The 3rd IEA
International Research Conference
(IRC-2008)

Conference Program

International Association for Evaluation of Education Achievement

Co-Sponsoring Institution

National Science Council,
Chinese Taipei

Co-Organizing Institutions

National Taiwan Normal University

Science Education Center,
National Taiwan Normal University

Table of Content

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Chia-Li Chen	National Taiwan Normal University

Chairs and Discussants

	Sessions	Ballroom	Chair	Discussant
9/18 10:00 ~ 11:30	TIMSS Math-1	Song Bo (10F)	Tsung-Hau Jen	Eugenio Gonzales
	PIRLS-1	Sky Lounge (12F)	Michael Martin	Ina Mullis
	SITES-1	Fu-Chuan (B1)	Tjeerd Plomp	Hans Pelgrum
9/18 13:00 ~ 14:30	TIMSS Math-2	Song Bo (10F)	Ruth Zuzovsky	Yuwen Chang
	PIRLS-2	Sky Lounge (12F)	Jan-Eric Gustafsson	Sarah Howie
	SITES-2	Fu-Chuan (B1)	Hans Pelgrum	Nancy Law
9/18 15:00 ~ 16:30	TIMSS Math-3	Song Bo (10F)	Peter Nystrom	Oliver Neuschmidt
	PIRLS-3	Sky Lounge (12F)	Leslie Rutkowski	Jan-Eric Gustafsson
	SITES-3	Fu-Chuan (B1)	Rafi Nachmias	Tjeerd Plomp
9/19 10:00 ~ 11:30	TIMSS Math-4	Song Bo (10F)	Eugenio Gonzales	Sue Thomson
	PIRLS-4	Sky Lounge (12F)	Ina Mullis	Michael Martin
	CivEd-4	Fu-Chuan (B1)	Margaret Wu	Wolfram Schulz
9/19 13:00 ~ 14:30	TIMSS Math-5	Song Bo (10F)	Sue Thomson	Tsung-Hau Jen
	PIRLS-5	Sky Lounge (12F)	Ann Kennedy	Kajsa Yang-Hansen
	CivEd-5	Fu-Chuan (B1)	Barbara Malak	Margaret Wu
9/19 15:00 ~ 16:30	TIMSS Math-6	Song Bo (10F)	Oliver Neuschmidt	Richard Houang
	PIRLS-6	Sky Lounge (12F)	Sarah Howie	Hwawei Ko
	TIMSS Sci-6	Fu-Chuan (B1)	Hak-Ping Tam	Che-Di Lee
9/20 10:00 ~ 11:30	TIMSS Math-7	Song Bo (10F)	Richard Houang	Peter Nystrom
	PIRLS-7	Sky Lounge (12F)	Kajsa Yang-Hansen	Monica Rosen
	TIMSS Sci-7	Fu-Chuan (B1)	Che-Di Lee	Chun-Yen Chang
9/20 13:00 ~ 14:30	TIMSS Math-8	Song Bo (10F)	Yuwen Chang	Hak-Ping Tam
	PIRLS-8	Sky Lounge (12F)	Hwawei Ko	Ann Kennedy
	TIMSS Sci-8	Fu-Chuan (B1)	Chun-Yen Chang	Pasi Reinikainen

Conference Information

The Grand Hotel

The Grand Hotel, with its traditional palace style architecture, vermilion pillars, stately archways, and brilliantly tiled roof, is not only a magnificent landmark of Taiwan, but it is an emblem of ancient China. The Grand Hotel has for decades played host to dignitaries from around the world. Its histories and legends will surely mesmerize those who step into the Grand's palatial lobby.

The Grand Hotel is a non-profit organization owned by the Duen-Mou Foundation of Taiwan. Its mission is to serve the community as an internationally recognized hotel with restaurants and facilities of the highest standard and quality. It has for decades been at the forefront of promoting tourism both locally and abroad.

Taipei: Capital City of Taiwan

Discover the heart of Asia in wonderful Taipei! From one of the world's highest building to the biggest collection of Chinese Art, Taipei invites you into a world of fascinating contrasts—a mix of the modern and traditional with a generous dash of energy and friendly smiles to make this one of your most memorable trips to Asia.

The cultural kaleidoscope of Taiwan's capital city pulses wherever you go. Incense-veiled temples dating back to dynastic times blend seamlessly with a neoned street life of a decidedly more modern era. Taipei has dozens of world-class restaurants where gourmets can sample the best regional Chinese cuisine; and for the gourmand, there are plenty night markets serving up scrumptious evening snacks in an environment of chaotic excitement and fun.

The polarities of Taipei are vividly present as well in the joining of the urban and natural. Just a few minutes from the heart of the city you can soak away the cares of the world in mineral-rich hot springs nestled in the lush mountain foothills ringing the Taipei Basin. And throughout the city there are plenty of trails, parks and other oases of tranquility to lift and invigorate your spirits.

Whether you're just stopping over en route to another Asian destination, or planning a longer stay, Taipei is a many-faceted treasure that will call you back again and again.

Pre-Conference Workshops

(16-17 September, 2008)

Workshop #1: Introduction to the IEA Databases and the IDB Analyzer

Venue: **Ucom Computer Lab**
Trainers: **Juliane Henke** and **Plamen Mirazchiyski**

1st day (16 September, 2008)

Time	Activities
8:00-8:20	Registration (Lobby of The Grand Hotel)
8:20-9:00	Departure to UCom Computer Lab (By Shuttle Bus)
9:00-9:20	**Opening Ceremony** **Dr. Hans Wagemaker**

9:20-10:40	• Introduction to the seminar material
	• Introduction to the International Databases (PIRLS, TIMSS, SITES)
	    Structure of the databases
	    Accessing the data
	    Reviewing the documentation
	• Sample design, plausible values, and implication for analyses
	    General sample and test design
	    Computing sampling and measurement variance
	    Estimating statistical significance of results

10:40-11:00	Coffee Break
11:00-12:30	• Introduction to the IDB Analyzer • Sample analyses with IDB Analyzer
12:30-13:30	Lunch
13:30-15:00	• SITES 2006: Sample analyses with IDB Analyzer *Assignment*
15:00-15:30	Coffee Break

15:30-17:00	• PIRLS 2006: Student level analyses: percentages, means
	    I: Merge student data
	    II: Simple student variables
	    Assignment

17:00-17:40	Departure to The Grand Hotel (By Shuttle Bus)

2nd day (17 September, 2008)

Time	Activities
8:20-9:00	The Grand Hotel →UCom Computer Lab (By Shuttle Bus)

9:00-10:30	• PIRLS 2006: Student level analyses: benchmarks
	   III: Performance at international benchmarks
	   Assignment

10:30-11:00	Coffee Break

11:00-12:30	• PIRLS 2006: School level analyses: dummy recoding and regression
	   I: Merge school data
	   II: Simple school variables
	   Assignment

12:30-13:30	Lunch

13:30-15:00	• PIRLS 2006: School level analyses: factor analysis
	   III: School indices
	   Assignment

15:00-15:30	Coffee Break

15:30-17:00	• PIRLS 2006: Teacher level analysis: trend analysis
	   I: Merge teacher data
	   II: Simple teacher variables
	   Assignment

17:00-17:40	UCom Computer Lab → The Grand Hotel (By Shuttle Bus)

Please Note: The participants who attend the Workshop #1 have to meet at the lobby of the Grand Hotel by 8:20 am to take the shuttle bus to UCom Computer Lab.

Desktop will be provided in the computer lab, but participants are encouraged to bring their own laptops for this workshop with SPSS installed. SPSS is required to use the IDB Analyzer.   User must have administrator rights to install the IDB Analyzer. Free copies of the IDB Analyzer will be distributed at the workshop to all participants.

Workshop #2: Analysis of Categorical Data in IEA Databases

Venue: **The Grand Hotel (Room 110)**
Trainers: **Leslie Rutkowski** and **David Rutkowski**

1st day (16, September, 2008)

Time	Activities
8:00-8:20	Registration (Lobby)
8:20-8:40	**Opening Ceremony** **Dr. Eugene Gonzales**
8:40-9:40	• Welcome and introduction to the seminar material • Overview & Introduction: How CDA methods are useful for LSA survey data
9:40-10:00	Coffee Break
10:00-11:30	• Introduction to WesVar • Sample analyses with WesVar
11:30-13:00	Lunch

13:00-14:30	• 2-way tables
	   I: Chi-square test of association
	   II: Odds ratios
	     Assignment

14:30-15:00	Coffee Break

15:00-16:30	• 3-way tables
	   I: Partial association
	     Assignment

2nd day (17, September, 2008)

Time	Activities

8:30-9:30	• Introduction to logistic regression
	   I: Predicting benchmarks based on background data
	     Assignment

9:30-10:00	Coffee Break

10:00-11:30	• Introduction to logistic regression, continued
	   II: Model interpretation and diagnostics
	     Assignment

11:30-13:00	Lunch
13:00-14:30	*Final Assignment – Using categorical methods to analyze IEA data*
14:30-15:00	Coffee Break
15:00-16:30	*Final Assignment – Using categorical methods to analyze IEA data*

Ceremony & Receptions

17 September, 2008   19:00-21:00
@Chinese Dining Room 柏壽廳 (Lobby Floor)

Opening Ceremony & Reception Dinner
Reception Dinner Standing Buffet

Welcomers:

Dr. Hans Wagemaker
Executive Director,
International Association for the Evaluation of Educational Achievement

Dr. Chih-Wei Hue
Director,
Department of Science Education,
National Science Council

Dr. Chun-Yen Chang
Director,
Science Education Center,
National Taiwan Normal University

Dr. Constantinos Papanastasiou
Chair of Scientific/Program Committee,
Professor, Department of Education, University of Cyprus

19 September, 2008 19:30-21:00
@International Reception Hall 敦睦廳 (First Floor)

Conference Gala Dinner 19:30-21:00
Table Buffet

Main Conference Program

Time	Thursday 18 Sept	Friday 19 Sept	Saturday 20 Sept
8:00-8:30	Registration (*Lobby*)		
8:30-9:30	Keynote Speech *(Auditorium, 10F)*		
9:30-10:00	Coffee Break (Served outside auditorium)		
10:00-11:30	Parallel sessions	Parallel sessions	Parallel sessions
11:30-13:00	Lunch		
13:00-14:30	Parallel sessions	Parallel sessions	Parallel sessions
14:30-15:00	Coffee Break (Served in conference rooms)		
15:00-16:30	Parallel sessions	Parallel sessions	Parallel sessions

Parallel Sessions

Parallel Sessions are held in three conference rooms.

	Song Bo Room (10F) 松柏廳	*Sky Lounge Room (12F) 崑崙廳*	*Fu-Chuan Room (B1) 福全廳*
18 Sept Thursday	TIMSS-Math	PIRLS	SITES
19 Sept Friday	TIMSS-Math	PIRLS	CivED-ICCS TIMSS-Sci
20 Sept Saturday	TIMSS-Math	PIRLS	TIMSS-Sci

General Schedule

    Everyday morning, there is one hour plenary keynote speech. There is a 30-minute break at 9:30 to allow delegates to stop for coffee between plenary speech and the first parallel sessions. Each parallel session runs for 90 minutes, with at least 30-minute breaks in between sessions. There is also a break for lunch between 11:30 to 13:00.

    Listing of authors and the title of papers on the program are based on updated full paper.

    To participate reception dinner and gala dinner, please hand over the voucher to IRC 2008 staff member before entering the hall. Participants will be responsible for their other meals.

1st Day (18 September, 2008)

Time	Activities
8:00-8:30	Registration (***Lobby***)
8:30-9:30	Plenary Keynote Speech (***Auditorium, 10F***) **Chair:** Ina Mullis **Dr. Frederick Koon-Shing Leung** Professor, Department of Mathematics Education, The University of Hong Kong **The Significance of IEA Studies for Education in East Asia and Beyond** Summary *Before the mid 1990s, East Asia is not a region well known for its education, and it is not of particular interest to the international education community. In fact, the literature has indicated that instructional practices in the East Asian classroom were rather traditional and backward, failing to keep in pace with the latest development in learning and instructional theories. The superior performance of East Asian students in TIMSS 1995, however, surprised both educators and politicians world-wide, and results of the succeeding rounds of TIMSS and the PIRLS study showed that the superiority of the achievements of East Asian students are rather robust across subject areas and over time. Some Western countries even started to "learn from the East" in order to move their positions up in the TIMSS and PIRLS league tables. But IEA studies such as TIMSS and PIRLS are not competitions in educational achievement and should not be concerned only with the ranking of countries. The major aims of such studies are to identify factors that explain high achievement, so that participating countries may improve their educational practices based on data generated through a rigorous study. As such, results of IEA studies have significance for educational policies in both East Asian countries and the West. The results also challenge some of the educational theories widely held among Western educators, and have prompted some educators to reassess the educational practices in East Asian countries. The discussion points to the importance of taking into account the underlying values or philosophy of a place in accounting for student achievement, instructional practices, as well as educational theories.*
9:30-10:00	Coffee Break

1st Day (18 September, 2008)

Time	Activities		
	Song Bo Room (10F) **TIMSS-Math**	***Sky Lounge Room (12F)*** **PIRLS**	***Fu-Chuan Room (B1)*** **SITES**
10:00-11:30 **1**	**Margaret Wu,** "A Comparison of PISA and TIMSS 2003 Achievement Results in Mathematics and Science" **David Rutkowski, Leslie Rutkowski,** "Private and Public Education: A Cross-national Exploration with TIMSS 2003" **Katherine Baird,** "Class in the Classroom: The Relationship Between School Resources and Math Performance among Low Socioeconomic Status Students in 19 Rich Countries"	**Ruth Zuzovsky,** "The Impact of Socioeconomic Factors on Achievement Gaps on Reading Literacy Between Hebrew-speaking and Arabic-speaking Students in Israel" **Yi-Ling Chan, Hwawei Ko, Shek Kam Tse,** "Family Factors and Reading Achievement: Chinese Community Perspective" **Kajsa Yang-Hansen, Jan-Eric Gustafsson,** "Methodology for Conducting Country-level Longitudinal Analyses: A Review and Comparison of Procedures"	**Allan H.K. Yuen, Man Wai Lee, Nancy Law, Albert Chan,** "Factors Predicting Impact of ICT-use on Students: An Exploration of Teachers' Perceptions" **David Rutkowski, Leslie Rutkowski, Jason Sparks,** "ICT, Education and Knowledge Economy: Goals, Support and Practice" **Geir Ottestad,** "Conceptual Use of Discrepancies in Teachers' Attitudes towards Stated Curriculum Goals"
	Chair: Tsung-Hau Jen **Discussant:** Eugenio Gonzales	**Chair:** Michael Martin **Discussant:** Ina Mullis	**Chair:** Tjeerd Plomp **Discussant:** Hans Pelgrum
11:30-13:00	Lunch		

1st Day   (18 September, 2008)

Time	Activities		
	Song Bo Room (10F) **TIMSS-Math**	*Sky Lounge Room (12F)* **PIRLS**	*Fu-Chuan Room (B1)* **SITES**
13:00-14:30 **2**	**Chih-Chien Yang,** "Quasi-longitudinal Trends of Mediators and Asian Female Mathematics Performances: TIMSS Perspectives" **Noor Azina Ismail, Halimah Awang,** "Mathematics Achievement among Malaysian Students: What can They Learn from Singapore" **Alexander W. Wiseman, Abdullah Sadaawi, Naif H. Alromi,** "Educational Indicators and National Development in Saudi Arabia"	**Ian Schagen, Liz Twist,** "Adding Value to PIRLS by Combining with National Data and Using Sophisticated Modelling Techniques" **Andrea Netten, Ludo Verhoeven, Mienke Droop,** " Predictors of Reading Literacy in the Netherlands" **Chia-Yi Chiu, Minhee Seo, Jeff Douglas,** "Cluster Analysis for Cognitive Diagnosis: An Application to the 2001 PIRLS Reading Assessment"	**Barbara Brecko,** "The Obstacles for Using ICT in Classroom" **Kim Draper, Sarah J. Howie, Seugnet Blignaut,** "Pedagogy and ICT Use in South African Science Education" **Alona Forkosh-Baruch, Rafi Nachmias, David Mioduser,** "Innovative Pedagogical Practices Using Technology: Cross-case Analysis of the SITESm2 Data"
	Chair: Ruth Zuzovsky **Discussant:** Yuwen Chang	**Chair:** Jan-Eric Gustafsson **Discussant:** Sarah Howie	**Chair:** Hans Pelgrum **Discussant:** Nancy Law
14:30-15:00	**Coffee Break**		

