

PISA

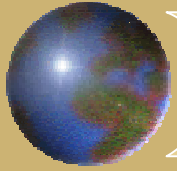
**Contribution of Parental Involvement and
Investment on 15 year-old students:
A comparative study of the Pacific Rim in PISA**

Presented by

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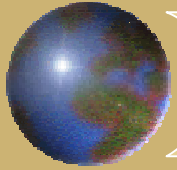
**Sept 8 2004
OEC Fourth Conference, Thailand**

May 21 2004



Some Basic Background

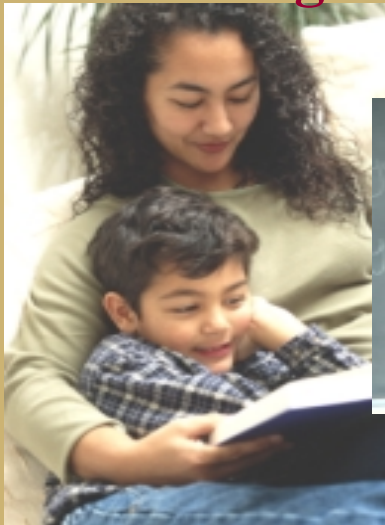
- Target population: 15-year-olds in school
- Target sample size of 5250
 - 150 schools of 35 students
- Student questionnaires
- School questionnaires



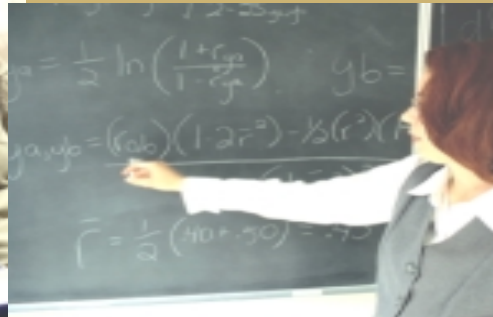
Some Basic Background: continued

- Tests **competencies for real-life situations** *and* not constrained by the common denominator of national curricula
- **Three Domains:**

Reading



Mathematics



Science



OECD/PISA Project 2006

Western Europe

Austria
Belgium
Denmark
Finland
France
Germany
Iceland
Ireland
Italy
Luxembourg
Netherlands
Norway
Portugal
Spain
Sweden
Switzerland
United Kingdom

Asia/Pacific Rim

Australia
Hong Kong - China
Indonesia
Japan
Korea
Macao - China
New Zealand
Chinese Taipei
Thailand

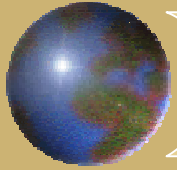
Eastern Europe

Bulgaria
Czech Republic
Croatia
Estonia
Greece
Hungary
Jordan
Latvia
Lithuania
Poland
Russian Federation
Serbia – Montenegro
Slovak Republic
Slovenia
Turkey

Americas & others

Argentina
Brazil
Canada
Chile
Colombia
Israel
Mexico
United States
Uruguay
Tunisia





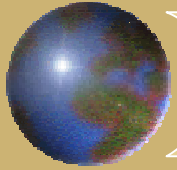
Parental Involvement and Investment in PISA

Parental Involvement

- Cultural communication (discussing political or social issues; discussing books, films or television programs; and listening to classical music)
- Social communication (discussing how well they are doing at school; eating dinner with them around a table; and spending time simply talking with them)
- Cultural activities (visited a museum or art gallery; attended an opera, ballet or classical symphony concert; and watched live theatre)
- homework supervision

Parental Investment

- Educational Resources (a dictionary, a quiet place to study, a desk for study, textbooks and calculators)
- Cultural Resources (classical literature, books of poetry and works of art)
- Material resources (e.g. a dishwasher, number of cellular phones, television sets, computers, motor cars)
- Number of Books at home



PI SA2000/+

Table 1. Sample Size of the 12 Pacific Rim Societies in PISA

Countries	Number of Students	Number of Schools
Australia	5176	231
Canada	29687	1117
Chile	4889	179
Hong Kong	4405	140
Indonesia	7368	290
Japan	5256	135
Korea	4982	146
Mexico	4600	183
New Zealand	3667	153
Peru	4429	177
Thailand	5340	179
United States	3846	153

