jaroslava Simonová, Charles University, Faculty of Education, Czech Republic
Karel Starý, Charles University, Faculty of Education, Czech Republic
Vít Šťastný, Charles University, Faculty of Education, Czech Republic
Jolana Svobodová, Charles University, Faculty of Education, Czech Republic
Dana Vízková, IEA, the Netherlands
Gillian Wilson, IEA, the Netherlands
Catherine Zwaneveld, IEA, the Netherlands

**PRE-CONFERENCE
WORKSHOPS**



Researching education, improving learning

WORKSHOP 1

Added Value. How IEA Study Participation Can Meet Specific National Research Interests

Dr Sabine Meinck, IEA Hamburg, Germany

26–27 June 2017 | 9:00–17:00

Room 208, Faculty of Education, Charles University, Magdalény Rettigové 4

Participants will learn more about the complexities surrounding the statistical analysis of IEA data. They will discover how they can reproduce the statistics presented in the international report, and will then focus on conducting further in-depth analysis concentrating on their own national research interests. Using the IDB Analyzer, the instructor will demonstrate how to conduct basic inferential statistics, such as estimating population means, percentages, correlation and OLS regression coefficients, and statistical significance testing for dependent and independent samples.

Workshop participants will be introduced to the many ways that IEA study data can be used in national analyses, extending study participation to accommodate specific national research interests. Topics that will be covered include:

- tailoring sample designs;
- extending questionnaires;
- regional modules;
- possibilities and limits of using additional national context data for analysis;
- benchmark participation; and
- statistical analysis with the IDB analyzer

Lectures on methodology will lay solid foundations for the practical application of statistical analysis. After a comprehensive introduction to the IEA IDB Analyzer, its application will be demonstrated using practical example analyses. Participants will receive course materials with step-by-step guidance on how to perform the various statistical analyses. They will have time to conduct their own example analysis, and develop and answer personal research questions. The workshop will provide an inspiring forum for the exchange of ideas on nationally-focused analyses, while the instructors will provide guidance and advice throughout on further possibilities or potential limitations. The workshop will showcase successful examples of tailoring participation in IEA studies for national needs, demonstrate procedures for implementation, and indicate potential constraints for consideration (such as methodological and financial constraints). Participants will thus learn how to conduct in-depth analyses of IEA data, with a specific focus on the possibilities and constraints for national analysis.

Prerequisites:

Participants should possess a working knowledge of basic and inferential statistics, and will need to bring their own laptop PC with Microsoft Office and SPSS 16.0 or higher preinstalled.

About the instructor:

Dr Sabine Meinck brings a wealth of experience to this workshop, being the Head of both the IEA's Research and Analysis Unit and its Sampling Unit. For the last decade, she has been involved with sampling, weighting and variance estimation for all the IEA's large-scale assessments. Her main research interest lies with the methodological challenges of complex survey data. Special guest instructors include: Carmen Tovar Sánchez, Heike Wendt, and Jana Strakova.

WORKSHOP 2

Multilevel Modeling With IEA Data

Dr Agnes Stancel-Piątak and Dr Leslie Rutkowski

26–27 June 2017 | 9:00–17:00

Room 209, Faculty of Education, Charles University, Magdalény Rettigové 4

This workshop will introduce participants to the basic theory and application of multilevel modeling (MLM), focusing especially on those features that are particular to large-scale assessment data (such as weighting and scaling). Participants will learn how to specify, estimate and interpret results of two- and three-level models using MPlus, and to formulate and test hypotheses for research and policy.

The following topics will be covered:

- methodological foundations of MLM;
- short introduction to MPlus;
- calculating the compositional effect;
- centering approaches; and
- application of MLM to large-scale assessment data (incorporating weighting and plausible values).

The workshop will cover the following models:

- Two-level random intercepts and random coefficients models with L1 and L2 predictors for: (1) students nested in schools and (2) student nested in classes.
- Three-level random intercepts and slopes models with predictors at L1, L2, and L3.

The models will be presented, and workshop participants will then practice their implementation in a series of practical exercises using MPlus.

Prerequisites:

This workshop is aimed at individuals who already possess a working knowledge of large-scale assessment and a solid knowledge of intermediate statistics. Although no previous experience of MPlus is required, familiarity with syntax based software is beneficial. Participants must bring their own PC-compatible laptops with SPSS software (or similar alternative software that can be used for data preparation) preinstalled. A trial version on the MPlus software will be made available and used during the workshop. The workshop will be a mixture of lectures and hands-on training, to ensure participants gain both sound knowledge and practical expertise.

About the instructors:

Dr Leslie Rutkowski is Professor of Educational Measurement at the Centre for Educational Measurement at the University of Oslo. She earned her PhD in educational psychology, specializing in statistics and measurement, from the University of Illinois at Urbana-Champaign. Leslie's research is in the area of international large-scale assessment. Her interests include latent variables and examining methods for comparing heterogeneous populations in international surveys. In addition to a recently funded *FINNUT* grant to develop international assessment methods, Leslie was one of the editors of the *Handbook of International Large-Scale Assessment* (Rutkowski, von Davier, & Rutkowski, 2014).

Dr Agnes Stancel-Piątak is Deputy Head of the IEA's Research and Analysis Unit and Sampling Unit. For over a decade she has been involved in the development, implementation and analysis of research projects in education including several large-scale assessments. Her methodological expertise encompasses applications of multilevel structural equation modeling, item response theory based modeling, and complex designs. Agnes' research focuses on school effectiveness, teaching and learning, and social justice.

WORKSHOP 3

Structural Equation Modeling Using IEA Data

Dr Deana Desa

26–27 June 2017 | 9:00–17:00

Room 210, Faculty of Education, Charles University, Magdalény Rettigové 4

This workshop is intended to provide a comprehensive overview of the basic theory and application of structural equation modeling (SEM) within the framework of IEA studies. Amongst other things, the workshop will cover how to use SEM models with sampling weights and plausible values, emphasizing the fundamentals of SEM and its underlying assumptions.

Topics covered during the workshop will include:

- data preparation for SEM analysis;
- latent variables and confirmatory factor analysis;
- multivariate regression; and
- multiple-group comparisons.

Participants will use MPlus or R software to perform SEM modeling, and focus on the interpretation of SEM models that are prepared for the analysis of complex data with latent variables. This workshop is ideal for students, researchers, or anyone else who wants to apply SEM in their analyses of IEA data.

The workshop will comprise of a mix of lectures, demonstrations, practical exercises and open discussion.

Prerequisites:

Participants should be familiar with basic statistical analyses, such as correlation, simple regression and analysis of variance, and knowledgeable about the features of IEA studies. Prior knowledge of SEM and the modeling software is not required. Participants will receive a set of presentations, sample data, and example SEM analyses. It would be helpful if participants could bring their own laptop; the operating system must be Windows 7 or a later version.

About the instructor:

Dr Deana Desa is a Research Analyst at the IEA, where she is involved in psychometric research and development of scaling complex data for IEA studies.

WORKSHOP 4

Bayesian Statistics With Applications to IEA Data

Dr David Kaplan

26–27 June 2017 | 9:00–17:00

Room 217, Faculty of Education, Charles University, Magdalény Rettigové 4

Bayesian statistics has long been overlooked in the quantitative methods training for education. Typically, the only introduction that a student might have to Bayesian ideas is a brief overview of Bayes' theorem while studying probability in an introductory statistics class. This is not surprising. First, until recently, it was not feasible to conduct statistical modeling from a Bayesian perspective because of its complexity and lack of available software. Second, Bayesian statistics represents a powerful alternative to frequentist (classical) statistics, and is therefore controversial. Recently, however, there has been great

interest in the application of Bayesian statistical methods, mostly due to the availability of powerful (and free) statistical software tools that now make it possible to estimate simple or complex models from a Bayesian perspective.

This pre-conference workshop introduces practicing education scientists to the basic elements of Bayesian statistics and shows why the Bayesian perspective provides a powerful alternative to the frequentist perspective. It is assumed that participants will have a background in basic statistical methods up to, and including, regression analysis.

Topics to be covered include:

Day 1

- The major differences between the Bayesian and frequentist paradigms of statistics, with particular focus on how uncertainty is characterized;
- Bayes' theorem;
- Bayesian model building and model evaluation; and
- Bayesian computation.

Day 2

- Introduction to "rjags";
- An example and practice using data from PIRLS; and
- Wrap-up: Relative advantages of the Bayesian perspective.

Suggested reading

van de Schoot, R., Kaplan, D., Denissen, J., Asendorpf, J. B., Neyer, F. J. & van Aken, M. A. G. (2013). A Gentle Introduction to Bayesian Analysis: Applications to Developmental Research. *Child Development*. DOI: 10.1111/cdev.12169

Kaplan, D. (2014). *Bayesian Statistics for the Social Sciences*. New York, USA: Guilford Press.

Kaplan, D. & Depaoli, S. (2013). Bayesian statistical methods. In T. D. Little (ed.), *Oxford Handbook of Quantitative Methods*. (pp 407-437). Oxford, UK: Oxford University Press.

About the instructor:

Dr David Kaplan is the Patricia Busk Professor of Quantitative Methods at the University of Wisconsin-Madison and an Honorary Research Fellow in the Department of Education at the University of Oxford. He is an elected member of the National Academy of Education and recipient of the Humboldt Research Award. Dr Kaplan's methodological research focuses on Bayesian model averaging; objective versus subjective Bayesian modeling; and Bayesian approaches to problems in large-scale survey methodology. Dr Kaplan is actively involved in PISA, where he served on its Technical Advisory Group from 2005-2009 and its Questionnaire Expert Group from 2004-present; he served as the Chair of the Questionnaire Expert Group for PISA 2015 and remains a member of the Questionnaire Expert Group for PISA 2018. Dr Kaplan also sits on the Questionnaire Expert Group for the OECD's TALIS, and the Design and Analysis Committee and the Questionnaire Standing Committee for the National Assessment of Educational Progress (NAEP).

The IEA conducts regular workshops at international research conferences and in collaboration with the IERI Institute. We are also happy to provide tailored workshops, designed to meet your organization's requirements. Workshops on demand are generally hosted by our research institute in Hamburg. For more information, please contact us.

**KEYNOTE
LECTURES**



Researching education, improving learning

KEYNOTE 1

20 Years of TIMSS: International Trends in Mathematics and Science Achievement, Curriculum, and Instruction

Ina Mullis and Michael Martin

Boston College, USA

28 June 2017 | 9:00–10:30

Aula, Faculty of Education, Charles University, Magdalény Rettigová 4

Chair: Hans Wagemaker, IEA, New Zealand

Abstract: The IEA's Trends in International Mathematics and Science Study (TIMSS) has measured student achievement in mathematics and science at fourth and eighth grades every four years since 1995, as well as in advanced mathematics and physics at less frequent intervals (1995, 2008, and 2015). TIMSS assessment and questionnaire data provide an authoritative account of how the world's students are currently performing in mathematics and science, how performance has evolved over the past 20 years, and the changes that have occurred in curricula, instruction, and other aspects of education that affect learning.

The purpose of this address is to describe long-term trends in achievement in both mathematics and science from 1995 to 2015 as well as short term trends from 2011 to 2015, highlighting changes in gender differences in these subjects over the years. It will reflect on how the contexts for teaching and learning mathematics and science have evolved over the 20 years of TIMSS, including how the curriculum has changed, the increased requirements for becoming a mathematics or science teacher, and the growing presence of technology in mathematics and science education globally. Finally, the results pertaining to trends in students' attitudes toward mathematics and science will be discussed.

Profile of Ina Mullis: Dr Ina V.S. Mullis is the Executive Director of the IEA's TIMSS & PIRLS International Study Center at Boston College. The contributing author of more than 80 reports of assessment results and articles about assessment, Dr Mullis has extensive management and technical experience in conducting large-scale international and national assessments. She currently directs IEA's international assessments of educational achievement in mathematics and science (TIMSS) and reading (PIRLS), together with Dr Michael O. Martin. Dr Mullis has directed seven TIMSS assessment cycles (1995, 1999, 2003, 2007, 2011, 2015 and 2019), and as a co-founder of PIRLS has directed its four assessment cycles (2001, 2006, 2011 and 2016). She is a frequent keynote speaker at international conferences and events.

Dr Mullis is a Professor at Boston College in the Lynch School of Education's Department of Measurement, Evaluation, Statistics, and Assessment. She teaches graduate-level courses in large scale assessment, mentors the graduate students who work at the TIMSS & PIRLS International Study Center, and chairs doctoral dissertation committees. She serves on the editorial board of several journals devoted to educational research and assessment. Prior to joining Boston College in 1994, Dr Mullis was Project Director of the National Assessment of Educational Progress (NAEP) at Educational Testing Service. Since then, she has been a member of the NAEP Validation Studies Panel, where she has authored and consulted on a number of studies and research papers. She has a Ph.D. in Educational Research from the University of Colorado.

Profile of Michael Martin: Dr Michael O. Martin is Executive Director at the TIMSS & PIRLS International Study Center at Boston College, and a long serving member of IEA's technical advisory group. Dr Martin has led and contributed to numerous advances in assessment methods. Since his early work on IEA's Reading Literacy Study, through TIMSS 1995, the founding of PIRLS in 2001, and now more than 20 years of TIMSS trends, he has built a long-standing reputation for excellence in international assessment. He currently directs IEA's international assessments of educational achievement in mathematics and

science (TIMSS) and reading (PIRLS), together with Dr Ina V.S. Mullis. Dr Martin has directed seven TIMSS assessment cycles (1995, 1999, 2003, 2007, 2011, 2015 and 2019), and four PIRLS assessment cycles (2001, 2006, 2011 and 2016).

Dr Martin has been a Research Professor at Boston College since 1994, and is an internationally recognized expert in large-scale assessment methods, specializing in assessment design and implementation, including data collection, scaling, and analysis. As such, he is an important mentor for the graduate students who work at the TIMSS & PIRLS International Study Center.

Before joining Boston College, Dr Martin was a Research Fellow at the Educational Research Centre at St Patrick's College, Dublin, where he directed Ireland's national surveys of student achievement and served as Ireland's national project representative for major international student surveys. Currently, he is a member of the Board of the Educational Research Centre. Dr Martin has a M.Sc. in Computer Science from Trinity College, Dublin, and a Ph.D. in Psychology from University College, Dublin.

KEYNOTE 2

What Do IEA Studies Mean for Eastern European Countries' Education Systems and Educational Research?

David Greger

Institute for Research & Development of Education

Faculty of Education, Charles University, Czech Republic

29 June 2017 | 9:00–10:30

[Aula, Faculty of Education, Charles University, Magdalény Rettigové 4](#)

Chair: Anne-Berit Kavli, IEA Chair, Norwegian Directorate for Education and Training, Norway

Abstract: After the fall of Iron Curtain in the late 1990s, and subsequently during in the new millennium, many Eastern and Central European Countries (ECEC) became active members of IEA, participating in many IEA studies, some beginning with the TIMSS 1995 study. For many ECEC countries, such international assessment was a new experience, with the exception of Hungary, which cooperated closely with IEA even during the Cold War Era. Reflecting upon ECEC countries participation in IEA studies and their wider participation in other international large-scale assessments, this paper stresses the ensuing effects on educational research, and assesses the contributions and limitations of IEA studies for national policymaking. This in-depth review also addresses topics of particular relevance to the Czech education system. A good example is the Czech Longitudinal Study in Education, initiated as a way to enhance the benefits of the TIMSS & PIRLS studies through longitudinal extension, with the aim of enabling causal inferences to be drawn on important topics used to formulate education policy in the Czech Republic.

Profile of David Greger: David Greger is the director of the Institute for Research & Development of Education at the Faculty of Education, Charles University in Prague. David has been involved in many national and international projects and serves as an advisor for the European Commission, OECD and the Ministry of Education of the Czech Republic. He is a member of the executive board of World Council of Comparative Education Societies (WCCES). On behalf of the Czech Ministry of Education and Czech School Inspectorate he has conducted several secondary data analysis of various waves of TIMSS and PIRLS. He is currently leading a major longitudinal study in the Czech Republic (CLoSE, the Czech Longitudinal Study in Education), which follows 4th graders that participated in the TIMSS & PIRLS 2011 study.

KEYNOTE 3

Response Styles from a Cross-Cultural Perspective: TIMSS and PIRLS

Fons J. R. Van de Vijver¹, Jia He¹ & Alena Kulikova²

¹Tilburg University, The Netherlands, and ²Institute of Education National Research University Higher School of Economics, Moscow, Russian Federation

30 June 2017 | 9:00–10:30

Aula, Faculty of Education, Charles University, Magdalény Rettigové 4

Chair: Dirk Hastedt, IEA Executive Director, Germany

Abstract: The presentation deals with response styles in large-scale educational surveys, examining response styles in student data using the background questionnaires of the IEA's Trends in Mathematics and Science Study (TIMSS) and Progress in International Reading Literacy Study (PIRLS). Building and extending on previous work using PISA data, the following questions are addressed:

1. Can all response styles (acquiescent, midpoint, and extremity responses) be captured in a single latent variable, labeled a general response style (GRS)?
2. Are there cross-cultural differences in the GRS and if so, which countries show low/high scores on this response style?
3. With which country-level variables, such as educational expenditure and the Human Development Index, is the GRS correlated at the country level?
4. What is the influence of correcting for a GRS on the size of the observed country differences in constructs measured in the background questionnaires?

Profile of Fons Van de Vijver: Professor Fons Van de Vijver holds a chair in cross-cultural psychology at Tilburg University, the Netherlands, and extraordinary chairs at North-West University, South Africa, and the University of Queensland, Australia. He has (co-)authored about 500 publications, mainly in the domain of cross-cultural psychology. He is a former editor of the *Journal of Cross-Cultural Psychology*. Professor Van de Vijver is also a former president of Division 2 (Assessment and Evaluation) of the International Association of Applied Psychology, the European Association of Psychological Assessment, and President of the International Association for Cross-Cultural Psychology. He has received national and international prizes for his work.

Profile of Jia He: Dr Jia He is a post-doctoral researcher at Tilburg University, the Netherlands. She was formerly a Humboldt fellow at the German Institute for International Educational Research (DIPF) in Germany and a Thomas J. Alexander fellow with the Organization for Economic Cooperation and Development (OECD). Her fellowship projects involve the extent of data incomparability in international surveys, and aim to identify solutions to overcome or pre-empt the effects of data incomparability. She has a Ph.D. (cum laude) in Cross-cultural Psychology from Tilburg University, the Netherlands and an M.A. degree in Intercultural Communication from Shanghai International Studies University, China. Her current research includes comparability and validity with innovative designs of item formats and sophisticated psychometric methods in cross-cultural research. She is also interested in modern research methods, such as structural equation modeling, multilevel analysis, and Bayesian statistics.

Profile of Alena Kulikova: Alena Kulikova is a postgraduate student at the Institute of Education, National Research University Higher School of Economics, Moscow, Russian Federation. She has a M.A. in Psychology from the National Research University Higher School of Economics. She was data manager for TALIS 2013 in Russia, and organized the data collection and analyzed the data during 2014-2015. Currently she is involved in the ESP (Educational and Social Progress) project. Her scientific interests lie in the field of psychometrics and developmental psychology. She is also interested in research methods and IRT-modeling.

**SESSION
ABSTRACTS**



Researching education, improving learning

SESSION 1A: TIMSS/PIRLS

Symposium: Changes Over Time at the Country Level: Value-Added for Education Policy and Practice

28 June 2017 | 11:00am-12:30pm

Aula, Faculty of Education, Charles University

Chair: Agnes Stancel-Piatak, IEA Hamburg, Germany; Trude Nilsen, University of Oslo, Norway

Discussant: Dirk Hastedt, IEA Executive Director

With six cycles of the Trends in International Mathematics and Science Study (TIMSS) and three cycles of the Progress in International Reading Literacy Study (PIRLS) the IEA provides data for cross-time comparisons on country level. Through the alignment of populations and variables between the cycles the data from these studies provide unique opportunities for education analysts to conduct research on trends using repeated observations at the system/population level. Moreover, countries conducting TIMSS at the 4th and 8th grade assess the same cohort with a four-year distance, which allows to research their development over time.

This symposium presents contributions that examine changes in student achievement over time for different groups of students. Whereas the first contribution focuses on the development of achievement in compulsory school in the Nordic countries the following two contributions compare gender gaps in mathematics and science as well as in reading literacy. These content related contributions are followed by a methodological paper on a promising approach for creating a synthetic pre/post design with TIMSS data using parametric and non-parametric imputation techniques.

The discussion will be guided by the overarching question whether and under which conditions trend analysis at the country level may be considered longitudinal and what are the resulting implications for policy and practice. The symposium provides a platform for discussions on related topics such as:

Benefits and add-ons from trend analysis for research, policy and practice;

Limitations, challenges and approaches (methodological, dissemination of results, etc.); and

Future developments and recommendations.

Development of Achievement in Compulsory School in the Nordic Countries Between 1964 and 2015

Jan-Eric Gustafsson^{1,2} and Sigrid Blömeke²

¹University of Gothenburg, Sweden; ²University of Oslo, Norway

The aim is to describe the development of achievement in compulsory school in the Nordic countries from the 1960s up to 2015. The study relies on published results from the international large-scale assessments conducted by IEA and OECD between 1964 and 2015, including also the PIAAC cross-sectional investigation of adult competencies. In the analysis, achievement differences between the PIAAC age-cohorts are aligned with within-country achievement changes over time. Methodological issues affecting the comparability of within-country comparisons over time are discussed. In particular the problem of age- versus grade-based population definitions is focused and it is concluded that studies conducted before the mid-1990s underestimated the results for the Nordic countries because of their late school-start at age 7. Possible ways of correcting for the bias caused by differences in age-levels and years of schooling over time and between countries are discussed. Policy implications of within-country change in achievement over time also are discussed and it is observed that large changes occurring within a short time frame have potential to inform theory and policy, because such changes may be associated with specific educational reforms or societal changes. As one example, a rapid improvement in reading literacy achievement was observed in Finland for students leaving compulsory school around 1990. This improvement is hypothesized to be associated with the introduction of the comprehensive school in 1972 and, in particular, with the ensuing introduction of a part-time special

education system for early detection and intervention of beginning reading difficulties. Another example is the observation of a steep decline in achievement in Sweden starting around the year 2000 and continuing until 2015, when quite substantial improvements were observed. The decline is hypothesized to be due to a series of decentralization, deregulation and marketization reforms in the early 1990s, which had negative effects on the teacher profession and on teacher competence. The recent improvements are hypothesized to be due to massive investments in teacher professional development.

Trends in Gender Gaps: Using Twenty Years of Evidence From TIMSS

Sabine Meinck and Falk Brese

IEA Hamburg, Germany

Differences in achievement between female and male students, prominently described as the “gender gap”, have always been very high on the agenda, not only in educational research, but also in a political and economic context. These differences are frequently seen as a matter of inequality. Also on supranational level, gender equality is of high importance, leading the UNESCO to declare gender equality as one of the most important goals in education. With the release of the IEA TIMSS 2015 results in November 2016, there is now data available covering a range of two decades of regular cross-sectional surveys at international level on 4th and 8th grade student achievement in mathematics and science. The TIMSS databases provide a tremendously rich resource for studying trends in student achievement in these subject areas. The paper will evaluate how the mathematics and science achievement of 4th and 8th grade students developed over the past 20 years. While the trends of the average achievement of girls and boys in mathematics and science have already been reported, little attention was given so far to the differences between female and male students with regards to ability distributions. While countries focused in the past mainly on enhancing the mean student achievement, researchers and politicians concentrate recently more on the far ends of the achievement distribution: students who do not even perform at the lowest benchmark receive increased attention, but also the advancement of high ability students raises interest. Based on the “international curriculum” of mathematics and science knowledge that have been identified as relevant by the TIMSS consortium and agreed upon by participating countries, TIMSS defines four benchmarks of both mathematics and science achievement.