1st Day (18 September, 2008)

Time	Activities		
	Song Bo Room (10F) **TIMSS-Math**	*Sky Lounge Room (12F)* **PIRLS**	*Fu-Chuan Room (B1)* **SITES**
15:00-16:30 **3**	**Poloko Chepete,** "What can Botswana Learn from the TIMSS Assessments of 2003?" **Beno Csapo, Gyongyver Molnar, Laszlo Kinyo,** "Analysis of the Selectiveness of Hungarian Educational System in International Context" **Jolita Dudaitė, Aistė Elijio,** "Trends in Similarities and Differences of Students Mathematics Profiles in Various Countries"	**Victor van Daal, Anne Charlotte Begnum, Ragnar Gees Solheim, Herman Adèr,** "Nordic Comparisons in PIRLS 2006" **Michael O. Martin, Ina V.S. Mullis, Pierre Foy,** "Interrelationships among Reading Achievement, Grade level, and Age in PIRLS 2006" **Fabio Alivernini, Sara Manganelli, Emanuela Vinci** "Multilevel Analysis of PIRLS 2006 Data for Italy"	**Hans Pelgrum,** "Context Factors Associated with ICT Use by Mathematics Teachers" **Nancy Law, Man Wai Lee, Albert Chan, Allan H.K. Yuen,** "Factors Influencing the Impact of ICT-use on Students' Learning"
	Chair: Peter Nystrom **Discussant:** Oliver Neuschmidt	**Chair:** Leslie Rutkowski **Discussant:** Jan-Eric Gustafsson	**Chair:** Rafi Nachmias **Discussant:** Tjeerd Plomp

2nd Day (19 September, 2008)

Time	Activities
8:00-8:30	Registration (***Lobby***)
8:30-9:30	Plenary Keynote Speech (***Auditorium,10F***) **Chair:** Tjeerd Plomp **Dr. Fou-Lai Lin**, Professor, Department of Mathematics, National Taiwan Normal University **Policy Making with IEA Reports** Summary *To take care of every student so that every child gets progress, a policy with IEA reports as its background has been made jointly by Ministry of Education and National Science Council of Taiwan will be addressed together with several action plans for carrying out the policy. Analyzing the process of making this policy and the progress of following up action plans, four important elements within this policy are identified: proposers of policy, goals of policy, indicators of achieving the goal and annual progress assessment. In this speech, I shall discuss the importance of setting up a mechanism which should comprise the four elements to generate policies with the optimization usage of IEA reports so as to improve education efficiency.*
9:30-10:00	Coffee Break

2nd Day (19 September, 2008)

Time	Activities		
	Song Bo Room (10F) **TIMSS-Math**	*Sky Lounge Room (12F)* **PIRLS**	*Fu-Chuan Room (B1)* **CivED-ICCS**
10:00-11:30 **4**	**Christina Cliffordson,** "Effects of Schooling and Age on performance in Mathematics and Science: A Between-grade Regression Discontinuity Design Applied to Swedish TIMSS 95 Data" **Hans Luyten, Bernard Veldkamp,** "Assessing the Effect of Schooling with Cross-sectional Data: Between Grades Differences Addressed as a Selection-bias Problem" **Nicole Wernert,** "Perceptions of Parental Involvement in Schooling, Student Milieu and Student Achievement in Mathematics"	**Surette van Staden, Sarah Howie,** "Reading between the Lines: Contributing Factors that Affect Grade 4 Student Reading Performance as Measured across South Africa's 11 Languages" **Sarah Howie, Elsie Venter, Surette van Staden,** "The Relationship between English Second Language Proficiency and Mother Tongue in Non-native English Speakers in South Africa" **Andrejs Geske, Antra Ozola,** "Different Influence of Contextual Educational Factors on Boys' and Girls' Reading Achievement"	**Britt Wilkenfeld,** "An Ecological Systems Approach to the Civic Education and Engagement of Adolescents" **Saskia De Groof, Mark Elchardus, Eva Franck, Dimokritos Kavadias,** "The Influence of Civic Knowledge versus Democratic School Experiences on Ethnic Tolerance of Adolescents. A Multilevel analysis" **Maria-Magdalena Isac, Margaretha van der Werf,** "Effective Civic Education Testing an Educational Effectiveness Model for Explaining Students' Achievement in Civic and Citizenship Education"
	Chair: Eugenio Gonzales **Discussant:** Sue Thomson	**Chair:** Ina Mullis **Discussant:** Michael Martin	**Chair:** Margaret Wu **Discussant:** Wolfram Schulz
11:30-13:00	Lunch		

2nd Day (19 September, 2008)

Time	Activities		
	Song Bo Room (10F) TIMSS-Math	*Sky Lounge Room (12F)* PIRLS	*Fu-Chuan Room (B1)* CivED-ICCS
13:00-14:30 **5**	**Oliver Neuschmidt, Juliane Hencke, David Rutkowski, Leslie Rutkowski,** "Effective Schools in Arab Educational Systems: An Analysis of TIMSS 2003" **Hak-Ping Tam,** "Is There a Relationship between School Discipline Problem and Student Performances in TIMSS Studies?" **Richard T. Houang, William H. Schmidt,** "TIMSS International Curriculum Analysis and Measuring Educational Opportunities"	**Chia-Hui Chiu, Hwa-Wei Ko** "Parental Factors Related to Children's Reading: Evidence from Comparing Transnational Marriage Families and Local Families" **Marjeta Doupona Horvat, Monica Rosén** "Why Smart Children from Low SES Families do not Reach Higher Reading Achievements?" **Jan Van Damme, Lobke Vanhee, Heidi Pustjens,** "Explaining Reading Achievement in PIRLS by Age and SES"	**Bryony Hoskins, Ernesto Villalba, Daniel Van Nijlen, Carolyn Barber,** "Measuring Civic Competence in Europe:" **Wolfram Schulz,** "Questionnaire Construct Validation in the International Civic and Citizenship Education Study" **Julian Fraillon,** "Constructing a Described Achievement Scale for the International Civic and Citizenship Education Study"
	Chair: Sue Thomson **Discussant:** Tsung-Hau Jen	**Chair:** Ann Kennedy **Discussant:** Kajsa Yang-Hansen	**Chair:** Barbara Malak **Discussant:** Margaret Wu
14:30-15:00	Coffee Break		

2nd Day (19 September, 2008)

Time	Activities		
	Song Bo Room (10F) **TIMSS-Math**	***Sky Lounge Room (12F)*** **PIRLS**	***Fu-Chuan Room (B1)*** **TIMSS-Sci**
15:00-16:30 **6**	**Jung-Chih Chen, Che-Jen Hsieh,** "Comparison of the Learning Expectations for School Mathematics across Several Asian Countries and U.S. States" **Daniele Vidoni, Luca Grassetti,** "The Role of School Leadership on Student Achievement: Evidence from TIMSS 2003" **Leslie Rutkowski, David Rutkowski,** "An Empirical Look at Globalization in Education: An Example with TIMSS Mathematics Data"	**Laurence T. Ogle, Anne Charlotte Begnum, Ragnar Gees Solheim,** "Comparisons of Teachers of Language Minority Fourth-graders in Norway and the United States: Results from PIRLS 2006" **Stefan Johansson, Monica Rosén,** "Teacher Assessment of Student Reading Skills as a Function of Student Reading Achievement and Grade" **Elisabeth Frank, Monica Rosén,** "On the Importance of Parental Participation for Student Achievement in Reading Literacy"	**Yuwen Chang,** "Gender Differences in Science Achievement, Science Self-concept, and Science Values" **Sue Thomson,** "Gender and Socioeconomic Differences in Science Achievement in Australia: From SISS to TIMSS" **Tsung-Hau Jen, Chin-Lung Chien,** "The Influences of the Academic Self-concept on Academic Achievement: From a Perspective of Learning Motivation"
	Chair: Oliver Neuschmidt **Discussant:** Richard Houang	**Chair:** Sarah Howie **Discussant:** Hwawei Ko	**Chair:** Hak-Ping Tam **Discussant:** Che-Di Lee

3rd Day (20 September, 2008)

Time	Activities
8:00-8:30	Registration (***Lobby***)
8:30-9:30	Plenary Keynote Speech (***Auditorium, 10F***) **Chair:** Barbara Malak **Dr. Anders Joest Hingel** European Commission **Present and future role of IEA surveys and studies in measuring progress and performance of EU education systems** Summary *International policy cooperation in the fields of education and training has within recent years become more and more dependent on the availability of valid, comparable and up quantitative and qualitative data. In the European Union this development has been especially spectacular after the launching of the so-called Lisbon process in 2000, where indicators and benchmarks are central tools for comparing national performance and progress in education and training, in view of identifying good performance and developing in-depth knowledge that other countries can learn from exchange and cooperation. International surveys on key competences of students are here central and IEA surveys such as TIMMS, PIRLS, CivED-ICCS and SITES provide valuable data and insight in the fields. What role for IEA surveys in the future within the context of other on-going or future international surveys ?*
9:30-10:00	Coffee Break (Served outside Auditorium)

3rd Day (20 September, 2008)

Time	Activities		
	Song Bo Room (10F) **TIMSS-Math**	*Sky Lounge Room (12F)* **PIRLS**	*Fu-Chuan Room (B1)* **TIMSS-Sci**
10:00-11:30 **7**	**Mareike Kunter, Yi-Miau Tsai,** "Facilitating Interest Development and Achievement in Classroom Instruction: How Large-scale Studies Like TIMSS Can be Used to Investigate Effects of Instructional Quality" **Åse Hansson,** "Is Multilingualism to Count on? The Importance of Instructional Modes for Multilingual Students' Mathematical Progress" **Hsiao-Fang Lin, Ming-Ning Yu,** "Boys are as Good as Girls? A confirmatory Study from TIMSS 2003 Data Analysis"	**Megan Chamberlain, Robyn Caygill,** "New Zealand Students' Engagement with the PIRLS 2006 Reading Passages" **Ann Kennedy,** "Examining Gender and Fourth Graders' Reading Habits and Attitudes in PIRLS 2001 and 2006" **Kathleen L. Trong,** "Using PIRLS Data to Measure Equity in Reading Achievement across Countries"	**Mei-Yu Chang, Pei-Hua Lo, Li-Fay Chen,** "Analysis on TIMSS 2003 in Seven Countries: The Correlations of 4th Graders' Backgrounds, Family Environments, Interests in Science, and Self Confidence with their Science Achievement" **Pasi Reinikainen,** "The Study of Science Achievement in Six Countries: Finland, England, Hungary, Japan, Latvia and Russia. Study based on TIMSS–1999" **Tina Vršnik Perše, Ana Kozina, Tina Rutar Leban,** "Negative School Factors and Their Influence on Math and Science Achievement in TIMSS 2003"
	Chair: Richard Houang **Discussant:** Peter Nystrom	**Chair:** Kajsa Yang-Hansen **Discussant:** Monica Rosen	**Chair:** Che-Di Lee **Discussant:** Chun-Yen Chang
11:30-13:00	Lunch		

3rd Day (20 September, 2008)

Time	Activities		
	Song Bo Room (10F) **TIMSS-Math**	***Sky Lounge Room (12F)*** **PIRLS**	***Fu-Chuan Room (B1)*** **TIMSS-Sci**
13:00-14:30 **8**	**Peter Nyström,** "Identification and Analysis of Text-structure and Wording in TIMSS-items" **Chih-Chien Yang,** "Effects of TIMSS Sampling Weights on Inference Accuracy when Utilizing Structural Equations Models" **Ali Reza Kiamanes, Mansoureh Mahdavi-Hezaveh,** "Influential Factors causing the gender differences in mathematics' achievement scores among Iranian Eight graders based on TIMSS 2003 data"	**Ian Schagen, Liz Twist, Simon Rutt,** "Estimating Trends in National Performance from International Surveys, with a Focus on PIRLS Results for England" **Minhee Seo, Chia-Yi Chiu, Louis Roussos,** "Evaluating the Dimensionality of the 2001 PIRLS Reading Assessment: An Application of DIMTEST with DESM and CFA"	**Ruth Zuzovsky,** "Teachers' Qualifications and Their Impact on Student Achievement Findings from TIMSS-2003 Data in Israel" **Wen-Gin Yang, Xiang-Ling Huang,** "The Relations of Linguistic Features of Students' Writing and Their Performance on TIMSS Free Response Items" **Mei-Yu Chang, Pei-Hua Lo, Tsui-Ping Chang,** "The Fourth Grade Students' Science Cognitive Performance and Influential Factors of Six Countries in TIMSS 2003"
	Chair: Yuwen Chang **Discussant:** Hak-Ping Tam	**Chair:** Hwawei Ko **Discussant:** Ann Kennedy	**Chair:** Chun-Yen Chang **Discussant:** Pasi Reinikainen
14:30-15:00	Coffee Break		
	End of the Conference		

Sessions & Abstracts

Session TIMSS-Math 1

18 Sept
10:00-11:30
Song Bo Room (10F) 松柏廳

Chair: Tsung-Han Jen
Discussant: Eugenio Gonzales

A Comparison of PISA and TIMSS 2003 Achievement Results in Mathematics and Science

Margaret Wu, The University of Melbourne, Australia

This study compares PISA 2003 Mathematics and Science results with TIMSS 2003 Grade 8 Mathematics and Science results, using country mean scores for 22 participants of both studies. In Mathematics, it is found that Western countries generally performed better in PISA than in TIMSS, and Eastern European and Asian countries generally performed better in TIMSS than in PISA. Furthermore, two factors, content balance and years of schooling can account for 94% of the variation between the differential performance of countries in PISA and TIMSS. Consequently, the rankings of countries in the two studies can be reconciled to a reasonable degree of accuracy. In Science, the correlation between PISA and TIMSS country mean scores is 0.95, much higher than for Mathematics. That is, TIMSS country mean scores can explain 90% of the variation in PISA country mean scores.

Keywords: *International study, Mathematics, PISA, TIMSS*

Private and Public Education: A Cross-national Exploration with TIMSS 2003

David Rutkowski, IEA Data Processing and Research Center, Germany
Leslie Rutkowski, IEA Data Processing and Research Center, Germany

International assessment programs have been indicating that Hungary is among those countries where between-school differences of students' achievements are very high. This selectiveness is one of the most crucial problems of Hungary's education system today, and changing the unfavorable tendencies requires a better understanding of this phenomenon. The main purpose of this paper is to study the selectiveness of the Hungarian education system in a historical perspective and in an international context. For the analysis, the IEA data bases offer the best sources, since the differences can be studied in several age groups, over a long time, and over different domains of achievement. In this paper, between-school differences of several IEA studies are compared. They are also compared to that of some other countries that may be considered as points of reference for Hungary. The results in general show that (1) the between-school differences are relatively stable over time; (2) there are larger differences when older age-groups are considered; (3) the differences are

greater when other than curriculum-related knowledge and skills are assessed; and finally, (4) these phenomena are not present in the same manner in all countries examined.

Class in the Classroom: The Relationship Between School Resources and Math Performance among Low Socioeconomic Status Students in 19 Rich Countries

Katherine Baird, University of Washington Tacoma, USA

This paper investigates average gaps in math performance among 8th grade students from different socioeconomic backgrounds. It does this through an examination of TIMSS math scores in 19 high income countries. On average, math scores of students with indicators of high socioeconomic status are over 1 standard deviation above those with low scores. The paper estimates the extent to which these math test score differences can be attributed to differences in classroom- and school-level resources available to students from different SES backgrounds. Using hierarchical linear modeling techniques to limit problems of self-selection in the data, and performing two additional exercises to further minimize problems of self-selection, we estimate that among these 19 countries, about one fifth of the SES test score gap can be explained by average differences in the characteristics of the schools that students in each group attend. However, we find two distinct patterns. In seven countries, large achievement gaps nearly disappear once we take account of students´ unmeasured characteristics. In these countries, then, lower human capital levels among low SES students can be traced to background traits common within this population. This is distinct from the findings in 4 countries where low SES students are disadvantaged by the schools they attend rather than by their background characteristics. Within these countries, we estimate that 1/3 to ¾ of the achievement gap between low and high SES students can be explained by differences in the characteristics of schools attended.