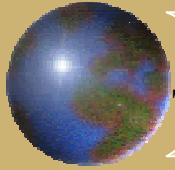


Table 2. Student performance in reading literacy in the Pacific Rim countries

Country	Reading literacy score	Standard Error	GDP per capita (US\$, 2000)
High GDP Western countries			
Australia	528	3.5	26325
Canada	534	1.6	28130
New Zealand	529	2.8	20372
USA	504	7.0	34602
High GDP Asian countries			
Hong Kong	525	2.9	25153
Japan	522	5.2	26011
Korea	525	2.4	15186
Low GDP Latin American countries			
Chile	410	3.6	9917
Mexico	422	3.3	9117
Peru	327	4.4	4799
Low GDP Eastern countries			
Indonesia	371	4.0	3043
Thailand	431	3.2	6402

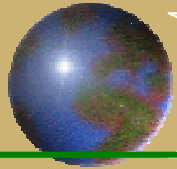


Table 3. Student Characteristics in the Pacific Rim countries

Country	Highest Occupation Index	Father Education	Mother Education	% of Girls	% of immigrant student	% of nuclear family	Average number of siblings
High GDP Western countries							
Australia	52.25	4.56	4.53	0.48	0.13	0.72	2.04
Canada	52.83	5.08	5.15	0.50	0.11	0.72	1.85
New Zealand	52.20	4.71	4.74	0.50	0.17	0.66	2.23
United States	52.40	5.05	5.01	0.52	0.07	0.54	2.41
High GDP Asian countries							
Hong Kong	42.25	3.23	3.06	0.50	0.21	0.85	1.51
Japan	50.54	m	m	0.51	0.00	0.88	1.48
Korea	42.80	4.32	3.97	0.44	m	0.88	1.30
Low GDP Latin American countries							
Chile	39.87	4.14	3.96	0.53	0.02	0.66	2.21
Mexico	42.48	3.22	2.88	0.50	0.03	0.75	2.97
Peru	40.42	4.12	3.52	0.50	0.01	0.69	3.11
Low GDP Eastern countries							
Indonesia	36.38	3.03	2.69	0.51	0.00	0.84	2.90
Thailand	33.02	2.74	2.49	0.59	0.00	0.64	2.15

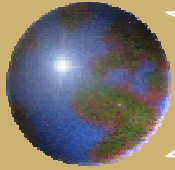


Table 4. Mean scores on parental involvement measures and correlation with reading performance by country

Country	Material Resources	Educational Resources	Cultural Resources	Number of Books	Cultural Communication	Social Communication	Cultural Activities	Homework Supervision
High GDP Western countries								
Australia	0.42	0.05	-0.09	4.90	-0.13	-0.31	-0.34	0.12
Canada	0.41	0.00	-0.12	4.68	0.08	-0.20	0.12	-0.07
New Zealand	0.22	-0.04	-0.22	4.69	0.07	-0.28	-0.08	0.27
United States	0.61	-0.28	-0.12	4.32	0.22	0.06	0.20	-0.10
High GDP Asian countries								
Hong Kong	-0.38	-0.19	-0.59	3.16	0.21	-0.24	0.18	-0.46
Japan	-0.14	0.02	-0.27	4.20	0.09	-0.19	-0.72	-0.12
Korea	-0.27	-0.55	0.24	4.47	-0.59	-0.18	-0.70	-0.01
Low GDP Latin American countries								
Chile	-0.97	-0.97	-0.20	3.35	0.31	0.36	-0.16	0.33
Mexico	-1.44	-0.72	-0.58	3.23	0.00	-0.05	-0.08	0.22
Peru	-1.82	-1.49	0.04	3.00	0.42	-0.26	-0.70	0.34
Low GDP Eastern countries								
Indonesia	-2.07	-1.72	-0.60	2.88	-0.30	-0.60	-0.54	0.08
Thailand	-1.70	-1.65	-0.10	3.25	0.28	-0.27	0.64	0.56



Table 5. Percentage of variance explained by student background factors in countries in the Pacific Rim.

