Appendix A: Table of Contents for Volume I of the Technical Report

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Appendix B: Characteristics of the National Samples

In Chapter 2, the TIMSS target populations were described and the participation rates and sample sizes were documented for Populations 1 and 2. This appendix describes, for each country and each population in which it participated, the target population definitions, coverage and exclusions, use of stratification variables, and any deviations from the general TIMSS design.

AUSTRALIA

Target Population

Table B.1 identifies the defined target grades by state for Population 1 and Population 2 in Australia. The target grades in the two populations varied by state. This variation is due to different age entrance rules applied in the Australian States and Territories. Allowing these state variations maximized coverage of the age-13 cohort.

Table B.1 Target Grades in Australia

State or Territory	Population 1	Population 2
New South Wales	3 and 4	7 and 8
Victoria	3 and 4	7 and 8
Queensland	4 and 5	8 and 9
South Australia	4 and 5	8 and 9
Western Australia	4 and 5	8 and 9
Tasmania	3 and 4	7 and 8
Northern Territory	4 and 5	8 and 9
Australian Capital Territory	3 and 4	7 and 8

Coverage and Exclusions

School-level exclusions in Population 1 consisted of extremely small schools, distance-education schools, and Victorian schools involved in another study. School-level exclusions in Population 2 consisted of extremely small schools and distance-education schools.

Sample Design - Population 1

- Explicit stratification by eight states and territories and three types of school (government, Catholic, and independent), for a total of 24 strata
- No implicit stratification

- Schools sorted on the sampling frame by geography
- Sample allocation of schools as presented in Table B.2
- Additional schools sampled after a first selection (these schools were included in the TIMSS sample for Population 1)
- School participation adjustments for weighting computed only at the state and territory level because the type-of-school level of stratification became too fine
- Sampled two upper-grade classrooms per school
- Sampled one lower-grade classroom per school except in Queensland, South Australia, Western Australia, and the Northern Territory, where two classrooms per school were sampled

Table B.2 Allocation of School Sample in Australia

State or Territory	Population 1 Schools	Population 2 Schools
New South Wales	40	40
Victoria	40	40
Queensland	40	40
Western Australia	40	35
South Australia	40	35
Tasmania	30	12
Northern Territory	20	8
Australian Capital Territory	18	4
All Australia	268	214

Sample Design - Population 2

- Explicit stratification by eight states and territories and three types of school (government, Catholic, and independent), for a total of 24 strata
- No implicit stratification
- Schools sorted on the sampling frame by geography
- Sample allocation of schools as presented in Table B.2
- Additional schools sampled after a first selection (these schools could not be included in the TIMSS sample for Population 2 because of time constraints; students from those schools were not assigned any sampling weights)

- School participation adjustments for weighting computed only at the state and territory level because the type-of-school level of stratification became too fine
- Sampled two upper-grade classrooms per school
- Sampled one lower grade classroom per school, except in Queensland, South Australia, Western Australia and the Northern Territory, where two classrooms per school were sampled

AUSTRIA

Coverage and Exclusions

School-level exclusions in both populations consisted of schools labeled "Sonderschulen."

Sample Design - Population 1

- Explicit stratification by three levels of urbanization (Vienna, urban, and rural)
- Sampled 150 schools, 50 per explicit stratum
- Schools sorted on the sampling frame by geography
- Sampled one classroom per grade per school

Sample Design - Population 2

- Explicit stratification by two school types and three levels of urbanization, for a total of six strata (see Table B.3)
- Sampled 159 schools, based on the allocation presented in Table B.3
- Schools sorted on the sampling frame by geography
- Sampled one classroom per grade per school
- Sampled science classrooms in Population 2, rather than mathematics classrooms as in other countries, because streaming in mathematics classes would have resulted in the inclusion of an inordinate number of science teachers in the data collection

Table B.3 Allocation of School Sample in Austria - Population 2

School Type	Explicit Stratum: Urbanization (Number of Inhabitants)	Number of Schools
Hauptschulen (HS)	Up to 5,000	33
	From 5,001 to 1,000,000	33
	More than 1,000,000 (Vienna)	33
AHS-Unterstufe (Lower Step)	Up to 5,000	10
	From 5,001 to 1,000,000	25
	More than 1,000,000 (Vienna)	25
All Austria		159

BELGIUM (FLEMISH)

Coverage and Exclusions

School-level exclusions consisted mostly of lower-grade students in a track labeled 1B. These students had encountered failure in primary schooling and had been moved to the secondary system because of age. Since their curriculum was largely a review of primary education, the Flemish part of Belgium chose to exclude them. Small schools and schools with only vocational programs also were excluded.

Sample Design - Population 2

- No explicit stratification
- Implicit stratification by three types of school (state, local board, and Catholic) and two programs (schools with or without the technical program), for a total of six strata
- Sampled 150 schools to contribute a classroom from each grade in the general program
- Subsampled 15 schools among the 79 sampled schools with the technical program, to contribute a classroom from the technical program

BELGIUM (FRENCH)

Coverage and Exclusions

School-level exclusions consisted mostly of lower-grade students in a track labeled 1B. These students had failures in primary schooling and had been moved to the secondary system because of age. Since their curriculum was largely a review of primary education, the French part of Belgium chose to exclude them. Small schools and schools with only vocational programs also were excluded.

Sample Design - Population 2

- No explicit stratification
- Implicit stratification by three types of school (state, local board, and Catholic) and two programs (schools with or without the technical program), for a total of six strata
- Sampled 150 schools to contribute a classroom from each grade in the general program
- Subsampled 35 schools among the 70 sampled schools with the technical program, to contribute a classroom from the technical program

BULGARIA

Coverage and Exclusions

School-level exclusions consisted of schools for the disabled, sport schools, and art schools.

Sample Design - Population 2

- Explicit stratification by two types of schools (schools with both grades and schools with only the upper grade)
- Implicit stratification by three levels of urbanization (national capital, urban, and rural) and three levels of school size (since no valid measure of size was available)
- Sampled 150 schools with both grades and 17 schools with only the upper grade, for a total sample of 167 schools
- Sampled one classroom per grade per school

CANADA

Coverage and Exclusions

School-level exclusions consisted of offshore schools, schools where students are taught in their aboriginal language, very small schools, schools in Prince Edward Island, and French schools in New Brunswick.

Sample Design - Population 1 and Population 2

- Explicit stratification by province or territory, language (in Ontario), and three types of school (Population 1 only, Population 2 only, Population 1 and Population 2), for a total of 39 strata over both populations (see Table B.4)
- Type-of-school stratification allowing maximum overlap of sampled schools between Population 1 and Population 2
- No implicit stratification

- Sample allocation of schools as presented in Table B.4
- A total of 428 schools sampled for Population 1 and 429 sampled for Population 2
- The 40 Population 1 and Population 2 schools sampled in Alberta divided equally between populations since that province wanted to reduce the school participation burden
- The 14 Population 1 and Population 2 schools in British Columbia more finely stratified because of odd combinations of target grades present in those schools
- Sampled one classroom per grade per school
- Sampled two upper-grade classrooms per school in Ontario

Table B.4 Allocation of School Sample in Canada

Province or Territory	Population 1 Only Schools	Populations 1 and 2 Schools	Population 2 Only Schools
Newfoundland	25	15	25
Nova Scotia	3	2	3
New Brunswick	12	10	12
Québec	35	2	40
Ontario (French)	20	75	6
Ontario (English)	40	80	40
Manitoba	2	4	2
Saskatchewan	2	4	2
Alberta	35	40	35
British Columbia	4	10	14
Yukon Territory	2	2	2
Northwest Territories	2	2	2
All Canada	182	246	183

COLOMBIA

Coverage and Exclusions

School-level exclusions consisted of schools located in remote areas.

Sample Design - Population 2

- No explicit stratification
- Implicit stratification by five regions, two types of school (public and private), and four types of schedule (morning, afternoon, evening, and all day), for a total of 48 strata

- The fifth region further stratified by calendar since it is split between a Northern Hemisphere calendar and a Southern Hemisphere calendar (hence, 48 implicit strata)
- Sampled 150 schools
- Sampled one classroom per grade per school
- Subsampled 20 students per sampled classroom; classrooms sampled with PPS

CYPRUS

Coverage and Exclusions

School-level exclusions in Population 1 consisted of single-classroom schools. There were no school-level exclusions in Population 2.

Sample Design - Population 1

- No explicit stratification
- Implicit stratification by four regions and two levels of urbanization (urban and rural), for a total of eight strata
- Sampled 150 schools
- 74 schools were sampled with certainty because of their large size
- Sampled one classroom per grade per school

Sample Design - Population 2

- All 55 Population 2 schools included in TIMSS
- Sampled two classrooms per grade per school

CZECH REPUBLIC

Coverage and Exclusions

School-level exclusions consisted of schools for the disabled.

Sample Design - Population 1

- No explicit stratification
- Implicit stratification by four levels of urbanization and two types of school
- Sampled 150 schools
- Pseudo-schools constructed in Population 1
- Sampled one classroom per grade per school

Sample Design - Population 2

- No explicit stratification
- Implicit stratification by four levels of urbanization, two types of school, and two levels of school stream
- Sampled 150 schools
- Sampled one classroom per grade per school

DENMARK

Coverage and Exclusions

There were no school-level exclusions in Denmark.

Sample Design - Population 2

- Explicit stratification by two geographical levels (Copenhagen and the rest)
- No implicit stratification
- Schools sampled using a stratified simple random sample design
- Sampled 24 schools from Copenhagen and 134 from the rest of the country
- Sampled one classroom per grade per school
- Classrooms sampled by the school headmasters
- Grade 8 classrooms also sampled for national purposes
- A national test booklet added to the booklet rotation; students assigned the TIMSS booklets were considered a random subsample within classrooms

ENGLAND

Coverage and Exclusions

School-level exclusions consisted of special-needs schools, very small schools, and schools that were selected for their national evaluation samples. The last category accounts for the relatively high exclusion rates in both populations.