MEMO

Session TIMSS-Math 2

Chair: Sue Thomson
Discussant: Yuwen Chang

Quasi-longitudinal Trends of Mediators and Asian Female Mathematics Performances: TIMSS Perspectives

Chih-Chien Yang, National Taichung University, Taiwan

Mathematics performances of Taiwan and Asian female students will be compared thoroughly based on specific mathematics problems solving abilities, including understanding, planning, executing and monitoring. In addition, their performances on routine and non-routine mathematics problems will be examined and compared. In other words, performances on standardized (multiple choices) items and alternative items (performance assessment) will be separated and examined. Quasi-longitudinal or stage-wise educational developments or changes in Taiwan educational systems and other Asian environments with respect to the changes of educational achievements across years will be modeled. Specifically, categorized mathematics scores and their scaled overall achievements will be analyzed. Developments of specific mathematics learning for TIMSS participants (countries) can be recorded individually and analyzed across different survey years. The changing trajectories are useful for educational interpretations and policy refinements.

Mathematics Achievement among Malaysian Students: What can They Learn from Singapore

Noor Azina Ismail, University of Malaya, Malaysia
Halimah Awang, University of Malaya, Malaysia

Malaysia is ranked 16th and 10th in mathematics based on the Trends in Mathematics and Science Study (TIMSS) in 1999 and 2003, respectively while its neighbor, Singapore, used to be part of Malaysia until 1965, is ranked first in both years. Hence, it is the aim of this study to investigate what makes Singaporean students better in mathematics performance compared to Malaysian students. However, this study is limited to investigating factors that are collected by TIMSS in student, teacher and school background questionnaire. It is hoped that the findings from this study will provide useful inputs to improve mathematics learning among Malaysian students.

Keywords: *achievement, secondary analysis, comparative studies, TIMSS*

Educational Indicators and National Development in Saudi Arabia

Alexander W. Wiseman, Lehigh University, USA
Abdullah Sadaawi, Ministry of Education, Kingdom of Saudi Aarbia
Naif H. Alromi, Ministry of Education, Kingdom of Saudi Aarbia

This study examines the impact of socioeconomic status and school resource indicators on 8th grade math and science achievement in the Kingdom of Saudi Arabia. The analyses reported here show that the Kingdom's national averages in most of these areas in 2003 fell below that of peer nations both in the region and globally, which gives Saudi educational policymakers several clear targets for educational reform and improvement. The value and importance of internationally comparative assessments like TIMSS is also discussed with reference to the Saudi case, in particular.

Keywords: *Saudi Arabia, achievement, socioeconomic status, school resources, opportunity to learn, education policy, TIMSS 2003*

MEMO

Session TIMSS-Math 3

Chair: Yuwen Chang
Discussant: Oliver Neuschmidt

What can Botswana Learn from the TIMSS Assessments of 2003?
Poloko Chepete, Molepolole College of Education, Botswana

This study offers a holistic examination of 8th grade student performance in mathematics in schools in Botswana based on the country's sample data from the IEA's Trends in International Mathematics and Science Study (TIMSS) of 2003. The analyzed sample is comprised of 4,805 students in 136 schools. Missing data was treated at the student level using multiple imputation and at the school level using the expectation maximization (EM) algorithm. Part of the theoretical framework for variable selection was based on six factors from the Rand model (Oakes, 1986). Two of the factors (student background and attitudes) were at the student level, three factors (teacher attributes, school quality, and instructional quality) were at the school level, and the sixth one, Mathematics Achievement, served as the outcome variable. A two-level hierarchical linear modeling technique was employed to model student achievement in mathematics as a function of the student and the school level factors. Findings suggested that about one fifth of the variability in mathematics performance is between schools and that the learning of mathematics in Botswana was driven largely by student level factors with the attitudinal factor accounting for a greater part of the variation than the student background factor. The findings also suggested that the most effective schools in mathematics had safe school environments and an academically-inspired student body. Teacher-attribute and instructional quality factors served a moderating effect on the relationship between student-level factors and student performance.

Keywords: *Missing data, Multiple imputation, attitudes, school safety, hierarchical linear modeling*

Analysis of the Selectiveness of the Hungarian Educational System in International Context
Beno Csapo, University of Szeged
Gyongyver Molnar, University of Szeged
Laszlo Kinyo, University of Szeged

International assessment programs have been indicating that Hungary is among those

countries where between-school differences of students' achievements are very high. This selectiveness is one of the most crucial problems of Hungary's education system today, and changing the unfavorable tendencies requires a better understanding of this phenomenon. The main purpose of this paper is to study the selectiveness of the Hungarian education system in a historical perspective and in an international context. For the analysis, the IEA data bases offer the best sources, since the differences can be studied in several age groups, over a long time, and over different domains of achievement. In this paper, between-school differences of several IEA studies are compared. They are also compared to that of some other countries that may be considered as points of reference for Hungary. The results in general show that (1) the between-school differences are relatively stable over time; (2) there are larger differences when older age-groups are considered; (3) the differences are greater when other than curriculum-related knowledge and skills are assessed; and finally, (4) these phenomena are not present in the same manner in all countries examined.

Keywords: *between-school differences, selective education, system monitoring*

Trends in Similarities and Differences of Students Mathematics Profiles in Various Countries

Jolita Dudaitė, Kaunas University of Technology
Aistė Elijio, Vilnius University

The purpose of the article is to investigate how countries can be grouped according to their students' mathematics achievements. The patterns of students' answers for groups of countries are searched for, based on the difficulty of mathematics items for the students in those countries. The attempt is made not only to group countries according to their mathematics profile, but also to see whether the similarities within the particular group remain throughout the years. The main methods of the research include hierarchical cluster analysis and factor analysis. TIMSS (Trends in Mathematics and Science Study) 1995 and 2003 data is used for the analysis. Mathematics results of Grade 8 students of all participating countries are included. The investigation shows that although essentially the same groups remain throughout the three TIMSS cycles, but at the same time there are several interesting changes and the mathematics profile of all participating countries in the survey becomes more similar to each other.

Keywords: *TIMSS, trends, mathematics profiles, item difficulty, hierarchical cluster analysis.*

Session TIMSS-Math 4

Chair: Eugene Gonzales
Discussant: Richard Houang

Effects of Schooling and Age on performance in Mathematics and Science: A Between-grade Regression Discontinuity Design Applied to Swedish TIMSS 95 Data

Christina Cliffordson, University West and University of Gothenburg

One purpose of the study is to examine the relative effects of schooling and age on performance in mathematics and science by the use of a between-grade regression discontinuity approach applied to the Swedish samples of TIMSS 95. This design relies on the assumptions that there is a sharp age-based decision rule for grade assignment, and that the regression of performance on age is linear. Another main purpose is to investigate the robustness of the results against deviations from these assumptions. The issue has theoretical, methodological and practical implications, especially on the design of international comparative studies of school performance, in which it is necessary to focus on comparability with respect to either age or to the number of years in school. Even though the design has strong advantages, there are some problems as well. The greatest problem is the selection effect caused by the non-sharp decision rule for school start. According to the Swedish TIMSS 95 data the share of under-aged students is between 0.3 % and 0.7% and of over-aged about 3%. As the Swedish data comprises three successive grade cohorts it is possible to bring together students born a particular year in the analysis, and to estimate the selection effect on the within-year regression coefficients. The main pattern of results agrees with that obtained in previous research, showing that the grade effect is about twice as strong as the age effect. The results indicate that the regression of performance on birth date is linear, and that the selection effect on the within-year regression coefficient is generally relatively small.

Keywords: *Age effect, between-grade regression discontinuity design, intellectual performance, schooling effect, TIMSS 95*

Assessing the Effect of Schooling with Cross-sectional Data: Between Grades Differences Addressed as a Selection-bias Problem

Hans Luyten, University of Twente, Netherlands
Bernard Veldkamp, University of Twente, Netherlands

This paper shows that it is possible to assess the effect of schooling accurately with

cross-sectional data. The methodology applied requires that the data relate to two (or more) adjacent grades. The difference in learning outcomes between grades can be conceived as partly resulting from selection bias. Differences result primarily from the education received, but it should be taken into account that some of the factors - besides date of birth - that play a role in the assignment process also affect learning outcomes. Information on these factors may not be available, but this is not necessarily a problem. Heckman's two-stage procedure provides a solution. This is illustrated through analyses of TIMSS-95 data. These reveal substantial effects of education on mathematics and science achievement in fifteen different countries. With regard to attitudes, hardly any significant effects were found for science. The effects on attitudes toward mathematics are mostly negative.

Perceptions of Parental Involvement in Schooling, Student Milieu and Student Achievement in Mathematics

Nicole Wernert, Australian Council for Educational Research, Australia

This study builds on recent research that has found that teacher perceptions of parental involvement in schooling are an important influence on student outcomes, in addition to the effects of parent reports of their involvement. Using data from TIMSS 2003, this study explores the relationship between principal perceptions of parental involvement and student milieu and the impact of both on student achievement in mathematics. Moderated multiple regression analyses were used to explore these relationships. A significant relationship was found for mean school mathematics achievement regressed on principals' perceptions of parental support and involvement at both Grades 4 and 8. However, statistically significant evidence of milieu moderating those relationships was not found. This may be because low statistical power is often associated with moderated hierarchical regression analyses. Significant interaction terms suggested that moderation may be found with more power. Further investigation into these relationships is suggested.

MEMO

19 Sept
13:00-14:30
Song Bo Room (10F) 松柏廳

Chair: Ruth Zuzovsky
Discussant: Tsung-Hau Jen

Effective Schools in Arab Educational Systems: An Analysis of TIMSS 2003

Oliver Neuschmidt, IEA Data Processing and Research Center, Germany
Juliane Hencke, IEA Data Processing and Research Center, Germany
David Rutkowski, IEA Data Processing and Research Center, Germany
Leslie Rutkowski, IEA Data Processing and Research Center, Germany

Like in other regions of the world, in the Arab region researchers are increasingly interested in detecting the key factors that make a school successful in order to raise the performance of low-achieving schools in their educational systems.

The present study used data from the 3rd cycle of the Trends in International Mathematics and Science Study (TIMSS 2003) in order to look at school level factors influencing mathematics achievement in Arabic educational systems participating in TIMSS. Although a common regional pattern emerged and parental support, shortage of school resources and certain kinds of negative student behavior seemed to be associated with mathematics effectiveness in nearly all of the educational systems, the characteristics and importance of the indicated factors was quite different. While in all educational systems questions concerning resources and technology seem to be associated with effectiveness in mathematics, especially in Morocco and the Palestinian National Authority student behavior even played a bigger role.

Keywords: *effective schools, Arabic educational systems, TIMSS 2003*

Is There a Relationship between School Discipline Problem and Student Performances in TIMSS Studies?

Hak-Ping Tam, National Taiwan Normal University, Taiwan

Student misbehaviors exist in almost every school system. However, in some countries or regions, such issues are seldom brought out for open discussion, nor are relevant records easily available to educational researchers. As a result, tactics cannot be effectively planned and implemented to curb such behaviors should they post adverse impact on instructional practices. However, in TIMSS's school questionnaire, there is a set of questions that taps into the prevalence and severity of a subset of such behaviors. The present study takes advantage of this feature in TIMSS. Descriptive statistics and correspondence analysis were

performed. The results were supplemented with an analysis on the derived variable entitled the index of students' perception of being safe in schools as defined in the international reports. The findings from this paper signified that there is a relationship between student performances in TIMSS and the general discipline in the schools that they attended. Hence, the provision of a safe environment for students to study in is of utmost importance. This issue should be of concern to science and mathematics teachers, not just to the school staffs.

Keywords: *secondary analysis, student misbehaviors, correspondence analysis*

TIMSS International Curriculum Analysis and Measuring Educational Opportunities

Richard T. Houang, Michigan State University, USA
William H. Schmidt, Michigan State University, USA

Following the long tradition of attending to the importance of educational opportunity in the understanding of educational progress, 1995 TIMSS International Curriculum Analysis (ICA) was designed to capture country's curriculum standards as intended curricula and their textbooks as potential implemented curricula. The vision of education opportunity was that of the IEA Tri-Partite Model of Curriculum. Since then, numerous articles and books have been published expanding on the knowledge gained from this study. This paper briefly reviews the ICA dataset and the subsequent advances made toward relating educational opportunity to educational gains.

Keywords: *curriculum analysis, secondary analysis, educational opportunity, opportunity to learn, educational policies,*

MEMO

Session TIMSS-Math 6

Chair: Oliver Neuschmidt
Discussant: Sue Thomson

Comparison of the Learning Expectations for School Mathematics across Several Asian Countries and U.S. States

Jung-Chih Chen, National Chiayi University, Taiwan
Che-Jen Hsieh, National Tainan Institute of Nursing, Taiwan

This study analyzes learning expectations in grade 1-8 mathematics across several U.S. states and high performing TIMSS Asian countries, including Singapore, Taiwan and Japan. In order to narrow and focus the investigation, only one topic within the strands is reported. Based on the official curriculum documents, results of this study indicate that the mathematics content, grade placement and cognitive level of learning expectations related to selected topic might vary markedly across documents. This variability in learning expectations results in striking differences in students' opportunity to learn.

Keywords: *learning expectation, opportunity to learn, TIMSS.*

The Role of School Leadership on Student Achievement: Evidence from TIMSS 2003

Daniele Vidoni, INVALSI; European Commission JRC – CRELL
Luca Grassetti, Università degli Studi di Udine

To address this question, the study uses the TIMSS2003 and investigates the relationship between head-teacher time allocation and school characteristics, student background, and student achievement in 18 countries. The model used in the empirical analysis is a three level Multilevel Model with random effects (evaluated using the R-Statistics software) that aims at evaluating the interaction effect between a particular school level variable (the time used by the head-teacher in managerial or leadership activities) and the explanatory variables describing school and student characteristics. What the study shows is that head-teacher specialization (either in management or in leadership) has negligible direct effect on student achievement. Most of all, however, head-teacher specialization is correlated to a lower impact of family SES on student achievement. Moreover, by investigating the impact of school management and school leadership on student achievement on students with different family background in terms of education, it is apparent that the high concentrations of school leadership are especially valuable for students of lower SES. On the other hand, the high concentrations of school management

are most valuable for the students of higher SES.

An Empirical Look at Globalization in Education: An Example with TIMSS Mathematics Data

Leslie Rutkowski, IEA Data Processing and Research Center, Germany
David Rutkowski, IEA Data Processing and Research Center, Germany

The education reform in Canada and the United States envisions schooling where all students, irrespective of their background characteristics have the opportunity to succeed. To achieve this vision, the school systems in both countries need to function in such a way that students' success do not depend on their backgrounds. That is, if the school processes and policies in the two education systems were inclusive supporting the learning of all students, then we would expect high quality schools to compensate for socioeconomic disadvantage such that the achievement gap associated with the socioeconomic status (SES) would be minimized. The main objective of this paper is to explore the relationship between school quality and socioeconomic disadvantage within schools in the United States and Canada. Our analysis using data from TIMSS-2003 indicates that the average within school impact of SES on students' achievement level is relatively stronger in the United States than in Canada. The difference in the impact between the two countries is particularly prominent in high achieving schools. In Canada, students from socioeconomic disadvantage backgrounds compared with high SES students are equally successful in high achieving schools, while within high achieving schools in the United States these disadvantage students are less successful. Our finding suggests that, unlike in the United States, the current schooling processes and policies designed to improve the quality of schools in Canada seem to compensate for socioeconomic disadvantage.