International Gender Gap Trends in Reading Over 40 Years: Results From Linking IEA Studies

Rolf Strietholt^{1, 2}, Isa Steinmann² and Monica Rosén¹

¹University of Gothenburg, Sweden; ²Technische Universität Dortmund, Germany

This study aims to analyze long-term change in international gender gaps in reading literacy in grade schoolers. Gender differences in political participation, career opportunities, income, access to health-care, and other benefits are well documented. In public debates, education is sometimes discussed as a lever to support women and to prevent later inequities. We seek to contribute to this debate by studying trends in gender achievement gaps from an international perspective. We use achievement data from six IEA studies on reading literacy at the end of primary school conducted between 1970–2011: Reading Comprehension Study from 1970, Reading Literacy Study 1991 and 2001, and PIRLS in 2001, 2006, and 2011. The total sample comprises 690,906 students from 78 educational systems (172 system-by-year observations). Tracing gender gaps over time requires comparable achievement measures. While scores related to different waves of the same study have the same metric, scores related to different studies are incomparable. For this reason, we use item response theory models to link all tests onto one metric by means of a concurrent calibration of all item and person parameters. In a second step, we investigate whether the gender achievement gaps have widened or narrowed over time. As the sets of participating educational systems have changed over studies, we control the sample composition by means of a system-level regression with fixed effects, and regress the gender gap on the study years and educational systems’ dummies. The main result is that girls outperform boys in reading in 168 of 172 educational system-by-year observations. The average gap is 15 points (SD = 9). The regression analyses suggest that the international gender gap rises by 0.091 points (SE = 0.037; $p = 0.016$) per year which implies a gender gap increase of roughly 4 points over 40 years. The observation that girls outperform

boys in reading in early life raises questions about why this early head start does not pay off later on. The trend analyses suggest that the role of education as a [gender] 'equalizer' should not be overestimated.

Imputation as a Means to Create a Synthetic Pre/Post Design

Leslie Rutkowski¹, David Kaplan² and Tyler Matta¹

¹Centre for Educational Measurement, University of Oslo, Norway; ²University of Wisconsin-Madison, USA

One option for strengthening the foundation for estimating change over time at the individual student level from large-scale assessment data lies in adding a longitudinal or repeated-measures component to these studies. TIMSS is one study that could serve as a natural testbed for such an approach. As fourth and eighth graders are assessed in TIMSS and the lag between measurements is four years, the representative fourth grade population is randomly equivalent to the representative eighth grade population four years later. A clear burden of adding a longitudinal component to TIMSS includes, among other factors, implementing a system for tracking a subset of the grade four sample over time. As an alternative to measuring students at two time points, we demonstrate a promising approach for creating a synthetic pre/post design with TIMSS data. We consider both parametric and non-parametric imputation techniques including predictive mean matching, random hot deck, and Bayesian bootstrap predictive mean matching to validate this approach with the US Educational Longitudinal Study (ELS) of 2002, base year and first follow-up. In particular, we treat the two measurement occasions as cross-sectional studies, the test scores of which are matched based on a common set of covariates. The covariates are selected to be relatively similar to available background variables that are common between grade 4 and 8 TIMSS. Initial findings with ELS data show fair recovery of marginal distributions of time 2 test scores and attenuated estimation of regression coefficients where imputed time 2 scores are regressed on socioeconomic status and time 1 scores. We note that although TIMSS grade 4 and grade 8 tests are not linked, rendering estimates of difference scores meaningless, pre-test scores can be meaningfully used as covariates in models where post-test scores serve as outcomes. Our results suggest that such an approach meaningfully reduces bias in policy-relevant OLS regression parameter estimates. We also illustrate this approach with US TIMSS 2011 grade 4 and TIMSS 2015 grade 8 data. The potential and limitations of this method are discussed.

SESSION 1B: ICILS

Findings From 21st Century Schools

28 June 2017 | 11:00am-12:30pm

Room 016, Faculty of Education, Charles University

Chair: Josef Basl, Czech School Inspectorate, Czech Republic

Researching Characteristics of Resilient Schools - A Latent Profile Analysis of Schools That Successfully Bridge the Digital Divide

Birgit Eickelmann and Mario Vennemann

Paderborn University, Germany

The importance of computer and information literacy (CIL) is increasing on a global scale. Thus, IEA's International Computer and Information Literacy Study (ICILS 2013) has shown that in many countries, potentials for fostering CIL in schools have – on average – not been transformed into practice. As reporting these results – which broadly refer to holistic analyses, countries' averages and complete

country datasets – does not sufficiently mirror the efforts of single schools in fostering the acquisition of students' CIL, this research focuses exclusively on schools in challenging conditions of comparably high CIL achievement. While for other subject domains, e.g. reading and mathematics, research was able to show that there are successful schools overcoming social disparities and achieving high levels of competencies, this question has not yet been answered with reference to CIL. Information on successful schools may further help to understand and improve school systems.

This contribution is to close the aforementioned research gap by identifying schools that are successful in the acquisition of CIL despite their unfavorable social student composition. Taking advantage of students' background data as well as teacher data on school characteristics, in a first step schools which in the aforementioned sense bridge the digital divide are identified in different countries that participated in ICILS 2013. In order to understand which school composition of characteristics tends to be supportive, in a second step, a latent profile analysis (LPA) is used to derive a school typology. As to the schools' characteristics, a 4-group-solution describes the data best and leads to the result that four types of schools can be identified which content-wise differ regarding relevant school characteristics. Furthermore, results show that the number of such schools varies considerably across educational systems.

Patterns in Students' School-Related and Recreational Computer Use and Their Relations to Computer and Information Literacy – Results for Denmark and Germany

Jeppé Bundsgaard¹ and Julia Gerick²

¹Aarhus University, Denmark; ²Universität Hamburg, Germany

Previous studies have shown that there is a complex relationship between students' computer and information literacy (CIL) and their use of information and communication technologies (ICT) for both recreational and school use. This study seeks to dig deeper into these complex relations by identifying different patterns of students' school-related and recreational computer use in the 21 countries participating in the International Computer and Information Literacy Study (ICILS 2013). Furthermore, we investigate relations between these patterns and the students' level of computer and information literacy through secondary analyses using student questionnaire and performance data from the ICILS 2013 study. Through latent class analysis (LCA), we identify different patterns of use of ICT and relate these patterns to differences in CIL score. Our analyses support the conclusions of previous studies, which find in many cases a 'hill shape' in the data, suggesting that both low and extended use of computers is correlated to lower scores on the CIL scale, while intermediate use is correlated with higher scores. Interesting differences are found between countries, and in addition to the hill shape, we have identified both a 'plateau shape' and a 'hill-valley shape' in the data, raising important questions about differences in contexts.

Does Teacher Professional Development Matter? A Typology of Teachers in the Context of Successful ICT Implementation in Teaching

Kerstin Drossel and Birgit Eickelmann

Paderborn University, Germany

The increasing availability of new technologies in an ever more digitalized world has gained momentum in practically all spheres of life, making technology-related skills a key competence not only in professional settings. At that, the schools takes on the responsibility of imparting these skills to their students, and hence to future generations of professionals. In doing so, teachers take on the role of a keystone species with their competences in using new technologies constituting an essential prerequisite for the effective implementation of such skills. As models of school development and school effectiveness found teacher professionalization to be a key element with regards to student achievement as well as teachers' in-class use of new technology, the present research project conducts secondary analyses using data from the IEA-study of ICILS 2013 (International Computer and Information Literacy Study) regarding internal and external teacher professionalization. Particular

emphasis is placed on the implementation of new technologies in class in a comparison between the educational systems of Germany and the Czech Republic. A Latent Class Analysis (LCA) serves the purpose of establishing a teacher typology with regards to technology-related professional development. This typology is subsequently used for further analyses on additional factors that show a correlation with the teachers' use of computers in class. These include the teachers' ICT self-efficacy and their emphasis on teaching ICT skills. The results show two different types of teachers across both countries. Teachers who participate in professional development use computers more frequently in class, put more emphasis on teaching ICT skills and have a stronger sense of ICT self-efficacy. By comparison, teachers in Germany who participate in professional development consider themselves more ICT self-efficient, while teachers in the Czech Republic use computers more often and put more emphasis on teaching ICT skills as opposed to their colleagues in Germany.

Differences Among Learning Areas in the Pedagogical Use of Information and Communication Technologies

Julian Mederic Stephen Fraillon, John Gilbert Ainley and Tim Friedman

Australian Council for Educational Research, Australia

This paper investigates the extent to which teachers in different learning areas use information and communication technologies and emphasize the development of computer and information literacy among their students. It finds that in general there are substantial differences among learning areas in both the use of ICT (information and communications technology) and the emphasis on developing computer literacy. These aspects of ICT were strongest in information technology, the sciences and the humanities and weakest in mathematics, practical and vocational education "other" learning areas. In addition the relationships of these manifestations of ICT use with teacher attributes such as teachers' confidence in using ICT, collaborative school environments and few resource limitations differed among learning areas and among countries. It is argued that recognition of the differences among learning areas is important for understanding the take-up and use of ICT in lower secondary schools.

SESSION 1C: ICCS

Symposium: Teaching Tolerance in a Globalized World

28 June 2017 | 11:00am-12:30pm

Room 112, Faculty of Education, Charles University

Chairs: Andres Sandoval-Hernandez, University of Bath, UK; Maria Magdalena Isac, University of Groningen, the Netherlands

This symposium addresses teaching tolerance in a globalized world. The aim of the symposium, is to identify factors and conditions that help schools and teachers to promote tolerance in a globalized world. The symposium integrates insights from different theoretical perspectives and methodological approaches using data from the 38 countries participating in the International Civic and Citizenship Education Study (ICCS) 2009.

In the first paper, Multi-Group Confirmatory Factor Analysis tested the extent to which the latent variables of inclusive attitudes towards immigrants, minorities and gender (egalitarian values) included in ICCS 2009 can be compared across countries. The results of this study informed the analyses developed in subsequent papers.

Paper two provides a general overview of the patterns of segregation of immigrant students across countries. To achieve this goal, it analyzes the distribution of immigrant students across countries. Further, it uses HLM models to estimate the relationship between segregation and egalitarian values.

Paper three uses hierarchical linear modeling (HLM) to estimate the direct and indirect effects of teachers, families and schools on student attitudes towards egalitarian values – over and above the effect of segregation.

Paper four focuses on the variable “open classroom for discussion”. This chapter uses multilevel structural equation modeling (MSEM) to evaluate the extent to which the association between student socioeconomic status and attitudes towards egalitarian values is moderated by an open classroom for discussion.

Finally, paper five uses three-level MSEM to study the relationship between family socioeconomic background and attitudes towards diversity. The relationship between these two concepts has been widely studied in the literature; however, the focus of this paper is on a distinction rarely addressed in previous works: class and status.

Measurement Model and Invariance Testing of Scales Measuring Attitudes Towards Diversity in ICCS 2009

Daniel Miranda and Juan Carlos Castillo

Pontificia Universidad Catolica de Chile

Based on the conceptualization of egalitarian values in ICCS 2009 and the availability of measures in its dataset, this paper evaluates the extent to which the scales measuring attitudes towards gender equality, equal rights for all ethnic/racial groups, and equal rights for immigrants are invariant, and to what extent they can be compared across countries. One of the main objectives of ICCS and other ILSAs is to produce data that allows for robust comparisons across countries. This paper discusses whether these comparisons can be made with the ICCS scales related to egalitarian values. One of the main challenges of developing measures of social concepts is to attain meaningful comparability. The respondents of international surveys, for example, are born and socialized in different contexts, and jointly respond to different language versions of the same questionnaires. For this reason, among others, it is necessary to assess the comparability of measures between and across relevant groups. Multi-group confirmatory factor analysis (MGCFAs) is one of the most consolidated techniques for assessing comparability. This approach consists of conducting a sequence of increasingly restrictive invariance tests in order to prove different levels of equivalence; these levels are configural, metric, scalar and strict. Preliminary results suggest that all ICCS measured latent variables of egalitarian values reach at least (partial) scalar invariance. In other words, that these indicators of egalitarian values allow for comparisons of coefficients in explanatory models (for example hierarchical linear modeling or structural equation modeling). Lack of strict invariance may pose challenges for the interpretation of analyses considering these scales. Potential solutions to address this issue are discussed.

School Segregation of Immigrant Students

Cristobal Villalobos and Ernesto Treviño

Pontificia Universidad Catolica de Chile

In contrast to most previous research, this paper seeks to deepen understanding of the processes related with tolerance in schools by focusing on the factors that underpin segregation of immigrant students. To do that, it adopts a multidimensional perspective, where the effects of race, ethnicity, nationality and socioeconomic status are seen as inseparable. In general, educational segregation is defined as a measure of unequal distribution of individuals according to a particular characteristic between organizational units. Previous research has shown that segregation produces higher levels of intolerance and prejudice, and generates lower levels of social cohesion, civic knowledge and democratic culture. Levels of immigrant segregation were estimated using standardized indices, such as the Duncan Index, the Rank-Order Information Theory Index, and the Inclusion Index. Different specifications of multilevel logistic regression models are used to analyze the relationship between levels of segregation and the characteristics of countries and schools. The effect of the concentration of immigrant students on civic knowledge and attitudes towards diversity in schools is measured using multilevel models. The results

give a global overview of the distribution of immigrant students in the countries participating in ICCS 2009, identifying how education systems produce or, on the contrary, mitigate social segregation of these groups. The contextual, social, political and school factors that affect students' attitudes towards egalitarian values may inform the design or evaluation of policies aimed at addressing the issue of tolerance in schools.

Influence of Teachers, Families and Schools on Students' Attitudes Towards Diversity

Consuelo Béjares and Ernesto Treviño

Pontificia Universidad Católica de Chile

The main objective of this paper is to assess the influence of teachers, families and schools on student attitudes towards diversity across the countries participating in ICCS 2009. To do this, we test for direct and indirect effects of selected characteristics of each of these actors (i.e., teachers, family and school) on the student attitudes towards diversity. Even when there is some research regarding the association between family, schools and teacher characteristics with students' attitudes towards diversity, this study fills a gap by using international large-scale assessment data to provide cross-national evidence, and by focusing on the intersectionality of these groups of variables. Evidence has revealed that teachers are key players in the development of skills and pro-social behaviors in students. In addition, empirical research has demonstrated the existence of a relationship between characteristics of the families and the attitudes of students towards diversity, especially in social and ethnic terms. Research has also shown that organizational and cultural characteristics of schools have also an important role in the acquisitions of these attitudes by students. Along these lines, this paper focuses on analyzing the influence of educational actors and schools on the student differences on inclusive attitudes towards immigrants, minorities and gender. Different specifications of hierarchical linear models are used to test for direct and indirect effects of student, teacher and school variables on egalitarian values as measured by a scale of generalized prejudice (constructed ad hoc for this study). Our results identify international patterns regarding the direct and indirect effects of teacher, family and school characteristics on student attitudes towards diversity over and above the effect of socioeconomic context. The analysis of our results suggests that, although family characteristics have the greater influence on students' attitudes towards diversity, schools and teachers have a considerable margin of action, especially in schools with high levels of socioeconomic segregation.

Open Classroom Discussion and Student Attitudes Towards Diversity

Diego Carrasco and David Torres

Pontificia Universidad Católica de Chile

In this paper, we argue that variation in classroom discussions across countries offer a natural experiment to assess its role in explaining students' attitudes towards diversity. The objective of this chapter is to evaluate to what extent this specific classroom practice is positively related to the endorsement of egalitarian values. Additionally, we will assess if this variable operates as a moderator of the social background of students. This paper is based on the premise that students do not learn citizenry only by knowledge acquisition; and that practices such as classroom discussion also foster critical thinking and promote the acceptance of conflict as part of the democratic process. In particular, educational interventions directed to reduce the 'need for closure' might reduce prejudice in general. In this sense, this paper makes a contribution to the body of knowledge in the field of tolerance in schools by testing a solid theoretical development with data from 38 countries around the world. Past research has shown that students in schools with greater levels of open classroom for discussion, tend to have more positive attitudes towards other groups; less authoritarianism; and endorse more democratic attitudes, especially if they come from more disadvantaged backgrounds. We fit multilevel structural equation models for each participating country in ICCS 2009, where socioeconomic background and civic knowledge are predictors of democratic attitudes, and where open classroom for discussion is a moderator and a predictor. Our results reveal the existence of positive relationships between student socioeconomic background, civic knowledge, open classroom for discussion and students' attitudes towards diversity.

Additionally, we identify a larger effect of open classroom discussion for students of lower socioeconomic backgrounds. The analysis of our results suggests that interventions aimed at increasing openness of discussion in classrooms could be an effective way of promoting more positive attitudes towards diversity, especially for those students coming from socioeconomically disadvantaged backgrounds.

Class and Status as Predictors of Inclusive Attitudes Towards Immigrants, Minorities and Gender

Juan Carlos Castillo and Daniel Miranda

Pontificia Universidad Catolica de Chile

The objective of this paper is twofold. First, to evaluate the relationship between family's socioeconomic characteristics (i.e., class position and socioeconomic status), and inclusive attitudes towards immigrants, minorities and gender. Second, to assess whether the relationship is the same across different national contexts. When analyzing the relationship among socioeconomic characteristics, socialization sources and political outcomes, most authors tend to make no distinction between class and status. Researchers have hypothesized that both class and status are involved in the shaping of partisanship and values orientation, but in clearly different ways. This paper contributes to the literature in the topic by testing this hypothesis across different countries with empirical data from ICCS 2009. Empirical evidence consistently shows that students' attitudes towards diversity are influenced by family socioeconomic background, even from the early years. Furthermore, most evidence supports the thesis that political identification and political activity are transmitted from one generation to the next. Understanding the role of socioeconomic characteristics in the process, however, requires plenty of additional research. In order to address our objectives, we first use the International Standard Classification of Occupations (ISCO-88) and the highest occupational status of parents [HISEI] to construct an indicator of class; and the International Standard Classification of Education (ISED) and the highest educational level of parental education [HISCED] to construct an indicator of status. Subsequently, we fit different specifications of three-level structural equation models (i.e. students, schools and countries) to test the differential effects of family's socioeconomic characteristics on egalitarian values (as a fixed effects) and its variation across countries (as random effects). Our results support the previous hypothesis by revealing that both class and status show significant associations with student attitudes towards diversity over and above the effect of each other. The analysis and interpretation of our results suggest that, on the one hand, class is related to social cleavages and, on the other, that status is related to authoritarian-libertarian issues.

SESSION 2A: TIMSS

Symposium: Changes in Achievement Over Time as a Function of Changes in Contextual Factors

28 June 2017 | 2:00pm-3:30pm

Aula, Faculty of Education, Charles University

Chairs: Trude Nilsen, University of Oslo, Norway; Agnes Stancel-Piatak, IEA Hamburg, Germany

Discussant: Eckhard Klieme, DIPF, Germany

The trend design of international large-scale surveys like TIMSS (Trends in International Mathematics and Science Study) is rarely exploited in educational research. However, the equated achievement scales and the fact that a large number of countries participate in adjacent cycles, provide unique opportunities to relate changes in outcomes to changes in explanatory factors. Such analyses can provide a stronger basis for making causal inferences than other analytical approaches.

A large body of research has found students' educational outcomes to be related to contextual factors, such as school climate, teacher quality and students' opportunity to learn. However, relying on cross-sectional data entails threats to causal interpretations, such as the problems of reverse causality and omitted variables. Through focusing instead on change over time, some of these threats to valid causal inference may be avoided.

This symposium presents findings on the above mentioned contextual factors from trend analyses of data from TIMSS 2011 and 2015. We discuss whether, and under which conditions, trend analysis at the country level may be considered longitudinal. Benefits and gains, limitations and future recommendations will also be discussed.

The symposium thus provides a platform for researchers to learn from each other's experience and to discuss the policy and practice relevant implications from trend analysis in a cross-country comparative framework.

Changes In Mathematics Performance From 2011 To 2015 in Norway and Sweden as a Function of Teacher Professional Development

Jan-Eric Gustafsson^{1,2} and Trude Nilsen²

¹University of Gothenburg, Sweden; ²University of Oslo, Norway

This study investigates whether teacher professional development is related to increased mathematics achievement in grade eight in Sweden and Norway from 2011 to 2015. In both Norway and Sweden efforts have recently been made to enhance teacher competence through professional development. Previous research has shown professional development to be related to student achievement, both directly and indirectly through instructional quality. Using data from TIMSS 2015 and 2011, we investigate the relation between teacher professional development, student-assessed instructional quality and 8th grade mathematics achievement in Norway and Sweden. A two-level (students and classes) two-group (Norway and Sweden) structural equation modeling approach was used, with a dummy variable for time (YEAR, coded 0 for 2011 and 1 for 2015). A mediation model was fit to investigate whether professional development and instructional quality may mediate the relation between YEAR and achievement. In Sweden professional development, instructional quality and achievement increased significantly between 2011 and 2015. In Norway only achievement increased. In Sweden, professional development was associated with instructional quality ($\beta = 0.171$, $p < 0.001$) which in turn was related to student achievement ($\beta = 0.258$, $p < 0.001$). In Norway, there was no significant relation between professional development and instructional quality, but there was a positive relation between instructional quality and achievement ($\beta = 0.262$, $p < 0.001$). In Sweden, professional development and instructional quality mediated the relation between YEAR and achievement ($p < 0.05$). In Sweden a large-scale national program for teacher professional development has been in operation since 2013, and the results suggest that this program has led to improved instructional quality, which in turn has improved mathematics achievement from 2011 to 2015. In Norway, neither professional development nor instructional quality has improved, which suggests that the increased level of achievement in Norway requires other explanations. Implications for educational policy and practice in Norway and Sweden are discussed.

Changes In Teacher Quality And School Climate Influencing Changes In Achievement From 2011 To 2015

Trude Nilsen¹, Jan-Eric Gustafsson^{1,2} and Kajsja Yang Hansen²

¹University of Oslo, Norway; ²University of Gothenburg, Sweden

Increased attention to education has resulted in attempts to enhance students' academic success through improving teacher quality and school climate in many countries. For example, in Sweden national school development programs and in-service training of the teachers in different subject matter domains have been implemented with the aim to counteract a declining trend in achievement. School climate includes aspects such as a safe and orderly climate, and school emphasis on academic success,

which are related to student outcome. Teacher quality comprises a number of aspects, including both qualifications (e.g. educational level, specialization, and professional development) and teacher characteristics such as confidence and self-efficacy. Teacher quality has been shown to be associated with student outcome. The aim of this contribution is to investigate the relation between changes in teacher quality and school climate and changes in mathematics achievement from 2011 and 2015 in order to provide a basis for causal inference concerning the impact of teacher quality and school climate on achievement. The sample includes all countries who participated in TIMSS 2011 and 2015 with grade 8. Using a structural equation modeling approach, the analysis is done at the country-level with fixed effects for countries and time. The software is Mplus and MLR is used to take care of missing data.