Sample Design - Population 1

- No explicit stratification
- Implicit stratification by three regions, two types of school, and two levels of urbanization
- Sampled 150 schools

- Sampled one classroom per grade per school
- Two classrooms sampled in single-grade schools

Sample Design - Population 2

- No explicit stratification
- Implicit stratification by three regions, two types of school, and two levels of urbanization
- Sampled 150 schools
- Students sampled across classrooms within grades in sampled schools, resulting in 16 students randomly sampled per grade per school
- 32 students randomly sampled in single-grade schools

FRANCE

Coverage and Exclusions

School-level exclusions consisted of schools in a track labeled CPPN, as well as schools in their offshore territories (*térritoires outre-mer).*

The target grades are *5iéme générale (5g), 4iéme générale (4g),* and *4iéme technologique (4t).* Not all schools offer the 4t program, and this was accounted for in explicit stratification for sampling purposes.

Sample Design - Population 2

- Sampled three independent samples: *collèges*, *collèges* with 4t, *lycées professionnels*
- Overlap in the sampling frames for the first two samples, the second sampling frame being a subset of the first
- Explicit stratification by two levels of urbanization (rural and urban) and two types of school (public and private), for a total of four strata
- No implicit stratification
- Sample allocation of schools as presented in Table B.5
- Schools sampled using a Lahiri method of PPS selection
- All schools in the first sample contributing one 5g classroom; only 136 of them contributing a 4g classroom via a random drop method
- All seven schools in the second sample contributing one 5g classroom and one 4t classroom
- All eight schools in the third sample contributing a single 4t classroom, since these schools do not have the *général* track

- Overlap in the first two sampling frames, causing all *collèges* with 4t classrooms to have two chances of being sampled and contributing a 5g classroom; their school selection probabilities computed accordingly

Table B.5 Allocation of School Sample in France - Population 2

Sampling Frame	Sampled Schools	Sampled Classrooms		
		5g	4g	4t
All collèges	144	144	136	0
Collèges with 4t	7	7	0	7
Lycées Professionnels	8	0	0	8
All France	159	151	136	15

GERMANY

Coverage and Exclusions

One region, Baden-Württemberg, did not participate in TIMSS, thereby reducing national coverage of the target population.

School-level exclusions in Germany consisted of:

- Non-graded private schools
- Special schools for the disabled
- Schools in small strata where no schools were actually sampled
  - Realschulen in Brandenburg
  - Integrierte Gesamtschules and Integrierte Klassen in Hauptund Realschulen in Mecklenburg-Vorpommern and Niedersachsen
  - Integrierte Gesamtschulen in Rheinland-Pfalz and Saarland
- Schools in strata where none of the sampled schools participated
  - Realschulen in Berlin
  - Hauptschulen and Integrierte Gesamtschulen in Schleswig-Holstein

Sample Design - Population 2

- Explicit stratification by 14 regions and 5 types of school, for a total of 45 strata (Table B.6)
- No schools sampled in some of the explicit strata because they were small (see exclusions above)

Table B.6 Allocation of School Sample in Germany - Population 2

Region	Type of School					Total
	Hauptschulen	Realschulen	Gymnasien	Integrierte Gesamtschulen	Integrierte Klasse Haupt- und Realschulen	
Bayern	11	8	8	1	---	28
Berlin	1	1	2	2	---	6
Brandenburg	---	0	2	4	---	6
Bremen-Hamburg	2	2	1	1	---	6
Hessen	2	3	4	3	---	12
Mecklenburg-Vorpommern	2	4	4	0	0	10
Niedersachsen	5	5	3	0	0	13
Nordrhein-Westfalen	12	7	9	3	---	31
Rheinland-Pfalz	4	2	2	0	---	8
Saarland	1	1	1	0	---	3
Sachsen	---	---	4	---	7	11
Sachsen-Anhalt	---	---	1	---	5	6
Schleswig-Holstein	2	2	2	1	---	7
Thuringen	2	---	2	2	---	6
All Germany	44	35	45	17	12	153

- No implicit stratification
- Sample allocation of schools as presented in Table B.6
- Sampled one classroom per grade per school
- Upper-grade classrooms sampled with PPS and lower grade classrooms sampled with equal probabilities within schools
- Explicit strata considered as implicit in the construction of replicate strata for the jackknife estimation method, since there were an inordinate number of strata

GREECE

Coverage and Exclusions

School-level exclusions in Population 1 and Population 2 consisted of special schools where a different curriculum is used. Evening schools were also excluded in Population 2.

Sample Design - Population 1

- Explicit stratification by 11 regions
- No implicit stratification
- Proportional allocation of 187 schools to the 11 explicit strata

- Sampled one classroom per grade per school
- Computed an overall school participation adjustment for weighting, thereby ignoring the relatively fine explicit stratification

Sample Design - Population 2

- Explicit stratification by 11 regions
- No implicit stratification
- Proportional allocation of 180 schools to the 11 explicit strata
- Sampled one classroom per grade per school
- Always sampled the first classroom listed in the school administrative records from each grade
- Computed an overall school participation adjustment for weighting, thereby ignoring the relatively fine explicit stratification

HONG KONG

Coverage and Exclusions

School-level exclusions consisted of "international" schools that follow overseas curricula.

Sample Design - Population 1

- Explicit stratification by two levels of gender (co-educational and single-sex) and three levels of school administration (aided, government, and private), for a total of five strata (single-sex government schools do not exist)
- No implicit stratification
- A proportional allocation of 156 schools to the five explicit strata
- Eight of the sampled schools no longer in operation
- Sampled one classroom per grade per school
- Computed an overall school participation adjustment for weighting, thereby ignoring the relatively fine explicit stratification

Sample Design - Population 2

- Explicit stratification by two levels of gender (co-educational and single-sex), two levels of language (Chinese and English), and three levels of school administration (aided, government, and private) for a total of 10 strata (single-sex/Chinese/ government and single-sex/Chinese/private schools do not exist)
- No implicit stratification

- A proportional allocation of 105 schools to the 10 explicit strata
- One sampled school no longer in operation
- Sampled one classroom per grade per school
- Computed an overall school participation adjustment for weighting, thereby ignoring the relatively fine explicit stratification

HUNGARY

Coverage and Exclusions

School-level exclusions consisted of very small schools.

Sample Design - Population 1 and Population 2

- No explicit stratification
- Implicit stratification by three levels of urbanization (national capital, urban, and rural)
- Sampled 150 schools, to be used for both populations
- Sampled one classroom per grade per school
- Grade 8 classrooms sampled with PPS, using class size as the measure of size; grades 3, 4, and 7 classrooms sampled using the grade 8 selection probabilities
- Whenever the grade 8 selection probabilities were inappropriate for the other grades, assumed selection with equal probabilities for those grades; this was not a significant issue for grade 7, but did become an issue for grades 3 and 4

ICELAND

Coverage and Exclusions

School-level exclusions consisted of very small schools.

Sample Design - Population 1 and Population 2

- All eligible schools are included in TIMSS
- Sampled one classroom per grade per school

IRAN, ISLAMIC REPUBLIC OF

Coverage and Exclusions

School-level exclusions consisted of schools for the physically and mentally disabled.

Sample Design - Population 1

- Six regions as explicit strata
- Three implicit strata: rural schools, urban girls' schools, and urban boys' schools
- Sampled 180 schools, 30 per region
- Sampled one classroom per grade per school
- Subsampled 20 students per sampled classroom; classrooms sampled with PPS

Sample Design - Population 2

- Six regions as explicit strata
- Four implicit strata: rural girls' schools, rural boys' schools, urban girls' schools, and urban boys' schools
- Sampled 192 schools in Population 2, 32 per region
- Sampled one classroom per grade per school
- Subsampled 20 students per sampled classroom; classrooms were sampled with PPS

IRELAND

Coverage and Exclusions

School-level exclusions in Population 1 consisted of private schools, schools for the physically and mentally disabled, and very small schools. There are no school-level exclusions in Population 2.

Sample Design - Population 1

- Two explicit strata based on school size – small/medium schools and large schools
- Three implicit strata based on gender: boys' schools, girls' schools, and co-educational schools
- Sampled 91 small/medium schools and 59 large schools
- Pseudo-schools constructed
- Sampled one classroom per grade per school

Sample Design - Population 2

- No explicit stratification
- Five implicit strata based on gender and type of school: secondary boys' schools, secondary girls' schools, secondary coeducational schools, vocational schools, and community/comprehensive schools
- Sampled 150 schools
- Sampled one classroom per grade per school

ISRAEL

Coverage and Exclusions

Coverage in Israel is restricted to the Hebrew public education system. This means that the non-Jewish education system and the Jewish Orthodox Independent Education system are not covered. School-level exclusions consisted of special education schools for the physically and mentally disabled. Israel included only the upper grade (eighth grade) in Population 2 and the upper grade (fourth grade) in Population 1.

Sample Design - Population 1

- No explicit stratification
- No implicit stratification
- Sampled 100 schools
- Some sampled schools replacing schools participating in a longitudinal study; these alternate schools are recognized as non-procedural replacement schools
- Sampled one classroom per school
- Alternate classrooms sampled by the local school authorities in 27 of 87 participating schools

Sample Design - Population 2

- No explicit stratification
- Two implicit strata: junior high schools and elementary schools
- Sampled 100 schools
- Sampled one classroom per school
- Alternate classrooms sampled by the local school authorities in 35 of 46 participating schools

JAPAN

Coverage and Exclusions

School-level exclusions consisted of very small schools and schools for the physically and mentally disabled. Private schools also were excluded in Population 1.

Sample Design - Population 1

- Explicit stratification by three school sizes (small, medium, and large) and three levels of urbanization (rural, urban, and large urban), for a total of nine strata
- No implicit stratification
- Schools sampled using a stratified simple random sample design
- Sampled 150 schools
- Sampled one classroom per grade per school

Sample Design - Population 2

- Explicit stratification by three school sizes (small, medium, and large) and three levels of urbanization (rural, urban, and large urban), for a total of nine strata
- No small/large urban schools, but private schools added as a ninth stratum
- No implicit stratification
- Schools sampled using a stratified simple random sample design
- Sampled 158 schools
- Sampled one classroom per grade per school

KOREA

Coverage and Exclusions

School-level exclusions consisted of schools in remote places, islands, and border areas. Additional Population 2 school-level exclusions consisted of evening schools and physical education schools.