MEMO

Session TIMSS-Math 7

Chair: Richard Houang
**Discussant:** Peter Nystrom

Facilitating Interest Development and Achievement in Classroom Instruction: How Large-scale Studies Like TIMSS Can be Used to Investigate Effects of Instructional Quality

Mareike Kunter, Max Planck Institute for Human Development, Germany
Yi-Miau Tsai, Max Planck Institute for Human Development, Germany

This study uses data from the 1995 TIMSS middle school study to investigate efficient use of classroom time and personal support of students as important aspects of instructional quality. Typically, most studies on instructional quality define quality in terms of instructional effects either on cognitive outcomes, such as achievement gains, or on non-cognitive outcomes, such as students' motivational development, hypothesizing that different aspects of instruction show specific effects on each set of variables. In the present study, we examine whether mathematical instruction that is characterized by efficient use of time but, at the same, leaves room for personal support fosters both mathematical achievement and mathematics-related interest. In addition, we investigate the hypothesis that an imbalance between the two instructional aspects may have specific unfavourable effects on the two outcomes. The study draws on the German TIMSS sample of 8th graders and a national longitudinal extension which included 1900 students for whom additional data from a measurement point in grade 7 and supplementary questionnaires were available. Students' class mean ratings of classroom instruction were used to predict learning gains and interest development over the course of the year. Results showed that efficient time use and teacher personal support affected students' achievement and interest differentially. Students in classrooms with less efficient time use showed weaker achievement gains, whereas personal support was found to have a positive effect on interest development. However, no empirical support was found for the expected interaction effects between the two aspects of instruction. These distinct effects highlight the need for multiple criteria of instructional quality. Considering motivational and achievement outcomes at the same time may usefully inform educators about good teaching.

Keywords: *interest, student achievement, instructional quality*
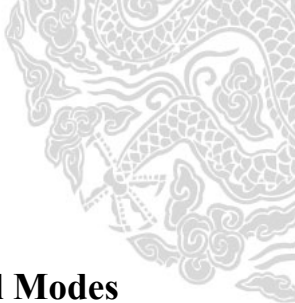
Is Multilingualism to Count on? The Importance of Instructional Modes for Multilingual Students' Mathematical Progress

Åse Hansson, University of Gothenburg, Sweden

In this study the importance of instructional modes for multilingual students' mathematical progress is discussed and how to conceptualise and define "instructional modes" is analyzed. Findings from a study of the educational situation in Sweden are presented. A measurement model for instructional modes in mathematics education is being explored. The traditional division in teacher- versus student-centred modes of instruction is challenged by an alternative perspective focusing on teachers' intervention and students' interaction. Results from this study support the possibility to adopt this alternative perspective on modes of instruction.

Boys are as Good as Girls? A Confirmatory Study from TIMSS 2003 Data Analysis

Hsiao-Fang Lin, Institute of Teaching Art MingDao University, Taiwan
Ming-Ning YU, Department of Education National Chengchi University, Taiwan

The purpose of this study is to do the secondary analysis of TIMSS2003 dataset for investigating the learning differences in mathematics literacy, and for seeking out the factors that affect mathematic literacy. Besides, this research especially focuses on the gender difference in the 8th grade students' mathematics literacy. In research method, a model will be constructed and verified from the TIMSS2003 dataset by Structure Equation Modeling (SEM) to interpret the phenomenon of "boys are good at mathematics, and girls are bad at mathematics". Researcher also wants to compare Taiwan with United States students' performance. The conclusion explains the gender and culture differences in performing the mathematics literacy and learning factor.

Keywords: *gender difference, TIMSS2003, Structure Equation Modeling, mathematics literacy*

20 Sept
13:00-14:30
Song Bo Room (10F) 松柏廳

Chair: Ruth Zuzovsky
Discussant: Hak-Ping Tan

Identification and Analysis of Text-structure and Wording in TIMSS-items

Peter Nyström, Department of educational measurement, Umeå university, Sweden

The extent to which students are able to understand the text in an item is important in order for them to show what they know and can do. In this study a word-recognition test is used to identify items where verbal skills have a significant contribution to the probability of getting the answer right. When achievement level in mathematics or science is controlled for, a strong verbal component can indicate unwanted reading difficulties in an item. The items identified are then analysed in order to find critical features in the item texts.

Keywords: *secondary analysis, item analysis, text, TIMSS*

Effects of TIMSS Sampling Weights on Inference Accuracy when Utilizing Structural Equations Models

Chih-Chien Yang, National Taichung University, Taiwan

The project aims to address the issues and promote proper analyses and usages of the TIMSS datasets with appropriate weighting procedures. Literature (e.g., Lohr, 1999; Kish, 1965; Asparouhov, 2005; Yang, & Tsai, 2006) suggested that unequal probability of selection is an inevitable feature of complex sampling surveys as in all TIMSS survey procedures. Not accounting for the impact of complex sampling designs can lead to an underestimate of the sampling variance associated with an estimate and, at the same time, bias the standard error (Yang, 2007). Empirical SEM models (Tsai, & Yang, 2007; Tsai, & Yang, 2007; Yang, & Tsai, 2006) are demonstrated by analyzing TIMSS datasets with sampling weights.

Influential Factors Causing the Gender Differences in Mathematics' Achievement Scores among Iranian Eight Graders based on TIMSS 2003 Data

Ali Reza Kiamanes, Teacher Training University, Tehran
Mansoureh Mahdavi-Hezaveh, Ministry of Education, Tehran

Enhancing student's mathematics performance is a concern for students, parents, school personals, educators as well as the whole community. The purpose of the present study has been to develop and test a conceptual model for predicting math achievement by examining different factors that have had an effect on the Iranian 8th graders' mathematics achievement as documented in TIMSS 2003, and determining the contribution of each factor to the explained variance, in order to see if different models would emerge for boys and girls. Using the TMSS 2003 data on the Iranian 8 graders, the Criterion Variable was defined as the mean of five mathematics plausible values, while the Predictor Variables were identified as Attitudes towards math, SES, Self-Concept, School Climate, School Connectedness, and Teaching Process. One factor was selected as the exogenous and the others as the endogenous constructs of the proposed model. The direct effects of SES and self-concept on Achievement were positively significant and the direct effects of school connectedness and attitudes toward math on achievement were negatively significant in all three models. Paths from teaching process on achievement were not significant. Paths from school climate to achievement were small and positively significant for the total sample as well as the girls sample alone, but not for the boys sample by itself. Except for the chi-squared, for sensitivity to the sample size, all other indices support the hypothesis that models fit the sample data in all three cases.

Keywords: *Math achievement;Gender;SES;Self-concept;Model*

MEMO

Session TIMSS-Sci 6

Chair: Hak-Ping Tam
Discussant: Che-Di Lee

Gender Differences in Science Achievement, Science Self-concept, and Science Values

Yuwen Chang, National Taipei University of Education, Center for Psychological Research, Chung Yuan Christian University, Taiwan

This study investigates gender differences in science achievement, self-concept of science ability, and subjective science values, based on TIMSS 1999 and 2003 database. The sample in the analyses presented including 5772 (TIMSS 1999) and 5739 (TIMSS 2003) Taiwanese eighth graders. All statistics showed that gender differences became smaller over time. However, the gender differences in the upper and lower levels deserved continued investigation. At lower level, girls average performance were better than boys and had smaller score variation. At upper level, boys outperformed girls and had larger variance. In addition, boys outnumbered girls in the top 25% in science performance. No matter the direction of gender differences at each quarter, boys always had higher self-concept of ability and subjective science values. It evidenced that gender differences in self-concept and science values did not parallel diminishing differences in actual achievement. When students' achievement levels were controlled, science self-concept and values were more highly related to science achievement for high achievers.

Keywords: *TIMSS, expectancy-value model, science self-concept, subjective science values*

Gender and Socioeconomic Differences in Science Achievement in Australia: From SISS to TIMSS

Sue Thomson, Australian Council for Educational Research, Australia

Gender differences in science amongst year 8 students in Australia in TIMSS 2003 were a surprise, given two decades of programs designed to increase girls' participation levels in science. This study examines student and school-level characteristics simultaneously using hierarchical linear modelling to estimate the ability of each to explain gender differences in science achievement for students with differing socioeconomic backgrounds.   Using separate datasets for low and high socioeconomic background schools, adjusting for the students' background and personal characteristics and elements reflecting the context of their schools, there were still significant gender differences in Australia. Comparisons are made with similar studies using data from the Second International Science Study

The Influences of the Academic Self-concept on Academic Achievement: From a Perspective of Learning Motivation

Tsung-Hau Jen, National Taiwan Normal University, Taiwan
Chin-Lung Chien, National Chengchi University, Taiwan

Based on the released data of 5,690 Taiwanese 8th graders participating in TIMSS 1999, an elaborated motivation-resource competition model will be examined through the structural equation modeling technique. According to the model, a student's self-concept in one learning subject exerts a positive effect on his/her achievement in the same subject, but a negative effect on the achievement in another learning subject. The model demonstrates that students with higher academic self-concept tend to invest more time to engage in learning activities in correspondent learning subject; on the other hand, the time spending on study for other learning subjects will decrease relatively.

MEMO

Session TIMSS-Sci 7

Chair: Yuwen Chang
Discussant: Chun-Yen Chang

Analysis on TIMSS 2003 in Seven Countries: The Correlations of 4th Graders' Backgrounds, Family Environments, Interests in Science, and Self Confidence with their Science Achievement

Mei-Yu Chang, National Hsinchu University of Education, Taiwan
Pei-Hua Lo, National Taiwan Normal University, Taiwan
Li-Fay Chen, Chiauyues Elementary School, Taiwan

The study based on TIMSS 2003 data is to investigate the relationships of the 4th graders' in Taiwan, Singapore, Japan, the United States, the Netherlands, Italy, and Australia among personal backgrounds, family environments, interest in science, self confidence and science achievement. T-test, Pearson's Product-moment Correlations and One-way ANOVA are applied to compare the correlations of science achievement and variables in different countries. The results are as follow:

1. The students' background factors, such as "gender" and "how often to speak TIMSS survey language at home" are influential on the 4th graders' interest, self confidence, and performance in science.
2. Among the students in seven countries, in general, the more books one's family has, the more interested and confident in science with better science achievement than those whose family with fewer books. However, students going to cramming schools have more interests in science; students not going to cramming schools have more confidence in science and better science achievement.
3. The interest, self confidence, and science performance are positive correlated. The self-confidence is more correlated than the interest.
4. The 4th graders in Asian countries have lower interests and self confidence in science than those in western countries. However the former have better scientific performances than the latter.

Keywords: *international comparison, background, interest in science; self confidence, family environments*

The Study of Science Achievement in Six Countries: Finland, England, Hungary, Japan, Latvia and Russia. Study based on TIMSS–1999

Pasi Reinikainen, University of Jyväskylä

This paper introduces Reinikainen's (2007) study which explored country-specific explanatory variables for eighth-grade student science achievement in Finland, England, Hungary, Japan, Latvia and Russia by multi-level modeling of the TIMSS–1999 data. The study was based on a pragmatic approach, in which instead of using one across the countries model or international indicators each country had its own model and explanatory indicators based solely on statistically significant explanatory variables. These variables were presented in graphical form that facilitates interpretation of the results also by persons unfamiliar with multi-level modeling. The study did not only present explanatory variables but also aimed at a new level of interpreting these secondary results: firstly by describing the demographics, educational systems and science education practices of the studied countries, and secondly, by using national science education experts to provide emic interpretation of the statistical results.

Keywords: *science, TIMSS–1999, multilevel modeling, country-specific models, mixed method*

Negative School Factors and Their Influence on Math and Science Achievement in TIMSS 2003

Tina Vršnik Perše, Educational Research Institute, Slovenia
Ana Kozina, Educational Research Institute, Slovenia
Tina Rutar Leban, Educational Research Institute, Slovenia

The aim of the presented study was to conduct an analysis of TIMSS 2003 database and to determine how negative school factors, such as aggression, are associated to the mathematical and science achievement of students. The analyses were conducted separately for national and international data. National analyses for Slovenia show significant associations between math and science achievement and the experience of aggressive behavior. Students who experienced aggressive behavior scored lower in math and science, both in the 4th and 8th grade. The results of the regression analysis show that negative factors, such as aggressive behavior, are good predictors of educational achievement in Slovenia. International analyses for the selected countries (high and low achieving countries from the whole TIMSS population) confirm that this type of finding is culturally impartial as well as valid for the level of achievement both in math and science.

Keywords: *aggressive behavior, school, achievement, math, science*

Session TIMSS-Sci 8

Chair: Chun-Yen Chang
Discussant: Pasi Reinikainen

Teachers' Qualifications and Their Impact on Student Achievement Findings from TIMSS-2003 Data in Israel

Ruth Zuzovsky, School of Education, Science & Technology Education Center, Israel

Data collected as part of TIMSS-2003 in Israel make it possible to validate some assumptions regarding the relationship between some teachers' characteristics and students' achievements. This examination is needed for taking a stance in the hot debate in Israel and elsewhere, regarding the nature of necessary reforms in initial teacher education, opportunities for professional development and the reward mechanisms and incentives that affect the career structure of practicing teachers. The findings in this study, which are in line with findings from many other studies, do support policy intervention aimed to provide more opportunities and incentives for participation in content-focused professional development.

Keywords: *Teachers' qualifications, student achievement, teachers' policy*

The Relations of Linguistic Features of Students' Writing and Their Performance on TIMSS Free Response Items

Wen-Gin Yang, National Taiwan Normal University, Taiwan
Xiang-Ling Huang, National Taiwan Normal University, Taiwan

Drawn upon the perspective of Systemic Functional Linguistics and the features of Mandarin, this study aimed at exploring the relations between the linguistic characteristics of students' writing on answering TIMSS 2003 free response items and their academic performance. Nineteen language features were identified according to the quantitative unit, qualitative structure, Mandarin features, and textual function of writing. 1037 records of 8th grade were random stratified sampled as the target dataset from six items of the TIMSS 2003 data pool. The dataset was classified into two sets, the 'correct' and 'incorrect' groups, according to its correctness. Comparisons of the differences between these two groups among the 19 language features were analyzed, and the regression of these language features on academic performance was conducted by logistic regression. Major findings include: (1) overall speaking, the 'correct' group outperformed on most language features except 'science content words', 'zero anaphora', and 'within clause inference'; (2) the language feature differences indicate the very ability difference of using 'the language of science'
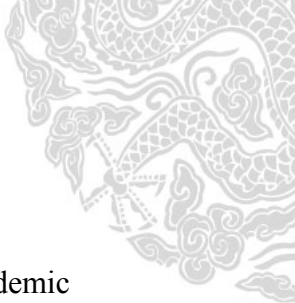
between these two groups; (3) the language features would predict students' academic performance as many as about 88%.

The Fourth Grade Students' Science Cognitive Performance and Influential Factors of Six Countries in TIMSS 2003

Mei-Yu Chang, National Hsinchu University of Education, Taiwan
Pei-Hua Lo, National Taiwan Normal University, Taiwan
Tsui-Ping Chang, Da-Tong Elementary School, Taiwan

The fourth grade students' science cognitive performance and influential factors of the six best achievement countries, Singapore, Chinese Taipei, Japan, Hong Kong, England, and the United States, in TIMSS 2003 are discussed. The cognitive performances are studied in three domains, factual knowledge, conceptual understanding, and reasoning and analysis. T-test and one-way ANOVA are applied to examine the influential factors. The results showed that the fourth graders from Taiwan and Singapore have the best performance in factual knowledge and conceptual understanding domains among six countries. Japanese fourth graders performed best in reasoning and analysis domain. The variables of gender, family's book collection, whether a PC in one's family, interest in science, and confidence in science, are positively correlated to students' performances in factual knowledge and in conceptual understanding. Confidence in science is positive correlated to performance in reasoning and analysis.

MEMO

Session PIRLS 1

Chair: Michael Martin
Discussant: Ina Mullis

The Impact of Socioeconomic Factors on Achievement Gaps on Reading Literacy Between Hebrew-speaking and Arabic-speaking Students in Israel

Ruth Zuzovsky, Hakibbutzim College of Education, Israel

The study intends to make it possible to decide between two alternative explanations for the low attainment of Arabic-speaking students in reading literacy compared with Hebrew-speaking students who participated in the PIRLS (2006), i.e., one that associates the variability in reading literacy scores the with the variability in socioeconomic measures, and another that considers the diglossia typical of Arabic (two linguistic codes: standard written Arabic and the spoken form) as the critical variable responsible for the low attainment in reading literacy among Arabic-speaking students. Analyses of covariance were used to explore achievement gaps between the two groups while statistically controlling for the effect of socioeconomic factors. Repeating the analysis carried out on reading scores, on mathematics and science scores, considered to be less affected by diglossia, the achievement gap in favor of Hebrew-speaking students disappeared and even reversed. The findings of the study supported the explanation that Arabic diglossia is the main cause of the low results of Arabic-speaking students and recommends educational interventions aimed to directly treat the problem of diglossia rather than focus only on improving socioeconomic conditions in schools.