Most aspects of teacher quality and school climate have increased across countries from 2011 to 2015. On the basis of previous research, e.g. on data from TIMSS 2007 and 2011, we expect changes in certain aspects of school climate and teacher quality to be related to changes in achievement. Preliminary analyses indicate that this is the case for school emphasis on academic achievement. Implications for policy and practice as well as methodological implications are discussed. Improving quality of education through teacher quality and school climate may improve student outcome and may hence increase their opportunity of success in further education and careers.

Are Changes in the Socio-demographic Achievement Gap in Mathematics a Function of Changing Opportunity to Learn? A Cross-country Comparison Between TIMSS 2011 to 2015

Kajsa Yang Hansen¹, Jan-Eric Gustafsson^{1,2}, Trude Nilsen², Monica Rosén¹

¹University of Gothenburg, Sweden; ²University of Oslo, Norway

The TIMSS 2015 results revealed for the 8th graders in Sweden an improved math score. However, the achievement gaps with respect to socioeconomic and ethnic background also have increased dramatically. Similar patterns of changes have been observed for other countries as well, so it is interesting and important to examine the factors that might be lying behind the observed trends in equity and efficiency. One possible explanation is that changing opportunities to learn (OTL) have had differential effects on equity and efficiency. Many countries have revised their curricula, and other reforms, such as implementing free choice of schools, may have changed the social ethnic composition of the schools. Changes in the learning and teaching environment may, furthermore, constrain or strengthen the OTL. In the study we focus on content changes in mathematics between 2011 and 2015 for all participating countries. We try to establish a causal link between the changing OTL and the changing achievement gaps between students of different social demographic and ethnic background. Cross-country comparisons are done by multiple-group two-level random coefficients model within the structural equation modeling framework. A country-level analysis with fixed effects across countries and time will also be tested to validate the results from the first set of analyses. Preliminary analyses indicate that socioeconomic and ethnic inequality in math achievement differ significantly across schools for some countries. The school-student mix too appears to have a varying effect on the between-school differences in the relationship between student's sociodemographic characteristics and their math achievement. We expect that, in addition, differences in OTL between 2011 and 2015 have an effect on the sociodemographic inequality in math achievement across different educational systems. Implications for policy and practice as well as methodological implications are discussed. Improving educational equity and quality through balancing the school mix of students, as well as through the design of the implemented curriculum seem to be important considerations.

SESSION 2B: POLICY

Panel Discussion: Use, Benefits and Impact of IEA Studies Within Participating Countries

28 June 2017 | 2:00pm-3:30pm

Room 016, Faculty of Education, Charles University

Chair: Josef Basl, Czech School Inspectorate, Czech Republic

Using IEA Studies to Enhance National Assessment in France

Thierry Rocher

DEPP, France

Many countries use the results obtained from IEA studies to support and enhance national assessment measures. While such national assessment results clearly often converge with the results obtained from IEA studies, they are usually complementary rather than overlapping. Combining national and international assessment programs can often provide a clearer picture of the national education system.

In France, assessment is mainly sample-based, built on national programs implemented annually; these national surveys have a similar design to the international TIMSS or PISA surveys. Nationally, the French results in the last Progress in International Reading Literacy Study (PIRLS) were felt to be disappointing. National surveys had already identified reading as a weakness in primary school education, but subsequent focus had been more on developing language elements (such as spelling and grammar skills) than on reading comprehension skills. The PIRLS results revealed that learning comprehension aspects also needed to be tackled, complementing national assessments in French.

Similarly, national programs had increasingly suggested standards were dropping in mathematics at the primary school level. The November 2016 TIMSS results at Grade 4 were, of course, very disappointing for France, but, in reality, this international study only served to confirm aspects that national programs had been indicating for several years, providing further independent evidence for greater impetus for reform.

TIMSS Advanced 2015 was also critical. In 1995, France was the top performer in advanced mathematics, with the highest coverage index; by 2015, this had clearly changed. While social factors have influenced the evolution of the future careers of France's potential advanced mathematics students, who are increasingly less likely to opt to pursue science and mathematics degrees at university, the pattern of change suggested by national statistics was confirmed by the TIMSS results.

Good Practices and Lessons Learned from IEA Studies: How Insights from International Assessment Can Help Teachers

Carmen Tovar Sánchez

National Institute for Educational Assessment (INEE), Spain

Spain participates in many studies, being interested in learning from other countries' experiences and in identifying improvements suitable for their education system. The Instituto Nacional De Evaluacion Educativa (INEE) makes extensive use of workshops and small conferences to explain the theory and design of IEA studies to teachers, researchers and others. A key component of their work is to undertake in-depth examination of the results obtained from international large-scale assessment, and identify potential implications for teaching practices in Spain. Because the international reports are sometimes too technical for a more general audience, they provide this information in newsletters and briefs designed for the wider audience, as well as making frequent use of social media for dissemination.

Spanish teachers have access to all released resources as downloadable items to use with students, and are advised how this could benefit their teaching practice.

Development of an online course for teachers, “International Assessments of the Educational System,” carried out by the Ministry of Education of Spain, of which INEE is a part, was one effort. Teachers learn about the process of developing cognitive test items for international surveys. In 2013, INEE organized a seminar on the theoretical framework, development, and didactic use of PISA, TIMSS, and PIRLS together with partners in Cantabria. In 2014, a symposium on international assessments familiarized teachers with the major IEA international studies (PIRLS, TIMSS, and TIMSS Advanced) and the OECD (PISA). Workshops enabled teachers to work with the released assessment items from these studies and consider how to integrate them into classroom activities. INEE has a special interest in promoting the use of released items from international assessments in teachers’ daily work. 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. All 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, and four-page bulletins provide a quick overview of the key aspects and highlights of these studies.

Using IEA Studies to Improve Norwegian Education

Liv Sissel Grønmo

University of Oslo, Norway

In Norway, as in many other countries, there are critics of international comparative studies like TIMSS and PISA. While some may think this is irrelevant, researchers, school administrators and politicians need to better explain how data and results from international comparative studies can be used to improve national educational systems. There is admittedly room for improvement.

In Norway, researchers, school administrators and politicians enjoy good cooperation, providing a robust (and necessary?) basis for further improvements in education. For TIMSS Advanced in Norway, a new initiative was to work closely with school teachers and principals, and show them how to interpret and use the results from international large-scale assessment of education systems to help teachers and schools in their daily work.

TIMSS Advanced researchers in Norway have hence worked closely with an upper secondary school and their teachers in mathematics, physics, chemistry and biology for the last two years. Together with some of these teachers, we are now working on producing two new reports based largely on data from TIMSS Advanced 2015 - one in mathematics and one in physics. The teachers will be co-authors for several of the chapters, and these chapters will be dedicated to analyzing and discussing the study results from a school perspective, with a focus on how teachers can use the released items, as well as the results of research analyses, to better support their own teaching in the classroom.

There needs to be more discussion about how to develop better communication between researchers, policymakers and practitioners. Researchers need to develop and explain their work so that teachers in school understand its utility and benefit. Norway’s experiences so far have been promising, but there is still a long way to go.

SESSION 2C: ICCS

Perceptions, Attitudes, Identity and Competencies

28 June 2017 | 2:00pm-3:30pm

Room 112, Faculty of Education, Charles University

Chair: Christian Christrup Kjeldsen, DPU, Aarhus University, Denmark

Perceptions of Student Influence and Participation at School Among Lower Secondary Students: Results from ICCS 2009

Wolfram Schulz¹, John Ainley² and Julian Fraillon²

¹Australian Council for Educational Research, UK; ²Australian Council for Educational Research, Australia

Research on students' experience of open school climates and involvement in school governance has been an important source of understanding the ways in which young people engage with civics and citizenship. This paper investigates the relationship between students' perceptions of their influence on school matters, their valuing of civic engagement at school and characteristics of the home and community environments and the national context of their school systems. It confirms previous research that experience with engagement is related to positive beliefs about the value of participation at school. However, it also suggests that there are complex relationships between students' perceptions of influence at school and the value of their engagement.

Historical Legacies and Democratic Orientation Among Adolescents in Established and Aspiring Democracies: A Cross-Cultural Comparison Based on ICCS 2009

Natallia Sianko and Mark Small

Clemson University, USA

Using data from the 2009 IEA International Civic and Citizenship Study (ICCS), this secondary analysis identified factors that describe adolescents' democratic orientation, explored variation in democratic orientation based on adolescents' countries of origin (established vs. aspiring democracies), and examined the relationship between adolescents' democratic orientation and historical legacies of their countries. Results revealed a multidimensional pattern of democratic attitudes, with three distinct aspects consistently present in all analyzed societies: civil liberties, engagement potential, and trust attitudes. Analyses of the role of historic legacies showed that in their democratic orientations, adolescents are still largely influenced by previous regimes of their respective societies. Adolescents in countries with a history of democratic tradition show a greater endorsement of civil liberties values than students from countries with a history of communism. Similarly, higher trust levels are observed among adolescents in established democracies than among their peers in aspiring democracies. Furthermore, the relationship between a country's history of communism and democratic orientations was stronger among adolescents in countries that had more restrictive communist regimes. Overall, the findings confirm the importance of considering national context, especially through its historical influences, when studying democratic mindsets. The paper concludes with implications for research and policy.

Findings Related to Student Identity Using the Large-Scale Civic Education Datasets

Ryan T. Knowles

Utah State University, USA

This presentation reveals the results of a content analysis of 101 secondary analysis publications that used either the IEA CIVED (Civic Education Study) or IEA ICCS (International Civic and Citizenship Education Study) datasets. The analysis was conducted in three steps: deciding inclusion criteria, conducting a literature search, and synthesizing research specific aims. Utilizing these criteria, a table was created including the author and year, keywords, independent variables, dependent variables, mediator/moderator/group comparisons, how the study incorporated country comparisons, and a brief statement of the articles focus. The results of this analysis yielded a large amount of work considering student identity, which has received less attention in comparison to studies exploring aspects of democratic education or student dispositions. Thus, this study focuses primarily on how student identity, such as race, gender, immigrant status, and SES (socioeconomic status), relates to their educational experiences and development of civic engagement.

The Influence of Students' Citizenship Competences on Their Political and Civic Participation in Early Adulthood

Edwin Slijkhuis

University of Groningen, the Netherlands

The past decades show a decline in voter turnout and other traditional political activities among young adults. Scholars argue that young adults have become alienated from democratic institutions and are politically uninterested. As a consequence, many Western countries encourage schools to promote active citizenship. The idea is that citizenship education will stimulate the development of civic competences and that better citizenship competences will lead to more political active citizens. In the current study we will assess the long-term effect of students' civic competences on their political and civic participation in young adulthood.

The citizenship competences are derived from the International Civic and Citizenship Study 2009 (ICCS), a survey for students in the 8th grade. In a follow-up study in 2016 the political and civic participation of the same students was measured by interviewing 120 young adults. Using multilevel analysis the effect of each of the civic competences on participation in early adulthood is analyzed, taking various other student characteristics (gender, socioeconomic status and school track) as control variables.

The analysis showed that the participation in the community during secondary school predicts both traditional political activities and more informal political consumption. Political consumption also benefits from students with a lot of civic knowledge. Civic participation is best served by students who are politically efficacious. While almost every adolescent reported reasonable support of basic democratic values, the ones with the most support participate less in politics and the community as a young adult. Overall, the results provide preliminary evidence of the impact of civic knowledge, attitudes and engagement of adolescents on their political participation later in life. The findings are discussed in light of previous research on the link between civic competences and participation in society.

SESSION 3A: TIMSS

Focus on Curricula

28 June 2017 | 4:00pm-5:30pm

Aula, Faculty of Education, Charles University

Chair: Carmen Tovar Sánchez, National Institute for Educational Assessment (INEE), Spain

The Globalization of Science Curricula - A Thematic Report Using IEA TIMSS Data

Emily Jane Jones and Oliver Stacey

National Foundation for Educational Research, UK

Globalization exerts a significant influence on education and education policy. This research investigates the globalization of science curricula and considers the changes to intended and implemented national science curricula over the last 20 years. It additionally explores whether science curricula are becoming increasingly similar across countries. The research uses data from the TIMSS (Trends in International Mathematics and Science Study) curriculum questionnaires for three different TIMSS cycles and latent class analysis to identify countries with similar patterns in their science curriculum and how this pattern has changed over time. Detailed qualitative analysis of a selected group of countries science curricula will then be carried out to identify the ways in which countries curriculum have converged over time.

Curricula Harmonization? A Study Using Data From National Research Coordinators

Stefan Johansson and Kajsa Yang-Hansen

University of Gothenburg, Sweden

The proposed study aims to examine the tendency that national curricula in different educational systems harmonize over time, for example as a consequence of the prevalent impacts of international large-scale assessments (ILSAs), such as TIMSS (Trends in International Mathematics and Science Study), PIRLS (Progress in International Reading Literacy Study) and PISA (Programme for International Student Assessment). Since the TIMSS 1995, a curriculum questionnaire was completed by each national research coordinator (NRC) of all participating countries in each TIMSS cycle. In the present study, data from 2003 and 2015 was used. Information about the extent to which the national mathematics curriculum covered certain topics in the subdomains tested in TIMSS (Number, Algebra, Geometry, Data) was in focus for the analyses. The analytical method used was latent profile analyses where countries belongingness to a certain profile was observed. The preliminary analyses did not show any indications of a general harmonization or differentiation of countries curricula over time. Most countries belonged to the same profile 2003 and 2015. A larger time span would most likely be needed to trace any harmonizing effects.

Measuring the Amount of Mathematical Theory Needed to Solve Test Items in TIMSS Advanced Mathematics and Physics

Arne Hole, Liv Sissel Grønmo and Torgeir Onstad

University of Oslo Norway

This paper discusses a framework for measuring to what extent knowledge of mathematical theory is helpful for solving the items in a given test. Roughly described, the framework is aimed at measuring the "mathematical content" of the given test. Two indicators representing item involvement of mathematical theory are used: (i) The existence of mathematical theorems relevant for solving the item, and (ii) the

need for involving mathematical formulas in solving the item. When these indicators are used to classify the items in a given test, they give rise to two dichotomies on the set of items: The Theorem/No Theorem (T/NT) dichotomy and the Formula/No Formula (F/NF) dichotomy. The framework can be applied to any test in which some knowledge of mathematics theory may be useful, both within mathematics itself and in other subjects. In this paper, the framework is applied to TIMSS Advanced 2015 (Trends in International Mathematics and Science Study) mathematics and physics test items. The results are compared to an earlier study of mathematics items in TIMSS 8th grade and PISA (Programme for International Student Assessment). Our results indicate, among other things, that the dependence on mathematical theory in the set of TIMSS Advanced 2015 physics test items is greater than in the set of PISA 2012 mathematics test items.

Concerning relations to item difficulty, we find significant differences between the average p-values in the set of item groups defined by the dichotomies for most participating countries in TIMSS Advanced 2015. Interestingly, many of the differences in differences between countries are also found to be significant. The dominating picture is that dependence on mathematical theory in an item, tends to reduce the item p-value more strongly in the Nordic/Western countries than in countries from Eastern Europe. However, our result concerning T/NT in mathematics forms an interesting exception to this.

Variables Affecting of Developing Higher-Order Thinking Competences in Science

Masoud Kabiri and Abdol'azim Karimi

Research Institute for Education (RIE), Iran

Developing higher-order thinking competencies are central purpose of the most developed educational systems. In present study, the mastery of Iranian student in eight grade on higher-order thinking competencies were investigated using TIMSS 2011 (Trends in International Mathematics and Science Study) data. These competences included reasoning, predicting, explaining, and scientific inquiring which extracted by task analysis of eight grade science items. Applying General Diagnostic Model, mastery of students on competencies were determined. Then, the role of several variables relating to teacher and schools on each of mastery of competencies was examined. The result show that about a half of variances of competences are accounted for by predictors. In addition, the difference in regression models both explained variance and significant predictors is noticeable. The most explained variance is in scientific reasoning and the less in explaining of natural phenomena scientifically. Also, there is not found any independent variable that have significant effect on all competencies. Among all variables, availability of computer, school emphasis on academic success, working problems of teachers, and teaching experience were significant on three competencies. Aside from these variables, class size, school resources, major of teacher, engaging of students and professional development are significant in one or two models. The results emphasis that mastery over the higher-order thinking competencies do not effected from the same variables, therefore, various strategies to develop each of them should be used.

SESSION 3B: METHODOLOGY

Multilevel Analysis

28 June 2017 | 4:00pm-5:30pm

Room 016, Faculty of Education, Charles University

Chair: Oliver Neuschmidt, IEA Hamburg, Germany

Discussant: Leslie Rutkowski, CEMO Centre for Educational Measurement, Norway

School Potential for Mitigating Social Inequalities in Selected European Educational Systems: Evidence From TIMSS 2015

Agnes Stancel-Piatak and Nadine Radermacher

IEA Hamburg, Germany

Current studies show that regardless of higher participation in education across social classes, the structure of educational discrimination has not changed significantly. Although this topic is on top of educational and political agendas, there is still a lack of knowledge about school and class conditions that can mitigate social inequalities. Previous research has shown that student composition, classroom climate, and teacher ability can mitigate social inequality in schools. In this study, TIMSS 2015 data is used to analyze social inequalities in schools and their conditions. Using multilevel structural equation models with random slopes, differences between schools and factors mitigating social inequalities are estimated. The methodological approach of multiple group analysis enables a multidimensional and comparative perspective across education systems. Cross-country comparisons of school factors that mitigate social inequality allow for conclusions on potentially successful educational actions and political reforms aiming at reducing social inequalities.

The Effects of Student-Level and School-Level Factors on 8th Grade Turkish Students' Mathematics Achievement

Mustafa Aydin

Necmettin Erbakan University, Turkey

In this study, the effects of student-level and school-level factors on middle school students' mathematics achievement were investigated. The study was conducted by employing the hierarchical linear modeling based on the data obtained from the Turkish eight-grade students' who participated in TIMSS 2011 (Trends in International Mathematics and Science Study) mathematics assessment. Within the scope of the study, four distinct models were developed taking the student, teacher, and school-level factors into consideration, and the effects of these factors on student achievement were examined. In regards to the mathematics achievement of Turkish eight-grade students, it is found that (i) 35 % of the differences were among schools; (ii) at the student level, 31 % of the variation in student achievement stemmed from gender, home educational resources and self-efficacy of students; (iii) 27 % of the variance in the differences among schools were attributed to the attitudes of teachers toward school and their profession; (iv) and at the school level, school composition by student socioeconomic background, along with school discipline and safety, accounted for the differences among schools. Moreover, a final model was developed using the significant variables in the models for the classroom and school-level. Based on this model, it was concluded that (v) 48 % of the differences among schools in Turkey could be explained by the teacher-level and school-level factors in the model. Furthermore, the most important predictors were self-efficacy at the student level, teachers' attitudes toward school at the teacher level and school composition by student socioeconomic background at the school level. The study concludes with a discussion of the results and pedagogical implications.

Multilevel Analysis of Binary Response Data in Mathematics and Science of Grade 9 Learners in South Africa

Rene Ehlers¹, Gretel Crafford¹, Cas Prinsloo² and Lolita Winnaar²

¹University of Pretoria, South Africa; ²Human Sciences Research Council, South Africa

Multilevel analysis of binary response data is applied in this study to explore factors that have a relationship with mathematics and science achievement of Grade 9 learners in South Africa. According to the Trends in International Mathematics and Science Study (TIMSS) 2015 results, only 34.3 % of mathematics learners and 32.3 % of science learners achieved a score above the low benchmark of 400. The purpose of this study is to identify high risk factors that are significantly related to learners not achieving the low benchmark score of 400 in mathematics and science in order to assist with decisions about intervention and policymaking. The models for mathematics and science are compared to identify possible differences in risk categories. The low benchmark score of 400 is used to create a binary response variable from the raw achievement scores. The hierarchical structure of the data is accommodated by considering two-level multilevel models where learners (level-1) are nested within schools (level-2). Using Carrols' model of school learning as a point of departure, contextual information on different levels are used to select factors that are likely to be significantly related to achievement in mathematics and science. The South African population is very diverse, especially with regards to language and socioeconomic status (SES), and variables taking this into account are included in the models. School resources, school environment, surroundings and learner- and school-SES also vary a lot between schools.

The Use of Multilevel Modeling to Assess the Mathematics Achievement of Grade 9 Learners in South Africa for the TIMSS 2015 Data

Gretel Crafford¹, Rene Ehlers¹, Agnes Stancel-Piqtak², Cas Prinsloo³ and Lolita Winnaar³

¹University of Pretoria, South Africa; ²IEA Hamburg, Germany; ³Human Sciences Research Council, South Africa

The TIMSS 2015 (Trends in International Mathematics and Science Study) data set will be used to investigate the mathematics achievement of Grade 9 learners in South Africa. South Africa is one of the lower performers of the 39 participating countries with an average score of 372 that is way below the international average of 500. Notwithstanding the vast inequalities in the education system, South Africa had the highest improvement of all participating countries with an average increase of 87 points from 2003 to 2015. There is little research regarding the contribution of South African schools to improve student learning. This study investigates the association of selected school factors with students' mathematics outcomes of South African 9th-Graders. Due to the hierarchical structure of the educational system where learners (level-1 units) are nested within schools (level-2 units), multilevel modeling will be used to analyze the data by means of a two-level model. The regression coefficients of the two-level model are treated as stochastic coefficients to accommodate different relationships between the schools. School- and learner variables are used to explain the variation of mathematical achievement between and within schools. An explanation of the fixed and random effects will provide an effective tool to explain the complex relationships that exist in the South African educational system.

SESSION 3C: ICCS

Student Engagement

28 June 2017 | 4:00pm-5:30pm

Room 112, Faculty of Education, Charles University

Chair: Ralph Carstens, IEA Hamburg, Germany

Discussant: Bruno Losito, Roma Tre University, Italy

Religious Engagement, Attitudes Toward Religion and Society, and Expected Future Political Participation Among Young People

Wolfram Schulz¹ and John Ainley²

¹Australian Council for Educational Research, UK; ²Australian Council for Educational Research, Australia

This paper analyses the extent to which lower-secondary students in 26 countries from Asia, Europe and Latin America are attached to a religion, endorse its influence on society and the extent to which their engagement with religion is related to their expected future participation. The rich database of ICCS 2009 (International Civic and Citizenship Education Study) provides an excellent opportunity to follow up on earlier research findings which suggest that religious affiliation and beliefs are a motivating factor driving individual engagement in society. The multivariate analyses presented in this paper provide evidence about associations between attitudes toward religious influence in society and expected political engagement within the context of the general status of religion in each participating country. It concludes that while young people's endorsement of religious influence on society is lower among those with higher levels of civic knowledge, this variable is indeed positively correlated with expectations of future engagement as adults.

The Impact of Classroom Socioeconomic Composition Effect on Czech Youth's Civic Knowledge and Engagement

Aleš Kudrnáč

Institute of Sociology of the Czech Academy of Sciences, Czech Republic

Three of the key features of a civic education are civic knowledge, willingness to vote in future elections, and propensity to engage in politics. In many countries, all forms of political participation are declining and this trend is most apparent among the youth. Here the role of schools in promoting effective citizenship is considered crucial. This study examines if students from low-SES (socioeconomic status) families in Czech schools gain from (1) being mixed in classes with high-SES pupils, and (2) having an 'open classroom climate' with frequent discussions. This case study shows that there are compensation effects where poorer students gain by having higher than expected scores. However, these effects are both modest and complex suggesting that education policies oriented toward fostering more effective citizenship using mixed classes and open classroom climate is not a panacea for declining interest and participation in politics among Czech youth.