Sample Design - Population 1

- No explicit stratification
- Implicit stratification by region and urbanization, for a total of 24 strata
- Sampled 150 schools
- Sampled one classroom per grade per school
- Subsampled 20 students per sampled classroom; classrooms sampled with PPS

Sample Design - Population 2

- No explicit stratification
- Implicit stratification by region, urbanization, and type of school (national and private), for a total of 48 strata
- Sampled 150 schools
- Sampled one classroom per grade per school
- Subsampled 20 students per sampled classroom; classrooms sampled with PPS

KUWAIT

Coverage and Exclusions

There were no exclusions of any kind in Kuwait. Kuwait included only the upper grade (ninth grade) in Population 2 and the upper grade (fifth grade) in Population 1.

Sample Design - Population 1 and Population 2

- All eligible schools included in TIMSS
- Girls' schools and boys' schools
- Sampled one classroom per school
- Classrooms sampled based on the weekly school schedule; i.e., the Monday morning mathematics class was generally sampled

LATVIA

Coverage and Exclusions

Coverage in Latvia was restricted to students whose language of instruction is Latvian. School-level exclusions consisted of schools for the physically and mentally disabled and very small schools.

Sample Design - Population 1 and Population 2

- No explicit stratification
- Implicit stratification by five regions, two levels of urbanization (rural and urban), and three types of school (beginner, basic, and secondary)
- Sampled 150 schools
- Some schools sampled with certainty
- Pseudo-schools constructed
- Sampled one classroom per grade per school

LITHUANIA

Coverage and Exclusions

Coverage in Lithuania was restricted to students whose language of instruction is Lithuanian. School-level exclusions consisted of schools with more than one language of instruction, schools for the physically and mentally disabled, and very small schools.

Sample Design - Population 2

- Explicit stratification by three levels of urbanization (big urban, urban, and rural)
- No implicit stratification
- Proportional allocation of 151 schools to the three explicit strata
- Sampled one classroom per grade per school
- Computed an overall school participation adjustment for weighting

NETHERLANDS

Coverage and Exclusions

School-level exclusions consisted of special education schools for the physically and mentally disabled and very small schools.

Sample Design - Population 1

- No explicit stratification
- Implicit stratification by four levels of denomination, three levels of urbanization, and two levels of socio-economic composition
- Sampled 150 schools
- Pseudo-schools constructed
- Sampled all eligible students in sampled schools
- A national test booklet added to the booklet rotation in the upper grade; students assigned the TIMSS booklets considered a random subsample within classrooms

Sample Design - Population 2

- No explicit stratification
- Implicit stratification by three types of school and two levels of urbanization

- Sampled 150 schools
- Sampled one classroom per grade per school
- A national test booklet added to the booklet rotation in the upper grade; students assigned the TIMSS booklets considered a random subsample within classrooms

NEW ZEALAND

Coverage and Exclusions

School-level exclusions consisted of correspondence schools and very small schools. One geographically remote school was also excluded in Population 1.

Sample Design - Population 1

- No explicit stratification
- Implicit stratification by two levels of community size and three levels of school size
- Sampled 150 schools
- Sampled one classroom per grade per school

Sample Design - Population 2

- Explicit stratification by three types of school (both grades present, only upper grade present, only lower grade present)
- Implicit stratification varying by explicit stratum as described in Table B.7
- The sample allocation of schools as presented in Table B.7
- Sampled one classroom per grade per school

Table B.7 Allocation of School Sample in New Zealand - Population 2

Explicit Stratum	Sampled Schools	Implicit Stratification
Both Grades Present	23	Authority (state & private) Community size (2 levels) School gender (co-ed, boys, girls)
Upper Grade Only	127	–
Lower Grade Only	127	Authority (state & private) Community size (5 levels) School type (full primary & intermediate)

NORWAY

Coverage and Exclusions

School-level exclusions consisted of special schools for the disabled and schools with Sami (Lapp) as the language of instruction. Special schools with an alternative pedagogy were also excluded in Population 1.

Sample Design - Population 1

- Explicit stratification by three school sizes (see Table B.8)
- Implicit stratification by six regions and two levels of urbanization
- Sample allocation of schools as presented in Table B.8
- Sampled one classroom per grade per school

Table B.8 Allocation of School Sample in Norway - Population 1

Explicit Stratum	Sampled Schools
Schools with Small Classrooms	40
Schools with Mid-Sized Classrooms	83
Schools with Large Classrooms	27
All Norway	150

Sample Design - Population 2

- Explicit stratification by five types of school (see Table B.9)
- Implicit stratification by six regions and two levels of urbanization
- Sample allocation of schools as presented in Table B.9
- Sampled one classroom per grade per school

Table B.9 Allocation of School Sample in Norway - Population 2

Explicit Stratum		Sampled Schools
Dual-Grade Schools	Small Classrooms	13
	Large Classrooms	27
Upper-Grade Schools		110
Lower-Grade Schools	Small Classrooms	91
	Large Classrooms	19
All Norway		260

PHILIPPINES

Coverage and Exclusions

Regions 8 and 12 and the Autonomous Region of Muslim Mindanao were removed from their national coverage. School-level exclusions consisted of schools under the responsibility of the Agriculture, Fisheries, and Industrial Arts/Trade ministries. These exclusions affected only the upper grade, which is found in the secondary school system.

Sample Design - Population 2

- Preliminary sampling of 57 school divisions from a frame of 114 school divisions; some school divisions sampled randomly, others based on the advice of the Department of Education, Culture and Sports
- Explicit stratification by school system: elementary schools for the lower grade and secondary schools for the upper grade
- No implicit stratification
- Sampled 200 secondary schools and 200 elementary schools
- Generally, three to five secondary schools sampled per school division
- Elementary schools sampled based on the notion that they are feeder schools for the sampled secondary schools
- Sampled one classroom per grade per school
- Subsampled 32 students per sampled classroom, but classrooms sampled with equal probabilities within schools

Special note: Sampling weights could not be computed for the Philippines. The selection of elementary schools could not be considered random, nor was it possible to derive their selection probabilities.

PORTUGAL

Coverage and Exclusions

School-level exclusions in Population 1 consisted of very small schools. There were no school-level exclusions in Population 2.

Sample Design - Population 1

- Explicit stratification by seven regions
- Implicit stratification by two levels of urbanization (rural and urban) and three levels of socio-economic status
- Sampled 150 schools

- Pseudo-schools constructed
- Sampled one classroom per grade per school

Sample Design - Population 2

- No explicit stratification
- Implicit stratification by five regions, two levels of urbanization (rural and urban), and two levels of type of school (basic and secondary)
- Sampled 150 schools
- Pseudo-schools constructed
- Sampled one classroom per grade per school

ROMANIA

Coverage and Exclusions

School-level exclusions consisted of schools for the disabled, orphanages, schools with only one of the target grades, schools with multigrade classrooms, and very small schools.

Sample Design - Population 2

- No explicit stratification
- No implicit stratification
- Sampled 150 schools
- Pseudo-schools constructed
- Sampled one classroom per grade per school

RUSSIAN FEDERATION

Coverage and Exclusions

School-level exclusions consisted of schools where the language of instruction is other than Russian and schools in regions Nord Osetia and Chechnia.

Sample Design - Population 2

- Preliminary sampling of 40 regions from a frame of 79 regions; ten regions large enough to be sampled with certainty
- No explicit stratification
- Implicit stratification by two levels of urbanization (urban and rural)
- Sampled 175 schools

- Generally, four schools sampled per region; more schools sampled in most certainty regions
- Pseudo-schools constructed
- Sampled one classroom per grade per school

SCOTLAND

Coverage and Exclusions

School-level exclusions consisted of very small schools.

Sample Design - Population 1 and Population 2

- Explicit stratification by two types of school (state and independent)
- No implicit stratification
- Sampled 150 schools
- Pseudo-schools constructed
- Sampled one classroom per grade per school

SINGAPORE

Coverage and Exclusions

There are no school-level exclusions in Population 1. School-level exclusions in Population 2 consisted of newly-opened schools without the upper grade.

Sample Design - Population 1 and Population 2

- All eligible schools included in TIMSS
- Sampled one classroom per grade per school

SLOVAK REPUBLIC

Coverage and Exclusions

School-level exclusions consisted of schools where the language of instruction is other than Slovakian.

Sample Design - Population 2

- No explicit stratification
- Implicit stratification by 4 regions
- Sampled 150 schools
- Sampled one classroom per grade per school

SLOVENIA

Coverage and Exclusions

School-level exclusions consisted of schools for the disabled and schools where the language of instruction is Italian or Hungarian.

Sample Design - Population 1 and Population 2

- No explicit stratification
- Implicit stratification by four levels of urbanization and two types of school (dislocated or not)
- Sampled 150 schools, to be used for both populations
- Sampled one classroom per grade per school

SOUTH AFRICA

Coverage and Exclusions

School-level exclusions consisted of very small schools.

Sample Design - Population 2

- Explicit stratification by school system-elementary schools for the lower grade and secondary schools for the upper grade
- Implicit stratification by nine provinces
- Sampled 150 elementary schools and 150 secondary schools
- Some elementary schools with upper-grade classrooms; some secondary schools with lower-grade classrooms
- Sampled one classroom per grade per school
- Not all absent students recorded in the TIMSS database, so student participation rates are overestimated

SPAIN

Coverage and Exclusions

School-level exclusions consisted of schools where the language of instruction is Euskera, very small schools, and schools in 15 very small explicit strata (see notes below).

Sample Design - Population 2

- Explicit stratification by eight regions, two types of school (public and private), and three levels of school size, for a total of 43 strata
- No schools sampled from 15 of these strata because they were so small (see exclusions above)

- No implicit stratification
- Proportional allocation of 150 schools to the remaining 28 explicit strata
- Pseudo-schools constructed
- Sampled one classroom per grade per school
- Computed an overall school participation adjustment for weighting, thereby ignoring the relatively fine explicit stratification

SWEDEN

Coverage and Exclusions

School-level exclusions consisted of schools for the disabled.