Keywords: *socioeconomic factors, Arabic diglossia, reading literacy achievement*

Family Factors and Reading Achievement: Chinese Community Perspective

Yi-Ling Chan, National Central University, Taiwan
Hwawei Ko, National Central University, Taiwan
Shek Kam Tse, The University of Hong Kong, Taiwan

This study examined family reading practices between Chinese community and non-Chinese community. Six family environmental factors were adopted, and they are parents' evaluation of child's early literacy skills, early home literacy activities (EHLA), reading activities between parents and children, parental attitudes and habits regarding reading, parents' reports of books in the home, and parents' reports of children's books in

the home. Chinese community has Hong Kong, Singapore, and Taiwan. Non-Chinese community includes counterparts whose students' PIRLS reading achievement scores are similar to those in Chinese community. Using IDBAnalyzer and hierarchical multiple regression analysis, the results showed Chinese community parents had higher estimates of their children's early literacy skills, but lower reading activities between parents and children. Parents' attitudes regarding reading in Chinese community were relatively moderate, and the books at home are less than non-Chinese community families. However, children's book or books at home was an important predictor in both communities. It explained a significant 1% to 9% of variance of students' reading achievement after controlling children's early literacy skills. Although there were differences between two communities among six family reading factors, the regression pattern indicated that there was more similarity than difference between Chinese and non-Chinese communities.

Keywords: *family environment factors, reading achievement, Chinese community*

Methodology for Conducting Country-level Longitudinal Analyses: A Review and Comparison of Procedures

Kajsa Yang-Hansen, Department of Education, University of Gothenburg
Jan-Eric Gustafsson, Department of Education, University of Gothenburg

One of the most challenging tasks in secondary analysis of data from international studies is to make credible causal inference about the impact of different factors on educational achievement. The trend design of the major IEA studies has provided a basis for conducting longitudinal studies at the country level, and this approach has shown great promise in preliminary analyses based upon simple methods of analysis. However, within other scientific fields there is greater experience with these kinds of approaches. The purpose of the paper is to review methods for country-level longitudinal analysis, such as the time-series cross-section method used in political science and methods for panel analysis used in econometrics. The different methods are illustrated using data from the PIRLS studies.

Keywords: *PIRLS, country-level comparison, time-series cross-section model, panel data, STATA*

MEMO

Session PIRLS 2

Chair: Jan-Eric Gustafsson
Discussant: Sarah Howie

Adding Value to PIRLS by Combining with National Data and Using Sophisticated Modelling Techniques

Ian Schagen, Ministry of Education, Wellington, New Zealand
Liz Twist, National Foundation for Educational Research (NFER), U.K.

In this paper we give worked examples of adding national data to international datasets in order to add value to the secondary analysis of this data. We also show how more sophisticated techniques, including multilevel modelling and structural equation modelling, can be applied to such enhanced data to go beyond the potentially misleading simple correlational analysis. The paper is illustrated with data from PIRLS 2006 for England.

Keywords: *secondary analysis, value added analysis, multilevel modelling, structural equation modelling, PIRLS.*

Predictors of Reading Literacy in the Netherlands

Andrea Netten, National Language Center, The Netherlands
Ludo Verhoeven, National Language Center, The Netherlands
Mienke Droop, National Language Center, The Netherlands

The purpose of this study was to construct a longitudinal model that predicts reading literacy at the end of primary school. The data of 822 students who participated on a combined PRIMA and PIRLS 2001 study and PRIMA 2003 study were analyzed. The following student variables were considered for the model predicting Reading Literacy in grade 6: Nonverbal Intelligence, Home Reading Resources, Decoding, Language Comprehension, Mathematics, Reading Motivation, Academic Self-confidence and Reading Literacy in grade 4. The fit of the model was found to be good. The model explained 62% of the variance in Reading Literacy in Grade 6. The three school-learned skills that were entered in the model; Language, Decoding and Mathematics have proven to be important predictors for reading literacy. With respect to the two variables measuring attitudes, Reading Motivation and Academic Self-Confidence, it can be concluded that they contributed, either direct or indirect, to the prediction of reading literacy in grade 6, although they explained only a small part of the variance.

Cluster Analysis for Cognitive Diagnosis: An Application to the 2001 PIRLS Reading Assessment

Chia-Yi Chiu, Rutgers, The State University of New Jersey, USA
Minhee Seo, University of North Carolina at Greensboro, USA
Jeff Douglas, University of Illinois at Urbana-Champaign, USA

Latent class models for cognitive diagnosis often begin with specification of a matrix that indicates which attributes or skills are needed for each item. Then by imposing restrictions that take this into account, along with a theory governing how subjects interact with items, parametric formulations of item response functions are derived and fitted. Cluster analysis provides an alternative approach that does not require specifying an item response model, but does require an item-by-attribute matrix. After summarizing the data with a particular vector of sum-scores, K-means cluster analysis or hierarchical agglomerative cluster analysis can be applied with the purpose of clustering subjects who possess the same skills. An application study to the 2001 PIRLS reading data is conducted to illustrate how the methods can be implemented in practice.

MEMO

Session PIRLS 3

Chair: Sue Thomson
Discussant: Yuwan Chang

Nordic Comparisons in PIRLS 2006

Victor van Daal, University of Stavanger, Norway
Anne Charlotte Begnum, University of Stavanger, Norway
Ragnar Gees Solheim, University of Stavanger, Norway
Herman Adèr, (Formerly) Free University, Amsterdam, The Netherlands

PIRLS 2006 data of Iceland, Sweden, Denmark and Norway were analyzed to examine which general and country-specific factors influence reading comprehension performance in these Nordic countries. The full data set contains 13082 cases. In a first step, multilevel models were constructed for each country on the basis of half of the students randomly selected, with homes/students nested within schools/teachers. In the second step of the analysis, the Norwegian model was cross-validated using the other halves of the four subsamples in one multilevel model. The main findings include that girls do better than boys, but only on inference questions. Older students score higher than younger students. With respect to language minority groups we found that if the father is born in the country, students do better, especially in Iceland. If the student speaks the language of the test prior to school entry, he scores higher on straightforward questions. At the student level, a positive attitude towards reading was positively related to both text types and both question types, the latter two even more so in Iceland. If no negative things happened at school, the performance on the total score was higher, especially in Sweden. The use of the internet has a negative correlation with reading comprehension, except in Iceland, where more use of the internet is beneficial for performance on information texts and on straightforward questions. At the home level the number of children's books at home estimated by the parents made a difference, as did the assessment by the students of the number of books at home. The higher the level of education of the father and the mother, the better the students perform. Finally at the home level the language activities conducted with the students before they went to school and the reading level of the students prior to school entry assessed by the parents were positively related to the total reading score. Rather surprisingly, no effects of teacher and school variables were found at all.

Keywords: *secondary analysis, multilevel modeling, reading comprehension, Nordic countries*

Assessing the effect of schooling with cross-sectional data
Between grades differences addressed as a selection-bias problem

Michael O. Martin, TIMSS & PIRLS International Study Center, Boston College, USA
Ina V.S. Mullis, TIMSS & PIRLS International Study Center, Boston College, USA
Pierre Foy, TIMSS & PIRLS International Study Center, Boston College, USA

This study uses PIRLS 2006 reading achievement results for fourth grade students in 40 countries to show how countries' policies on age of school entry and promotion/retention affect students' age within grade and result in a range of average ages for the PIRLS countries. In addition, the relationship between age within grade and achievement is complicated by the flexibility of school entry policies as well as policies regarding promotion/retention. Although in some countries older fourth grade students have higher achievement than younger students, older students do not necessarily perform better. Many countries have a significant proportion of older students in the fourth grade (students whose age suggests they belong in a higher grade) and these older students have significantly lower achievement than their younger classmates. The many different configurations of age-within-grade and reading achievement makes statistical adjustment of countries' average reading achievement for differences in age problematic.

Keywords: *school entry policies, promotion/retention, age and grade level, reading achievement, regression discontinuity design*

Multilevel Analysis of PIRLS 2006 Data for Italy

Fabio Alivernini, Sara Manganelli, Emanuela Vinci, National Institute for the Educational Evaluation of Instruction and Training, Frascati

Questionnaire Data from the PIRLS 2006 study in Italy provided a number of indices in order to summarize factors of educational context influencing reading achievement. The aim of the present secondary study is to explore the relationship between these indices at school as well as pupil levels and the Rasch-scaled score for overall reading achievement. A multilevel analysis was conducted using two levels, the home/student level nested under the school/teacher level following a four-stage procedure. Results show that pupils' attainment in reading is significantly related to home educational resources (home/student level effect), to the parents' attitudes toward reading (home/student level effect), to students' attitudes toward reading, to students' reading self-concept and to teacher career satisfaction (school/teacher level).

Keywords: *secondary analysis, reading achievement, multilevel regression, PIRLS 2006, background indices*

Session PIRLS 4

Chair: Ina Mullis
Discussant: Michael Martin

Reading between the Lines: Contributing Factors that Affect Grade 4 Student Reading Performance as Measured across South Africa's 11 Languages

Surette van Staden, Centre for Evaluation and Assessment, University of Pretoria, South Africa
Sarah Howie, Centre for Evaluation and Assessment, University of Pretoria, South Africa

Abstract
This paper reports on the conceptualization of a study to identify, illuminate and explain relationships between some major factors associated with successful reading at Grade 4 level in South African primary schools. The South African population is characterized by great diversity and variation. With 11 official languages, current educational policy in South Africa advocates an additive bilingualism model and therefore students in Grade 1 to 3 are taught in their mother tongue. Thereafter, these students progress to Grade 4, the language of learning and teaching changes to a second language, which in most cases is English. At this key developmental stage students are also expected to advance from learning to read, to a stage where they can use reading in order to learn. The study intends to use Structural Equation Modeling techniques to analyse the South African PIRLS 2006 data. However, as this is work in progress and the study is still in its preparatory data analysis phase, this paper will focus on the conceptual and preparatory stages of developing a model for one of three models, namely the student-level model.

Keywords: *secondary analysis, educational policies, reading literacy*

The Relationship between English Second Language Proficiency and Mother Tongue in Non-native English Speakers in South Africa

Sarah Howie, Centre for Evaluation and Assessment, University of Pretoria, South Africa
Elsie Venter, Centre for Evaluation and Assessment, University of Pretoria, South Africa
Surette van Staden, Centre for Evaluation and Assessment, University of Pretoria, South Africa

The aim of this paper is to investigate the relationship between English second language proficiency and mother tongue proficiency amongst non-native English speakers in South Africa. South Africa participated in PIRLS for the first time in the 2006 study. In addition to the international assessment, South Africa included a national option, a second assessment which focused on assessing English second language level proficiency. This national option was included because more than 80% of students in the South African study learn in English from Grade 4 onwards, although it is spoken by less than 10% of the population as their mother tongue. The national assessment in English (ENA)

was based on the South African curriculum. In this paper, the data were analysed conducting correlational and regression analyses using the IDB analyzer software. Mother tongue proficiency was explored to identify the extent to which this proficiency predicted proficiency in English second language for all students who wrote in nine African languages and Afrikaans; and the extent to which ENA performance predicted the performance in the international assessment for those non-native English speakers writing the international assessment in English. Both the South African data from PIRLS 2006 and the ENA data were analysed. The overall results in PIRLS 2006 ranked South African students the lowest in the PIRLS 2006 and these have raised major educational and policy concerns. A very high correlation was found between mother tongue proficiency and the ENA and non-native English speakers achieved higher results when learning in English than when they learnt in African language environments. More than half of the variance in the international assessment scores was explained by the results on the ENA.

Keywords: *secondary analysis, educational policies, language achievement, English second language*

Different Influence of Contextual Educational Factors on Boys' and Girls' Reading Achievement

Andrejs Geske, University of Latvia
Antra Ozola, University of Latvia

The results of IEA (The International Association for the Evaluation of Educational Achievement) PIRLS 2006 (Progress in International Reading Literacy Study) has showed that Latvia has the 6th largest gender gap in reading literacy scores and that is an indication of a serious problem of education in this country. The purpose of the paper is to find out reasons behind boys' low achievement to help improve their reading literacy. The proposed hypothesis is that boys and girls are differently affected by the same factors. If that is so, teachers, parents and other education practitioners should be aware of this fact to adapt reading literacy studies for both genders at maximum efficiency.
In this research PILRS 2006 data are used and different structural equation models are created to find out which factors have the most influence on boys' reading achievement. Structural equation modeling (SEM) is based on achievement scores and student and parent questionnaire data. The model formed using all population data was applied to boys' and girls' data separately to observe different influence of the same factors on students reading achievement scores. The comparison of standardized coefficients of structural equation model among five countries (Spain, Russian Federation, Lithuania, Latvia and Trinidad and Tobago) has been performed.
Running the same model over different boys' and girls' data of different countries has showed that the strengths of relationships among the variables are similar. It was expected to observe noticeable differences between SEM coefficients of boys' and girls' data, but it turned out that big gender differences in reading achievement does not mean big differences in standardized coefficients of structural equation model and vice versa. It is found that school environment has greater impact on boys reading literacy as well as boys' achievement could be raised by stimulating them to read more outside the school.

Keywords: *structural equation modeling, PIRLS, reading literacy, gender differences*

Session PIRLS 5

Chair: Ann Kennedy
Discussant: Kajsa Yang-Hansen

Parental Factors Related to Children's Reading: Evidence from Comparing Transnational Marriage Families and Local Families

Chia-Hui Chiu, National Chengchi University, Taiwan
Hwa-Wei Ko, National Central University, Taiwan

The purpose of this study was to determine the parental factors related to children's reading by comparing two types of families, transnational marriage families in which the mother was not born in Taiwan and local families. Data for this study came from the PIRLS 2006. There were 273 children from transnational marriage families. Children's gender, mother's education level and well-off condition of families were all identical. The study selected 273 children from local families who were the classmates of the children from transnational marriage families. To control the economic effect, this study further selected the "average" well-off condition of families. A total of 179 children (102 girls and 87 boys) from transnational marriage families and 214 children (112 girls and 92 goys) from local families were analyzed by using The Learning to Read Survey. Results revealed that children of transnational marriage families did not have good reading achievement when comparing to children from local families. However, the efforts of parents from two types of families on children's reading were not different. Nevertheless, mother's education plays an essential role on children's reading. This phenomenon is discussed in the paper.

Keywords: *transnational marriage family, parental factors related children's reading*

Why Smart Children from Low SES Families do not Reach Higher Reading Achievements?

Marjeta Doupona Horvat, Educational Research Institute
Monica Rosén, Gothenburg University, Sweden

Data from PIRLS 2001 and PIRLS 2006 show strong relationship between students' achievements and families' SES. Children with index that indicate high early literacy skills (ELS), as reported by their parents, have higher reading achievement as well. Different studies show that literacy supportive home environment has positive effect on children emergent writing. Children from low SES families have less supportive literacy home environment and their cultural capital is low. If they manage to learn how to read and write before they enter elementary school in spite of non-supportive environment, we assume they

must be smart. But their reading literacy achievement in both PIRLS surveys was consistently lower then those of their peers with high ELS index from high SES families, in all PIRLS countries. By the multiple group modeling we explain which factors contribute to the lower reading achievement of high ELS children from low SES families.

Keywords: *reading achievement, SES, cultural capital, early literacy skills*

Explaining Reading Achievement in PIRLS by Age and SES
Jan Van Damme, Center for Educational Effectiveness and Evaluation, K.U.Leuven, Belgium
Lobke Vanhee, Center for Educational Effectiveness and Evaluation, K.U.Leuven, Belgium
Heidi Pustjens, Center for Educational Effectiveness and Evaluation, K.U.Leuven, Belgium

This paper investigates the effect of change in average age at the country level upon the change in average reading achievement between PIRLS 2001 and PIRLS 2006. A correction for age yields a different ranking of countries according to their average achievement. Also, the importance and the construction of an internationally acceptable SES-indicator will be handled.