Can Schools Engage Students? A Multiple Perspective, Multidimensional School Climate Research in England and Ireland

Dorien Sampermans and Ellen Claes

KU Leuven, Belgium

This paper unravels how relations between school characteristics as part of the school climate can influence students' engagement in school. Multiple researchers have found evidence for a relation between specific dimensions in school and students' participation levels in school. For example, active learning strategies can engage students, or a good student-teacher relationship can motivate students to become more engaged. Although research has focused on specific dimensions within the school climate, the school climate is mostly described as a concept of multiple dimensions, which are often related to each other. This paper focuses on multiple dimensions. In response to advice formulated by previous research, this paper builds further on school climate analyses by including multiple perspectives.

This paper relies on the English and Irish ICCS 2009 (International Civic and Citizenship Education Study) data to include both the multiple perspectives and the multiple dimensions of the school climate. The school climate in both countries is reconstructed by a model including both student and aggregated teacher questionnaires for each dimension. The model is presented by a multilevel structural equation model in Mplus. As a second step, a multilevel regression model indicates how much variation of students' engagement can be explained by the parameters in the school climate model.

Hereby this paper contributes to the civic education research by pointing out the importance of the school climate on engaging students. In order to engage students, schools should focus not only on the formal curriculum, but – and especially related to civic, social topics – also on the school climate.

SESSION 4A: TIMSS

Symposium: Instructional Quality

29 June 2017 | 11:00am-12:30pm

Aula, Faculty of Education, Charles University

Chairs: Heike Wendt, TU Dortmund, Germany; Trude Nilsen, University of Oslo, Norway

Discussant: Sigrid Blömeke

Teachers' Instructional Quality (InQ) comprises a number of aspects, which are highly important for students' learning outcomes such as achievement and motivation. Although the concept is understood differently across the field, there is an agreement that InQ is multidimensional and can be characterized by: (1) classroom management (i.e. actions taken by the teacher to ensure an orderly environment and an effective use of time during lessons); (2) teacher support (i.e. teachers provide extra help when needed, provide clear and comprehensive instruction and learning goals, connect new and old topics, and listen to and respect students' ideas and questions); and (3) cognitive activation (i.e. instructional activities, in which students have to evaluate, integrate, and apply knowledge in the context of problem solving).

Given that InQ is an important predictor for students' achievement, it can be expected to explain differences in student achievement in international large-scale assessments as well. However, due to limited instrumentation of InQ, there is still a need for more nuanced research in this area.

As a response to this need, several countries that participated in TIMSS 2015 (Trends in International Mathematics and Science Study) included scales on the dimensions of teachers' InQ as part of their national extensions. This endeavor provides a unique dataset to investigate InQ within and across countries and in relation to different process and outcome variables. This symposium comprises three

contributions that present data from Germany, Norway, and Belgium. Previous research indicated that the InQ scales were sufficiently invariant across the three countries. The three contributions extend this finding by reporting on the relations between InQ and different process and outcome variables.

Instructional Quality: Catalyst or Catch in the Strive for Quality and Equity in Education Across Germany, Norway, and Flanders (Belgium)

Kim Bellens¹, Jan Van Damme¹, Bieke De Fraine¹, Wim Van Den Noortgate¹, Heike Wendt², Trude Nilsen³

¹KU Leuven, Belgium; ²TU Dortmund University, Germany; ³University of Oslo, Norway

The participation of about 150 German, Norwegian and Flemish primary schools (grade 4) in TIMSS 2015 was used to test the model of Klieme on instructional quality, including three components i.e. supportive climate, classroom management and cognitive activation. Next to the effect of instructional quality on achievement, we explored how instructional quality plays a role in the strive for educational equity. Whereas some studies indicate that instructional quality might counter socio-cultural effects, other studies show that it is determined by students' compositional group background which explains the existing (and persisting) inequity. The data of each country are analysed separately using MPLus-software. Separate analyses are performed for each country. To take into account the hierarchical structure of the data, we made use of multilevel models, with students nested within classes. Preliminary results for Flanders support the hypothesis that instructional quality influences math achievement. Results reveal a significant negative relation between cognitive activation and math. A significant and large positive relation exists between supportive climate and math ($\beta = 0.64$; $p < 0.000$), indicating that higher supportive climate positively influences math. Both SES and language significantly relate to math achievement: classgroups characterized by a higher mean SES or more students speaking the language of instruction at home have higher math achievement. This relation is lower in the models where instructional quality mediates this relation. No significant moderation effects were found. Whereas the positive effect of supportive climate on math achievement is in line with previous findings, the negative effect of cognitive activation on math isn't. As we have no prior math achievement of students, reversed causality might explain these results. This might be due to the strong emphasis in Flemish education on bringing up the weaker students. Results of mediation models with instructional quality also support this interpretation in the sense that lower SES-classes receive higher cognitive activation. Results give insight in how teachers can optimize their teaching practices and further shed light on countries' policies regarding educational quality and equity.

Relations Between Instruction Quality, School Climate, and Student Outcomes

Trude Nilsen¹, Ronny Scherer², Heike Wendt³ and Jan Van Damme⁴

¹University of Oslo, Norway; ²Centre for Educational Measurement at the University of Oslo, Norway; ³TU Dortmund University, Germany; ⁴KU Leuven, Belgium

This contribution examines relations between school climate, instructional quality (InQ), and student motivation. Previous research based on data from TIMSS 2011 indicated that the nature of these relations is heterogeneous across countries (Authors, 2016). However, the measure of InQ available in TIMSS 2011 was not able to capture all three dimensions of the construct. Moreover, this study used the grade 8 sample from all participating countries, including developed and developing countries with large cultural differences. The current study will focus on fourth graders from three European OECD countries: Norway, Germany, and Belgium (Flanders). The constructs reflecting on school climate include School Emphasis on Academic Success, and Safe and orderly schools. InQ is measured by students' ratings of classroom management, cognitive activation and supportive climate (national option). Motivation is measured by students' ratings of self-concept, intrinsic and extrinsic motivation. A multi-group, two-level (students and classes) structural equation modeling approach is taken, with countries as the grouping variable. On the basis of the preliminary findings (TIMSS 2011), we expect positive significant relations between the dimensions of InQ and student motivation. InQ is further expected to mediate the relation between school climate and motivation; however, this may vary across the three countries. Preliminary findings for Norway show that School Emphasis on Academic Success is related

to InQ, which in turn is related to student motivation. The next step is to test for mediation and include data from Germany and Belgium. The contributions for policy, practice, and the TIMSS contextual framework will be discussed.

Exploring the Relation Between Teacher Qualification and Instructional Quality

Heike Wendt¹ and Raphaela Porsch²

¹TU Dortmund University, Germany; ²WWU University of Münster, Germany

Several studies conducted in the USA, Australia and Europe have researched the impact of teachers' qualification on students' proficiency, reflecting the view that teachers are a significant factor affecting children's learning outcomes. In order to explain these results, the underlying assumption is that university education focusing on general pedagogy as well as didactics and content knowledge of special subjects enables teachers to be effective in the classroom. So far only few studies have used data from large-scale assessment to explore this relationship: For Germany, research has identified a significant negative relationship between teacher qualifications (major in mathematics) and teacher reported indicators for InQ using TIMSS 2011 data. However qualitative research suggests that teaching is (negatively) affected if teachers teach subjects as non-specialists. This paper aims to explore the relation between teacher qualification and InQ in Germany using data from TIMSS 2015. In contrast to previous research, InQ is measured by students' ratings of cognitive activation, classroom management and supportive climate and teacher qualification is measured distinguishing teachers who studied the either mathematics (MAT) or science (SCI) as a major (MAT: 64%; SCI: 48%), as a minor (MAT: 17%; SCI: 15%) or not at all (MAT: 19%; SCI: 37%). Preliminary analysis show for both subject areas there is a significant relationship between teacher qualification and InQ: For both mathematics and science, students who are taught by teachers having studied the respective subject as a major report experiencing higher cognitive activation and supportive climate than students who are taught by teachers with different qualification profiles. No significant difference is found for the classroom management scale ($p > 0.05$). This relationship will be further explored controlling for other teacher and classroom composition characteristics. Consequences for further research in large-scale assessments as well as implications for policy and practice will be discussed.

Mathematics Achievement Gaps of Low- and High-Performing Students: A Comparison Cross-Nationally and Over Time

David Christopher Miller and Frank Torres Fonseca

American Institutes for Research (AIR), USA

Using fourth- and eighth-grade mathematics data from the 1995, 2007 and 2015 administrations of TIMSS (Trends in International Mathematics and Science Study), this analysis examined cross-national differences in the achievement of low- and high-performing students, especially relative to average performance within countries. The results showed that examining countries' average achievement cross-nationally and over time can mask significant differences and changes that may be occurring with low- and high-performing students. The analysis also identified significant differences by grade. For example, at the country level, smaller achievement gaps between low- and high-performing students were associated with higher average scores at grade 4 but not grade 8. Furthermore, it was found that these mathematics achievement gaps were related to country-level income inequality, but differently by grade and for OECD compared to non-OECD countries.

SESSION 4B: ICCS

Politics and Civics

29 June 2017 | 11:00am-12:30pm

Room 016, Faculty of Education, Charles University

Chair: Bruno Losito, Roma Tre University, Italy

Discussant: David Rutkowski, University of Oslo, Norway

Classroom Discussions and Political Tolerance Towards Immigrants: The Importance of Mutual Respect and Responsiveness

Lies Maurissen¹, Carolyn Barber² and Ellen Claes¹

¹Centre for Political Research, KU Leuven, Belgium; ²School of Education, University of Missouri-Kansas City, USA

Political tolerance, the willingness to extend civil rights to people who are different from oneself, is considered as a requirement for peaceful coexistence in modern societies. Deliberative democratic theory argues that deliberation can positively influence political tolerance. Also within a school environment, discussions on controversial issues are believed to stimulate tolerance amongst adolescents. As previous research leads to inconclusive results, this paper aims to clarify how discussions in schools can influence tolerance towards immigrants, by taking the context in which such discussions take place into account. Based on deliberative democratic theory, we argue that both a context of mutual respect and responsiveness towards student demands are crucial to boost levels of tolerance amongst adolescents. Using the Belgian (Flemish) sample of the ICCS 2009 (International Civic and Citizenship Education Study) data in a multilevel path model, we find that the discussion climate as such no longer affects tolerance towards immigrants when the environment of respect and responsiveness are taken into account. Consequently, schools should focus on making students feel equally treated and respected. In addition, schools should be responsive when students express desired changes in school policy or organisation. Both aspects prove to positively influence political tolerance towards immigrants among adolescents in Flanders.

Political Cultures as Context of Civic and Citizenship Education

Max Rånge and Mikael Sandberg

Halmstad University, Sweden

The overarching aim in this paper is to contextualize civic and citizenship education practices, something which promises to settle an old social scientific dispute about the sources of trust in institutions: Is trust in institutions rooted in social psychology, culture and socioeconomic factors, or is it a response to institutional performance? Here, we analyze ICCS 2009 (International Civic and Citizenship Education Study) data at student level (approximately 140,000 students) in 37 countries and territories merged with the 2009 Quality of Government dataset that includes the World Values Surveys (WVS) national aggregates on trust and confidence. We also added MaxRange institutional data for 2009. First, a regression tree analysis is made, second a series of ordinary least squares (OLS) regressions, and third, a structural equation model. Results strongly support the institutional performance theory and further explains the interaction between the political institutions and the political culture. In fact the former make possible the latter, so that attitudes and participation may be critical to established institutions while taking part in them. Influences on trust in institutions thus exist on all three levels investigated: institutional, cultural and individual-psychological. However, the interacting political-institutional and political-cultural influences dominate.

The Impact of School Factors on Civic Knowledge in Mexican Students

Citlalli Sanchez-Alvarez, Ramses Vazquez-Lira, Maria Teresa Melendez-Irigoyen; Gilberto Guevara-Niebla and Eduardo Backhoff-Escudero

Instituto Nacional para la Evaluacion de la Educacion, Mexico

This study examines the relationship between school factors and civic knowledge in a sample of 6576 eight grade Mexican students, using data from the International Civic and Citizenship Study (ICCS) 2009. It explores the ways in which students' contextual variables, attitudes and perceptions of their schools' learning environment and Latin American context contribute to score differences amongst them on the ICCS achievement test. ICCS 2009 databases for Mexico were used to run two types of analyses. First, using the IDB Analyzer v. 3.2, regression models were created using the total student weights and were tested by forward stepwise regression analyses. Second, multilevel regression analyses were conducted using different variables at student and school levels, including variables from the Latin American student questionnaire. The multilevel analyses were done with three different samples: (1) country, (2) students whose scores were at the proficiency level 1 of the cognitive test, and (3) students with scores at level 3. Results from the regression models indicate that the first model (ILA) accounted for 50.2 % of the variance between students' ICCS scores ($p < 0.001$), and the second model (LA), accounted for 40.5 % of the variance ($p < 0.001$). The multilevel analyses yielded six independent models with two levels: students nested within schools, where model 6 was the one that accounted for the most variance (56 %). These results suggest that differences amongst students' scores in the national sample are best accounted for by positive predictors such as: gender, socioeconomic background, expected years of further education, discussion of civic issues outside of school and openness in classroom discussions; while negative predictors such as: students' attitudes toward authoritarianism in government and corrupt practices in government, and their level of participation in civic activities at school, best account for lower achievement scores. Further discussion is presented.

SESSION 5A: TIMSS

Using TIMSS for National Monitoring

29 June 2017 | 2:00pm-3:30pm

Aula, Faculty of Education, Charles University

Chair: Thierry Rocher, DEPP, France

Discussant: Josef Basl, Czech School Inspectorate, Czech Republic

Comparing Results of TIMSS and the Hungarian National Assessment of Basic Competencies

Ildikó Balázi and Ildikó Szepesi

Educational Authority, Hungary

This paper compares some characteristics of TIMSS 2015 (Trends in International Mathematics and Science Study) and Hungarian National Assessment of Basic Competencies (ABC) 2015. Both studies measure students' performance in mathematics at Grade 8. Linking the data at the student level allows us to answer some validity questions about both studies and makes it possible to estimate the amount of bias arising from sampling and missing data.

We compare the mathematics frameworks of the studies, showing that, despite some differences in the frameworks, TIMSS and National ABC measure similar cognitive constructs. High correlation between mathematics results of the two studies proves that the measured latent variables are analogous. Similarly, we are cross-checking the stability of the most important socioeconomical background variables used in both studies.

National ABC is a census, therefore we can examine the qualities of the TIMSS 2015 sample through comparing National ABC results of students in TIMSS sample to those not sampled in TIMSS. We also analyze missing answers' impact on TIMSS and National ABC results and background variables comparing the characteristics of students missing in one study but participating in the other. Analyzing missing values' impact on the results is especially important in the case of National ABC, since in National ABC no follow up sessions are administered and student questionnaires are not compulsory.

TIMSS, TIMSS Advanced and the Grades: Exploring the Consistency Between the National Assessment System in Sweden and the TIMSS Studies

Oscar Oelrich, Maria Axelsson and Matilda Ankargren

Swedish National Agency for Education, Sweden

Sweden participates in several international studies with the purpose of comparing students' knowledge between countries and over time. Our participation in these studies is based on the fact that we use these as part of the Swedish evaluation system. At the end of 2016, the results of TIMSS (Trends in International Mathematics and Science Study) and TIMSS Advanced were presented. This paper aims to describe the consistency between the Swedish students' results from the two TIMSS-studies and their grades and results on national tests. We analyze the results in mathematics from TIMSS grade 8 and TIMSS Advanced together with students' final mathematics grades and grades from the national tests in mathematics.

The conclusion of our analyses is that the consistency between the results from TIMSS and the students' grades and national test results is good. Students with higher grades in mathematics and in the national tests have, on average, higher results in the TIMSS tests than students with lower grades. When comparing students with equal grades, there are differences in average results in TIMSS between boys and girls/men and women, between students with different migration backgrounds and between students with different degrees of home resources. Boys and men have higher average points in TIMSS than girls and women when we take the students' grades into consideration. The same results are shown for students born in Sweden with at least one Swedish-born parent and students with a higher degree of home resources.

Discriminant Analysis of High and Low 4th Grade Performers in Math and Science in the United Arab Emirates: Lessons Learned From TIMSS 2015

Masood Badri¹, Rabaa Al Sumaiti², Ali Al Yafei³, Lassaad Essafi³, Khaled Temsah³, Mohammed Mazheruddin³, Asma Al Rashedi¹ and Guang Yang¹

¹ADEC Abu Dhabi Education Council, United Arab Emirates; ²KHDA Knowledge and Human Development Authority, United Arab Emirates; ³MoE Ministry of Education, United Arab Emirates

Discriminant analysis is used to analyze the effect of several individual constructs (61 variables) on the dependent variable related to performance of 4th Grade students in TIMSS (Trends in International Mathematics and Science Study) in the United Arab Emirates (UAE). The students are organized into two groups (high and low performers) in Science and Math. The constructs used were associated with the school in general, learning Mathematics in general, Mathematics lessons, perception of performance in Mathematics, learning Science in general, Science lessons, and perception of performance in Science. The data were collected from TIMSS scores and the relative student questionnaire. This research is aimed at determining predictor variables for student TIMSS success or failure in the UAE. The hit ratio of all models were mediocre. The largest hit ratio corresponded to the nature and attitude of students towards both Math and most significant discriminant variables were associated with student perception, motivation and anxiety related to Math and Science, teacher's extent of guide and direction given to students, and school factors of safety, and peer relations. Results help curriculum designers and school policymakers to coordinate and integrate their efforts in how to make both Math and Science attractive to 4th Graders.

SESSION 5B: METHODOLOGY

Symposium: Towards Improved Measures of Socioeconomic Status in Low- and Middle-Income Countries

29 June 2017 | 2:00pm-3:30pm

Room 016, Faculty of Education, Charles University

Chair: Wolfram Schulz, Australian Council for Educational Research, UK

Socioeconomic status (SES) has been shown to be an important construct when examining differences in outcomes both as an input-control construct to monitor equity in outcomes or a substantive construct. These relationships have been found to apply in high- as well as low- and middle-income countries, with some conflicting evidence regarding the relative importance of individual- and group-level SES on outcomes. Such differences, however, may be partly due to the possible inappropriateness of widely-used measures of SES in low- and middle-income countries. This symposium presents results of a literature review and data analyses aimed at improving the measurement of SES in various contexts around the world.

The three contributions in this symposium inform this discussion as follows.

1. Measures of SES in Economics, Education, Health and Psychology

This first contribution reviews how SES has been defined, operationalised and used in the analyses in economics, education, health and psychology. It looks how this has been done in different contexts, with a particular focus on low- and middle-income countries.

2. Quality of SES Measures

This contribution uses TIMSS (Trends in International Mathematics and Science Study) and PIRLS (Progress in International Reading Literacy Study) 2011 data to examine the quality of SES. To this end, missing data analysis, reliability analysis and regression analyses are undertaken, with a view to comparing the relative appropriateness of current SES measures in high-income countries compared with low- and middle-income countries.

3. Towards a Global Scale of Household Wealth

For many years, it has been possible for countries to add country-specific items to the internationally common questions regarding home possessions. This contribution reports results of IRT (item response theory framework) analyses of TIMSS and PIRLS 2011 data aimed at developing a tool that will enable countries to select items which optimize the home possession scale, depending on the country's income and inequality levels.

Measures of SES in Economics, Education, Health and Psychology

Raymond Adams, Syeda Kashfee Ahmed, Dan Cloney, Katherine Dix, Tim Friedman, Petra Lietz, Alla Routitsky and Ursula Schwantner

Australian Council for Educational Research, Australia

Socioeconomic status (SES) is widely used as an important construct when examining differences in outcomes in various disciplines. Depending on the thrust of the analyses and the discipline in which they are undertaken, SES can be considered an input-control construct to monitor equity in outcomes or a substantive construct that relates to outcomes through other constructs. The purpose of this paper is to investigate how SES has been defined, operationalized and used in the analyses in various disciplines such as education, health, or economics with a particular focus on low- and middle-income countries. It encapsulates communalities, differences and unique approaches across these disciplines. While a comprehensive review of all studies employing socioeconomic measures for low- and middle-income countries is beyond the scope of this paper, the primary purpose is to review existing SES measures in two respects: (1) appropriateness for the use in the contexts of low- and middle-income countries; and (2) appropriateness for creating a globally comparable SES metric. In addition to 'traditional' SES

indicators used in international, regional and national educational large-scale assessments which are usually related to parental education, parental occupation and wealth, this paper also sources indicators from surveys in the fields of psychology and health.

Quality of SES Measures

Raymond Adams, Syeda Kashfee Ahmed, Dan Cloney, Katherine Dix, Tim Friedman, Petra Lietz, Alla Routitsky and Ursula Schwantner

Australian Council for Educational Research, Australia

Although measures of socioeconomic status (SES) are well established in large-scale educational surveys, their effectiveness for low- and middle-income countries requires greater investigation. The purpose of this paper is to compare psychometric properties of SES-related measures for low- and middle-income countries in large-scale international assessments against a group of higher income countries. The analyses draws on data from students who participated in TIMSS 2011 and in PIRLS 2011 (including those who participated in prePIRLS). All lower- and middle-income countries participating in these studies were selected for analysis to form one country group. Additionally, several countries with a range of expenditure amongst OECD countries, larger English speaking countries, and countries representing Europe and Asia were selected as part of comparison group to contrast findings. The measures examined include questions on home possessions, the number of books at home, parental education, parental occupation as well as questions on school and neighborhood characteristics. Three types of analyses were conducted on each dataset. Missing data analyses were run to compare the proportion of missing data across SES-related questions and across country groupings. Reliability analyses were conducted for home possession items (both international and national) and contrasted across country groupings. Finally, regression analyses were undertaken to explore the relative predictive power of the different SES-related measures on student achievement. Overall the results reveal some patterns in the rates of missing data and the reliabilities of home possession items across country groupings. They also reveal differences in the effectiveness of the different SES measures in explaining variance in student achievement across the two groups of countries. Implications for refining the SES measures to become more effective for lower- and middle-income countries are discussed.

Towards a Global Scale of Household Wealth

Katherine Dix, Tim Friedman, Dan Cloney, Petra Lietz, Alla Routitsky, Ursula Schwantner, Raymond Adams and Syeda Kashfee Ahmed

Australian Council for Educational Research, Australia

Large-scale educational surveys, typically include international as well as country-specific student-response items about home possessions as part of a suite of SES measures. For school-age children, these are considered a more reliable measure of wealth than traditional indicators (e.g., asking about household income). Home possession measures, however, appear to work better in some countries compared to others. One cause of this is the selection of inappropriate items: countries may choose home possession items that most children have or that no children have and these items provide little information to a measure of household wealth. This study undertakes a novel investigation of TIMSS 2011 and PIRLS 2011 home-possession items to propose: (1) a psychometrically sound home-possession scale, and (2) a method for countries to select appropriate home-possession items based on national profiling based on World Bank Development Indicators. First, Item Responses Modelling (IRM) is used to construct a measure of household wealth using a “common set” of home possession items asked in TIMSS and PIRLS by different countries nationally and internationally. This measure is compared to more traditional composite measure (e.g., just international items) in terms of reliability, predictive validity, and external validity (including World Bank Development Indicators). Then the results of IRM are used to make recommendations about whether better targeting of “more difficult” or “easier” items would improve the measurement of family wealth within countries and internationally. The study demonstrates that the measurement of the household wealth can be improved by simply selecting items optimally targeted to the national profile of each country. Improved measurement is a simple way to

improve explanatory power of statistical models. This is important because SES indicators are key variables considered in relation to academic achievement.