Sample Design - Population 2

- Explicit stratification by school system: elementary schools for the lower grade and secondary schools for the upper grade
- No implicit stratification
- Sampled 160 elementary schools and 120 secondary schools
- Schools sampled using a PPS Lahiri method
- Sampled one classroom per elementary school and two classrooms per secondary school
- Eighth-grade classrooms also sampled for national purposes
- A national test booklet added to the booklet rotation; students assigned the TIMSS booklets considered a random subsample within classrooms

SWITZERLAND

Target Population

The target grades vary in Switzerland. In the German parts, they are 6 and 7. In all other parts of Switzerland, the target grades are 7 and 8.

Coverage and Exclusions

Four cantons – Jura, Waadt, Neuchatel and Freiburg – did not participate, thereby reducing national coverage of the target population. School-level exclusions consisted of schools for the disabled, schools where the language of instruction is not one of the official languages, and very small schools.

Sample Design - Population 2

- Explicit stratification by region, type of school, and track, for a total of 15 strata (see Table B.10)

- No implicit stratification
- Sample allocation of schools as presented in Table B.10
- In each stratum from the canton of Basle, all 16 sampled schools contributing a grade 7 classroom, 8 of them contributing a grade 8 classroom (see note below), and 2 of them contributing a grade 6 classroom
- Additional schools sampled for national purposes; students from such schools were not assigned sampling weights
- Sampled one classroom per grade per school
- Grade 8 classrooms also sampled in the German cantons for national purposes

Table B.10 Allocation of School Sample in Switzerland - Population 1

Explicit Stratum	Sampled Schools
Private schools, with lower grade	2
Private schools, with upper grade	2
Private schools, with both grades	2
Canton of Bern, German part	30
Canton of Basle, lower track	16
Canton of Basle, medium track	16
Canton of Basle, higher track	16
Other German cantons, with lower grade	80
Other German cantons, with upper grade	80
Other German cantons, with both grades	18
Canton of Bern, French part	12
Canton of Valais, French part	10
Geneva	18
Canton of Grison, Italian part	2
Canton of Ticino	37
All Switzerland	341

THAILAND

Coverage and Exclusions

School-level exclusions consisted of special education schools, demonstration schools run by the Department of Teacher Education and the Ministry of University Affairs, and private schools.

Sample Design - Population 1

- Explicit stratification by 13 regions and two levels of urbanization (rural and urban), for a total of 25 strata (Bangkok region is all urban)
- No implicit stratification
- Schools sampled using a stratified simple random sample design
- Proportional allocation of 150 schools to the first 24 explicit strata; five schools sampled from Bangkok
- Sampled one classroom per grade per school
- Always sampled the first classroom listed in the school administrative records from each grade
- Computed an overall school participation adjustment for weighting for the first 24 explicit strata, thereby ignoring the relatively fine explicit stratification

Sample Design - Population 2

- No explicit stratification
- No implicit stratification
- Schools sampled using a simple random sample design
- Sampled 150 schools
- Sampled one classroom per grade per school
- Always sampled the first classroom listed in the school administrative records from each grade

UNITED STATES

Coverage and Exclusions

School-level exclusions consisted of ungraded schools.

Sample Design - Population 1 and Population 2

- Preliminary sampling of 59 primary sampling units (PSU), from a frame of 1026 PSUs
- Explicit stratification of PSUs, prior to sampling, by four regions: northeast, southeast, midwest, and west
- Eleven PSUs sampled with certainty – essentially large urban centers
- Explicit stratification of schools by type – public and private

- Implicit stratification by two levels of minority status (high and low) and three levels of split grades (lower, upper, and both)
- Increased (i.e., doubled) school selection probabilities in the high minority strata
- Sampled 220 schools
- Sampled one lower-grade classroom and two upper-grade classrooms per school

Appendix C: Design Effects and Effective Sample Size Tables

Table C.1 Design Effects and Effective Sample Sizes by Grade and Gender
Third Grade - Girls - Mathematics Mean Scale Score - Population 1

Country	Sample Size	Mean Mathematics Score	Variance	JRR s.e.	SRS s.e.	Design Effect	Effective Sample Size
Australia	2392	480	7920.6	4.5	1.8	6.12	391
Austria	1261	481	5616.8	3.8	2.1	3.29	384
Canada	3691	463	5815.5	3.0	1.3	5.79	637
Cyprus	1640	428	5364.4	3.1	1.8	2.99	548
Czech Republic	1652	493	6587.2	3.8	2.0	3.55	465
England	1544	452	7073.2	3.4	2.1	2.50	619
Greece	1444	424	7234.4	4.2	2.2	3.45	419
Hong Kong	1969	518	4778.2	3.5	1.6	5.16	381
Hungary	1492	476	7508.2	4.4	2.2	3.84	388
Iceland	854	403	3818.9	3.0	2.1	2.06	415
Iran, Islamic Rep.	1744	373	4073.2	4.9	1.5	10.39	168
Ireland	1367	479	6047.2	4.5	2.1	4.60	297
Japan	2109	536	5373.6	1.7	1.6	1.17	1804
Korea	1325	554	4678.3	2.5	1.9	1.79	741
Latvia (LSS)	1043	464	6438.0	4.5	2.5	3.22	324
Netherlands	1379	489	4158.4	3.2	1.7	3.45	399
New Zealand	1289	443	6621.1	4.5	2.3	4.00	322
Norway	1069	411	5018.2	3.8	2.2	3.09	346
Portugal	1288	420	7233.3	5.0	2.4	4.47	288
Scotland	1576	454	6008.1	3.5	2.0	3.29	479
Singapore	3378	553	9151.0	5.0	1.6	9.28	364
Slovenia	1233	483	5623.2	3.5	2.1	2.65	466
Thailand	1439	448	5077.4	5.6	1.9	8.77	164
United States	1857	479	6724.8	4.4	1.9	5.33	349

*Third grade in most countries.

Table C.2 Design Effects and Effective Sample Sizes by Grade and Gender
Third Grade - Boys - Mathematics Mean Scale Score- Population 1

Country	Sample Size	Mean Mathematics Score	Variance	JRR s.e.	SRS s.e.	Design Effect	Effective Sample Size
Australia	2348	488	8289.4	4.6	1.9	6.00	391
Austria	1243	494	8020.2	9.2	2.5	13.08	95
Canada	3754	477	6446.7	3.2	1.3	5.81	647
Cyprus	1636	433	6582.9	3.3	2.0	2.67	613
Czech Republic	1604	502	7085.4	3.7	2.1	3.12	515
England	1512	461	8168.3	3.5	2.3	2.21	685
Greece	1508	432	7236.7	4.4	2.2	4.00	377
Hong Kong	2412	528	5554.8	3.2	1.5	4.48	538
Hungary	1456	479	8359.1	4.9	2.4	4.18	348
Iceland	844	418	5117.9	3.5	2.5	2.07	408
Iran, Islamic Rep.	1616	384	4500.3	4.4	1.7	7.04	229
Ireland	1522	473	6997.4	4.3	2.1	4.10	371
Japan	2197	539	5953.4	2.0	1.6	1.50	1469
Korea	1452	567	5068.9	2.8	1.9	2.22	653
Latvia (LSS)	1010	462	6656.3	5.3	2.6	4.33	233
Netherlands	1391	497	4261.7	2.9	1.8	2.75	505
New Zealand	1213	436	6903.5	4.4	2.4	3.39	358
Norway	1102	430	5027.0	3.5	2.1	2.71	407
Portugal	1362	430	7306.1	3.5	2.3	2.27	600
Scotland	1537	462	6546.3	3.8	2.1	3.38	455
Singapore	3645	551	10745.7	5.4	1.7	9.88	369
Slovenia	1288	492	6275.2	3.1	2.2	2.00	644
Thailand	1430	440	5042.5	5.0	1.9	7.14	200
United States	1962	480	6695.5	3.1	1.8	2.86	686

*Third grade in most countries.

Table C.3 Design Effects and Effective Sample Sizes by Grade and Gender
Fourth Grade - Girls - Mathematics Mean Scale Score - Population 1

Country	Sample Size	Mean Mathematics Score	Variance	JRR s.e.	SRS s.e.	Design Effect	Effective Sample Size
Australia	3252	546	8241.4	3.9	1.6	5.88	553
Austria	1262	555	6209.2	3.6	2.2	2.58	490
Canada	4063	531	6741.8	3.9	1.3	9.18	442
Cyprus	1657	499	6940.7	3.3	2.0	2.63	630
Czech Republic	1707	566	7469.9	3.6	2.1	3.02	565
England	1582	510	8059.0	4.4	2.3	3.73	424
Greece	1575	493	7828.8	4.5	2.2	4.11	383
Hong Kong	2013	587	5795.3	4.2	1.7	6.21	324
Hungary	1462	546	7278.3	3.9	2.2	3.07	476
Iceland	929	473	5219.4	3.0	2.4	1.64	567
Iran, Islamic Rep.	1655	424	4346.1	5.0	1.6	9.54	173
Ireland	1421	551	6884.7	4.3	2.2	3.89	365
Israel	1097	528	7387.1	4.1	2.6	2.48	442
Japan	2153	593	5879.8	2.2	1.7	1.74	1238
Korea	1388	603	5244.1	2.6	1.9	1.75	795
Kuwait	2252	402	3730.9	2.5	1.3	3.87	581
Latvia (LSS)	1088	530	6745.3	5.2	2.5	4.35	250
Netherlands	1238	569	4790.8	3.4	2.0	3.00	413
New Zealand	1238	504	6946.6	4.3	2.4	3.27	379
Norway	1025	499	5065.8	3.6	2.2	2.56	401
Portugal	1393	473	6272.1	3.7	2.1	3.12	447
Scotland	1639	520	7442.4	3.8	2.1	3.20	512
Singapore	3383	630	10149.8	6.4	1.7	13.47	251
Slovenia	1282	554	6688.4	4.0	2.3	3.06	420
Thailand	1480	496	4731.1	4.2	1.8	5.40	274
United States	3749	544	7014.0	3.3	1.4	5.69	659

*Fourth grade in most countries.