Keywords: *PIRLS, age, socio-economic status, principal component analysis, regression-discontinuity approach*

MEMO

Session PIRLS 6

Chair: Sarah Howie
Discussant: Hwawei Ko

Comparisons of Teachers of Language Minority Fourth-graders in Norway and the United States: Results from PIRLS 2006

Laurence T. Ogle, National Center for Reading Education and Research, University of Stavanger, Norway
Anne Charlotte Begnum, National Center for Reading Education and Research, University of Stavanger, Norway
Ragnar Gees Solheim, National Center for Reading Education and Research, University of Stavanger, Norway

In this paper, we examine the teachers of language minority students and attempt to understand their backgrounds, the types of students they teach, and their instructional techniques. We compare teachers of language minority students in Norway and the United States because of our interest in the different equity perspectives in the two countries. We identify language minority students as those fourth-graders who indicate that neither parent was born in the country in which the child was assessed. And we use the assessment and teacher background data from the Progress in International Reading Literacy Study (PIRLS) 2006 as our dataset. Selected results indicate that Language Minority Reporting (LMR) reading teachers and their non-LMR colleagues tend to have similar characteristics and practices within the countries (especially in Norway), but look very different when they are compared across countries. The findings also indicate that few fourth-grade teachers in either Norway or the United States have been trained in second-language learning. Additionally, we found few reliable teacher effects on student outcomes. We do suggest a tentative hypothesis on the benefits of instruction for language minority students in Norway and the United States. However, we point out that our conclusions are tentative because some of the PIRLS data on language minority students are weak, although steps are being taken to improve it, specifically in Norway.

Keywords: *Language Minority Students, PIRLS, Norway, United States*

Teacher Assessment of Student Reading Skills as a Function of Student Reading Achievement and Grade

Stefan Johansson, University of Gothenburg, Department of Education
Monica Rosén, University of Gothenburg, Department of Education

This paper investigates teacher ratings in relation to the student test score in PIRLS 2001. Teacher

assessment relates to concerns of equity and equality, and of making correct judgments of the students' skills. It is thus crucial for a teacher to think about these issues. But do teachers assess the same skills equally? Previous research suggests that teacher assessments lack in equality. As an extension of the PIRLS 2001 study, Swedish teachers rated each and every student on 18 different statements about students' literacy skills on a scale ranging from 1-10. It is therefore possible to investigate the relationship between teacher ratings and student achievement in reading literacy. The analysis was conducted in three steps. First a two-level model was fitted to the data and the variance of the teacher ratings were studied by creating a latent model of the teacher ratings. Second students' achievement was used to explain variance between both students and teachers. In a later step effects of students' grade and teacher background were examined. Results show that the variance among the teacher ratings was high and that a substantial part of the variance was due to between class differences. The variance at the within class level was to a large degree accounted for by student achievement. No substantial effect arose when introducing explanatory indicators, such as teachers education or experience to account for the between class differences in teachers ratings. However, grade had a significant effect on the level of ratings between classes. Grade 3 teachers tended to rate their students higher than did the grade 4 teachers at the same performance level.

Keywords: *Teacher assessment, Student reading achievement, Equality, PIRLS 2001, Two-level modeling*

On the Importance of Parental Participation for Student Achievement in Reading Literacy

Elisabeth Frank, University of Kalmar, Sweden
Monica Rosén, University of Gothenburg, Sweden

The main aim of this study is to investigate the effect of home and school interplay on students' reading achievement at both individual and class level. While previous research has shown that interplay between home and school may be of importance for student achievement, no consistent pattern has been found. The analyses presented here are based on data from PIRLS 2001, using variables from both the teachers', the schools', students' and the parents' reports of communication and collaboration between home and school. A series of theoretically based structural equation models was fitted to these data. In the first stage, measurement models of broad constructs such as "parental participation" was identified and later included in a two-level structural model. These latent variables were related to achievement both at the individual and at the class level. The results indicate that the home-school relationships play an important role in explaining differences between classes in reading achievement, whilst the effect at the individual level is almost negligible. In the final analysis the relationships are investigated in a model where both teacher competence and student SES in terms of general capital is included. It is shown that the positive effect of parental participation on achievement was dependent on student home background and teacher competence. The results also showed that teacher competence and student home background to a certain degree was mediated through the parental participation factors.

Keywords: *PIRLS, Reading achievement, Parental participation, Two-level structural equation modeling.*

20 Sept
10:00-11:30
Sky Lounge Room(12F)崑崙廳

Chair: Kajsa Yang-Hansen
Discussant: Monica Rosen

New Zealand Students' Engagement with the PIRLS 2006 Reading Passages

Megan Chamberlain, Ministry of Education, Wellington, New Zealand
Robyn Caygill, Ministry of Education, Wellington, New Zealand

Results from the Progress in International Reading Literacy Study (PIRLS) 2001 and 2006 show New Zealand to have one of the largest differences, in favor of girls, between Grade 4 boys' and girls' mean reading literacy achievement. This paper summarizes the findings from an "enjoyment" survey administered to approximately 6,300 New Zealand Grade 4 children who participated in the PIRLS 2006 main survey. The purpose of the research was to investigate whether or not the students engaged with the PIRLS 2006 reading passages, the reasons why they liked them, and whether or not their engagement with the reading material related to their reading achievement as measured by PIRLS. The findings, both qualitative and quantitative, show that the majority of New Zealand students enjoyed the passages, with girls generally more positive than boys with their endorsements. For some passages, there were small effects of liking the passage on student achievement. Furthermore, there did appear to be some position effect on achievement for some passages, and more so for boys. As well as providing insight for researchers and practitioners into the features of the passages that appealed to students, the information arising from this research should be useful in informing the selection of reading passages, and the design and rotation scheme used in PIRLS 2011.

Keywords: *PIRLS 2006, student reading engagement, assessment, gender differences*

Examining Gender and Fourth Graders' Reading Habits and Attitudes in PIRLS 2001 and 2006

Ann Kennedy, TIMSS & PIRLS International Study Center, Boston College, USA

In PIRLS 2001 and again in PIRLS 2006, girls had higher reading achievement than boys in nearly all participating countries. Analyses of the PIRLS 2001 and 2006 datasets investigate the extent to which girls and boys differ in their participation in literacy activities by the fourth grade. More specifically, analyses are used to create profiles of high-and low-achieving fourth-grade boys and girls with respect to reading habits, behaviors, and attitudes towards reading. Results, including trends for 26 countries, reveal differences

between boys and girls in the top and bottom thirds of the achievement distribution. For example, regardless of achievement, girls had more positive attitudes towards reading than boys, and reported talking with others about reading, both at home and at school. These results provide valuable information to parents and teachers for understanding the intricate relationship between gender and reading outcomes.

Keywords: *reading achievement, gender differences, attitudes, reading habits*

Using PIRLS Data to Measure Equity in Reading Achievement across Countries
Kathleen L. Trong, TIMSS & PIRLS International Study Center

An approach to measuring equity in reading achievement between student groups is presented, using data from PIRLS 2006. Relative risk ratios are used to compare how likely students with various characteristics were to score in the bottom 20 percent of their country's distribution of achievement. Additionally, to indicate the extent of the problem, these ratios are weighted by the percentage of students possessing the characteristic to provide an estimated size of the group at risk in each country. Results suggest that boys, students attending rural schools, and students whose parents have less than a secondary education are at particular risk for low achievement in a wide range of countries. The results from this study provide countries that participated in PIRLS 2006 information about the equity of their educational systems and can be useful in targeting groups of students that would benefit from special assistance, within and across countries.

Keywords: *equity, reading achievement, relative risk ratios*

MEMO

Session PIRLS 8

Chair: Hwawei Ko
Discussant: Ann Kennedy

Estimating Trends in National Performance from International Surveys, with a Focus on PIRLS Results for England

Ian Schagen, Ministry of Education, Wellington, New Zealand
Liz Twist, National Foundation for Educational Research (NFER), UK
Simon Rutt, National Foundation for Educational Research (NFER), UK

"No man ever steps in the same river twice, for it's not the same river and he's not the same man. (Heraclitus)" England's results for PIRLS 2006 showed a significant decline from 2001, in absolute scores as well as relative rankings. Closer examination of the performance on common items between the two years did not bear this out, so further analysis has been carried out. A recent paper by Gebhardt and Adams (2007) indicated that equating methodology affects trend estimates, with examples from PISA. We have followed up this work by investigating different approaches to estimating PIRLS trends for England, resulting in substantively different results from the same data, depending on the methodology used.

Keywords: *trend analysis, item response theory, PIRLS.*

Evaluating the Dimensionality of the 2001 PIRLS Reading Assessment: An Application of DIMTEST with DESM and CFA

Minhee Seo, University of North Carolina at Greensboro, USA
Chia-Yi Chiu, Rutgers, The State University of New Jersey, USA
Louis Roussos, Measured Progress

The purpose of this study was to investigate the dimensionality of the reading assessment of 2001 Progress in International Reading Literacy Study (PIRLS) by DIMTEST with DIMTEST-based Effect Size Measure (DESM) and Confirmatory Factor Analysis (CFA). The 2001 PIRLS reading assessment was comprised of eight booklets, with accompanying items based on different reading passages. With respect to the potential problem of reading passage dependency on measurement precision and content-related validity in reading comprehension tests, the study examined the dimensionality of the reading assessments by booklet of reading passage; a total of ten pairs of booklets were tested. As implied in previous studies reporting unexpected high Type I error rate of DIMTEST (Froliech & Habing, 2003; Seo & Roussos, 2006; Stout, Froelich, & Gao, 2001), DIMTEST rejected the

null for all the ten cases; A pair of booklets is not dimensionally similar. DESM used in tandem with DIMTEST resulted in six sets that were unidimensional, but the other four sets were not. Despite different underlying assumptions, several pairs were found to be unidimensional, which is common in DESM and CFA.

MEMO

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18 Sept
10:00-11:30
Fu-Chuan Room(B1) 福全廳

Chair: Tjeerd Plomp
Discussant: Hans Pelgrum

Factors Predicting Impact of ICT-use on Students: An Exploration of Teachers' Perceptions

Allan H.K. Yuen, The University of Hong Kong
Man Wai Lee, The University of Hong Kong
Nancy Law, The University of Hong Kong
Albert Chan, The University of Hong Kong

As a secondary analysis of the SITES 2006 data, the present paper focused on the exploration of the factors associated with the impact of ICT-use on students' 21st-century skills as perceived by teachers, in which students' 21st-century skills included information-handling skills, problem-solving skills, self-directed learning skills, collaborative skills, communication skills, ICT skills, and ability to learn at students' own pace. In order to predict and understand teachers' perceptions of the impact of ICT-use on students' 21st-century skills, we proposed a model embracing five factors: (1) teachers' perceptions on teacher-practice orientation 21st-century learning, (2) student-practice orientation of 21st-century learning, (3) pedagogical ICT competence, (4) teachers' perceptions on the presence of a community of practice on professional collaboration, and (5) teacher-related obstacles in using ICT. Results of the path analysis revealed three direct effects on student-impact, namely teacher-practice orientation, student-practice orientation, and pedagogical ICT competence. Findings revealed that teacher perception on student-practice orientation was the strongest predictor of student-impact than other factors. The direct effects of teacher-practice orientation, student-practice orientation, and pedagogical ICT competence on student-impact were positive. The pedagogical ICT competence had direct as well as indirect effects on student-impact. However, the effects of pedagogical ICT competence on the mediated factors teacher-practice orientation and student-practice orientation were negative. The indirect effects of community of practice on professional collaboration and teacher-related obstacles in using ICT on student-impact were mediated through teacher-practice orientation, student-practice orientation, or pedagogical ICT competence. The effects of community of practice on professional collaboration on all mediated factors were positive whereas the effects of teacher-related obstacles in using ICT on all mediated factors were negative. Finally, implications for teacher professional development are discussed.

Keywords: *secondary analysis, teacher perceptions, student impact, path analysis*

ICT, Education and Knowledge Economy: Goals, Support and Practice

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Investment in ICT in education has been largely successful in terms of bringing students and teachers into contact with ICT hardware and software in many nations. However, investment has also exposed the profound challenge of realizing the potential for the many transformations imagined by proponents, with particular attention focused on the limited integration of ICT into teaching and learning. In this study, using data and questionnaires from the 2006 SITES survey, we take up this discussion of teaching and learning appropriate for the knowledge-based economy in a consideration of the ways institutional support, teacher and principal goals, and math and science teacher practices, as detailed in the survey, impact what we have analyzed as a set of pedagogical features we are calling "KBE Teaching." Our research question can be stated as follows: Is there an agreement internationally between teachers and principals regarding the importance of using and fostering KBE-type practices in the classroom. Further, does ICT support for particular KBE-type activities predict the increased use of ICT in conjunction with those KBE-type activities in the classroom? Our findings show that, in general, regardless of country, principals acknowledge the importance of all KBE teaching practices. Further, we found that for each KBE-type activity, a small handful of countries displayed an association between ICT support and ICT use on KBE-type classroom activities. These findings are relevant for policy makers, teachers and principals in the countries analyzed, particularly with respect to communication of and support for goals to support ICT and KBE learning.

Conceptual Use of Discrepancies in Teachers' Attitudes towards Stated Curriculum Goals

Geir Ottestad, University of Oslo

In the IEA SITES 2006, a conceptual framework for the analysis of teachers´ attitudes towards their pedagogical orientations was developed (Law, Pelgrum, & Plomp, 2008). The three pedagogical orientations, traditional orientation, lifelong learning and connectedness, were measured in SITES 2006 using three different sets of indicators; curriculum goal orientation, teacher practice and student practice orientations (Law et al., 2008). The indicators were tested by a combination of reliability analysis and confirmatory factor analysis, and found to be adequate all-over measures of pedagogical orientations for most of the 22 participating educational systems in SITES 2006. National differences from the international combined result still prevail, and this provides an opportunity to cast light upon recent local curriculum and policy changes in Norway. By covering a rich variety of attitudes towards teaching, pedagogy and technology the 13 indicators concerning the stated curriculum goals are of special interest.
Differences in indicator constructions can provide information on if or how the Norwegian teachers in the study were directing their efforts towards the "Knowledge promotion" – the curriculum reform that took place during the SITES 2006 survey period in Norway.

Keywords: *curriculum analysis, policy, pedagogical orientation*

Chair: Hans Pelgrum
Discussant: Nancy Law

The Obstacles for Using ICT in Classroom

Barbara Brecko, researcher

ICT in schools is a topic on the agenda in many countries and the same is in Slovenia. ICT in Slovenia is part of the curriculum, it is taught as a separate subject and it is also integrated into different subjects including mathematics and science. Schools are relatively well equipped, but despite that, we observe ICT is not used to the expected extent. One of the obstacles is lack of ICT skills of teachers and lack of ICT related pedagogical skills, but at the same time certain groups of teachers are not prepared for further professional development. It is well acknowledged that the teacher characteristics are one of the most important sets of factors influencing pedagogical practice.
Within the study the most influential personal factors are identified and also the most important school factors which influence the use of ICT in the classroom are identified. Within the study we identify which are the factors which can be controlled and perhaps changed by the school policy. The strategies which will encourage the use of ICT will be developed

Keywords: *ICT; teaching practices; obstacles; SITES*

Pedagogy and ICT Use in South African Science Education

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The purpose of this paper is to present work in progress as part of the analysis of the South African SITES 2006 data which forms the basis for an ongoing PhD study. The PhD study aims to examine how teachers in classrooms representing the majority of South African schools use ICT when they teach science and to explore factors which may be used as predictors of ICT use by science teachers in similar developing country contexts. The study is relevant and timeous in light of the South African government's preparation to embark on its roll-out of ICT in schools across the country in 2009, despite a strong 'traditionally important' pedagogical orientation of South African teachers in science education and little evidence to suggest South African teachers are ready to integrate ICT into teaching practice.