SESSION 6A: METHODOLOGY

Reviewing Measures

29 June 2017 | 4:00pm-5:30pm

Aula, Faculty of Education, Charles University

Chair: Norman Verhelst, Eurometrics, the Netherlands

Gauging the Measurement Property of Opportunity to Learn in TIMSS and PISA

Kajsa Yang Hansen¹ and Rolf Strietholt^{1,2}

¹Gothenburg University, Sweden; ²Technische Universität Dortmund, Germany

One of the main determinants of level and equality of student's academic achievement is opportunity to learn (OTL). Results from meta-analyses suggested that OTL has a relatively substantial average-effect size compared to other effectiveness enhancing conditions, such as learning time and instructional leadership. Even though the importance of OTL is highly recognized, the effect sizes vary across PISA (Programme for International Student Assessment) and TIMSS (Trends in International Mathematics and Science Study). Thus, the current study is to gauge the construct validity of the OTL measure used in these studies. In particular, we examine if the OTL measures in PISA 2012 involve construct irrelevant components such as self-concept. By separating OTL and self-concept dimensions, we show overlaps and differences in the OTL measures used in PISA and TIMSS. Our multi-level analyses with the adjusted OTL effects revealed some interesting results across different education systems.

An Examination of Measurement Invariance in ICCS Questionnaire Scales Across Groups With Different Levels of Civic Knowledge

Julian Fraillon, Eveline Gebhardt and Wolfram Schulz

Australian Council for Educational Research, Australia

This paper investigates measurement invariance in ICCS (International Civic and Citizenship Education Study) measures of student attitudes, values and dispositions with respect to two groups of students with different levels of civic knowledge. The analyses will help to better understand whether student the measurement of student attitudes and values is influenced by the level of students' knowledge about the civic issues. The tests of invariance will be conducted using multiple group confirmatory factor analysis with comparisons of parameters and model fit under different conditions of systematically restricting selected parameters. The analysis results will show the extent of measurement invariance across different student questionnaire scales and draw attention to scales for which measurement invariance does not hold across ability groups. This paper will contribute to richer interpretations of student questionnaire data from ICCS 2009 and may help to frame the analysis and reporting of student questionnaire data relating to civic and citizenship education. The findings also have the potential of informing student civic and citizenship education questionnaire development in future surveys of this kind.

Effect Size Measures for Multilevel Models: Definition, Interpretation, and TIMSS Example

Julie Ann Lorah

Indiana University, USA

Effect size reporting is crucial for interpretation of applied research results and for conducting meta-analysis. However, clear guidelines for reporting effect size in multilevel models have not been provided. This report suggests and demonstrates appropriate effect size measures including the intraclass correlation coefficient (ICC) for random effects and standardized regression coefficients or f^2 for fixed effects. Complexities associated with three-level models, reporting R^2 , random slopes, plausible values, sampling weights, and replicate weights are explored. An example using TIMSS data is provided.

Motivational Scales in TIMSS 2011 Math: Negative Wording Correlates With Reading Achievement

Michalis P. Michaelides

University of Cyprus, Cyprus

The Student Background survey administered in IEA studies includes scales of student motivation in mathematics and science. The current research examined the factorial structure of the TIMSS 2011 (Trends in International Mathematics and Science Study) student motivation scales in 4th grade mathematics. Survey data from five European countries in the Joint TIMSS & PIRLS 2011 (Progress in International Reading Literacy Study) Grade 4 database were used. In a comparison of alternative models, the fit was adequate when negative wording was taken into account as a latent factor or with correlated uniquenesses. Participants reading achievement scores related systematically to this wording effect in all five samples with correlation coefficients ranging from 0.26 to 0.43.

SESSION 6B: METHODOLOGY & POLICY

Predictors and Predicting

29 June 2017 | 4:00pm-5:30pm

Room 016, Faculty of Education, Charles University

Chair: Jan-Eric Gustafsson, University of Gothenburg, Sweden

Discussant: Pierre Foy, Boston College, USA

Individual and Compositional Effects in Primary Schools: Predicting the Acquisition of Mathematics Achievement?

Mario Vennemann and Birgit Eickelmann

Paderborn University, Germany

Research on mathematics education in primary schools has shown that besides individual characteristics of students, compositional effects of classes and schools are regarded as fostering or hindering factors for achievement. Because cross-sectional studies are mainly used worldwide to assess educational quality, longitudinal studies are scarce. Using the methodological approach from the IEA TIMSS study (Trends in International Mathematics and Science Study), this paper evaluates if compositional measures of schools are able to predict educational progress in mathematics. Considering the nested structure of the data, hierarchical linear models are used to examine the relative importance of school compositional variables using representative panel data of a collaborative research project using IEA TIMSS instruments for longitudinal measurement ($N = 1,117$). Results show

that achievement heterogeneity does not whereas the achievement level does significantly predict mathematic progress in primary education.

Predicting Students' Achievements in Computer and Information Literacy Through the School Management Features of ICT: An International Perspective

Noga Magen-Nagar

Gordon College of Education, Israel

The current study was designed to examine organizational and pedagogical ICT (information and communications technology) factors that predict student achievement in CIL (computer and information literacy). The basic assumption is that the role of education systems is to develop CIL among their students so they will be prepared to cope successfully with the challenges of the future and master 21st century skills, and thus it is worthwhile examining to what extent schools are oriented toward this goal. The study used the data from ICILS 2013 (International Computer and Information Literacy Study) for the school and student levels. The data on CIL achievements of students were aggregated to the school level, so that the data file contained 3224 schools from 21 countries or education systems of a country. The school ICT factors were: the attitudes of the principal toward the importance of the use of ICT in education, the principal's use of ICT at work, the school's experience in ICT, the expectations and demands made of teachers to integrate ICT skills in teaching and learning, professional development and encouraging teachers to integrate ICT. A path analysis was conducted using structural equation modeling (SEM) using the AMOS 22.0 (Analysis of Moment Structures) statistical software. This provides a multi-variable data analysis in a graphic environment used to test a complex model containing several variables or several dependencies between variables. The findings of the study showed that all ICT factors at school predict student achievement, where professional development of teachers is the most significant factor. In other words, the more teachers learn and gain expertise in integrating ICT into their work, the higher the scores their students will attain for computer and information literacy. It is, therefore, worthwhile investing in the diverse and effective professional development of teachers. A more in-depth discussion of the findings will be presented at the conference.

Optimizing Prediction in International Large-Scale Assessments: A Case-Study Using PIRLS

David Kaplan and Chansoon Lee

University of Wisconsin - Madison, USA

This paper examines Bayesian model averaging as a means of improving the predictive performance of statistical models commonly encountered in education research. The Bayesian framework recognizes that in addition to parameter uncertainty as expressed through the prior distribution, there is also uncertainty in the choice of models themselves insofar as a particular model is chosen based on prior knowledge of the problem at hand. The current approach to addressing the problem of model uncertainty lies in the method of Bayesian model averaging. Bayesian model averaging is a method of model combination that searches the model space for a set of sub-models that satisfy certain scientific principles. A new set of parameters are formed as a weighted combination of the estimates of the sub-models, weighted by each model's posterior model probability. We demonstrate the utility of Bayesian model averaging for prediction with international large-scale assessments using a simple regression model using PIRLS. We find, as expected, that the model-averaged estimates are shown to yield better prediction of the outcome of interest than any sub-model based on predictive coverage and the log-score rule. The paper concludes with a discussion of how Bayesian model averaging can be used to develop predictive systems with international large-scale assessment data.

Canadian School Administrators' Interpretations of Large-Scale Assessment Statistics

Darryl Milburn Hunter

University of Alberta, Canada

Perhaps surprisingly, we know little about how relatively well-educated school leaders operate as readers of performance statistics, about the kinds of inferences they draw from the numeric products of low-/high-stakes testing, and about their reasoning patterns when making inferences with IEA and OECD results. Using a North American pragmatic theory of interpretation and a mixed- methodology, 220 Canadian school administrators' interpretations of graphs and charts of data are investigated for their reasoning patterns and conceptions of "average" student achievement using materials from recent TIMSS (Trends in International Mathematics and Science Study), PISA (Programme for International Student Assessment) and PIRLS (Progress in International Reading Literacy Study) studies. Western Canadian school administrators consider average student achievement not with the inferential patterns assumed within contemporary notions of heuristic irrationality, but rather as a reasoned form of inquisitive thinking and behaviour that has been formalized and comprehensively described in North American philosophy for over 100 years. Implications are drawn for school leadership preparation and for more accessible data displays by (inter)national assessment agencies.

SESSION 6C: TIMSS

Gender Studies

29 June 2017 | 4:00pm-5:30pm

Room 112, Faculty of Education, Charles University

Chair: Elena C. Papanastasiou, University of Nicosia, Cyprus

Discussant: Jana Strakova, Charles University, Czech Republic

Are Girls Better at Reading Than Math? Gender Differences in Achievement Profiles

Silvia Salchegger and Katrin Widauer

BIFIE, Austria

Individual achievement profiles were shown to have significant effects on academic self-concept, motivation, career choice, educational choices, and creative accomplishments. However, little is known about gender differences in achievement profiles. The present study aims to close this research gap. Based on data from TIMSS (Trends in International Mathematics and Science Study) & PIRLS 2011 (Progress in International Reading Literacy Study), we investigate gender differences in achievement profiles of fourth grade students across 33 countries. We characterized intra-individual achievement profiles by a) achievement level (sum of math and verbal scores) and b) achievement tilt (math score minus verbal score). Results show that while girls and boys do not differ markedly by achievement level (average effect size of $d = -0.10$ across all 33 countries included), they do differ in achievement tilt (average effect size of $d = 0.40$). Gender differences in achievement tilt are moreover decisively larger than gender differences in the single domains of math (average $d = 0.04$ across the 33 countries) and reading (average $d = -0.23$). The relatively large gender differences in achievement tilt show that boys are more often better at math than reading and girls are more often better at reading than math. This pattern can be considered culture-universal as it is found across all 33 countries included here. This shows that further research on gender differences in achievement should focus on achievement patterns rather than investigating specific domains in isolation.

Gender, Self-Concept and Mathematics and Science Performance of Grade 9 Students in South Africa

Debra Lynne Shepherd

University of Stellenbosch, South Africa

Stereotypes that men are naturally more talented and interested in mathematics and science are thought to influence the aspirations and achievements of boys and girls. The widely studied concept of stereotype threat in which individuals feel themselves to be at risk of conforming to stereotypes about their social group (e.g. girls are bad at maths) has been shown to reduce the performance of individuals who belong to negatively stereotyped groups. This study uses the TIMSS (Trends in International Mathematics and Science Study) 2011 and 2015 data to analyse the link between domain-specific self-concept, motivation and performance of grade 9 girls and boys in mathematics and science in South Africa. Measures of self-concept and motivation are constructed using TIMSS contextual questionnaire instruments related to domain identification together with factor analysis. South Africa shows evidence of a positive gender gap in favour of girls in mathematics and science. However, closer assessment of this achievement gap by school wealth indicates a large, positive gender gap in favour of boys amongst the group of wealthy schools, whilst the opposite is true amongst poorer schools. This pattern of performance is highly correlated to student self-concept and motivation; boys in wealthy schools show a significantly higher self-concept and motivation in mathematics and science. A structural equation model analysis reveals that the 'effect' of gender on performance operates through its positive relationship with self-concept; that is, the indirect effect of gender (mediated through self-concept) on test performance is greater than the direct effect. Preliminary findings further indicate that the gender composition of the classroom and the self-concept of boys and girls are related.

Different Gender Differences in Pre-University Mathematics: Comparing the Student Achievement From TIMSS Advanced and Scores From the National Mathematics Examination

Barbara Japelj Pavešič¹ and Gašper Cankar²

¹Educational Research Institute, Slovenia; ²National Examinations Centre, Slovenia

Although Slovenia measures almost no difference between scores of boys and girls at the National Examination from mathematics, TIMSS Advanced (Trends in International Mathematics and Science Study) 2008 and 2015 have revealed large gender difference in mathematics achievement in favor of boys. In the study, we try to find explanations for the last different gender differences in TIMSS Advanced 2015 and in the National Examination 2015. In the first part we will compare both tests' results from content and cognitive perspective by gender and put them into international perspective with US and Portugal, one country with large and one with no gender difference in TIMSS Advanced. In the second part we will compare links between students' factors and each achievement. The HLM (hierarchical linear model) will be used on student background data and attitudes, separately with TIMSS Advanced scores and with the National Examination scores. Profile of the highest achievers from both tests will be described. The study intends to find as precise answers as possible to the following questions: which mathematics knowledge was demonstrated with each assessment; which student factors are linked with gender differences in each assessment; what limited the highest achieving boys in TIMSS Advanced to score higher in the National Examination; do the best students in mathematics of any gender have, within the system of the National Examination, equal opportunities to enter the most elite but limited STEM (science, technology, engineering and mathematics) study programs?

SESSION 7A: METHODOLOGY

Symposium: Embracing Heterogeneity in International Large-Scale Assessments

30 June 2017 | 11:00am-12:30pm

Aula, Faculty of Education, Charles University

Chair: Leslie Rutkowski, CEMO Centre for Educational Measurement, Norway

Criticisms over international large-scale assessment (ILSA) models point to problems with current methods used to scale achievement and context scales due to (1) country-specific factors not accounted for in current models; and (2) the choice and misfit of the statistical measurement model. In addition, recent analysis indicated the degree to which achievement estimates are biased as a result of the estimation method chosen. Further, given the growing diversity of new participants and the rapidly changing global landscape due to changes in demographics, political structures, and other factors, it is important for new and historic participants to evaluate their participation in ILSAs, in general and with respect to particular studies. To that end, the proposed symposium takes up several of these issues through five interrelated papers that fall under the umbrella of a larger, overarching research project.

In the first paper, the authors aim to assess the comparability of a typical background measure (socioeconomic status) across three different international/regional studies. With growth in popularity of multiple-groups models as a means for understanding cross-cultural measurement differences, the second paper investigates the impact on scale reliability and model fit of making substantive or analytic decisions to collapse categories of ordinal indicators that comprise a scale. In the third paper, the authors develop a model that brings together ideas from evaluation and validity theory to help system-level participants understand the value of ILSA participation to their local context. And finally, we demonstrate a newly developed R package that allows users to simulate data that mimics international assessment designs, which can be used for basic methodological and applied studies. Each paper is intended to foster productive research around improving the models and methods used to estimate achievement and non-achievement context scales to optimize comparability and local usefulness of international assessments.

Back To The Drawing Board: Can We Compare Background Scales?

David Rutkowski¹ and Andres Sandoval Hernandez²

¹CEMO Centre for Educational Measurement, Norway; ²University of Bath, UK

An important assumption in cross-cultural studies such as PISA, TERCE, and TIMSS is that constructs (math, science, reading, and non-achievement domains) are measured and understood similarly across groups. Historically, significant work has been done to ensure comparability of achievement scales but, in contrast, much less effort is spent on evaluating scales derived from the background questionnaires. Empirically, results show that the assumption of equivalent background scales is often violated, leading to compromised comparability. In this paper we use data from three international studies (PISA, TERCE, and TIMSS), to explore both across and within country data consistency on select background scales. Specifically we use scales developed by the testing organizations to examine some form of socioeconomic status. The three assessments were purposely chosen as they represent three different models of international assessment. For example, TERCE, was chosen to represent a regional study, with measures that are regionally developed and believed to have more relevance for participants. TIMSS, was chosen to represent a trends focused study, one that has historically emphasized consistency and comparison. Finally, we include PISA, which has the largest number of participants and has historically been willing to make significant changes to its background questionnaires. Our initial findings suggest that the analyzed background scales are not fully equivalent in any of the three studies, and therefore comparisons across countries should be done with caution. The different levels of equivalence reached by each scale in each study and the type of comparisons that can be made given these results (e.g., comparison of average scale scores, comparison of relationships between the tested scales and other

variables) are discussed in the full paper. Finally, we conclude the paper with a discussion of two differing ways to account for the heterogeneity in LSAs, including model-based and design-based solutions (OECD, 2012).

The Impact of Collapsing Choices in Categorical MG-CFA: A Look at Model Fit and Reliability

Leslie Rutkowski¹, Dubravka Svetina² and Yuan-Ling Liaw¹

¹CEMO Centre for Educational Measurement, Norway; ²Indiana University, USA

Increasingly in international assessments, there is an interest in understanding the degree to which non-achievement scales are comparable across educational systems. As most scales of this sort are comprised of items that are ordinal in nature (e.g., Likert-scaled items of agreement), recommended approaches for understanding comparability issues center around categorical multiple-group (MG) measurement models. An obvious aspect of this method (in contrast to a linear factor model) is that the number of categories for each item must be identical across countries. And differences in the number of categories per item, due to sparse counts in a country or countries, must be reflected by collapsing categories in all countries in the model. Similarly, researchers choose to collapse in an effort to produce substantively appealing categories. An example is an item that asks about frequency of occurrence that is collapsed to reflect a never/ever categorization. As noted in research around single-group analyses, collapsing decisions can have a meaningful impact on scale reliability and associated inferences. However, there is a paucity of literature regarding the impact of various category collapsing strategies on multiple-group analyses. To address this gap in the literature, we evaluate the impact on group and overall model fit via the chi-square test when different collapsing strategies are used in a multiple-group context. In particular, we use data from the TIMSS 2011 bullying scale to determine changes in model fit when we collapse categories to reflect substantive research interests. We also consider the impact of these collapsing choices on scale reliability and changes in the latent variable mean and variance across groups. Our findings offer some guidance for applied researchers engaged in multiple-group analyses.

Bridging Validity and Evaluation to Help Understand International Large-scale Assessments Utility, Value and Meaning for Various Stakeholders

Maria Elena Oliveri¹, David Rutkowski² and Leslie Rutkowski²

¹Educational Testing Service, USA; ²CEMO Centre for Educational Measurement, Norway

Fifty years after the first international large-scale assessment (ILSA), participation in these studies continues to grow, with more than 50% of the world's countries taking part. Concomitant with growth in ILSAs is an expansion in the diversity of participating countries, which introduces increased diversity in the represented languages, cultures, and educational perspectives and goals. As educational aims might differ for new participants and goals among historic participants can be expected to shift over time, it is useful to understand the degree to which countries' expectations of ILSAs, as a means for understanding their educational system, align with the explicitly and implicitly stated purposes of these studies. In this manuscript, we aim to shift the conversation away from countries reporting ILSA shock and dissatisfaction with participation to fostering a productive conversation about the value and utility of participation for educational systems. To that end, we propose a framework that combines ideas from evaluation theory and validity theory to help countries understand why they participate in ILSAs and the potential value in taking part. We develop this conceptual framework with the aim that countries can (a) systematically consider their educational goals and the degree to which ILSA participation can reasonably help countries monitor progress toward them; (b) use an argument model to analyze claims by ILSA programs against the background of a country's specific context; and (c) more clearly understand intended and unintended consequences of ILSA participation. The framework offers a tool to systematically think through a complex web of implicit and explicit purposes, goals, and actors related to ILSAs and educational systems. To demonstrate our proposed framework, we review national education agendas in several countries with differing educational traditions (e.g., the United States, Mexico, and Norway) against published ILSA frameworks. Using our proposed method would offer a set of general guidelines that national funders can use to chart a path forward in terms of future ILSA

participation. It can also equip participating countries with the knowledge to engage in reasoned conversations with testing organizations regarding unmet needs from testing programs.

ilsasim: An R Package for Simulating Large-Scale Assessment Data

Tyler Matta¹

¹CEMO Centre for Educational Measurement, Norway

As one component of basic methodological research, simulation studies play an important role. Indeed, many educational and psychological measurement and methods journals emphasize simulation studies as a means for developing new methods or testing established methods. For example, four of five most read articles in Structural Equation Modeling feature simulation studies. Similarly, a search through the journal *Educational and Psychological Measurement* resulted in 716 articles that used the terms simulation. And in the three-year-old journal *Large-Scale Assessments in Education*, 11 of 39 publications include the term simulation. Important in the current context is that international assessments include design features that make simulation a potentially complex endeavor. To that end, we propose an easy-to-use R package – *ilsasim* – for simulating data that mimics international (and national) large-scale assessments (LSAs). The *ilsasim* package enables researchers to generate data for conducting research on many aspects of large-scale assessments. In particular, *ilsasim* has a number of capabilities including simulating correlated background questionnaire that have continuous, dichotomous, and ordinal scales. In addition, background variables can be specified to have varied relationships with underlying latent proficiencies. Item responses that depend on the latent proficiency can be generated from matrix sampling designs and exploratory IRT models. Although users have the ability to specify each part of the data generating process, the package comes with population parameters from previous PISA and TIMSS assessments as well as functions that facilitate the generation of random population parameters. In the paper, we provide an overview of the methodology – based on international assessment design, population modeling, and item response theory – used to generate each inter-related component of the data. To demonstrate *ilsasim*, we include two vignettes that illustrate the functionality of the package. The package has potential for academic researchers and researchers and analysts in testing organizations and companies.

SESSION 7B: PIRLS

Interrogating Conceptual Information

30 June 2017 | 11:00am-12:30pm

Room 016, Faculty of Education, Charles University

Chair: Andrea Netten, IEA Amsterdam, The Netherlands

The Effect of Access to Text on Bilingual Language in Education Models: Exploring Higher-order Reading Comprehension Performance in prePIRLS 2011

Nelladee McLeod Palane and Sarah Howie

University of Pretoria, South Africa

As part of a doctoral study, the performance of South African Grade 4 students on the 'Integrating and Interpreting' plausible value in prePIRLS 2011 (preProgress in International Reading Literacy Study) is compared between students writing in English for whom it is not their home language, (Immersion Model) and students writing in their home language (Additive Bilingual Model) across the nine African languages tested within the lowest socioeconomic grouping. The final sub-sample included in the analysis was 968 students.

Using Linear regression, it was found that African students from the most disadvantaged sector of South Africa, whose Language of Learning and Teaching (LoLT) is English in the Foundation Phase (Grade 1-3), but who do not speak English as a home language perform better on the higher-order reading comprehension subscale, compared with those having mother-tongue instruction across the same grades and socioeconomic status. Preliminary results from hierarchical linear modeling of contextual variables at the student- and class- levels suggest that for the Additive Bilingual group where home language was spoken more often at home and where the father had full-time employment, these variables contributed positively to reading achievement on the higher-order subscale; whereas in the Immersion group access to children's books mainly in the language of the test explained the most variance followed by the father's level of education. It is posited that language development to the level necessary for higher-order reading comprehension requires a supportive home and school mediatory context to emerge within each language model, and that the contextual factors that contribute the most mediation differ for the language models considered here across the same socioeconomic status. The nature of the contextual variables that most contribute to better performance on the higher-order subscale by the Immersion group suggest that the availability of print in the home promote language development to the abstract level required for higher-order reading comprehension.