Country	Between School Variance	Within School Variance
High GDP Western countries		
Australia	18.8%	81.2%
Canada	17.6%	82.4%
New Zealand	16.2%	83.8%
United States	29.6%	70.4%
High GDP Asian countries		
Hong Kong	48.3%	51.7%
Japan	45.4%	54.6%
Korea	37.4%	62.6%
Low GDP Latin American countries		
Chile	56.7%	43.3%
Mexico	53.4%	46.6%
Peru	58.0%	42.0%
Low GDP Eastern countries		
Indonesia	42.7%	57.3%
Thailand	30.9%	69.1%

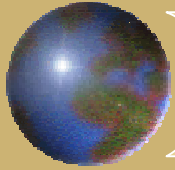


Table 6A. Percentage of variance explained by student background factors in countries in the Pacific Rim

Student Background	High GDP Western countries				High GDP Asian countries		
	Australia	Canada	New Zealand	USA	Hong Kong	Japan	Korea
Parent occupation (HISEI)	1.10 ***	0.87 ***	1.18 ***	1.00 ***	0.17	---	0.02
Mother Education	2.78 *	6.14 ***	6.49 ***	3.99	1.13	---	1.57
Father Education	8.37 ***	6.15 ***	5.16 ***	4.90 **	1.24	---	3.25 ***
Nuclear Family	6.82 *	12.56 ***	17.73 ***	29.52 ***	2.05	-6.47 *	1.25
No. of Siblings	-3.87 ***	-1.86 ***	-6.57 ***	-3.77 ***	-1.92	-0.17	-3.10 **
Girl	32.62 ***	33.07 ***	40.67 ***	26.74 ***	11.29 ***	21.24 ***	20.40 ***
Immigrant Student	-25.64 ***	-20.61 ***	-33.83 ***	-16.38 *	-10.38 ***	-55.36 *	---
Between-School variance explained	50.20 %	32.82 %	55.16 %	48.41 %	9.00 %	2.86 %	12.99 %
Within-School variance explained	7.93 %	8.77 %	10.80 %	8.85 %	1.14 %	1.86 %	1.62 %
Total variance explained by model	14.69 %	12.61 %	16.06 %	17.25 %	4.25 %	2.24 %	5.09 %

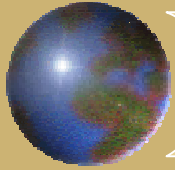


Table 6B. Percentage of variance explained by student background factors in Pacific Rim countries/regions

Student Background	Low GDP Latin American countries			Low GDP Eastern countries	
	Chile	Mexico	Peru	Indonesia	Thailand
Parent occupation (HISEI)	0.60 ***	0.37 ***	0.30 **	0.35 ***	0.42 ***
Mother Education	4.58 ***	0.23	3.24 **	0.34	1.21
Father Education	1.74	1.49	3.35 **	1.26	2.57 *
Nuclear Family	4.25	-3.22	7.51 **	3.70	5.87 **
No. of Siblings	-1.17	-2.83 ***	-3.34 ***	-0.32	0.28
Girl	8.93 ***	9.51 ***	1.66	9.73 ***	29.74 ***
Immigrant Student	5.23	-31.29 ***	-15.52	12.33	-52.12 ***
Between-School variance explained	29.48 %	23.39 %	26.39 %	12.33 %	26.17 %
Within-School variance explained	1.82 %	1.17 %	1.18 %	0.86 %	4.34 %
Total variance explained by model	14.36 %	11.18 %	12.61 %	4.33 %	10.19 %

Note: * p < 0.05, ** p < 0.01, *** p < 0.001

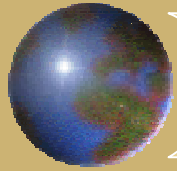


Table 7A. % of variance explained by the school contextual background factors in countries in the Pacific Rim