Innovative Pedagogical Practices Using Technology: Cross-case Analysis of the SITESm2 Data

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David Mioduser, Tel-Aviv University

The study reported herewith is based on data collected in the IEA SITESm2 study, conducted between the years 2000-2002, including case studies of innovative pedagogical practices using technology within schools (Kozma, 2003). Our study offers secondary analysis of the 174 cases from the 26 participating countries (see http://sitesm2.org), attempting to identify domains and levels of innovative practices, as well as factors involved in its successful implementation. Our study quantifies the qualitative data collected and reported in the SITESm2 database as narrative case studies. In order to achieve this goal, a theoretical as well as a methodological framework was developed and a pilot study was carried out using the 10 local technology-based innovations, in an attempt to assess our framework. Our report in this paper includes analysis of the full database. Results show that: (a) diffusion of ICT-based innovations within schools is a complex and gradual process, affecting each of the school domains differently; (b) factors are involved in the innovation on varying levels. Considering results from the SITES2006 study, stating that ICT implementation is practiced mostly with regards to a traditional educational paradigm, it is imperative we learn as much as we can from the successful and exemplary educational initiatives of the SITESm2 study, mostly based on an emerging paradigm, referred to in the SITES2006 study as the life-long-learning and connectedness paradigms.

Chair: Rafi Nachmias
Discussant: Tjeerd Plomp

Context Factors Associated with ICT Use by Mathematics Teachers
Hans Pelgrum, EdAsMo

SITES 2006 was an international assessment of pedagogy and ICT use. The study was conducted in 22 education systems and consisted of data collection at the national, school and teacher level. The main aim of the study was to investigate to what extent and for which pedagogical practices mathematics and science teachers were using ICT. The descriptive results of the study as well as first exploratory analyses were reported by Law, Pelgrum & Plomp (2008). A main observation from this study was that education systems differed substantially in terms of the extent to which ICT was used frequently by mathematics and science teachers (Voogt, 2008). For policy makers and researchers it is important to acquire a better understanding of why these differences exist. In order to throw more light on this issue, in this paper national and school context factors will be compared between education systems with relatively high versus low use of ICT in mathematics.

Keywords: *secondary analysis, educational policies, ICT use, mathematics, pedagogy*

Factors Influencing the Impact of ICT-use on Students' Learning
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Education policy documents in many countries have placed emphases on promoting the use of ICT in teaching and learning, often in conjunction with curriculum reform initiatives that aim to enhance the development of 21st century skills such as collaborative inquiry and collaboration. Is there evidence that ICT-use actually contributes to the development of 21st century skills? Does the pedagogical approach adopted by the teacher matter? Do the teacher's technical and pedagogical competence in using ICT to support teaching and learning relate in any way to the impact of ICT-use on students' learning outcomes? These are the questions that will be explored in this paper through a secondary analysis of the SITES 2006 data. The teacher survey in SITES 2006 was designed to provide a variety of indicators related to pedagogy and ICT, including: (1) teachers' perceived impacts of ICT-use on their students, (2) teachers pedagogical orientations for their overall practices as

well as for their ICT-using practices, and (3) teachers' self-reported technical and pedagogical competence in using ICT for teaching and learning. Multilevel analysis found that the general pedagogical orientation of the teacher has a much stronger relationship with the perceived impact of ICT-use on students' learning compared to the more specifically ICT-related pedagogical orientations. Further, the self-perceived pedagogical ICT-use competence of the teacher was an even stronger predictor for the perceived impact of ICT-use on students. The implications of these findings are discussed.

Keywords: *information technology, learning outcomes, pedagogical orientation, lifelong learning, inquiry skills*

MEMO

Session CivEd-ICCS 4

Chair: Margaret Wu
Discussant: Wolfram Schulz

An Ecological Systems Approach to the Civic Education and Engagement of Adolescents

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This study is an investigation of direct and indirect school and neighborhood effects on adolescents' civic knowledge and voting intentions utilizing data from the 1999 IEA Civic Education Study and the U.S. Census. The nationally representative U.S. sample consists of 2,729 students from 119 schools (in 119 neighborhoods) nationwide. I utilize multi-level regression techniques to give a precise estimate of the separate and shared impact of individuals, schools, and neighborhoods on youth civic engagement. For civic knowledge, student demographics, civic experiences in school, and learning civic topics are important predictors. The school and neighborhood context are not as strongly related, and only the neighborhood immigrant population is a significant predictor. For voting behavior, student civic experiences in school and learning civic topics predict voting behavior, while the effects of demographic characteristics (gender and SES) are found to vary between schools. School demographic and neighborhood characteristics directly relate to voting behavior, but also indirectly relate through interactions with student demographics.

Keywords: *civic engagement, adolescents, context effects*

The Influence of Civic Knowledge versus Democratic School Experiences on Ethnic Tolerance of Adolescents. A Multilevel analysis

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In a society of rapid change and increasing complexity, there is a growing need for citizens to be informed, to be actively involved and to take up personal responsibility. However, research points out citizens no longer feel connected to society and that intolerance and distrust tend to increase. Therefore a crucial role has been granted to citizenship education from early ages on.
This paper examines the impact of different school experiences on the attitudes of 14-year olds towards ethnic minorities, using the CivEd 1999 data. In particular, we compare the influence of civic knowledge versus democratic school experiences. By means of a

multilevel analysis with individual, school and country variables we try to extend the knowledge on the impact of schools on ethnic tolerance of their students, after controlling for relevant background characteristics.

An open classroom climate and a general confidence in school participation are important assets to promote ethnic tolerance. Civic knowledge, however, also remains an important predictor of a positive attitude towards ethnic minorities. This means that both knowledge and a democratic class and school climate seem to foster ethnic tolerance. Participation in the student council has no meaningful impact on tolerance towards ethnic minorities. However, schools with high levels of students participating in the student council do have students with more tolerant attitudes. Other civic studies-related school variables have no impact on ethnic tolerance.

Keywords: *multilevel analysis, civic knowledge, open classroom climate, active participation, ethnic tolerance*

Effective Civic Education Testing an Educational Effectiveness Model for Explaining Students' Achievement in Civic and Citizenship Education

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The intended study aims at testing a causal model for "effective civic education" based on the Comprehensive Model of Educational Effectiveness developed by Creemers (1994) in relation with secondary school students' achievement in civic and citizenship education in 22 countries participating in the IEA Civic and Citizenship Study (CIVED). It is assumed that secondary analysis of international comparative studies in civic and citizenship education can provide a valuable opportunity to test and develop integrated multilevel educational effectiveness models in relation to different outcomes of learning than the ones that were usually investigated, namely civic and citizenship achievement. This secondary analysis makes use of the information gathered via questionnaires from students, headmasters and cognitive tests in order to determine how much of the variation in students civic achievement can be explained by variables located at different levels (student, classroom/school, country) and if individual variables from different levels show the expected results on students civic achievement. Multilevel analysis was employed to recognize the multilevel influences on students' civic achievement that the model assumes. The results of this study partially generated empirical support for the validity of Creemers' for outcomes in civic and citizenship education and shed a light on the importance of investigating country effects.

Keywords: *educational effectiveness model; civic knowledge; multilevel analysis; Secondary analysis; CIVED*

Session CivEd-ICCS 5

Chair: Barbara Malak
Discussant: Margaret Wu

Measuring Civic Competence in Europe

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Measuring Civic Competence in Europe is part of a process to establish and monitor the learning outcomes needed to facilitate the development of active citizens in Europe. This article is an exploration of how civic competence can be measured and the results of these measurements across Europe and internationally. It describes what civic competence is in terms of the attitudes, values, knowledge and skills required and how it can be calculated using existing data from international tests. The data and scales used are from the IEA 1999 international Civic Education study of 14-year-olds in school. It clearly highlights the limitations of the data coverage for civic competence and explains which aspects of civic competence are not available and the implication for measuring civic competence. Following this, the Civic Competence Composite Indicator (CCCI) is built using a framework comprised of 4 dimensions; Citizenship values, Social justice (both values and attitudes), Participatory attitudes and Cognitions about democratic institutions. Statistically the composite indicator was proved to be robust.
The results of the CCCI ranking do not show clear geographical patterns. There is some tendency for Southern-European countries to be in the upper part of the ranking with Cyprus and Greece doing particularly well in the overall CCCI. For the four dimensions the results across Europe show that in countries with long standing stable democracies, where there are high levels of adult participation, young people's attitudes towards participation and Citizenship values are low. The opposite is true for less stable and more recent democracies that can be found in south and east Europe: in these countries young people have greater Participatory attitudes and values. North and West Europe fared better in the results for cognition about democratic institutions and the values of Social justice. In this case it was Eastern European countries that had low scores. The lack of a history of democratic citizenship education and the experience of Communism are likely to be contributory factors.

Keywords: *Civic competences, Europe, Composite indicator, active citizenship, democracy*

Questionnaire Construct Validation in the International Civic and Citizenship Education Study

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International studies tend to use student, teacher or school questionnaires for the collection of contextual data on student or teacher characteristics, background, activities and the school's learning environment. Furthermore, student measures of values, attitudes and behavioural intentions are also frequently viewed as important learning outcomes, in particular in the context of studies of civic and citizenship education. Data obtained from these instruments become frequently important predictors of student performance or are treated as learning outcome variables of interest.

Therefore, the scaling of questionnaire items to obtain measures of students', teachers' and principals' perceptions and attitudes should ideally be subject of a thorough cross-country validation of the underlying constructs. However, whereas international studies use to spend considerable efforts on ensuring measurement equivalence for international test instruments, the issue of equivalency of questionnaire data does not always receive quite the same attention.

Using a set of student questionnaire items as an example, this paper describes how measurement equivalence was reviewed in the field trial analysis for the IEA International Civic and Citizenship Education Study (ICCS) using different methodological approaches including factor analysis and item response modelling.

Keywords: *civic education, item response theory, structural equation modeling, ICCS*

Constructing a Described Achievement Scale for the International Civic and Citizenship Education Study

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This paper presents a draft described civic and citizenship cognitive achievement scale based on the International Civics and Citizenship Education Study (ICCS) field trial cognitive test items and student achievement data. The paper briefly outlines the process of generating the described scale before presenting and examining the substance of the scale. The scale is based on data from the 80 test items used in the ICCS field trial that have been included in the ICCS main survey test instrument. The described scale comprises four discrete described achievement levels that are further articulated by examples of achievement. Key aspects of the cognitive differences between the levels are discussed and some questions raised about the way in which the achievement of students below Level 1 will be dealt with in the main survey.

Keywords: *ICCS, Civics and Citizenship, Achievement Scale, Progress Map*

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Updated on: 2008/9/8

Floor Maps and Dining Areas

This information aims to help you move back and forth from different conference rooms. Locations of conference rooms are filled in yellow. Dining areas were marked by numbers. Since each participant is responsible for his/her meal, we also provide information and estimated dining cost for your reference.

Lobby (Registration Desk, Welcome Reception)
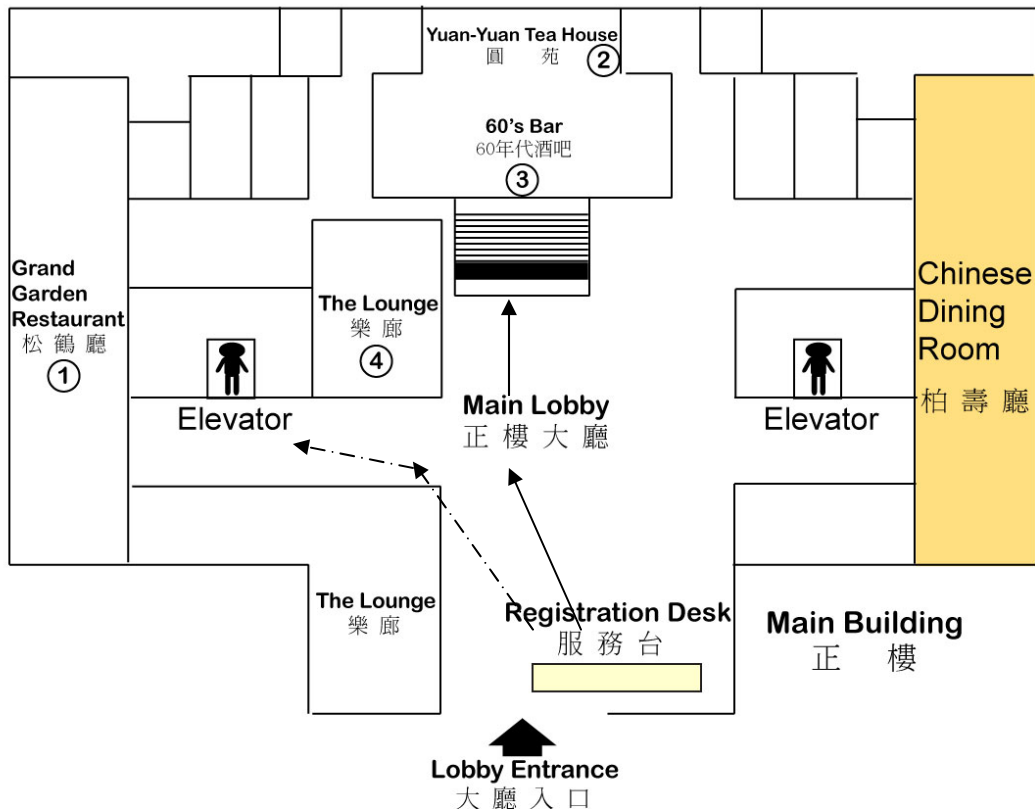
To 1F (Gala Dinner)

To 10F Auditorium
    10F Song Bo Room (Keynote Speech, TIMSS-Math)
    12F Skylounge Room (PIRLS)
    B1 Fu-Chun Room (SITES, CivEd-ICCS, TIMSS-Sci)

Dining Areas

1. Grand Garden Restaurant 松鶴廳

    The Grand Garden offers a wide selection of authentic Western cuisine carefully prepared by our master chefs and beautifully arranged as a buffet.

    西式美食餐點，自助式餐檯。

    Estimated average price per person (每人預估花費): NT$ 700-800

2. Yuan-Yuan 圓苑

    Designed in the style of a northern Chinese restaurant, the restaurant offers hand-made snacks of northern China's cuisine.

    北方小點

    Estimated average price per person (每人預估花費): NT$ 600-900

3. 60's Bar 六○年代酒吧

    Live Band music will bring you back in time to a romantic era. The bar features a fine selection of snacks and beverages and there is plenty of opportunity to dance the night away.