Table C.4 Design Effects and Effective Sample Sizes by Grade and Gender
Fourth Grade - Boys - Mathematics Mean Scale Score - Population 1

Country	Sample Size	Mean Mathematics Score	Variance	JRR s.e.	SRS s.e.	Design Effect	Effective Sample Size
Australia	3240	548	8560.7	3.6	1.6	4.89	663
Austria	1341	563	6238.2	3.6	2.2	2.86	469
Canada	4172	534	7311.5	3.4	1.3	6.64	628
Cyprus	1705	506	7904.9	3.5	2.2	2.64	645
Czech Republic	1561	568	7416.8	3.4	2.2	2.50	624
England	1544	515	8569.1	3.4	2.4	2.08	743
Greece	1478	491	8357.3	5.0	2.4	4.47	330
Hong Kong	2375	586	6578.2	4.7	1.7	7.99	297
Hungary	1474	552	8161.0	4.2	2.4	3.23	456
Iceland	880	474	5245.0	3.3	2.4	1.82	482
Iran, Islamic Rep.	1730	433	5133.8	6.0	1.7	11.96	145
Ireland	1452	548	7685.2	3.9	2.3	2.86	508
Israel	1085	537	6743.6	4.4	2.5	3.18	342
Japan	2153	601	7271.4	2.5	1.8	1.90	1131
Korea	1424	618	5553.3	2.5	2.0	1.64	871
Kuwait	2066	399	5138.2	4.6	1.6	8.59	240
Latvia (LSS)	1128	521	7591.3	5.5	2.6	4.45	254
Netherlands	1258	585	5052.5	3.8	2.0	3.67	342
New Zealand	1183	494	9077.0	5.7	2.8	4.25	278
Norway	1167	504	5830.9	3.5	2.2	2.39	488
Portugal	1459	478	6616.2	3.8	2.1	3.16	461
Scotland	1651	520	8524.4	4.3	2.3	3.62	456
Singapore	3750	620	11439.1	5.5	1.7	9.96	376
Slovenia	1258	551	6910.2	3.4	2.3	2.08	605
Thailand	1510	485	4881.2	5.8	1.8	10.47	144
United States	3547	545	7478.8	3.1	1.5	4.49	789

*Fourth grade in most countries.

Table C.5 Design Effects and Effective Sample Sizes for Third Grade
Third Grade - Girls - Science Mean Scale Score - Population 1

Country	Sample Size	Mean Mathematics Score	Variance	JRR s.e.	SRS s.e.	Design Effect	Effective Sample Size
Australia	2392	510	8480.4	4.4	1.9	5.42	441
Austria	1261	501	6815.5	4.0	2.3	2.96	426
Canada	3691	486	7081.3	2.9	1.4	4.27	865
Cyprus	1640	412	5023.8	3.0	1.8	2.99	549
Czech Republic	1652	485	6719.7	3.9	2.0	3.70	447
England	1544	495	9085.1	3.4	2.4	1.99	776
Greece	1444	439	6244.4	3.9	2.1	3.59	403
Hong Kong	1969	473	5037.1	3.8	1.6	5.57	354
Hungary	1492	460	7694.0	4.7	2.3	4.33	344
Iceland	854	431	6215.0	3.9	2.7	2.07	412
Iran, Islamic Rep.	1744	354	5325.5	5.7	1.7	10.71	163
Ireland	1367	477	7012.8	4.4	2.3	3.81	359
Japan	2109	521	5021.6	2.0	1.5	1.60	1316
Korea	1325	543	4745.0	2.7	1.9	2.08	637
Latvia (LSS)	1043	469	6715.3	4.8	2.5	3.56	293
Netherlands	1379	493	4005.3	3.1	1.7	3.26	423
New Zealand	1289	476	9191.5	5.7	2.7	4.58	281
Norway	1069	444	7822.6	4.5	2.7	2.83	378
Portugal	1288	415	8854.6	5.4	2.6	4.17	309
Scotland	1576	482	9221.2	4.7	2.4	3.77	419
Singapore	3378	484	8626.1	5.2	1.6	10.43	324
Slovenia	1233	478	5630.6	3.4	2.1	2.55	483
Thailand	1439	437	5796.3	7.1	2.0	12.45	116
United States	1857	508	8156.9	3.2	2.1	2.34	795

*Third grade in most countries.

Table C.6 Design Effects and Effective Sample Sizes by Grade and Gender
Third Grade - Boys - Science Mean Scale Score - Population 1

Country	Sample Size	Mean Mathematics Score	Variance	JRR s.e.	SRS s.e.	Design Effect	Effective Sample Size
Australia	2348	511	10681.9	5.7	2.1	7.24	324
Austria	1243	508	8383.9	6.9	2.6	6.98	178
Canada	3754	496	8245.4	3.2	1.5	4.77	786
Cyprus	1636	418	5641.8	2.7	1.9	2.09	783
Czech Republic	1604	503	7440.8	4.1	2.2	3.62	444
England	1512	503	11134.2	4.8	2.7	3.17	478
Greece	1508	453	7238.1	4.6	2.2	4.34	347
Hong Kong	2412	488	5557.3	3.4	1.5	5.13	470
Hungary	1456	472	7907.7	4.2	2.3	3.21	454
Iceland	844	440	7234.9	4.0	2.9	1.91	443
Iran, Islamic Rep.	1616	359	6287.3	5.7	2.0	8.41	192
Ireland	1522	481	8306.6	4.6	2.3	3.91	389
Japan	2197	523	5511.5	2.1	1.6	1.68	1306
Korea	1452	562	5261.1	2.8	1.9	2.17	671
Latvia (LSS)	1010	462	6902.6	5.2	2.6	3.95	256
Netherlands	1391	504	4006.0	3.8	1.7	4.93	282
New Zealand	1213	470	10635.2	5.9	3.0	3.95	307
Norway	1102	457	8321.2	4.6	2.7	2.75	401
Portugal	1362	431	9308.7	4.3	2.6	2.75	495
Scotland	1537	485	8756.5	4.4	2.4	3.47	442
Singapore	3645	491	10774.5	5.8	1.7	11.25	324
Slovenia	1288	496	6372.6	3.4	2.2	2.27	568
Thailand	1430	428	6201.3	6.5	2.1	9.85	145
United States	1962	514	9369.8	4.2	2.2	3.62	542

*Third grade in most countries.

Table C.7 Design Effects and Effective Sample Sizes by Grade and Gender
Fourth Grade - Girls - Science Mean Scale Score - Population 1

Country	Sample Size	Mean Mathematics Score	Variance	JRR s.e.	SRS s.e.	Design Effect	Effective Sample Size
Australia	3252	556	7786.5	3.3	1.5	4.58	710
Austria	1262	556	6235.8	3.7	2.2	2.72	463
Canada	4063	545	6794.4	3.2	1.3	5.98	679
Cyprus	1657	471	5174.6	3.1	1.8	3.05	544
Czech Republic	1707	548	6520.7	3.6	2.0	3.43	498
England	1582	548	8066.4	3.4	2.3	2.30	689
Greece	1575	494	6724.6	4.3	2.1	4.27	369
Hong Kong	2013	526	5329.0	3.8	1.6	5.35	376
Hungary	1462	525	6269.7	3.9	2.1	3.47	421
Iceland	929	496	6552.0	3.3	2.7	1.53	609
Iran, Islamic Rep.	1655	412	5212.4	4.7	1.8	7.09	233
Ireland	1421	536	6743.7	4.5	2.2	4.22	337
Israel	1097	501	7313.7	3.8	2.6	2.19	501
Japan	2153	567	4638.2	2.0	1.5	1.92	1120
Korea	1388	590	4331.6	2.5	1.8	1.94	717
Kuwait	2252	414	5642.2	3.1	1.6	3.88	581
Latvia (LSS)	1088	513	6470.9	5.5	2.4	5.11	213
Netherlands	1238	544	4074.8	3.5	1.8	3.72	333
New Zealand	1238	535	7932.0	4.8	2.5	3.58	346
Norway	1025	526	6646.3	3.7	2.5	2.07	495
Portugal	1393	478	6630.5	4.2	2.2	3.64	383
Scotland	1639	533	7938.8	4.3	2.2	3.87	423
Singapore	3383	545	8672.1	6.3	1.6	15.28	221
Slovenia	1282	544	5550.8	4.0	2.1	3.63	353
Thailand	1480	474	4761.9	4.3	1.8	5.87	252
United States	3749	560	8555.8	3.3	1.5	4.77	786

*Fourth grade in most countries.

Table C.8 Design Effects and Effective Sample Sizes by Grade and Gender
Fourth Grade - Boys - Science Mean Scale Score - Population 1

Country	Sample Size	Mean Mathematics Score	Variance	JRR s.e.	SRS s.e.	Design Effect	Effective Sample Size
Australia	3240	569	9512.0	3.4	1.7	3.92	826
Austria	1341	572	6436.0	3.9	2.2	3.10	432
Canada	4172	553	7962.9	3.7	1.4	7.10	588
Cyprus	1705	480	6193.5	4.0	1.9	4.43	385
Czech Republic	1561	565	6530.1	3.4	2.0	2.83	552
England	1544	555	10354.3	4.0	2.6	2.42	638
Greece	1478	501	7034.7	4.5	2.2	4.19	352
Hong Kong	2375	540	6471.7	4.1	1.7	6.31	377
Hungary	1474	539	6562.3	3.8	2.1	3.21	459
Iceland	880	514	7745.3	4.3	3.0	2.11	417
Iran, Islamic Rep.	1730	421	5823.6	5.9	1.8	10.33	167
Ireland	1452	543	7653.8	3.5	2.3	2.37	612
Israel	1085	512	7498.8	4.5	2.6	2.90	375
Japan	2153	580	5860.0	2.0	1.6	1.47	1469
Korea	1424	604	4845.5	2.2	1.8	1.48	960
Kuwait	2066	389	8452.5	5.8	2.0	8.19	252
Latvia (LSS)	1128	512	7549.6	5.4	2.6	4.35	260
Netherlands	1258	570	4267.7	3.6	1.8	3.77	334
New Zealand	1183	527	10907.7	6.1	3.0	3.99	296
Norway	1167	534	8014.0	4.7	2.6	3.19	366
Portugal	1459	481	7591.0	4.5	2.3	3.97	367
Scotland	1651	538	9535.3	4.5	2.4	3.49	473
Singapore	3750	549	10125.2	5.4	1.6	10.78	348
Slovenia	1258	548	6033.5	3.3	2.2	2.30	546
Thailand	1510	471	5256.3	5.9	1.9	9.87	153
United States	3547	571	9443.4	3.3	1.6	4.02	883

*Fourth grade in most countries.