	High GDP Western countries				High GDP Asian countries		
	Australia	Canada	New Zealand	USA	Hong Kong	Japan	Korea
Student Background							
Parent occupation (HISEI)	0.94 ***	0.79 ***	1.05 ***	0.86 ***	0.15	---	-0.02
Mother Education	1.90	5.74 ***	5.91 ***	3.26	0.83	---	1.30
Father Education	7.03 ***	5.58 ***	4.07 **	3.88 *	0.88	---	2.87 ***
Nuclear Family	6.04	11.95 ***	16.62 ***	26.13 ***	1.26	-7.50 *	0.00
Number of Siblings	-3.51 ***	-1.75 ***	-5.69 ***	-3.24 **	-1.75	-0.19	-2.81 *
Girl	32.52 ***	32.94 ***	40.75 ***	26.22 ***	10.58 ***	21.19 ***	21.66 ***
Immigrant Student	-26.27 ***	-21.60 ***	-32.45 ***	-14.51	-10.07 ***	-55.06 *	---
School contextual background							
School mean HISEI	1.42 *	1.57 ***	1.87 ***	2.00 ***	-1.17	---	-0.18
School mean mother education	3.83	1.39	10.36	12.59	36.11 *	---	-0.48
School mean father education	12.00	9.95 **	4.71	-1.12	19.50	---	33.44 ***
% of immigrant students	0.03	-0.12	-0.48 **	0.07	-0.62 *	-1.92	---
% of nuclear families	0.23	0.36 ***	0.66 **	0.72 ***	2.17 ***	4.37 ***	1.18 ***
Between-School variance explained	70.71 %	48.13 %	78.14 %	76.34 %	56.09 %	40.49 %	55.10 %
Within-School variance explained	8.11 %	8.89 %	10.98 %	9.22 %	1.14 %	1.86 %	1.45 %
Total variance explained by model	18.12 %	15.16 %	18.94 %	23.47 %	22.87 %	16.61 %	17.81 %

Note: * p 0.05, ** p 0.01, *** p 0.001

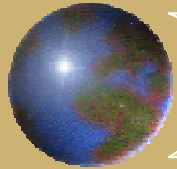


Table 7B. % of variance explained by the school contextual background factors in countries in the Pacific Rim

	Low GDP Latin American Countries			Low GDP Eastern countries	
	Chile	Mexico	Peru	Indonesia	Thailand
Student Background					
Parent occupation (HISEI)	0.49 ***	0.31 ***	0.18	0.26 ***	0.36 ***
Mother Education	3.70 ***	-0.78	2.04	-0.28	0.52
Father Education	1.14	0.76	2.92 **	1.02	1.78
Nuclear Family	3.33	-4.57	7.13 *	3.12	5.46 *
Number of Siblings	-1.07	-2.48 ***	-2.83 **	-0.32	0.17
Girl	9.40 ***	9.31 ***	0.79	9.77 ***	29.35 ***
Immigrant Student	6.14	-26.60 ***	-15.51	14.95	49.35 ***
School contextual background					
School mean HISEI	1.68 *	0.72	2.26 **	2.13 ***	1.39 *
School mean mother education	34.45 **	21.52 **	28.84 ***	15.62	17.94
School mean father education	-10.83	9.36	-3.40	-9.72	-1.63
% of immigrant students	-0.28	-1.64 ***	1.01	-1.77	-7.22 **
% of nuclear families	1.14 ***	0.93 ***	0.70 *	0.42 *	0.21
Between-School variance explained	72.86 %	76.31 %	72.76 %	39.96 %	54.17 %
Within-School variance explained	1.82 %	1.34 %	1.26 %	0.91 %	4.32 %
Total variance explained by model	34.02 %	35.12 %	33.66 %	12.73 %	17.69 %

Note: * p 0.05, ** p 0.01, *** p 0.001

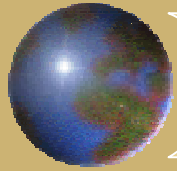


Table 8A. Percentage of variance explained by the parental involvement and investment in countries in the Pacific Rim after controlling the student and school contextual background factors