    現場 LIVE BAND 演唱

4. The Lobby Lounge 樂廊

    Entering the lobby of the hotel, you will soon be surrounded by melodious music. The Lobby Lounge offers a wide selection of desserts, fragrant teas and coffees. Here you can spend a relaxed afternoon while enjoying the exotic smells and flavors. Chinese music provided during afternoon tea time from 14:30-17:00

    英式點心、茶與咖啡

    Estimated average price per person: NT$ 500

5. Golden Dragon Restaurant 金龍餐廳

    The Golden Dragon Restaurant offers authentic Cantonese style Dim Sum and a large selection of fine seafood. While dining you can take in the beautiful view of Keelung River.
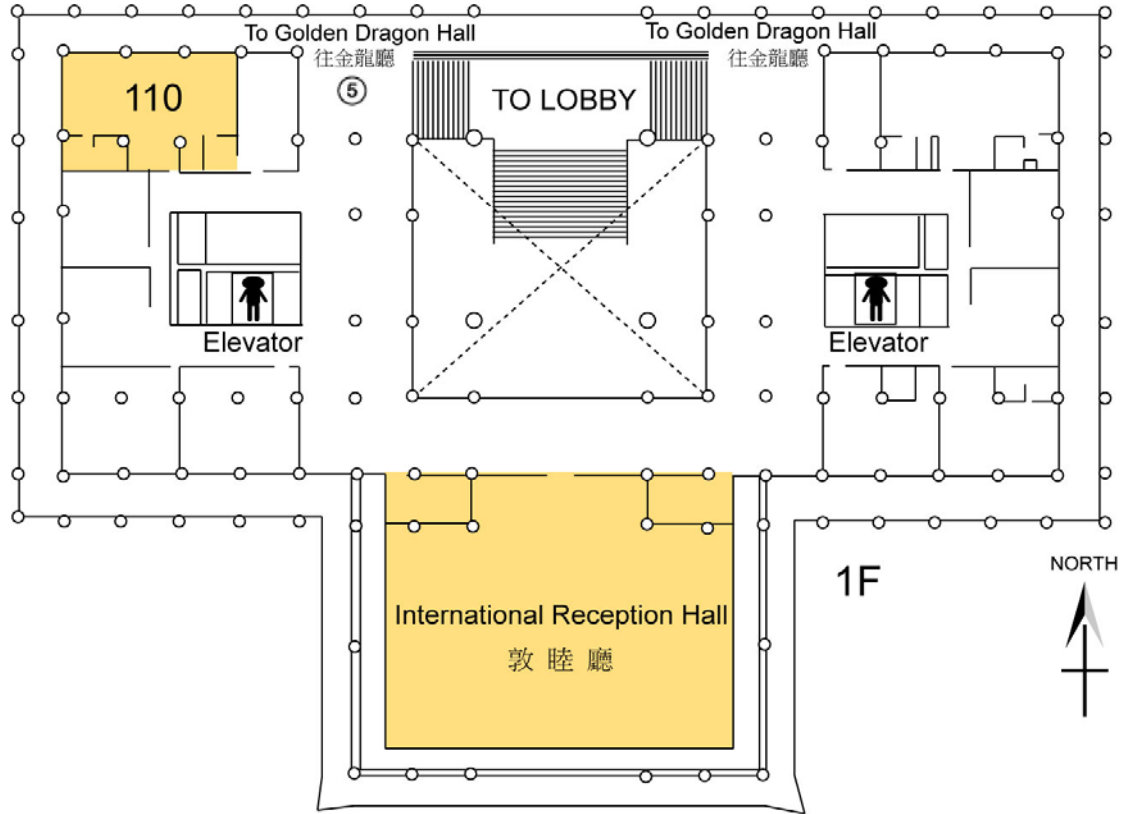
    港式茶點與海鮮珍饌
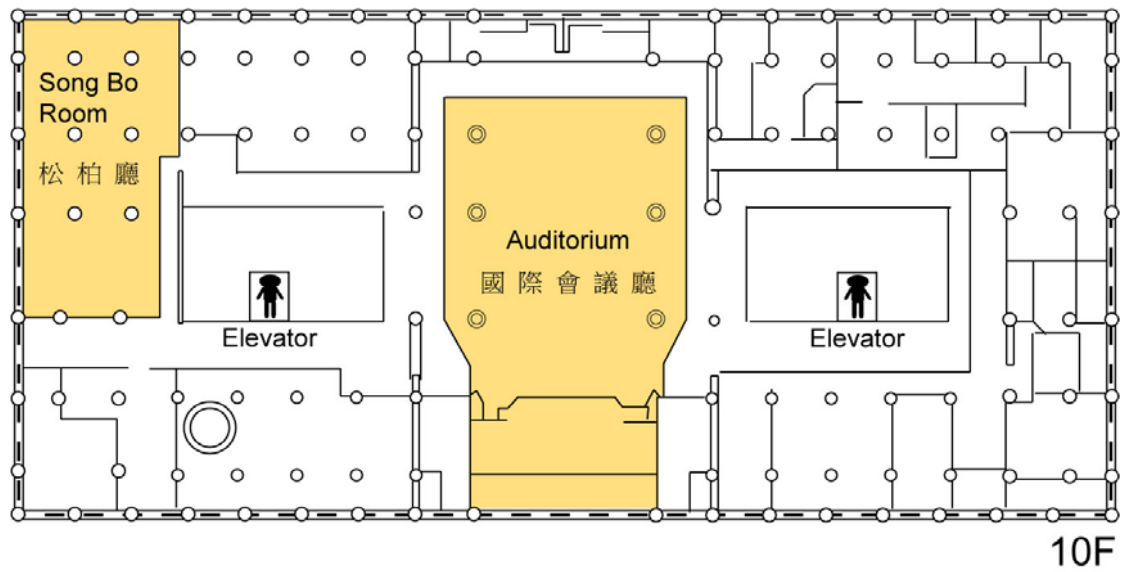
    Estimated average price per person: NT$ 600-900
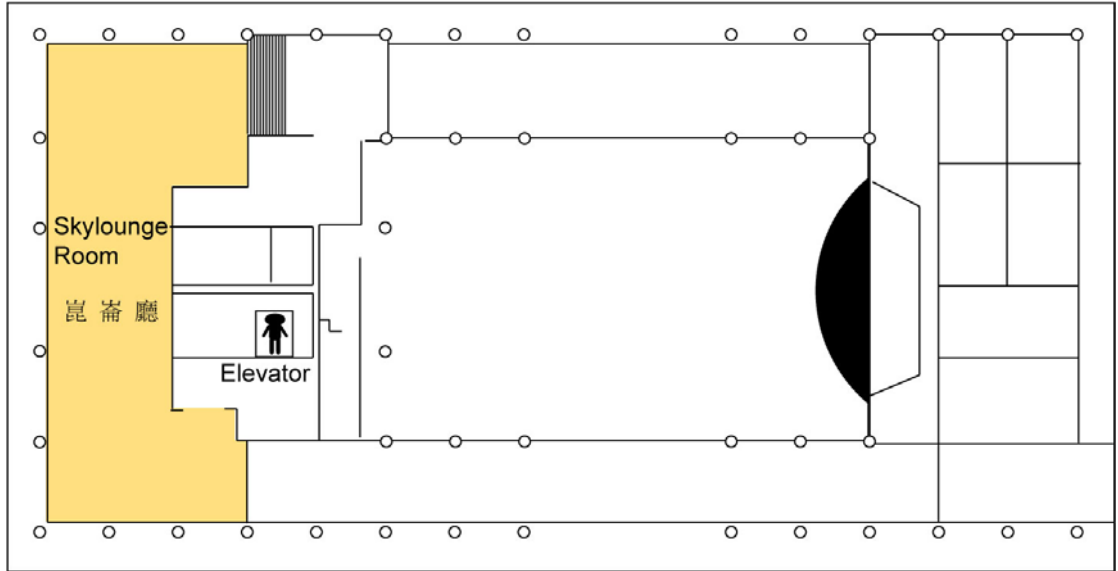
Floor Maps

1F (Gala Dinner)

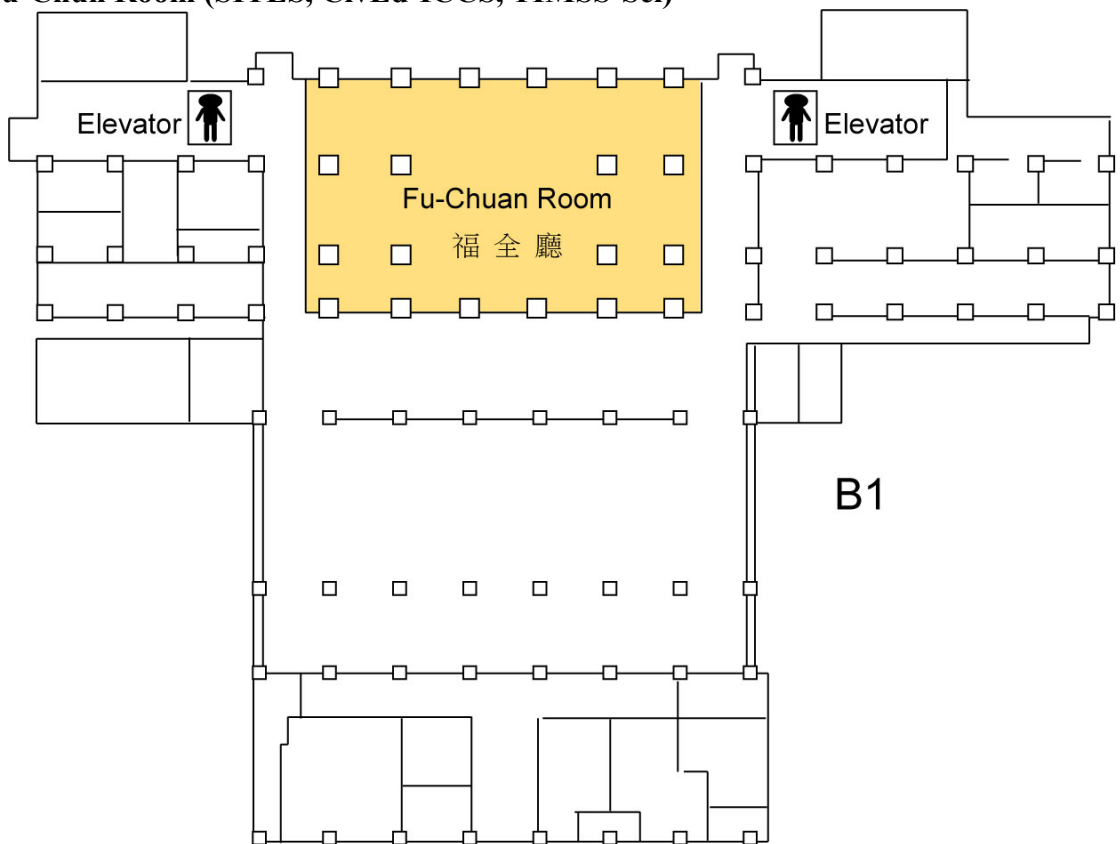**10F Auditorium & Song Bo Room (Keynote Speech, TIMSS-Math)**

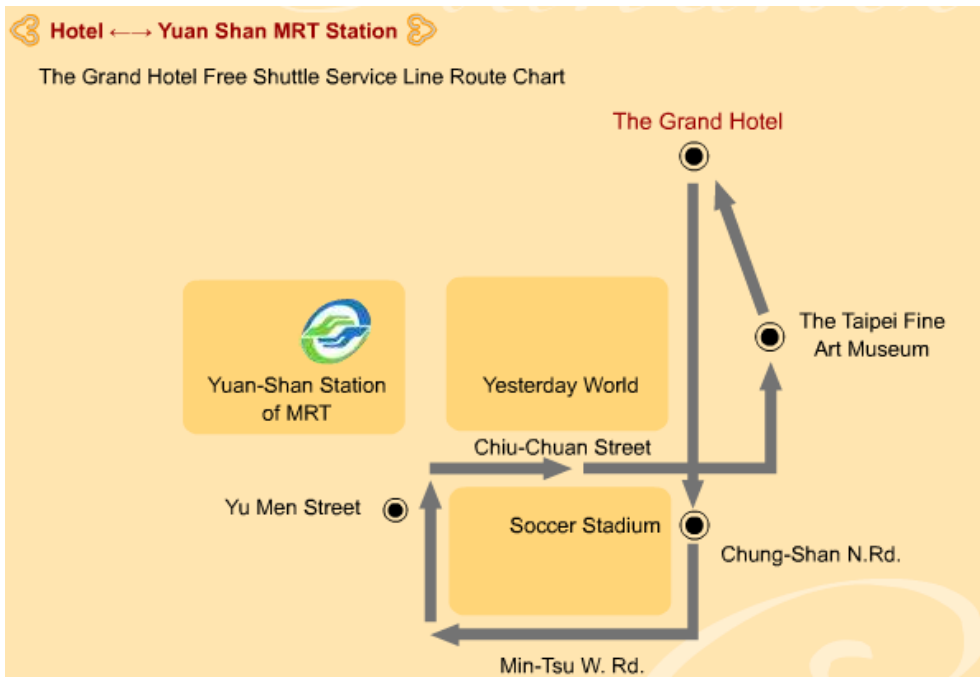# Floor Maps

12F Skylounge Room (PIRLS)

12F

B1 Fu-Chun Room (SITES, CivEd-ICCS, TIMSS-Sci)

B1

Hotel Shuttle Route & Schedule

Hotel ←→ Yuan Shan MRT Station

The Grand Hotel Free Shuttle Service Line Route Chart

Hotel ←→ Yuan Shan MRT Station

The Grand Hotel provides free shuttle service throughout the entire year giving you easier access to and from The Grand Hotel ←→Yuan Shan MRT Station.Available every 20-30 minutes at the following hours.

Departure Place:The Grand Hotel Main Lobby			Departure Place:Yuan-Shan Station of MRT		
06:30	14:10	21:00	06:40	14:20	21:10
07:20	15:00	21:20	07:30	15:10	21:30
08:00	15:30	21:40	08:10	15:40	21:50
08:20	16:00	22:00	08:30	16:10	22:10
08:40	16:30		08:50	16:40	
09:00	17:00		09:10	17:10	
09:40	17:20		09:50	17:30	
10:20	17:40		10:30	17:50	
11:00	18:00		11:10	18:10	
11:30	18:30		11:40	18:40	
12:00	19:00		12:10	19:10	
12:30	19:30		12:40	19:40	
13:00	20:00		13:10	20:10	
13:30	20:30		13:40	20:40	

The Grand Hotel
1,Chung Shan N.Rd.,Sec.4,Taipei, Taiwan, 104 R.O.C
TEL : 886-2-2886-8888   FAX : 886-2-2885-2885

Downtown Taipei Transportation

1. Downtown Taipei Transportation: MRT (subway)

◆The mass rapid transit system (MRT) in Taipei, together with the metropolitan area's dedicated bus route network, forms a convenient transportation system. The MRT currently has five lines with three branch lines in operation:

1. Danshui Line: Danshui - CKS Memorial Hal
   1.1 Xinbeitou Branch Line: Beitou - Xinbeitou
2. Zhonghe Line: Guting - Nanshijiao
3. Xindian Line: CKS Memorial Hall – Xindian
   3.1 Xiaonanmen Branch Line: Ximen - CKS Memorial Hall
   3.2 Xiaobitan Branch Line: Qizhang - Xiaobitan
4. Bannan Line: Yongning – Kunyang
5. Muzha Line: Zhongshan Junior High School - Taipei Zoo

◆ These lines are dotted with a variety of attractions and scenic spots. As a result, visitors can take a leisurely journey through most of the attractive parts of Taipei by using the MRT service. Auto ticketing slots can be found in MRT stations to provide ticketing services and coin changers are equipped in all stations. "Single-journey Ticket" price ranges from NTD$20 to NTD$65 depending on travel distance. A 150-dollar "One-day pass" purchased from service booth will allow unlimited travels among all MRT lines within one day. Please take advantage of One-day pass if you are in desire of visiting spots along MRT lines.

◆ Please note:
1. The MRT running hours is from 6:00 to 24:00.
2. To provide all the passengers a comfortable and safe ride, smoking, drinking & gum chewing are strictly prohibited in MRT area.
3. Using cellular phone is prohibited in the first and the last cabinet of the train.
4. Tickets are only valid on the date of purchase.
5. Please locate pets in hand-carry cage, while police dogs and guide dogs are excluded.

◆Metro Taipei Service Line: 0800-033-068, (02)2536-3001 (8:30am -5:30pm).

◆Taipei Rapid Transit Corporation
http://www.trtc.com.tw/englishnew/index.htm

◆Department of Rapid Transit Systems, Taipei City Government
http://www.dorts.gov.tw/english/index_e.htm

2. Downtown Taipei Transportation: Bus

◆Public buses are one of the most important vehicles of transportation in Taipei, with up to 200 routes stretching throughout the city. Bus fares are varied according to the distance traveled. A single section fare is NT$15. The passenger needs to prepare exact changes and pay upon boarding or getting off according to the instructions.

3. Downtown Taipei Transportation: Taxi

◆Using taxis is the most convenient way for tourists to get around in Taipei city. Some taxi drivers might speak English; however, ask the service desk in hotel to assist you before starting out. The rate for taxis is NTD$70 for the first 1.5 kilometers and NTD$5 for each additional 300 meters in Taipei. A 20% surcharge will be required for services from 11 pm to 6 am. Taxi's rates may be different in other cities in Taiwan.

◆The Address Cards, which show detailed addresses of the conference site and hotels in Chinese and in English, can be found at the end of this document. Please print them out and bring them with you. Depending on your destination, you may show one of the cards to the taxi driver, just in case the driver does not speak English very well.

Taxi Address Card for the Grand Hotel

ADDRESS CARD for the Grand Hotel

(English Version)

請您載我到圓山大飯店

Please take me to the Grand Hotel

地址：台北市中山北路４段１號　　電話：02 28868888

ADDRESS: No.1, Sec. 4, Zhongshan North Road, Taipei.

TEL: +886-2-28868888

S：台北火車站　Taipei Train Station
E：圓山飯店　The Grand Hotel