Reading Instruction Through Curriculum Reform in Hong Kong: An Evaluation of Its Impact and the Escalation of PIRLS Reading Attainment

Sau Yan Hui, Hung Wai Rex Ng and Yue Celinda Zhu

The Centre for Advancement of Chinese Language Education and Research, The University of Hong Kong, Hong Kong SAR (China)

In Hong Kong, the government has been keen on nurturing students' reading abilities since curriculum reform in 2000. This study intends to investigate how the Chinese Language curriculum (especially in reading instruction) has undergone reform and development since 2000, and its connections with the escalation of students' PIRLS (Progress in International Reading Literacy Study) reading attainment. To interpret the policy change and curriculum reform, curriculum documents and media reports will be analyzed. Students' reading attainment in different cycles of PIRLS, and how such improvement in performance is attributed to the change of reading instruction, will be explored.

The study will conduct document analysis and curriculum evaluation. Statistical analysis will be utilized to examine the relationship between reading instruction and reading attainment. Meanwhile, semi-structured interviews will be conducted, to capture opinions and thoughts on curriculum reform from officials and frontline teachers. Results of the study will explain the relationship between curriculum reform and the escalation of reading attainments of students, which will inspire the discussion of influence of curriculum reform in Hong Kong during the past two decades.

Social Interaction Determinants of South African Reading Literacy Achievement: Evidence From prePIRLS 2011

Surette van Staden¹ and Annika Bergbauer²

¹University of Pretoria, South Africa; ²Ifo Center for the Economics of Education, University of Munich, Germany

This study identifies factors predicting reading literacy achievement among Grade 4 learners in South Africa by utilising Vygotsky's social interaction theory. The study draws on the preProgress in International Reading Literacy Study (prePIRLS) 2011 data, which places South African Grade 4 learners' results considerably below the international centre point of 500 at 461 (SE = 3.7). Distinct items from the prePIRLS 2011 student, teacher and school questionnaires predict learning outcomes including school emphasis on the curriculum, teacher expectations of students, parents talking to students about school and assisting with homework. Findings explain 41 % of the variance in student reading achievement and provide evidence for the significant role of schools, parents and teachers (when controlling for background factors) in predicting increased reading literacy achievement scores. An

absence of interaction with the child in either parents who do not engage in homework activities or talking about school, less emphasis on academic success by the school, or teachers who do not successfully implement the curriculum or make their expectations clear to students link statistically significantly to lower reading literacy achievement scores. Achievement for Grade 4 students who were tested in African languages was adversely worse for those students by test language – these coefficients would indicate performance for students who were tested in an African language when that language was not their home language. These findings highlight the importance of social interaction in achieving literacy adding a non-economic dimension in predicting learning outcomes.

Exploring Complexity in Defining Higher-Order Reading Comprehension in prePIRLS 2011

Nelladee McLeod Palane, Celeste-Marie Combrinck and Sarah Howie

University of Pretoria, South Africa

This paper explores the relationship between the reading comprehension processes, item difficulty, text (reading passage) selection and the reader's socio-linguistic context as factors that contribute to allocating a reading comprehension task to a higher- or lower-order category. It is argued that defining the inferring reading comprehension process as either a higher- or lower- construct may differ for socio-linguistic groupings embedded even within the same language groupings of the South African data. The finding that items and reading processes work differently for embedded socio-linguistic groupings offers considerations for large-scale test development and the reporting of results. Items were taken from three prePIRLS 2011 (preProgress in International Reading Literacy Study) booklets with a common passage. Data from South African Grade 4 students who wrote the English versions of three booklets were used, resulting in a sample of 419 students for the total sample and an embedded subsample of 215 speakers for whom English is a second language (L2). The Rasch Partial Credit Model was applied to the whole sample as well as the English L1 home language and L2 second language students. The results showed that the prePIRLS 2011 items were well suited in difficulty for the L2 second language group, but for the L2 home language group the test was targeted below their proficiency. A multiple regression indicated that both the choice of passage (text selection) and the reading comprehension process have a significant effect on item difficulty and, as such affect the categorization of items into either a lower- or higher order cognitive category.

SESSION 8A: TIMSS

Focus on Teaching

30 June 2017 | 2:00pm-3:30pm

Aula, Faculty of Education, Charles University

Chair: Ina Mullis, Boston College, USA

Discussant: Michael Martin, Boston College, USA

Teachers' Efficacy, Parents' Involvement, and Students' Schooling Attitude as Determinants of School Achievement – A Case of United Arab Emirates 4th Graders in TIMSS 2015

Masood Badri¹, Guang Yang¹, Rabaa Al Sumaiti², Asma Al Rashedi¹, Lassaad Essafi³, Khaled Tamsah³, Ali Al Yafei³ and Mohammed Mazheriddin³

¹Abu Dhabi Education Council, United Arab Emirates; ²Knowledge and Human Development Authority, United Arab Emirates; ³Ministry of Education, United Arab Emirates

The study provides a structural equation modeling (SEM) of school leaderships' views of teachers', parents', and students' characteristics relative to school's performance in TIMSS 2015 (Trends in International Mathematics and Science Study) in Science and Math in the United Arab Emirates. The

School Questionnaire items related to school leader's perception of teachers, parents and students were used for the analysis (13 items). Both exploratory factor analysis (EFA) and confirmatory factor analysis (CFA) were employed to construct the SEM. The SEM provided acceptable fit statistics with several significant paths. Results point to the significance of attitudes and behavior of teachers, parents, and students. There were significant paths from (teachers) to (students), from (parents) to both (students) and (TIMSS scores), from (students) to (TIMSS scores). The direct impact of the parent construct on the TIMSS scores is elaborated on carefully. Implications of the study is addressed along with future research directions.

Relations Between Collective Teacher Efficacy, Disciplinary School Climate and Student Achievement in TIMSS 2011

Anna Toropova, Stefan Johansson, Eva Myrberg and Monica Rosén

University of Gothenburg, Sweden

School climate has proven to be an important factor for student academic achievement, with teachers playing a vital role in its formation. Among the various climate dimensions, disciplinary school and classroom climate are known to be crucial for student achievement and feeling of safety at school. Social cognitive theory suggests that collective teacher efficacy is an important factor to consider in its relation with the school environment, in particular its disciplinary climate. By shaping the school's normative environment teacher collective efficacy beliefs influence individual teacher attitude and behaviors, which in turn impact student behaviors and achievement. While studies on the relations between different aspects of the disciplinary school climate and student achievement are numerous, collective teacher efficacy has been given less attention, in particular when it comes to its potential impact on the disciplinary climate. The main aim of this study was to investigate the role of teacher collective efficacy and the disciplinary school climate for 8th graders achievement in mathematics in Sweden based on TIMSS 2011 (Trends in International Mathematics and Science Study) data. We relied on teachers' perceptions of the disciplinary school climate in our analysis. Analytical methods were mainly confirmatory factor analysis and structural equation modeling. Preliminary findings indicate that there is a positive direct effect of the disciplinary school climate on student achievement, even after controlling for student SES (socioeconomic status) composition. Findings also suggest that collective teacher efficacy beliefs are related to student achievement indirectly via the disciplinary school climate. The mechanisms and directionality of this relation require further exploration.

Robustness of Results About Teacher Effects Across Subjects, School Levels, Outcomes and Countries

Sigrid Blömeke and Rolf Vegar Olsen

University of Oslo, Norway

Results about teacher characteristics related to student outcomes lead to a lot of public attention because they may indicate ways how policy makers can improve the effectiveness of schooling. A crucial question is therefore how robust such results are: across subjects, school levels, outcome measures, and countries. This research question will be examined in this talk based on TIMSS 2011 (Trends in International Mathematics and Science Study) data with respect to five teacher characteristics (teacher education major, teaching experience, professional development, sense of preparedness and instructional quality) and two student outcomes (achievement, motivation) in five countries (England, Norway, South Korea, Thailand, Tunisia) for two school grades (4, 8) and two subjects (mathematics, science). Data revealed consistency of relations between teacher characteristics and student outcomes generally only within countries and specifically only with respect to instructional quality as predictor. With respect to the other predictors examined, policy makers are advised not to make inferences across grades, subjects or outcomes.

SESSION 8B: TIMSS & PIRLS

Comparing (Sub)Populations

30 June 2017 | 2:00pm-3:30pm

Room 016, Faculty of Education, Charles University

Chair: Jana Strakova, Charles University, Faculty of Education, Czech Republic

Differential Effectiveness for Residents and Immigrants in the Gulf States: An Analysis Based on Creemers' Comprehensive Model of Educational Effectiveness Using TIMSS 2015

Oliver Neuschmidt and Julia Tölle

IEA Hamburg, Germany

Results from international large-scale assessments over the last decade indicate comparatively low results in terms of mathematics achievement for the Gulf States which is in contradictions to the economic wealth of those countries. Besides, the area shows large disparities in the population, for example in terms of gender and immigration status. This research project aims to investigate in differences of effectiveness factors related to immigration status and their association to student's mathematics achievement based on a set of factors identified according to Creemers well established integrated model of school effectiveness.

The Role of Linguistic Demands in Testing Mathematics: An Exploration of Differences Between Students With Different Linguistic Backgrounds in TIMSS 2015

R. Annemiek Punter¹, Martina R.M. Meelissen¹, Theo J.H.M. Eggen^{1,2} and Cees A.W. Glas¹

¹University of Twente, the Netherlands; ²Cito, the Netherlands

Results of TIMSS 2015 (Trends in International Mathematics and Science Study) indicated that in the Netherlands, students that speak the test language at home scored substantially higher on the mathematics test than students primarily speaking a different language at home. This motivates further research on the role of language in assessing mathematical ability. IRT (item response theory framework) models were used to test the plausibility of attributing the effects to the language component and to test whether findings obtained also generalized to three other west-European countries: Denmark, Germany and Belgium.

Using the TIMSS 2015 mathematics test, an IRT model was estimated for the students that speak the test language at home (Language Group 1), and using this model as a base line, a bi-factor IRT model was estimated for students not speaking the test language at home the model (Language Group 2). The bi-factor model incorporates a main dimension pertaining to the core mathematical aspect of the test items and a second dimension, where item factor loadings indicate to what extent a "noise component" is reflected in the items for Language Group 2. The test items were also classified based on their level of reading demand. Effects of these item characteristics are also included in the model.

Results showed that the items address a second dimension for students in Language Group 2. Results are relevant for the context of mathematics studies as they confirm that language factors are in play in the mathematics test for student in Language Group 2, especially items high in reading demand. No great differences between the 2015 and 2011 items were found in item reading demand indicators.

Applying the Pseudo-Panel Approach to International Large-Scale Assessments: A Methodology for Analyzing Subpopulation Trend Data

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This paper explores a new subpopulation approach for analyzing trend data from international large-scale assessments. Previous research by Gustafsson has proposed that difference-in-differences analysis at country-level could aid causal interpretation by controlling for selection bias and omitted variable bias. Applying the pseudo-panel approach of Deaton to create subpopulations, this paper expands upon Gustafsson's approach to allow for analysis of subpopulation trend data. Example analysis was conducted analyzing the relationship between Early Literacy Activities and PIRLS reading achievement across PIRLS 2001 and PIRLS 2011 (Progress in International Reading Literacy Study). The results from this analysis show distinct coefficient estimates for the subpopulation approach when compared with other approaches, and demonstrate that the subpopulation approach allows for new opportunities for analysis of subgroup differences using trend data.

Examining Patterns of Non-Responses in Cyprus and the USA in TIMSS 2015

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Construct irrelevant due to test taking familiarity or test taking practices can impose threats to the validity of data interpretations from comparative international studies. Therefore, it is important to identify variations that might exist on these issues from country to country, as well as within countries. The purpose of this study is to identify the variations that might exist in relation to omitting item responses, look into their predictors, and measure their possible impact by examining TIMSS 2015 (Trends in International Mathematics and Science Study) fourth-grade data. The results of the study have found that variations do exist between countries on these issues. Moreover, item characteristics are also related to the ways in which students respond to various test items, and more specifically, to non-responses.

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Relative Age Effects in TIMSS and PIRLS Over 20 Years in the Nordic Countries

Julius Kristjan Björnsson and Rolf Vegar Olsen

University of Oslo, Norway

The relative age effect (RAE) is well known in the literature and has been described by several researchers, using data from a range of different assessments. There are, however, not many reports where the effect has been described throughout the course of primary and secondary school, although data from PIRLS 2006 (Progress in International Reading Literacy Study), TIMSS 2007 (Trends in International Mathematics and Science Study) and PISA 2009 (Programme for International Student Assessment) did show that the effect declines as the pupils grow older. The degree to which this initial difference persists into later life is not entirely clear.

This study uses the data from 20 years of TIMSS and PIRLS data from the Nordic countries which all have comparable school systems and rules of school-entry. The data were cleaned so that only students from the modal age/grade were included. For each study, performance in each of the domains was regressed on age in months and a dummy for grade.

At this time, analyses have only been done for Norway. The Nordic countries are particularly attractive to include since the cohorts entering the school systems are kept more or less unchanged through lower secondary education (no tracking or streaming).

In general, the results for the same grade/subject are not very robust across cycles, for instance varying from 19 points to 44 points for mathematics in grade 4 for the five cycles in TIMSS. Across subjects within the same cycle, the effect is more robust. Until now we have only been able to compare adjacent grades for the TIMSS 2015 in Norway. Norway participated with full samples from both grade 4 and 5. The average difference in scores between the two grades was 57 in mathematics and 44 in science. Using a regression discontinuity approach with parallel slopes the within grade age effect is estimated to 25 and the between grade shift (the discontinuity) to 30 scale points for mathematics. For science both effects represent 22 scale points. Similar estimation will be done for grade 8 and 9, it will be done for two more cycles (1995 and 2011) and it will be done with random slopes across the two grades.

How SES and Books at Home Affect Native and Immigrant Children's Reading Achievement: A Linear Mixed Model Study of PIRLS 2006 and 2011 in Taiwan

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Globalization opens to the increase of immigrant families which raised the issue of how to provide their children to learn the language of instruction. In general, immigrant children's school performance was relatively poorer than native children's. It might be due to the weaker parental education and social levels. Yet, the SES (socioeconomic status) factor may be too general to explain the essence of this phenomenon. The current study used PIRLS (Progress in International Reading Literacy Study) 2006 and 2011 data (Taiwan) to investigate the difference of overall reading performance between immigrant children and native children over the years (model 1). Question asked was how the difference changed when considering parent's education and occupation and the number of children's books at home (model 2)? We adopted linear mixed model as the main analysis method which could simultaneously estimate the effects of the category variables and the continuous variables and could hold the statistic power to process unbalanced data. Model 1 showed the poor performance of immigrant children which was consistent with the general impression. However, after excluding the influences of the above three factors, immigrant children's performance was poorer than natives in 2006, but was better in 2011. Further comparing the effects of the three factors within the years and the groups, it was found that the educational and occupational status of the immigrant parents in 2011 were different from those in 2006. It implied the structure of the immigrant families in Taiwan society was changing. In addition, this study also found that the immigrant parents in 2011, in spite of lower educational and occupational level, their children had more books than native children had, and with children had more books, their overall reading performance were better. This phenomenon shows that the education policy of the Taiwan government to promote the "rich collection of books at home" may be an effective policy for the equal opportunity for learning.

The Significance of the In-School Acquisition of ICT Skills. A Gender-Specific Typology and the Relationship With CIL and ICT Self-Efficacy in ICILS 2013

Kerstin Drossel, Birgit Eickelmann and Corinna Massek

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Studies show that girls indicate having acquired their ICT (information and communications technology) skills at school more often than boys. ICT skills acquired at school positively correlate with computer and information literacy (CIL) in some countries (e.g. Australia), but negatively in others (e.g. Germany); still others do not show any relationship (e.g. Czech Republic). The question of whether the girls' progress in CIL is connected with ICT skills acquired at school, however, has thus far not been investigated.

This desideratum is taken up using the framework model from the International Computer and Information Literacy Study (ICILS) 2013. For a selection of countries, this poster contribution aims to examine whether different student types with regards to the in-school acquisition of ICT skills can be identified and to what extent these types are connected with CIL and the ICT self-efficacy.

Therefore, a secondary analysis of ICILS 2013 student data from Australia, Germany and the Czech Republic is conducted. Using latent class analysis, the included five items on ICT skills acquired at school contribute to the identification of student types. The relationship between these types and CIL (plausible values), as well as the ICT self-efficacy (two scales; will subsequently be analyzed).

A two-group-solution is pursued for both girls and boys in Germany and in the Czech Republic. The results show that one learner type is very likely to have acquired their ICT skills at school (in-school learner). The other learner type rarely uses their school as a learning facility for these skills (extra-school learner). The Australian sample is best described using a three-group-solution, which equally shows a distinction between in-school and extra-school learners.

Moreover, the in-school learners – both girls and boys – show significantly lower levels of CIL than the extra-school learners. Boys of the in-school learner type additionally have a lower ICT self-efficacy. In the case of the girls' self-concept, a significant difference in favor of extra-school learners can only be detected in Australia and the Czech Republic.

DIF Study on the Effects of Item Modifications Based on the TIMSS Trend Items

David Ebbs¹, Deana Desa² and Paula Korsnakova¹

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This study presents an empirical evaluation on TIMSS (Trends in International Mathematics and Science Study) 2007 and 2011 mathematics test items on the methodology for detecting DIF (differential item functioning) items within the item response theory framework (IRT) and the methodology for analyzing linguistic complexities to detect sources of bias on test items. This study focuses on the comparability of the two test cycles where test items were translated and adapted from English into the targeted languages and where items were modified or changed between cycles. The item modifications from a linguistic perspective may reflect the effects of morphological, syntactic and lexical problems. From the preliminary results, it is shown that the examined item modifications on TIMSS 2007 and 2011 have successfully preserved the quality of the test items. That is the items function the same in all translated and adapted versions. Only a few test items showed very minor problems. The results largely showed that the consistency of translated items across test cycles was maintained. We propose further analyses of within-country patterns on items with- and without-DIF that show some effects from a linguistic perspective of morphological, syntactic and lexical modifications. This analysis would give an insight of how the different modifications are classified to improve guidelines, procedures and consistency of test items across test cycles and populations, and provide an informed explanation on problematic items for assessments.

What Is Masked by Average Scores by Gender? A Deeper Look into Gender Gaps in TIMSS 2015

Ebru Erberber, Yemurai Tsokodayi and Sarah Guile

American Institutes for Research, USA

When results from international large-scale assessments are reported, gender differences in achievement on average are often emphasized more than gender differences along the achievement distribution. Using the former approach may mask some key information that the latter approach may help uncover and that, in turn, may paint a richer picture of gender equity matters in education systems. Our study used TIMSS 2015 (Trends in International Mathematics and Science Study) data in mathematics and science at grades 4 and 8 from more than 60 education systems to investigate profiles of gender score differences on average and at the selected percentiles. Specifically, using the IEA's IDB Analyzer and the U.S. National Center for Education Statistics' (NCES) International Data Explorer (IDE), we computed, for each education system, gender differences in mean achievement, and at the 10th, 25th, 50th, 75th, and 90th percentiles, and tested the significance of the differences to determine if and how profiles of gender differences across the performance distribution differ from profiles of gender differences in mean achievement.

The results reveal three main findings that are observed consistently at grades 4 and 8 in both mathematics and science:

- In education systems where average score differences by gender favor males, the differences are more prevalent among high performers.
- On the other hand, in education systems where average score differences by gender favor females, the differences are more prevalent among low performers.
- Additionally, in education systems where there are no gender differences in average achievement, gender gaps are sometimes present among high or low performers.

These results are consistent with previous research that examined gender score differences within and across education systems. For example, research has indicated that, among TIMSS 1995 students in the final year of secondary school, achievement differences by gender are often more pronounced among high-performers. Our study contributes to previous research by examining gender equity using the most recent TIMSS data at the primary and secondary grade levels.

Policymakers would benefit from exploring gender score gaps at different percentiles. The insight gained through such analyses would allow them to target policies to better address gender equity issues among both high- and low-performing students.

ILSA Literacy via Comparison Matrix: Juxtaposing Results of PISA, TIMSS, PIRLS, and ICCS

Mariusz Gałczyński

Florida International University, USA

This poster advocates for ILSA (international large-scale assessment) literacy, the understanding necessary to interpret the results of international large-scale assessments as validly and meaningfully as possible. In applying insights from comparative studies to the framework of assessment literacy, ILSA literacy demands us to look at the “big picture” by putting individual ILSAs into broader context.

Essentially a meta-analysis of coincident ILSAs, this poster organizes ILSA results into comparison matrices that juxtapose student achievement across multiple age/grade levels in relation to multiple literacies. Two matrices are displayed: the first constructed with data from ILSA administrations carried out between 2009 and 2011, and the second with data from 2015-2016 administrations. Given that four major ILSAs (PISA (Program for International Student Assessment), TIMSS (Trends in International Mathematics and Science Study), PIRLS (Progress in International Reading Literacy Study), ICCS (International Civic and Citizenship Education Study)) are staggered along 3- to 7-year cycles, the depicted ranges of ILSA cycles represent the narrowest periods during which data was collected from fairly analogous student populations. Placeholders are included for 2016 cycles of PIRLS and ICCS, as results have not yet been released.

As a result of juxtaposing ILSA results in side-by-side matrices, stakeholders who make use of such data are directed to focus on macro-level and longitudinal issues that would be otherwise disregarded. Each matrix facilitates (1) easy identification of achievement trends for participating countries, including less typically recognized “top-performers”; (2) comparison of student achievement in humanistic (reading, civics) versus STEM (mathematics, science) fields; (3) comparison of student achievement at early ages/grades (TIMSS, PIRLS) versus later ages/grades (PISA, TIMSS, ICCS); and (4) comparison of mathematics and science achievement on comparable IEA- and OECD-sponsored ILSAs (via countries that participate in both TIMSS Grade 8 and PISA). Taken together, the 2009-2011 matrix also hints towards critical points for analysis on the 2015-2016 matrix.

In summary, this visual method of comparison generates a baseline reference for researchers, policymakers, and the media to use in making broad claims about educational quality in nations – and is in itself an illustration of ILSA literacy. Moreover, by replacing specific achievement scores with results in relation to each ILSA’s international average, the potential for sensationalism and subsequent policy reactions is reduced.

Impact of International Large-Scale Assessments on the Diversity of Education Policy Making

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Academics across the world have expressed concern about the negative impact of international large-scale assessments (ILSAs). Comparative Education researchers claim that ILSAs are more often used as tools for ‘soft power’ governance, and policy was found to more closely resemble ‘isomorphism’ and national education strategies became more packaged, uniformed, or paternalistic. One of the ILSA administrators responded to criticism that they provided opportunities for strategic policy design. In

spite of the debate surrounding policy-making using ILSA data and the influence of assessment culture on school atmosphere, clear evidence of its impact is thus far unclear from each side.

The purpose of this study is to examine whether the variety of characteristics of national education have been widening or not. Using TIMSS (Trends in International Mathematics and Science Study) data from 1995 to 2015, PIRLS (Progress in International Reading Literacy Study) data from 2001 to 2016, PISA (Programme for International Student Assessment) data from 2000 to 2015, and other ILSAs data, typically the trend of variance between and among countries, we made comparisons between each cycle of the assessment by analysing the TIMSS trend items and PISA link items. Contextual evidence was also used for interpreting the analysis, such as political discussion, curriculum reform, and the history and tradition of each country.