Table C.9 Design Effects and Effective Sample Sizes by Grade and Gender
Seventh Grade - Girls - Mathematics Mean Scale Score - Population 2

Country	Sample Size	Mean Mathematics Score	Variance	JRR s.e.	SRS s.e.	Design Effect	Effective Sample Size
Australia	3039	500	8028.7	4.3	1.6	7.07	430
Austria	1545	509	6629.4	3.3	2.1	2.50	618
Belgium (Fl)	1344	559	6029.3	4.7	2.1	4.95	272
Belgium (Fr)	1196	501	5806.2	4.2	2.2	3.60	332
Bulgaria	960	518	10583.9	8.7	3.3	6.82	141
Canada	3957	493	6416.9	2.6	1.3	4.19	944
Colombia	1359	365	4029.5	3.9	1.7	5.05	269
Cyprus	1428	446	6137.9	2.6	2.1	1.62	883
Czech Republic	1682	520	7757.4	5.6	2.1	6.91	243
Denmark	1039	462	5807.6	2.9	2.4	1.53	681
England	825	467	7713.5	4.3	3.1	2.00	413
France	1439	489	5193.6	3.3	1.9	3.06	471
Germany	1427	484	6937.2	4.5	2.2	4.12	346
Greece	1902	440	6822.5	3.0	1.9	2.57	739
Hong Kong	1499	556	8894.4	8.3	2.4	11.54	130
Hungary	1533	501	7727.3	4.4	2.2	3.91	392
Iceland	947	458	4576.4	3.2	2.2	2.11	449
Iran, Islamic Rep.	1646	393	3048.4	2.3	1.4	2.94	560
Ireland	1678	494	7375.4	4.8	2.1	5.34	314
Japan	2500	565	8335.0	2.0	1.8	1.17	2133
Korea	1254	567	10791.0	4.4	2.9	2.23	563
Latvia (LSS)	1317	460	5728.4	3.3	2.1	2.53	521
Lithuania	1277	433	5355.0	3.5	2.0	2.90	440
Netherlands	1037	515	5978.8	4.3	2.4	3.17	327
New Zealand	1498	470	7104.9	3.8	2.2	3.03	494
Norway	1212	459	5696.5	3.2	2.2	2.17	559
Portugal	1732	420	3457.3	2.2	1.4	2.50	692
Romania	1931	452	7069.2	3.7	1.9	3.68	525
Russian Federation	2137	499	7254.5	3.5	1.8	3.52	607
Scotland	1440	462	6213.2	3.8	2.1	3.30	437
Singapore	1873	601	8525.2	8.0	2.1	13.97	134
Slovak Republic	1823	505	6849.4	3.3	1.9	2.90	629
Slovenia	1486	496	6649.1	3.2	2.1	2.32	641
South Africa	2818	344	3633.6	3.3	1.1	8.31	339
Spain	1892	445	4511.7	2.7	1.5	3.06	618
Sweden	1374	475	5806.3	3.2	2.1	2.47	557
Switzerland	2019	498	5433.0	2.6	1.6	2.46	822
Thailand	3301	495	6186.0	5.7	1.4	17.34	190
United States	1976	473	7400.7	5.7	1.9	8.80	224

*Seventh grade in most countries.

Table C.10 Design Effects and Effective Sample Sizes by Grade and Gender
Seventh Grade - Boys - Mathematics Mean Scale Score - Population 2

Country	Sample Size	Mean Mathematics Score	Variance	JRR s.e.	SRS s.e.	Design Effect	Effective Sample Size
Australia	2560	495	8863.9	5.2	1.9	7.82	327
Austria	1358	510	7984.1	4.6	2.4	3.57	380
Belgium (Fl)	1424	557	5727.0	4.5	2.0	4.97	286
Belgium (Fr)	1052	514	6254.9	4.1	2.4	2.88	365
Bulgaria	820	508	10781.7	6.9	3.6	3.58	229
Canada	4144	495	6354.5	2.7	1.2	4.79	865
Colombia	1265	372	3903.3	3.8	1.8	4.73	268
Cyprus	1496	446	7319.7	2.5	2.2	1.30	1153
Czech Republic	1663	527	8172.0	4.8	2.2	4.64	358
Denmark	998	468	6299.4	2.8	2.5	1.21	825
England	978	484	8266.8	6.2	2.9	4.52	217
France	1484	497	5565.7	3.6	1.9	3.48	426
Germany	1426	486	7385.4	4.8	2.3	4.50	317
Greece	2022	440	7728.9	3.2	2.0	2.76	732
Hong Kong	1910	570	10521.1	9.7	2.3	17.25	111
Hungary	1533	503	8736.1	3.8	2.4	2.52	609
Iceland	1010	460	4610.4	2.7	2.1	1.62	622
Iran, Islamic Rep.	2074	407	3292.0	2.7	1.3	4.47	464
Ireland	1449	507	7636.7	6.0	2.3	6.76	214
Japan	2630	576	9990.9	2.7	1.9	1.95	1349
Korea	1653	584	10905.9	3.7	2.6	2.08	796
Latvia (LSS)	1244	463	5971.9	3.5	2.2	2.55	488
Lithuania	1254	423	5909.5	3.6	2.2	2.72	461
Netherlands	1053	517	6466.6	5.2	2.5	4.35	242
New Zealand	1686	473	7918.9	4.6	2.2	4.44	380
Norway	1257	462	5852.6	3.3	2.2	2.30	547
Portugal	1630	426	3669.4	2.7	1.5	3.28	496
Romania	1812	457	7094.4	3.7	2.0	3.44	526
Russian Federation	2001	502	8325.3	5.1	2.0	6.18	324
Scotland	1462	465	7097.7	4.6	2.2	4.30	340
Singapore	1768	601	8862.3	7.1	2.2	10.15	174
Slovak Republic	1777	511	7629.3	4.4	2.1	4.58	388
Slovenia	1411	501	6776.2	3.5	2.2	2.53	557
South Africa	2432	352	4482.7	5.3	1.4	15.10	161
Spain	1849	451	5141.5	2.7	1.7	2.68	689
Sweden	1444	480	5883.7	2.8	2.0	1.87	773
Switzerland	2059	513	5840.9	2.9	1.7	2.95	698
Thailand	2440	494	6133.0	4.8	1.6	9.21	265
United States	1910	478	8526.8	5.7	2.1	7.41	258

*Seventh grade in most countries.

Table C.11 Design Effects and Effective Sample Sizes by Grade and Gender
Eighth Grade - Girls - Mathematics Mean Scale Score - Population 2

Country	Sample Size	Mean Mathematics Score	Variance	JRR s.e.	SRS s.e.	Design Effect	Effective Sample Size
Australia	3722	532	9302.1	4.6	1.6	8.40	443
Austria	1321	536	8115.5	4.5	2.5	3.37	392
Belgium (Fl)	1437	567	7708.7	7.4	2.3	10.29	140
Belgium (Fr)	1291	524	6949.1	3.7	2.3	2.53	510
Bulgaria	1015	546	12872.6	6.7	3.6	3.52	288
Canada	4088	530	7071.2	2.7	1.3	4.08	1001
Colombia	1383	384	3965.7	3.6	1.7	4.45	311
Cyprus	1424	475	7414.2	2.5	2.3	1.22	1171
Czech Republic	1637	558	8624.3	6.3	2.3	7.51	218
Denmark	1120	494	6476.3	3.4	2.4	2.01	558
England	853	504	8193.6	3.5	3.1	1.24	688
France	1430	536	6011.3	3.8	2.1	3.50	408
Germany	1423	509	7826.6	5.0	2.3	4.47	318
Greece	1952	478	7267.8	3.1	1.9	2.62	745
Hong Kong	1508	577	9471.3	7.7	2.5	9.50	159
Hungary	1489	537	8771.5	3.6	2.4	2.26	659
Iceland	868	486	5183.7	5.6	2.4	5.17	168
Iran, Islamic Rep.	1637	421	3453.7	3.3	1.5	5.05	324
Ireland	1535	520	7872.5	6.0	2.3	6.99	220
Israel	668	509	8153.0	6.9	3.5	3.87	173
Japan	2495	600	9371.2	2.1	1.9	1.22	2052
Korea	1335	598	11732.9	3.4	3.0	1.32	1008
Kuwait	897	395	3035.4	2.6	1.8	2.01	447
Latvia (LSS)	1259	491	6749.7	3.5	2.3	2.32	543
Lithuania	1385	478	6512.4	4.1	2.2	3.57	388
Netherlands	977	536	7782.7	6.4	2.8	5.21	188
New Zealand	1775	503	7697.4	5.3	2.1	6.42	276
Norway	1634	501	6436.7	2.7	2.0	1.81	902
Portugal	1663	449	4045.5	2.7	1.6	3.03	550
Romania	1914	480	7590.0	4.0	2.0	3.99	480
Russian Federation	2151	536	7548.9	5.0	1.9	7.09	304
Scotland	1380	490	7301.7	5.2	2.3	5.20	265
Singapore	2307	645	7716.2	5.4	1.8	8.87	260
Slovak Republic	1785	545	8027.6	3.6	2.1	2.90	616
Slovenia	1381	537	7587.4	3.3	2.3	1.97	701
South Africa	2319	349	3899.5	4.1	1.3	9.97	233
Spain	2007	483	5174.3	2.6	1.6	2.58	778
Sweden	1979	518	7408.4	3.1	1.9	2.61	758
Switzerland	2411	543	7205.7	3.1	1.7	3.27	738
Thailand	3390	526	7565.4	7.0	1.5	22.19	153
United States	3561	497	7835.0	4.5	1.5	9.09	392

*Eighth grade in most countries.