Family Involvement	High GDP Western countries				High GDP Asian countries		
	Australia	Canada	New Zealand	USA	Hong Kong	Japan	Korea
<i>Parental investment</i>							
Material Resources	-4.44 **	-4.80 ***	-3.68	-5.04 *	-6.82 **	-3.99 *	-6.91 ***
Home Educational Resources	5.15 ***	2.06 ***	9.43 ***	1.46	5.11 ***	1.81	1.56
Cultural Possession	6.07 ***	3.29 ***	1.66	7.25 ***	-1.80	1.54	1.49
1-10 Books at home	16.35	36.07 ***	35.58	24.12	15.15 **	22.21 *	45.11 ***
11-50 Books at home	31.10 *	58.70 ***	61.79 **	38.63 **	20.22 ***	31.12 ***	61.93 ***
51-100 Books at home	42.93 **	63.94 ***	65.00 **	47.45 ***	25.81 ***	33.69 ***	63.28 ***
101-250 Books at home	50.42 ***	74.98 ***	80.67 ***	59.76 ***	27.22 ***	42.85 ***	68.29 ***
251-500 Books at home	51.79 ***	78.93 ***	83.94 ***	68.64 ***	23.58 **	39.46 ***	74.99 ***
>500 Books at home	48.65 ***	76.75 ***	87.84 ***	64.55 ***	18.88	41.47 ***	82.89 ***
<i>Parental involvement</i>							
Cultural Communication	16.18 ***	11.18 ***	11.38 ***	7.26 ***	4.01 **	2.59 *	0.76
Social Communication	4.83 **	4.44 ***	2.00	0.99	4.10 **	4.45 ***	7.40 ***
Cultural Activities	5.70 ***	9.15 ***	1.44	7.28 ***	3.03 *	5.39 ***	-3.18 **
Family Homework Supervision	-17.06 ***	-19.22 ***	-16.25 ***	-16.60 ***	-4.41 ***	-2.28 *	-3.88 ***
Between-School variance explained	76.74 %	58.43 %	80.75 %	80.45 %	61.54 %	48.37 %	62.10 %
Within-School variance explained	17.27 %	17.21 %	17.34 %	18.19 %	3.71 %	4.65 %	6.26 %
Total variance explained by model	26.78 %	23.79 %	24.86 %	31.41 %	26.57 %	21.34 %	23.29 %

Note: 1) * p 0.05, ** p 0.01, *** p 0.001

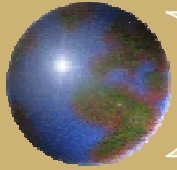
2) The model includes the student background factors and the school contextual background factors without showing here.



Family Involvement	Low GDP Latin American Countries			Low GDP Eastern countries	
	Chile	Mexico	Peru	Indonesia	Thailand
<i>Parental investment</i>					
Material Resources	-3.59 *	-6.93 ***	-5.52 ***	0.43	-3.67 *
Home Educational Resources	0.74	3.30 **	6.32 ***	0.94	7.62 ***
Cultural Possession	0.73	1.34	-1.77	1.20	-3.22 **
1-10 Books at home	12.18	10.88	11.81	1.69	16.69
11-50 Books at home	24.14 ***	18.73 **	24.75 ***	10.42 *	31.70 ***
51-100 Books at home	28.45 ***	26.34 ***	35.54 ***	10.63 *	31.32 ***
101-250 Books at home	31.42 ***	29.63 ***	38.33 ***	13.28 *	36.12 ***
251-500 Books at home	30.97 ***	33.52 ***	34.42 **	14.12 *	39.47 ***
>500 Books at home	16.57	20.88 *	31.09 **	4.24	35.98 ***
<i>Parental involvement</i>					
Cultural Communication	10.01 ***	6.04 ***	-0.43	1.96 *	2.61 *
Social Communication	3.34 *	1.48	5.99 ***	3.81 ***	5.04 ***
Cultural Activities	2.13	1.39	-6.08 ***	-4.58 ***	0.64
Family Homework Supervision	-11.30 ***	-9.66 ***	-8.77 ***	-4.21 ***	-10.24 ***
Between-School variance explained	76.87 %	79.44 %	76.45 %	44.36 %	59.38 %
Within-School variance explained	6.66 %	4.74 %	5.00 %	2.15 %	9.48 %
Total variance explained by model	38.49 %	38.40 %	37.38 %	14.93 %	22.86 %

Note: 1) * p 0.05, ** p 0.01, *** p 0.001

2) The model includes the student background factors and the school contextual background factors without showing here.



Conclusions

Parental Involvement

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- Cultural communication (e.g. discussing books, films or television programs)
- Social communication (discussing how well they are doing at school)
- Cultural activities (visited a museum or art gallery; attended classical concert)

-

- homework supervision
-

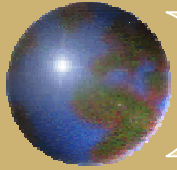
Parental Investment

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- Number of Books at home
- Educational Resources (a dictionary, a quiet place to study)
- Cultural Resources (classical literature, books of poetry and works of art)

-

- Material resources



HKPI SA Centre

Thank you !

Further information
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