The presentation has four major parts: (1) research question (purpose of study), (2) the methodological/technical background, (3) major findings from secondary analysis of ILSAs, and (4) interpretation of the results and conclusion. One key feature is that we focused solely on the trend of TIMSS 8th grade Mathematics mean score in each country who had participated all the cycles, and on the trend of PISA Mathematics mean scores; we found that there was a significance positive correlation between these two trends. This means that countries that improve their TIMSS achievement also succeed in raising their performance on PISA. To examine its robustness, we used the microdata such as TIMSS student test responses. The underlying concern of this study is whether ILSAs have provided more policy options to the participating countries, or have discouraged the development of distinct national education and empowered global uniformity.

Exploration of Measurement Characteristics of Home Possibility Over Time (2001 – 2015)

Masoud Kabiri

Research Institute for Education (RIE), Iran

In TIMSS (Trends in International Mathematics and Science Study) and PIRLS (Progress in International Reading Literacy Study), several indicators were used to assess family wealth and provided in two parts of national and international options. Whereas international options remain constant for all countries, national ones are quite different. Both parts have changed over time. In the present study, all national and international items in fourth grade of Iran were examined for 6 cycles of TIMSS and PIRLS. There were 23 items: calculator, computer, study desk, dictionary, daily newspaper, own book, internet connection, own room, washing machine, dishwasher, (own) mobile, car, video camera, piano, phone, game system, TV, video player, radio, audio-visual player, luxury furniture, musical instrument and pool. Difficulty and discrimination parameters of items were estimated, applying two-parameter item response model, in all cycles of TIMSS and PIRLS. Considering the reverse coding of items, results show that the difficulty of parameters often have increased towards the positive extreme of the continuum, which means that higher percent of ownership of them from 2001 to 2015. Although, typically the discrimination power of most items remain constant up to 2011, slope coefficients slightly have declined in the last cycle, which means adequacy of items likely have been decrease and alternative items should be considered for next cycles. Changes in ICT-related (information and communications technology) items are higher than others. Generally, results suggest the items of family wealth should be revised in order to hold their measurement power.

Policy and Curriculum Impacts in Different Education Systems Based from the IEA's TIMSS

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The international large-scale student assessments (ILSA) provide policymakers information on the development of their national education systems. One of the major benefits from ILSA is the adequacy of the current policies that drives the course of further reforms based on the evidence these studies provide. This study aims to collect information on the “impacts” the IEA's Trends in International

Mathematics and Science Study (TIMSS) on the national policy-making, curriculum in particular, through its cycles. The study will use the available data from TIMSS, as well as questionnaire on the impacts TIMSS' findings had on the national curriculum and general reforms implemented in the countries as result of the study's findings. Previous study, conducted in 2010 used data from previous TIMSS cycles and data collected from 28 educational systems found several TIMSS "impacts" on national policy-making, namely direct and indirect impacts. This study further enhances instrument by adding more questions on specific impacts TIMSS had through its cycles on the national policymaking. The findings will provide valuable information on the usefulness of TIMSS, and ILSA in general, for the national policymakers and the improvements made in their national education systems based on TIMSS over time.

Comparing Latent Means Across Countries - How Different Are the Results When Using Different Measurement Invariance Testing Methods?

Catalina Lomos

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Many authors have indicated how misleading the cross-cultural comparisons can be when cross-cultural equivalence is ignored, using examples from the European Social Survey (ESS) data. Testing for measurement invariance when working with latent variables has become a precursor to all country comparisons.

This need raises the question of the most appropriate method for performing such tests of measurement invariance in order to choose the most adequate measurement model. There are more methods or approaches possible and the question raised is if these methods give the same results in terms of country latent means' comparison. Previous research has tested and discussed the appropriateness of using the Composite Score, being the unweighted average score of the several items combined, and its quality estimates in establishing measurement equivalence. A multitude of methods and data analysis tools have been developed in the last years to assess measurement equivalence by setting equality constraints on specific measurement parameters, depending especially on the measurement level of the observed indicators and of the latent variable. In education, considering that most of the latent variables are continuous (measured through continuous or ordinal-categorical indicators), the most applied methods are the Composite Score and the Multi-Group Confirmatory Factor Analysis (MGCFA) when equality constraints are imposed in testing. The Full MGCFA method requires a full equivalence method through strict equality constraints, which most of the time are very hard to achieve. This has determined the development of derivative methods within MGCFA, such as the Partial Equivalence method, focusing on detecting local misspecifications or the Alignment Optimisation method without requiring exact measurement invariance.

Using a latent concept measured through five observed indicators from the ICCS 2009 (International Civic and Citizenship Education Study) data, we will empirically test for measurement invariance, and we will show how much the countries' compared latent means are impacted by the different methods, namely the Composite Score method, the Full and Partial MGCFA method, and the Alignment Optimisation method.

PIRLS 2006: Examining the Fourth Graders' Writing Competence During Testing and its Relationship With Chinese in Hong Kong

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The paper will look at the test booklets completed by Hong Kong primary school students as part of their contribution to the Progress in International Reading Literary Study (PIRLS) project. From the PIRLS 2006 databank, 300 booklets will be randomly selected for the study. The study aims to investigate competence in producing written Chinese during reading comprehension tests. Its relation with Chinese reading comprehension performance of Grade Four students in Hong Kong will also be

investigated. A comparison will also be made of responses to multiple choices (MC) and constructed response (CR) items. It will examine how outcomes have been influenced by the individual students' writing ability on the type of questions used in the tests: open-ended or multiple choices. In order to study Grade 4 students' writing competence during reading comprehension test, different psychological and linguistics aspects will be included in the analytical process. This study will create a methodology and analytical framework to produce major understanding of the components of written competence contributing to reading comprehension. Finally, the results and recommendations at curricular and pedagogical levels will be presented.

Student Absenteeism and 8th Grade TIMSS Achievement in Jordan

Helena Virve Pylvainen

Queen Rania Foundation, Jordan

Global results from the Trends in International Mathematics and Science Study (TIMSS) and the Programme for International Student Assessment (PISA) have shown a clear negative association between student absenteeism and achievement. This analysis used the new TIMSS 2015 results to provide an updated perspective on the issue in Jordan. In contrast to previous findings, the TIMSS 2015 data suggest that student absenteeism is not necessarily more widespread in Jordan than other countries. Eighteen percent of 8th graders in Jordan reported missing school once every two weeks or more, only slightly above the international average of 16 %. Multivariable linear regression models found a relatively strong negative association between absenteeism and student achievement. After controlling for student background, absenteeism was associated with around scores around 46 points lower in math and 54 points lower in science. However, when controlling for students' attitudes about learning and other factors, absenteeism was associated with a decrement of just 28 points in math and 29 points in science, suggesting other linked factors may play a larger role in learning outcomes.

Reading Enjoyment of Grade 4 and Grade 6 Students in the Czech Republic

Eva Potužníková

Charles University, Faculty of Education, Czech Republic

The present research shows that a positive attitude towards reading is a significant predictor of reading achievement that develops to a large extent independently of family background and can be supported by an appropriate reading instruction. Yet at the lower secondary level the attitude towards reading becomes a more individually shaped characteristic with a limited possibility to be influenced by school.

The Quality of School SES Measures Using ICCS 2009 Data

Nadine Radermacher and Falk Brese

IEA Hamburg, Germany

Using IEA ICCS 2009 (International Civic and Citizenship Education Study) data, this poster focuses on analyzing and evaluating existing family background measures regarding their quality and usability on school level. The practicability of aggregating existing socioeconomic status (SES) measures to school level is examined by analyzing the completeness of information (% of missing data), internal consistency and the reliability of scales on school level as well as the association with ICCS outcome variables. Appropriate statistical methods are used to account for the complex sampling and assessment design.

This paper builds on previous research on the quality of family background measures on individual level and analyzed their power to explain differences in student learning outcomes using TIMSS (Trends in International Mathematics and Science Study), PIRLS (Progress in International Reading Literacy Study) and PISA (Programme for International Student Assessment) data. The results of their research showed that family background measures, especially parental education and occupation information, are

significant predictors of student achievement. This research aims at explaining differences in student outcome by accounting for student composition within schools.

Generally, results show that SES indicators are of similar quality on student and school level. Non-response is not an issue, and civic knowledge is strongly associated with most of the indicators of school SES (home literary resources, parents' education and occupation). However, family structure and family's immigrant background are hardly related to civic knowledge. The analyses do not show an association of school SES indicators with students' support for democratic values and attitudes towards equal rights for immigrants. Overall, the school SES measures included in this analysis can contribute to explain differences in students' achievement outcomes.

Civic and Political Engagement in Post-Communist Societies: Exploration of Adolescent Attitudes Using ICCS 2009 Instruments

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The proposed article reports the results of a study that investigated civic and political orientations of adolescents in two post-communist countries, Albania and Belarus. The study explored how adolescents in these transitioning states make sense of democracy, what their beliefs about society are, and whether and to what extent they expect to undertake citizenship roles and responsibilities in the future. Additionally, the study investigated whether and to what extent institutional trust, both at the individual and collective levels, shapes adolescents intentions to participate in civic and political activities. Given that there is renewed interest in understanding adolescents' attitudes toward democracy and that neither Albania nor Belarus participated in the ICCS 2009 (International Civic and Citizenship Education Study), this study contributes to the growing literature on adolescents' democratic orientations.

Associations Between Educational Aspirations and Student Achievement in Norway for Majority and Minority Students: Evidence from PIRLS 2011

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¹University of Stavanger, Norway; ²IEA Hamburg, Germany

Parental involvement in student's performance is a prioritized area in a Norwegian school context. It is considered as one of the success criteria for the students to succeed in school, both from a school political perspective, and from a pedagogical perspective. Norwegian classrooms are getting more diverse as the migration population has increased especially in the last decade. According to Statistics Norway the migration population came to 16 % of the total population in 2016. The largest migration groups are workers from other European countries such as Poland, Lithuania and Sweden. In recent years, refugees from particularly Somalia, Afghanistan, Iraq and Syria have been conducive to an extended diversity in Norwegian schools throughout the country to a considerable extent. It is also stated an increasing drop-out problem among upper secondary school students. The minority population is overrepresented in this number. There seems to be a link between student's performance level in primary and lower secondary school (age 6-15), and how well they perform and actual complete upper secondary school (age 16-19) later on. It is therefore of great importance that the Norwegian school system is capable of meeting the challenges of a diverse classroom. Parental involvement is one of the areas that might be an important factor for the school to succeed. Using a structural equation model and data from PIRLS 2011 (Progress in International Reading Literacy Study), this study seeks to explore associations between educational aspirations and student achievement among 4th graders in Norway.

Investigating the Impact of Wider Educational Environment (System Level Factors) on Students' Mathematics Achievement Across European Countries: Evidence from TIMSS 2015 Data

Ioulia Televantou¹, Leonideas Kyriakides¹, Bert Creemers² and David Reynolds³

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International Large-Scale Assessment (ILSA) studies, such as the Trends in International Mathematics and Science Study (TIMSS), tend to search for the impact of other than system level factors on students' achievements, being mainly concerned with potential influences stemming from the school, the teacher, or the family background. However, ILSA findings reveal variation in the performance of students in different countries so that policy makers are expected to respond to criticisms about the effectiveness of their educational systems. To understand the impact that educational systems may have on student learning outcomes, we need ILSA studies measuring the national educational policies for improving learning (inside and outside classroom) as well as the political and socio-cultural context of each country which partly defines the wider educational environment in which students, teachers, and schools operate. In our study, we use European Social Survey data (ESS6; Round 6), merged with TIMSS 2015 mathematics achievement data, and we identify variables at the level of the system that can explain differences across countries in their students' achievements. In this respect, we seek to obtain a deeper knowledge on background factors at the country level that affect student achievement. ESS6 country level data are used; individual level data (appropriately aggregated at the country level) measuring perceptions of citizens about cultural characteristics of their country are incorporated at a later stage. The variables are carefully selected to reflect the cultural specific context of the countries in our sample. With individual level measures, methods to control for measurement and sampling error in aggregation are employed (multilevel structural equation models assuming latent aggregation); results obtained are then compared with those of conventional multilevel models.

Intellectually, our research deepens into our methodological understandings on how to measure contextual effects at a higher level in educational setting. The practical significance of our work lies in showing that, if we prove that there is, indeed, some country contextual variation that we need to understand before we implement certain policies, ILSA studies might consider incorporating in future study rounds, measures of factors at the country context level found to significantly affect student achievement.

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Gebhardt, Eveline, Session 6A
Gerick, Julia, Session 1B
Glas, Cees, Session 8B
Greger, David, Keynote 2
Grønmo, Liv Sissel, Session 2B, 3A
Guevara-Niebla, Gilberto, Session 4B
Guile, Sarah, Poster
Gustafsson, Jan-Eric, Session 1A, 2A
Hayashi, Kampei, Poster
Hayashi, Ryohei, Poster
He, Jia, Keynote 3
Hole, Arne, Session 3A
Hooper, Martin, Session 8B
Howie, Sarah, Session 7B,
Hui, Sau Yan, Session 7B
Hunter, Darryl Milburn, Session 6B
Japelj Pavešić, Barbara, Session 6C
Johansson, Stefan, Session 3A, 8A
Jones, Emily Jane, Session 3A
Kabiri, Masoud, Session 3A, Poster
Kaplan, David, Workshop 4, Session 1A, 6B
Karimi, Abdol'azim, Session 3A
Klemencic, Eva, Poster
Knowles, Ryan T., Session 2C
Ko, Hwa-Wei, Poster
Korsnakova, Paula, Poster
Kudrnáč, Aleš, Session 3C
Kulikova, Alena, Keynote 3
Kyriakides, Leonideas, Poster
Lee, Chansoon, Session 6B
Liaw, Yuan-Ling, Session 7A

Lietz, Petra, Session 5B
 Lomos, Catalina, Poster
 Lorah, Julie Ann, Session 6A
 Magen-Nagar, Noga, Session 6B
 Martin, Michael, Keynote 1
 Masek, Corinna, Poster
 Matta, Tyler, Session 1A, 7A
 Maurissen, Lies, Session 4B
 Mazheruddin, Mohammed, Session 5A, 8A
 Meelissen, Martina R.M., Session 8B
 Meinck, Sabine, Workshop 1, Session 1A
 Melendez-Irigoyen, Maria Teresa, Session 4B
 Michaelides, Michalis, Session 6A
 Miller, David Christopher, Session 4A
 Miranda, Daniel, Session 1C
 Mirazchiyski, Plamen, Poster
 Mullis, Ina, Keynote 1
 Myrberg, Eva, Session 8A
 Neuschmidt, Oliver, Session 8B
 Ng, Hung Wai Rex, Session 7B, Poster
 Nilsen, Trude, Session 2A, 4A
 Oelrich, Oscar, Session 5A
 Oliveri, Maria Elena, Session 7A
 Olsen, Rolf Vegar, Session 8A, Poster
 Onstad, Torgeir, Session 3A
 Palane, Nelladee McLeod, Session 7B
 Papanastasiou, Elena C., Session 8B
 Porsch, Raphaela, Session 4A
 Potužníková, Eva, Poster
 Prinsloo, Cas, Session 3B
 Punter, R. Annemiek, Session 8B
 Pylvainen, Helena Virve, Poster
 Radermacher, Nadine, Session 3B, Poster
 Rånge, Max, Session 4B
 Reynolds, David, Poster
 Rocher, Thierry, Session 2B
 Rosén, Monica, Session 1A, 2A, 8A
 Routitsky, Alla, Session 5B
 Rutkowski, David, Session 7A
 Rutkowski, Leslie, Workshop 2, Session 1A, 7A
 Salchegger, Silvia, Session 6C
 Sampermans, Dorien, Session 3C
 Sanchez-Alvarez, Citlalli, Session 4B
 Sandberg, Mikael, Session 4B
 Sandoval Hernandez, Andres, Session 7A
 Scherer, Ronny, Session 4A
 Schulz, Wolfram, Session 2C, 3C, 6A
 Schwantner, Ursula, Session 5B
 Shepherd, Debra Lynne, Session 6C
 Sianko, Natallia, Session 2C, Poster
 Slijkhuis, Edwin, Session 2C
 Small, Mark, Session 2C, Poster
 Stacey, Oliver, Session 3A
 Stancel-Piątak, Agnes, Workshop 2, Session 3B, Poster
 Steinmann, Isa, Session 1A
 Strand, Olaug, Poster
 Strietholt, Rolf, Session 1A, 6A
 Svetina, Dubravka, Session 7A
 Szepesi, Ildikó, Session 5A
 Televantou, Ioulia, Poster
 Temsah, Khaled, Session 5A, Session 8A
 Tölle, Julia, Session 8B
 Toropova, Anna, Session 8A
 Torres, David, Session 1C
 Tovar Sánchez, Carmen, Session 2B
 Treviño, Ernesto, Session 1C
 Tsokodayi, Yemurai, Poster
 Tsykalova, Lydmyla, Poster
 Van Damme, Jan, Session 4A
 van de Vijver, Fons, Keynote 3
 Van Den Noortgate, Wim, Session 4A
 van Staden, Surette, Session 7B
 Vazquez-Lira, Ramses, Session 4B
 Vennemann, Mario, Session 1B, 6B
 Villalobos, Cristobal, Session 1C
 Wendt, Heike, Session 4A
 Widauer, Katrin, Session 6C
 Winnaar, Lolita, Session 3B
 Yang, Guang, Session 5A, 8A
 Yang Hansen, Kajsa, Session 2A, 3A, 6A
 Zhu, Yue Celinda, Session 7B

Chairs

Basl, Josef, Session 1B, 2B
Carstens, Ralph, Session 3C
Gustafsson, Jan-Eric, Session 6B
Hastedt, Dirk, Session Keynote 3
Isac, Maria Magdalena, Session 1C
Kavli, Anne-Berit, Keynote 2
Kjeldsen, Christian Christrup, Session 2C
Losito, Bruno, Session 4B
Mullis, Ina, Session 8A
Netten, Andrea, Session 7B
Neuschmidt, Oliver, Session 3B
Nilsen, Trude, Session 1A, 2A, 4A
Papanastasiou, Elena C., Session 6C
Rocher, Thierry, Session 5A
Rutkowski, Leslie, Session 7A
Sandoval Hernandez, Andres, Session 1C
Schulz, Wolfram, Session 5B

Stancel-Piątak, Agnes, Session 1A, 2A

Strakova, Jana, Session 8B

Tovar Sánchez, Carmen, Session 3A

Verhelst, Norman, Session 6A

Wagemaker, Hans, Keynote 1

Wendt, Heike, Session 4A

Discussants

Basl, Josef, Session 5A

Blömeke, Sigrid, Session 4A

Foy, Pierre, Session 6B

Hastedt, Dirk, Session 1A

Losito, Bruno, Session 3C

Martin, Michael, Session 8A

Rutkowski, David, Session 4B

Rutkowski, Leslie, Session 3B

Strakova, Jana, Session 6C

**PRACTICAL
INFORMATION**



Researching education, improving learning

CONFERENCE AND WORKSHOP VENUE



The Carolinum, Charles University

Conference and Workshop Venue

Faculty of Education, Charles University, Prague

Magdalény Rettigové 4

Prague 1, 116 39 Czech Republic

Telephone: +420 221 900 111

Internet Access at the Conference Venue

Free wireless internet is available. Details on the connection will be provided with your name badge.

Reception

The Conference Reception will be held at the Carolinum, Ovonic trh 560/5, Prague (Map Ref.: 50.0862339, 14.4233031).

The Charles College, or Carolinum, was founded in 1366 and moved to the Gothic house of the royal coin maker Johlin Rotlev in 1386. A chapel was built there and also a big hall for ceremonial assemblies – the aula magna. All the other colleges were abolished in 1611 and the Carolinum became the central building of the Charles University. The Carolinum is today used for university celebrations and graduation ceremonies. Please arrive promptly for the concert, which will begin at 5:30 pm.

GENERAL INFORMATION

Arriving at Prague Airport

Arriving at Václav Havel Airport Prague, delegates have two main options. It is possible to prebook the official airport shuttle at relatively low costs direct to your hotel. Alternatively, for the budget traveler, there is also a very inexpensive public bus service between the airport and the center of Prague. Hotels may also offer a free shuttle service, so please check your options when booking accommodation. Please remember if you are traveling with children that car seats for children are mandatory in the Czech Republic; to avoid problems when prebooking transport, please ensure the company knows whether children are to be transported so that they can provide the appropriate seating.

Arriving by train

Domestic services are provided by CD (Czech Railways). There are number of daily connections to Prague from major European cities. Prague has several train stations, but if you are using an international train you will most probably arrive at the main railway station, Wilsonovo Nadrazi (Hlavni Nadrazi) or at Holesovice Station (Nadrazi Holesovice). Both of them are connected to the city center by public transport, via metro and by tram. Prague Tourist Office warns that it is inadvisable to take a taxi from directly outside the railway station, without first establishing the likely price in advance.

Information on rail connections is available from the CD website or by telephoning +420 224 224 200.

Getting around Prague

Prague is an easy city to navigate. Walking is the best way to explore the compact city center. Many of Prague's historic districts are within pedestrian zones, and the famous Charles Bridge, Prague Castle and Old Town Square can be explored only by walking. Be sure to bring suitable walking shoes for the cobbled streets!

If you feel tired Prague has a good public transport system. Prague trams are the best "sightseeing" option with 25 lines in the city center and frequent stops, but there is also an excellent metro system.

Prague public transport offers flexible 24-hour passes allowing unlimited rides on trams, buses and metro or three-day passes; these may save you time and money. These tickets are valid for all Prague public transport and allow transfers. The pass needs to be validated when you are ready to use it: inside the metro station at the top of the escalator, or inside the tram or bus. It is important to remember that passes and individual tickets must be validated only once.

Taxis are generally relatively expensive (see below).

Free local guidebooks and video-guide, and how to avoid the tourist traps

Even though you will probably have one of the guidebooks for Prague from a traditional publishers that you are accustomed to use on your travels, we recommend you also check some of the guidebooks available for free. For example, the In Your Pocket Guide, available from here: <https://www.inyourpocket.com/data/download/prague>, and you could also download a handy map produced by a non-profit project that is free from advertisements and full of local recommendations from here: <https://www.use-it.travel/cities/detail/prague/> (you will get the printed map in your conference materials at registration). Another useful resource is a series of video guides named the Honest Guide of Prague (go to www.youtube.com and search for the "Honest Guide Prague"), covering recommended restaurants and attractions.

There are two tourist traps you want to avoid: one is to be overcharged in taxi (see <https://www.youtube.com/watch?v=eccBS7mDd2o>) and another is to be cheated at a money exchange (see <https://www.youtube.com/watch?v=BHNzBvFXmf4>).

To find out how to get from the airport to the city centre without being ripped off, we recommend that you watch this YouTube clip: https://www.youtube.com/watch?v=W_CdFjbxehU. It is best to check the price of the taxi in advance, and to do this you could use the website of one of the taxi providers at this address: <https://www.aataxi.cz/en/> or here <http://www.green-prague.cz/en>. On these sites, you can enter place of departure and place of arrival to receive a price indication.

Private money exchange offices are well known tourist traps. Some of those charge very high fees, others advertise 0% commission but offer a very poor exchange rate, potentially half the normal values. Close to the conference venue (only five minutes' walk) is EasyChange at Jungmannova 747/28. This is a reliable exchange that offers reasonable rates and charges no commission.

Travel tips

The weather in Prague is usually warm in June, with daily highs increasing from 20°C to 22°C over the course of the month, exceeding 28°C or dropping below 14°C only one day in ten. More detailed information is available here. The local currency is the Czech crown (koruna), abbreviated as Kč, with the international abbreviation CZK. 100 CZK is approximately 4 EUR/5 USD. Current exchange rates can be found at www.cnb.cz. Major credit cards are widely accepted, and ATMs, banks, and exchange offices are widely available. The electricity network in the Czech Republic has a voltage of 230 V and frequency of 50 Hz. Plug sockets have two round holes and one round pin.