Table C.12 Design Effects and Effective Sample Sizes by Grade and Gender
Eighth Grade - Boys - Mathematics Mean Scale Score - Population 2

Country	Sample Size	Mean Mathematics Score	Variance	JRR s.e.	SRS s.e.	Design Effect	Effective Sample Size
Australia	3529	527	9985.3	5.1	1.7	9.21	383
Austria	1385	544	8761.6	3.2	2.5	1.65	838
Belgium (Fl)	1457	563	9152.1	8.8	2.5	12.30	118
Belgium (Fr)	1269	530	7792.1	4.7	2.5	3.62	351
Bulgaria	942	533	11266.3	7.0	3.5	4.05	233
Canada	4137	526	7791.3	3.2	1.4	5.60	739
Colombia	1240	386	4301.5	6.9	1.9	13.62	91
Cyprus	1494	472	7922.9	2.8	2.3	1.43	1041
Czech Republic	1690	569	8857.7	4.5	2.3	3.91	432
Denmark	1147	511	7370.5	3.2	2.5	1.57	731
England	923	508	9040.6	5.1	3.1	2.66	347
France	1449	542	5523.3	3.1	2.0	2.50	581
Germany	1410	512	7917.4	5.1	2.4	4.67	302
Greece	2037	490	8222.2	3.7	2.0	3.40	599
Hong Kong	1829	597	10604.4	7.7	2.4	10.20	179
Hungary	1423	537	8507.3	3.6	2.4	2.20	646
Iceland	905	488	6336.3	5.5	2.6	4.37	207
Iran, Islamic Rep.	2043	434	3480.5	2.9	1.3	4.97	411
Ireland	1541	535	9160.1	7.2	2.4	8.65	178
Israel	672	539	8009.0	6.6	3.5	3.70	182
Japan	2646	609	11296.9	2.6	2.1	1.53	1731
Korea	1585	615	11807.6	3.2	2.7	1.39	1142
Kuwait	758	389	3587.4	4.3	2.2	3.87	196
Latvia (LSS)	1148	496	6731.8	3.8	2.4	2.42	474
Lithuania	1140	477	6318.6	4.0	2.4	2.91	392
Netherlands	980	545	8010.3	7.8	2.9	7.43	132
New Zealand	1908	512	8530.1	5.9	2.1	7.70	248
Norway	1633	505	7630.9	2.8	2.2	1.66	983
Portugal	1728	460	4046.0	2.8	1.5	3.44	502
Romania	1809	483	8337.4	4.8	2.1	4.97	364
Russian Federation	1871	535	9470.6	6.3	2.2	7.81	240
Scotland	1477	506	7843.3	6.6	2.3	8.09	182
Singapore	2334	642	7831.0	6.3	1.8	11.72	199
Slovak Republic	1716	549	8928.0	3.7	2.3	2.68	640
Slovenia	1324	545	7799.4	3.8	2.4	2.41	550
South Africa	2089	360	4607.3	6.3	1.5	18.18	115
Spain	1848	492	5584.6	2.5	1.7	2.15	860
Sweden	2084	520	7174.4	3.6	1.9	3.67	568
Switzerland	2443	548	8096.7	3.5	1.8	3.69	662
Thailand	2407	517	6963.9	5.6	1.7	10.96	220
United States	3526	502	8677.3	5.2	1.6	11.04	319

*Eighth grade in most countries.

Table C.13 Design Effects and Effective Sample Sizes by Grade and Gender
Seventh Grade - Girls - Science Mean Scale Score - Population 2

Country	Sample Size	Mean Mathematics Score	Variance	JRR s.e.	SRS s.e.	Design Effect	Effective Sample Size
Australia	3039	502	9598.9	4.0	1.8	5.02	606
Austria	1545	516	8144.0	4.1	2.3	3.23	479
Belgium (Fl)	1344	521	4989.4	3.1	1.9	2.58	521
Belgium (Fr)	1196	432	6013.7	3.5	2.2	2.45	489
Bulgaria	960	532	11059.2	6.7	3.4	3.90	246
Canada	3957	493	7081.5	2.5	1.3	3.54	1118
Colombia	1359	378	4801.4	4.4	1.9	5.38	252
Cyprus	1428	420	6702.3	2.6	2.2	1.47	974
Czech Republic	1682	523	6470.0	4.1	2.0	4.42	381
Denmark	1039	427	6882.8	2.8	2.6	1.17	885
England	825	500	9404.8	4.6	3.4	1.86	444
France	1439	443	5146.2	3.0	1.9	2.56	563
Germany	1427	495	8645.7	4.5	2.5	3.36	425
Greece	1902	446	7212.3	2.8	1.9	2.01	945
Hong Kong	1499	485	6902.6	5.8	2.1	7.27	206
Hungary	1533	510	7850.7	3.4	2.3	2.21	695
Iceland	947	456	5275.5	2.4	2.4	1.04	914
Iran, Islamic Rep.	1646	428	4407.0	4.1	1.6	6.21	265
Ireland	1678	487	8188.9	4.5	2.2	4.20	400
Japan	2500	526	6834.2	1.9	1.7	1.28	1957
Korea	1254	521	8123.3	3.2	2.5	1.57	798
Latvia (LSS)	1317	430	5541.3	3.0	2.1	2.13	619
Lithuania	1277	401	5986.9	4.2	2.2	3.79	337
Netherlands	1037	512	6017.9	4.4	2.4	3.26	318
New Zealand	1498	472	8435.2	3.7	2.4	2.47	606
Norway	1212	477	6495.1	3.6	2.3	2.47	491
Portugal	1732	420	4681.3	2.4	1.6	2.08	832
Romania	1931	448	9803.8	4.9	2.3	4.65	415
Russian Federation	2137	475	7896.0	3.8	1.9	3.86	553
Scotland	1440	459	8033.4	4.1	2.4	2.97	484
Singapore	1873	541	9661.7	8.2	2.3	13.18	142
Slovak Republic	1823	499	6791.5	3.1	1.9	2.66	685
Slovenia	1486	521	7294.2	2.8	2.2	1.54	963
South Africa	2818	312	8343.5	5.2	1.7	9.21	306
Spain	1892	467	5840.6	2.3	1.8	1.77	1066
Sweden	1374	484	6542.8	3.3	2.2	2.31	596
Switzerland	2019	475	6404.6	2.9	1.8	2.62	769
Thailand	3301	492	4578.6	3.5	1.2	8.71	379
United States	1976	502	10022.5	5.8	2.3	6.73	294

*Seventh grade in most countries.

Table C.14 Design Effects and Effective Sample Sizes by Grade and Gender
Seventh Grade - Boys - Science Mean Scale Score - Population 2

Country	Sample Size	Mean Mathematics Score	Variance	JRR s.e.	SRS s.e.	Design Effect	Effective Sample Size
Australia	2560	507	11508.3	5.2	2.1	6.12	419
Austria	1358	522	9589.6	4.3	2.7	2.61	520
Belgium (Fl)	1424	536	5587.0	3.3	2.0	2.79	510
Belgium (Fr)	1052	453	6106.0	3.6	2.4	2.22	473
Bulgaria	820	529	10112.7	5.5	3.5	2.44	336
Canada	4144	505	8850.7	2.9	1.5	3.91	1059
Colombia	1265	396	5438.0	3.8	2.1	3.31	383
Cyprus	1496	420	8350.1	2.8	2.4	1.44	1039
Czech Republic	1663	543	6695.9	3.2	2.0	2.54	655
Denmark	998	452	7845.4	3.0	2.8	1.17	850
England	978	522	10692.2	5.6	3.3	2.88	339
France	1484	461	5770.1	3.1	2.0	2.39	620
Germany	1426	505	9470.3	4.9	2.6	3.59	398
Greece	2022	452	8012.7	3.2	2.0	2.53	799
Hong Kong	1910	503	7787.9	6.6	2.0	10.56	181
Hungary	1533	525	8743.1	3.9	2.4	2.63	583
Iceland	1010	468	5927.2	4.4	2.4	3.29	307
Iran, Islamic Rep.	2074	443	5567.5	2.9	1.6	3.13	662
Ireland	1449	504	8247.1	4.6	2.4	3.69	393
Japan	2630	536	7934.0	2.6	1.7	2.27	1157
Korea	1653	545	8379.9	2.8	2.3	1.52	1087
Latvia (LSS)	1244	440	6567.0	3.6	2.3	2.44	509
Lithuania	1254	405	6627.3	3.5	2.3	2.34	536
Netherlands	1053	523	6411.8	4.0	2.5	2.68	392
New Zealand	1686	489	9947.8	4.3	2.4	3.12	540
Norway	1257	489	7792.2	3.6	2.5	2.10	597
Portugal	1630	436	5428.7	2.4	1.8	1.75	934
Romania	1812	456	10204.2	4.7	2.4	3.85	471
Russian Federation	2001	493	9767.5	5.3	2.2	5.72	350
Scotland	1462	477	9373.9	4.4	2.5	3.00	487
Singapore	1768	548	10374.7	7.9	2.4	10.69	165
Slovak Republic	1777	520	7438.7	4.0	2.0	3.88	458
Slovenia	1411	539	7314.7	3.0	2.3	1.72	822
South Africa	2432	324	8581.3	6.4	1.9	11.64	209
Spain	1849	487	6710.8	2.9	1.9	2.36	783
Sweden	1444	493	7554.1	2.9	2.3	1.60	901
Switzerland	2059	492	6857.1	2.9	1.8	2.55	806
Thailand	2440	495	5067.2	3.3	1.4	5.14	475
United States	1910	514	11944.2	6.3	2.5	6.30	303

*Seventh grade in most countries.