The following links may provide practical information for those traveling to and around The Czech Republic:

- The Czech Tourism website: official tourist information, including information on accommodation, dining, and local activities. www.czechtourism.com
- The official Prague City Tourism website: provides comprehensive tourist information, specifically tailored for visitors to the capital. www.prague.eu/en
- My Czech Republic: a useful source of information for planning your trip, this covers a range of topics including Czech travel and tourist information, Czech cuisine, traditions and culture, language and history. This website is the project of long-time Prague residents and written by people with a strong personal connection to the Czech Republic. www.myczechrepublic.com
- Prague.Net: another useful resource for visitors to the beautiful city of Prague. www.prague.net

Where to eat?

There are many places to eat near the conference venue, and here we present just a few.

Most restaurants offer set daily menus – we suggest that you ask about this option, especially at lunchtime, if you prefer swifter service. In the Czech Republic, a typical daily menu consists of a soup and a main dish. A drink or a desert is sometimes included too, and you should establish the available options when ordering.

Tips are not always expected in the Czech Republic (as in the USA, for example), but if you are satisfied with the standard of the meal and the service, it would be normal to tip the serving staff some extra money (about 10% of the total price).

We recommend that you taste at least some of our famous Czech beer during the conference! After lunch, perhaps you'd like to sample a "male pivo" (which means a small beer, 0.3 litre), although you can opt for a regular "velke pivo" (a large beer, 0.5 litre). Non-alcoholic beer is popular (mostly bottled).

Nearby restaurants include (See map, page 90)

1) V Cípu – Oldtime Czech Pub

Vladislavova 1719/1

Opening hours: Monday – Saturday 11:00 – 23:00

Menu price: 98 – 125 Kč (for a main dish, with soup an extra 30 Kč)

<http://www.vcipu.cz/en/vladislavova>

Phone: +420 607 177 107

Distance: 138 m

2) Restaurace U kotvy – Summer garden

Spálená 11

Opening hours: Monday – Saturday 11:00 – 23:00; Bar: Monday – Sunday 9:00 – 05:00

Menu price: 102 – 122 Kč (soup and main dish)

<http://www.restaurace-ukotvy.cz/download/jl-2014-en.pdf>

Phone: +420 224 930 129

Distance: 161 m

- 3) **Bombay Express – Fine Indian Food**
 Vodičkova 680/16
Opening hours: Monday – Friday 11:00 – 22:00; Saturday – Sunday 12:00-22:00
Menu price: 69 – 215 Kč (no daily menu, you can choose from large selection of main dishes)
<http://www.bombayexpress.cz/nabidka/#mix>
Distance: 229 m
- 4) **Pastacaffé**
 Vodičkova 8
Opening hours: Monday – Thursday 8:00 – 22:00; Saturday 9:00 – 22:00; Sunday 1:00 – 20:00
Menu price: 158 – 188 Kč (for a main dish, with soup an extra 58 Kč)
<http://pastacaffe-vodickova.ambi.cz/en/>
Phone: +420 222 231 869
Distance: 255 m
- 5) **Fama Bar & Restaurant**
 Vladislavova 18
Opening hours: Monday – Thursday 10:30 – 24:00; Saturday 11:00 – 24:00
Menu price: 159 – 399 Kč (no daily menu, you can choose from large selection of main dishes)
<http://www.famabar.cz/>
Phone: +420 224 949 305
Distance: 264 m
- 6) **Novoměstský pivovar – First New Town Restaurant Brewery**
 Vodičkova 20
Opening hours: Monday – Friday 10:00 – 23:30, Saturday 11:30 – 23:30; Sunday 12:00 – 22:00
Menu price: 115 – 129 Kč
<http://www.npivovar.cz/en/>
Phone: +420 222 232 448
Distance: 277 m
- 7) **Miss Saigon Restaurant & Sushi Bar**
 Myslíkova 26
Opening hours: Monday – Friday 10:30 – 23:00, Saturday – Sunday 11:30 – 23:00
Menu price: 99 – 119 Kč (for a main dish, with soup an extra 25 Kč)
<http://www.miss-saigon.cz/>
Phone: +420 257 215 440
Distance: 285 m
- 8) **Dutch Pub**
 Vladislavova 1390/17
Opening hours: Monday – Thursday 8:00 – 24:00, Saturday 12:00 – 01:00; Sunday 12:00 – 22:00
Menu price: 169 – 495 Kč (no daily menu, you can choose from large selection of main dishes)
http://www.dutchpub.cz/upload/Menu/_menu%20280%20x%20280_aktualn%C3%AD.PDF
Phone: +420 727 969 818
Distance: 286 m
- 9) **Home Kitchen**
 Jungmannova 8
Opening hours: Monday – Friday 7:30 – 20:00
Menu price: 160 – 195 Kč (for a main dish, with soup an extra 70 Kč)
<http://www.homekitchen.cz/en/menu/>
Phone: +420 734 714 227
Distance: 297 m
- 10) **Pasta Krusta – Make your personal combination pasta and salsa**
 Vodičkova 15

Menu price: 114 – 220 Kč (no daily menu, you can combine pasta and salsa)
<http://www.pastakrusta.cz/en/nabidka/pasta-salsa/stale-menu/>
Phone: +420 211 221 410
Distance: 327 m

11) Restaurace U Čiriny

Navrátilova 6
Opening hours: Monday – Sunday 11:00 – 23:00
Menu price: 189 – 440 Kč (no daily menu, you can choose from large selection of main dishes)
<http://www.cirina.cz/>
Phone: +420 222 231 709
Distance: 343 m

12) Miyabi – Japanese restaurant

Navrátilova 10
Opening hours: Monday – Saturday 11:30 – 23:15
Menu price: 195 – 390 Kč
<https://www.miyabi.cz/en>
Phone: +420 296 233 102-3
Distance: 373 m

13) Dhaba Beas – Vegetarian Restaurant

Vladislavova 24
Opening hours: Monday – Friday 11:00 – 21:00, Saturday and Sunday 12:00 – 20:00
Menu price: 100 g for 22 Kč
<http://www.beas-dhaba.cz/en>
Phone: +420 773 380 371
Distance: 376 m

14) Hostinec U Matěje Kotrby – Czech Cuisine

Křemencova 1738/17
Opening hours: Monday – Sunday 11:00 – 00:15
Menu price: 109 – 220 Kč (soup, salad, main dish and dessert)
<http://hostinecumateje.cz/en/>
Phone: +420 224 930 768
Distance: 379 m

15) Jiná Krajina Řeznická

Řeznická 4
Opening hours: Monday – Friday 11:00 – 23:00
Menu price: 129 – 149 Kč (soup, main dish, salad)
<http://reznicka.jinakrajina.cz/en/>
Phone: +420 222 231 148
Distance: 385 m

16) Švejk Restaurant U Karla

Křemencova 7
Opening hours: Monday – Saturday 11:00 – 24:00; Sunday 11:00 – 22:00
Menu price: 110 – 145 Kč (for a main dish, with soup an extra 30 Kč, also offers gluten-free meals)
<http://www.svejk-restaurant.cz/>
Phone: +420 222 515 889
Distance: 408 m

17) U Fleků – Brewery and Restaurant, eight halls and a garden

Křemencova 11
Opening hours: Monday – Sunday 10:00 – 23:00

Menu price: 219 – 389 Kč (no daily menu, you can choose from large selection of main dishes, including vegetarian meals)

<http://en.ufleku.cz/>

Phone: +420 224 934 019-20

Distance: 410 m

18) Lemon Leaf – Thai & Continental Cuisine

Myslíkova 14

Opening hours: Monday – Thursday 11:00 – 23:00; Friday 11:00 – 24:00; Saturday 12:00 – 24:00; Sunday 12:00 – 23:00

Menu price: 109 – 149 Kč (for a main dish, with soup an extra 29 Kč)

<http://www.lemon.cz/home-en/>

Phone: +420 224 919 056

Distance: 423 m

19) Café Louvre

Národní 22

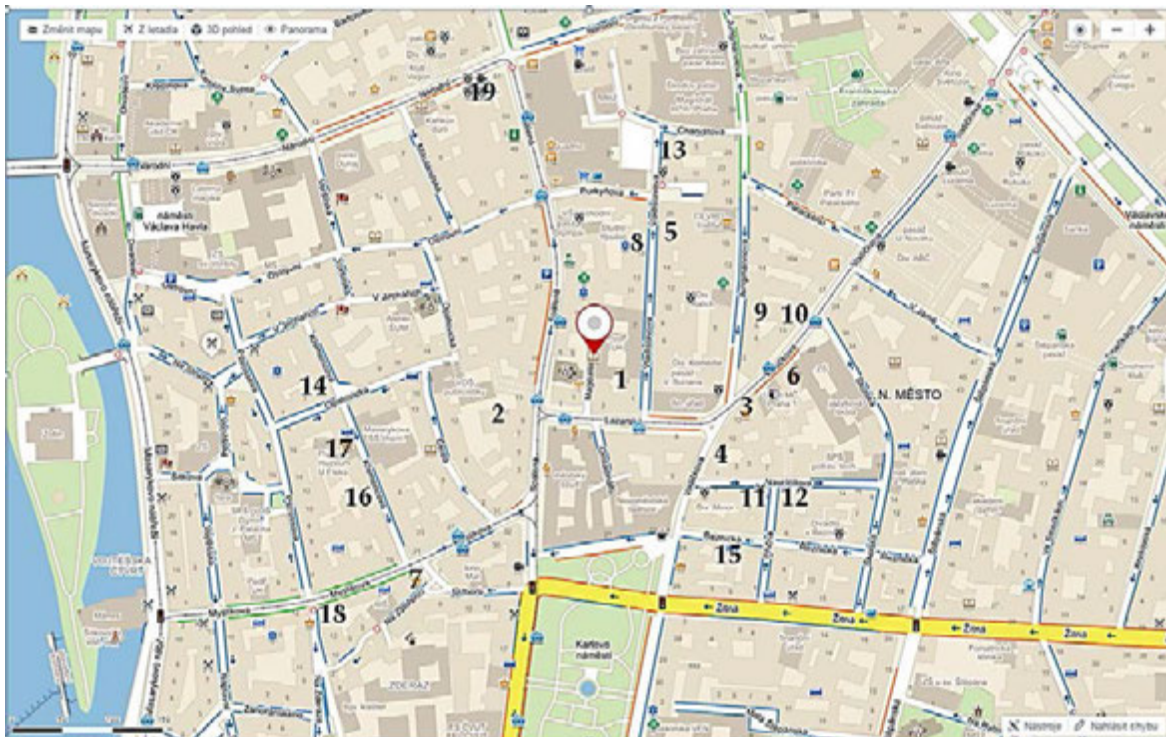
Opening hours: Monday – Friday 8:00 – 23:30; Saturday – Sunday 9:00 – 23:30

Menu price: 119 – 199 Kč (for a main dish, with soup an extra 39 Kč)

<http://www.cafelouvre.cz/en/>

Phone: +420 224 930 949

Distance: 508 m



Restaurants in the vicinity of the venue

IMPORTANT CONTACTS

Local Organizing Committee

The Local Organizing Committee is charged with the planning and direction of all (non-scientific) program facets of the conference, including the day-to-day logistics of the workshops as well as the conference.

The Institute for Research and Development of Education (IRDE, Charles University, Faculty of Education) and the Czech School Inspectorate (CSI) together form the Local Organizing Committee for the 7th IEA International Research Conference, and the core team can be contacted at the following contact details:

Name	Office	Email	Cell phone
Mr David Greger	IRDE	david.greger@pedf.cuni.cz	+420 605 585 594
Ms Jana Straková	IRDE	jana.strakova@pedf.cuni.cz	+420 731 191 980
Ms Vít Šťastný	IRDE	vit.stastny@pedf.cuni.cz	+420 603 842 505
Ms Jaroslava Simonová	IRDE	jaroslava.simonova@pedf.cuni.cz	+420 603 588 614
Mr Josef Basl	CSI	josef.basl@csicr.cz	+420 607 150 982

Poster session queries should be directed to Dr Eva Potuznikova, email eva.potuznikova@centrum.cz

Emergency Hotlines

General emergency number:	112
Ambulance:	155
Police:	158

Useful webpages

Public transport:	http://www.dpp.cz/en/
Flight information (Vaclav Havel airport):	http://www.prg.aero/en/
Tourism Information:	http://www.praguecitytourism.cz/en

Closest Hospital

Všeobecná fakultní nemocnice v Praze (public)

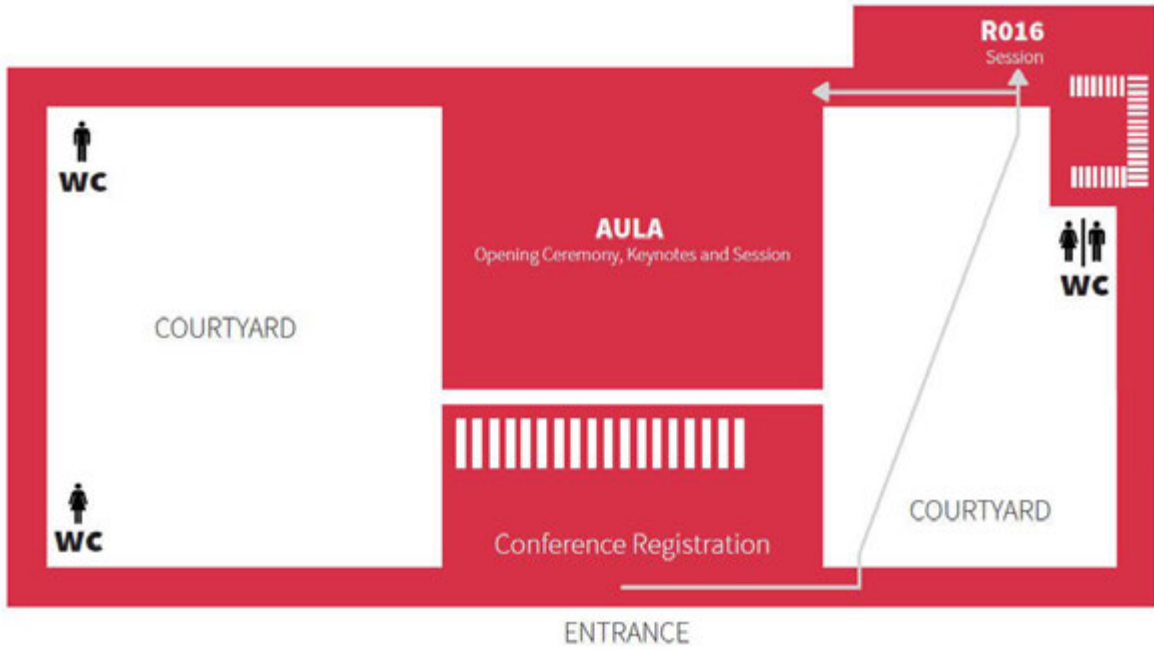
U Nemocnice 499/2, 128 08, Praha 2

Telephone: +420 224 961 111

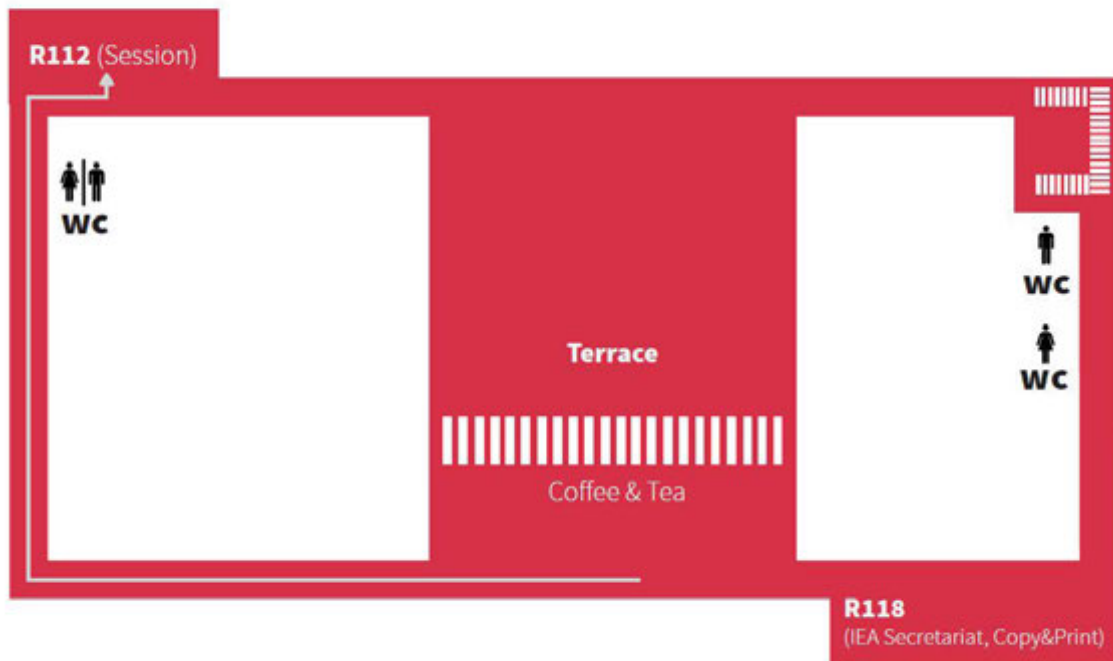
Webpage: <http://www.vfn.cz/?lang=en>

VENUE FLOOR PLANS

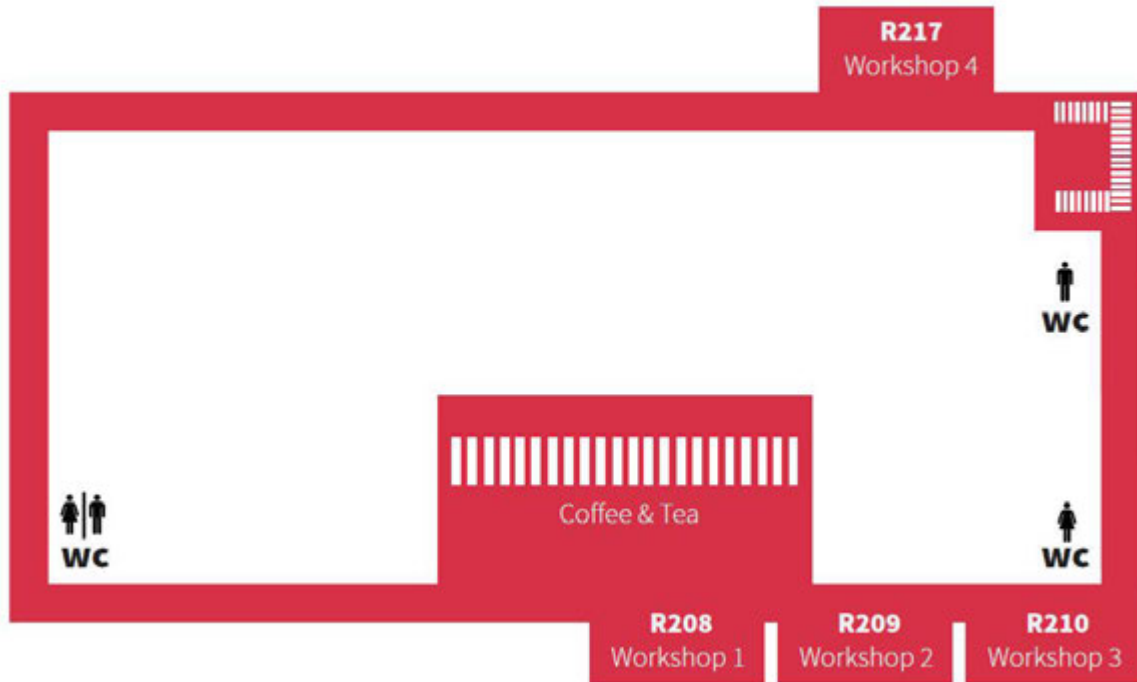
Ground Floor



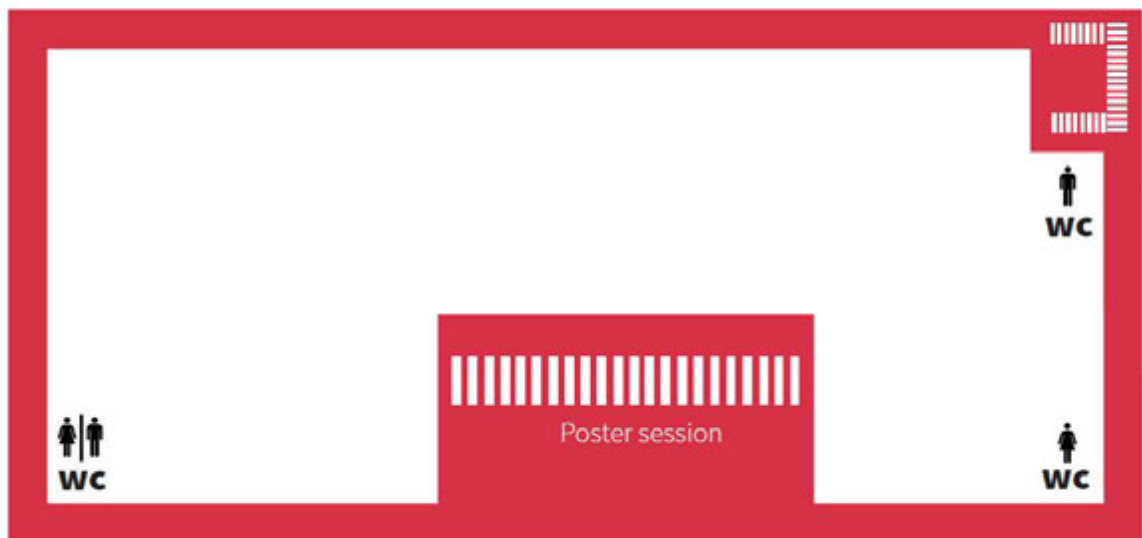
1st Floor



2nd Floor



3rd Floor



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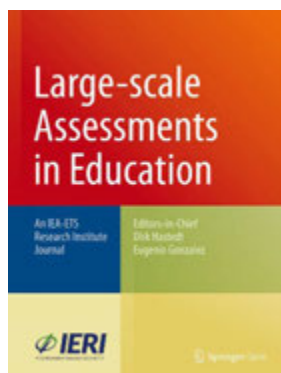
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Large-scale Assessments in Education operates a double-blind peer-review system, where the reviewers do not know the names or affiliations of the authors and the reviewer reports provided to the authors are anonymous. Submitted manuscripts are always reviewed by two or more experts, who will be asked to evaluate whether the manuscript is scientifically sound and coherent, whether it duplicates already published work, and whether or not the manuscript is sufficiently clear for publication.

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The International Association for the Evaluation of Educational Achievement (IEA) is a non-governmental, non-profit cooperative of national research institutions and governmental research agencies. IEA conducts high quality, large-scale comparative studies of educational achievement and other aspects of education, providing an important resource for monitoring education quality and progress around the world.

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2ND IEA IRC

9-11 NOVEMBER 2006, WASHINGTON DC, UNITED STATES

1ST IEA IRC

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WWW.IEA.NL/7TH-IEA-INTERNATIONAL-RESEARCH-CONFERENCE