Table C.15 Design Effects and Effective Sample Sizes by Grade and Gender
Eighth Grade - Girls - Science Mean Scale Score - Population 2

Country	Sample Size	Mean Mathematics Score	Variance	JRR s.e.	SRS s.e.	Design Effect	Effective Sample Size
Australia	3722	540	10513.8	4.1	1.7	5.89	632
Austria	1321	549	9605.5	4.6	2.7	2.90	456
Belgium (Fl)	1437	543	6257.4	5.8	2.1	7.82	184
Belgium (Fr)	1291	463	6553.6	2.9	2.3	1.69	762
Bulgaria	1015	567	12463.5	6.6	3.5	3.52	288
Canada	4088	525	7980.0	3.7	1.4	7.00	584
Colombia	1383	405	5085.8	4.6	1.9	5.68	243
Cyprus	1424	465	6817.8	2.7	2.2	1.48	962
Czech Republic	1637	562	7271.7	5.8	2.1	7.54	217
Denmark	1120	463	6918.3	3.9	2.5	2.49	450
England	853	542	10490.9	4.2	3.5	1.46	584
France	1430	490	5864.9	3.3	2.0	2.66	538
Germany	1423	524	9847.1	4.9	2.6	3.43	415
Greece	1952	489	7083.1	3.1	1.9	2.59	754
Hong Kong	1508	507	7348.2	5.1	2.2	5.40	279
Hungary	1489	545	8179.2	3.4	2.3	2.15	691
Iceland	868	486	5479.2	4.6	2.5	3.39	256
Iran, Islamic Rep.	1637	461	4540.2	3.2	1.7	3.66	448
Ireland	1535	532	8392.9	5.2	2.3	4.97	309
Israel	668	512	9559.9	6.1	3.8	2.62	255
Japan	2495	562	7380.0	2.0	1.7	1.34	1865
Korea	1335	551	8213.4	2.3	2.5	0.90	1490
Kuwait	897	444	4820.0	3.3	2.3	1.97	455
Latvia (LSS)	1259	478	6267.9	3.2	2.2	1.99	631
Lithuania	1385	470	6502.9	4.0	2.2	3.39	409
Netherlands	977	550	6933.5	4.9	2.7	3.36	291
New Zealand	1775	512	8964.8	5.2	2.2	5.42	328
Norway	1634	520	6875.8	2.0	2.1	0.96	1703
Portugal	1663	468	5394.9	2.7	1.8	2.31	721
Romania	1914	480	9889.9	5.0	2.3	4.76	403
Russian Federation	2151	533	8690.2	3.7	2.0	3.45	623
Scotland	1380	507	9287.9	4.7	2.6	3.23	427
Singapore	2307	603	9058.1	7.0	2.0	12.54	184
Slovak Republic	1785	537	8404.9	3.9	2.2	3.26	547
Slovenia	1381	548	7147.1	3.2	2.3	2.00	689
South Africa	2319	315	8785.8	6.0	1.9	9.66	240
Spain	2007	508	5997.1	2.3	1.7	1.84	1093
Sweden	1979	528	7871.6	3.4	2.0	2.88	688
Switzerland	2411	514	7600.5	3.0	1.8	2.81	857
Thailand	3390	526	5233.5	4.3	1.2	11.83	287
United States	3561	530	10269.7	5.2	1.7	9.56	373

*Eighth grade in most countries.

Table C.16 Design Effects and Effective Sample Sizes by Grade and Gender
Eighth Grade - Boys - Science Mean Scale Score - Population 2

Country	Sample Size	Mean Mathematics Score	Variance	JRR s.e.	SRS s.e.	Design Effect	Effective Sample Size
Australia	3529	550	12105.8	5.2	1.9	7.97	443
Austria	1385	566	9472.1	4.0	2.6	2.29	604
Belgium (Fl)	1457	558	6792.1	6.0	2.2	7.77	187
Belgium (Fr)	1269	479	7945.0	4.8	2.5	3.72	341
Bulgaria	942	563	12051.1	5.7	3.6	2.50	377
Canada	4137	537	9095.2	3.1	1.5	4.35	952
Colombia	1240	418	6294.6	7.3	2.3	10.42	119
Cyprus	1494	461	8717.2	2.2	2.4	0.82	1819
Czech Republic	1690	586	7575.8	4.2	2.1	3.99	424
Denmark	1147	494	8108.4	3.6	2.7	1.85	619
England	923	562	11659.4	5.6	3.6	2.52	367
France	1449	506	5815.9	2.7	2.0	1.88	770
Germany	1410	542	10144.9	5.9	2.7	4.78	295
Greece	2037	505	7233.9	2.6	1.9	1.83	1112
Hong Kong	1829	535	8014.9	5.5	2.1	6.78	270
Hungary	1423	563	7859.3	3.1	2.4	1.79	793
Iceland	905	501	6846.9	5.1	2.8	3.48	260
Iran, Islamic Rep.	2043	477	5716.0	3.8	1.7	5.08	402
Ireland	1541	544	9812.7	6.6	2.5	6.90	223
Israel	672	545	10654.2	6.4	4.0	2.59	260
Japan	2646	579	8655.3	2.4	1.8	1.78	1488
Korea	1585	576	8967.1	2.7	2.4	1.27	1250
Kuwait	758	416	5709.8	6.6	2.7	5.82	130
Latvia (LSS)	1148	492	6804.9	3.3	2.4	1.88	611
Lithuania	1140	484	6538.1	3.8	2.4	2.56	445
Netherlands	980	570	7295.0	6.4	2.7	5.54	177
New Zealand	1908	538	10562.9	5.4	2.4	5.35	356
Norway	1633	534	8300.1	3.2	2.3	2.05	798
Portugal	1728	490	5259.4	2.8	1.7	2.53	684
Romania	1809	492	10726.4	5.3	2.4	4.79	378
Russian Federation	1871	544	9449.0	4.9	2.2	4.75	394
Scotland	1477	527	10320.9	6.4	2.6	5.87	251
Singapore	2334	612	9069.5	6.7	2.0	11.68	200
Slovak Republic	1716	552	8393.3	3.5	2.2	2.49	688
Slovenia	1324	573	7952.9	3.2	2.5	1.69	781
South Africa	2089	337	10448.0	9.5	2.2	18.08	116
Spain	1848	526	5980.2	2.1	1.8	1.31	1408
Sweden	2084	542	8332.6	3.4	2.0	2.94	709
Switzerland	2443	529	8782.2	3.2	1.9	2.81	868
Thailand	2407	524	5186.1	3.9	1.5	7.20	335
United States	3526	539	12027.6	4.9	1.8	7.09	497

*Eighth grade in most countries.

Appendix D: Dummy Variables Constructed for Conditioning

Table D.1 Dummy Variable Construction for Input into Principal Components Population 1

Variable Name	Variable Label	Original Coding	New Coding
ASBGBRN1	GEN\BORN IN COUNTRY	yes:1; no:2; missing:9; not admin.:8;	1 0 0 1 0 0 0 0
ASBGBRN2	GEN\BORN IN COUNTRY\AGE	age when moved to country: 1-15; missing:99; not admin.:98;	1-15 0 0 1 0 1
ASBGLANG	GEN\SPEAK LANGUAGE OF TEST AT HOME	always or almost always:1; sometimes:2; never:3; missing:9; not admin.:8;	1 0 0 0 1 0 0 0 1 0 0 0 0 0 0
ASBMEXTR	MAT\OUTSIDE SCHL\EXTRA LESSONS	yes:1; no:2; missing:9; not admin.:8;	1 0 0 1 0 0 0 0
ASBSEXTR	SCI\OUTSIDE SCHL\EXTRA LESSONS	yes:1; no:2; missing:9; not admin.:8;	1 0 0 1 0 0 0 0
ASBGCLUB	GEN\OUTSIDE SCHL\CLUBS PARTICIPATION	yes:1; no:2; missing:9; not admin.:8;	1 0 0 1 0 0 0 0
ASBGDAY1	GEN\OUTSIDE SCHL\WATCH TY OR VIDEOS	no time:1; less than 1 hour:2; 1-2 hours:3; 3-4 hours:4; more than 4 hours:5; missing:9; not admin.:8;	0 0 0.5 0 1.5 0 4 0 6 0 0 1 0 1

Table D.1 Dummy Variable Construction for Input into Principal Components Population 1(Continued)

Variable Name	Variable Label	Original Coding	New Coding
ASBGDAY2	GEN\OUTSIDE SCHL\PLAY COMPUTER GAMES	no time:1; less than 1 hour:2; 1-2 hours:3; 3-4 hours:4; more than 4 hours:5; missing:9; not admin.:8;	0 0 0.5 0 1.5 0 4 0 6 0 0 1 0 1
ASBGDAY3	GEN\OUTSIDE SCHL\PLAY WITH FRIENDS	no time:1; less than 1 hour:2; 1-2 hours:3; 3-4 hours:4; more than 4 hours:5; missing:9; not admin.:8;	0 0 0.5 0 1.5 0 4 0 6 0 0 1 0 1
ASBGDAY4	GEN\OUTSIDE SCHL\DOING JOBS AT HOME	no time:1; less than 1 hour:2; 1-2 hours:3; 3-4 hours:4; more than 4 hours:5; missing:9; not admin.:8;	0 0 0.5 0 1.5 0 4 0 6 0 0 1 0 1
ASBGDAY5	GEN\OUTSIDE SCHL\PLAYING SPORTS	no time:1; less than 1 hour:2; 1-2 hours:3; 3-4 hours:4; more than 4 hours:5; missing:9; not admin.:8;	0 0 0.5 0 1.5 0 4 0 6 0 0 1 0 1
ASBGDAY6	GEN\OUTSIDE SCHL\READING A BOOK	no time:1; less than 1 hour:2; 1-2 hours:3; 3-4 hours:4; more than 4 hours:5; missing:9; not admin.:8;	0 0 0.5 0 1.5 0 4 0 6 0 0 1 0 1
ASBMDAY7	MAT\OUTSIDE SCHL\STUDYING MATH	no time:1; less than 1 hour:2; 1-2 hours:3; 3-4 hours:4; more than 4 hours:5; missing:9; not admin.:8;	0 0 0.5 0 1.5 0 4 0 6 0 0 1 0 1

Table D.1 Dummy Variable Construction for Input into Principal Components Population 1(Continued)

Variable Name	Variable Label	Original Coding	New Coding
ASBSDAY8	SCI\OUTSIDE SCHL\STUDYING SCIENCE	no time:1; less than 1 hour:2; 1-2 hours:3; 3-4 hours:4; more than 4 hours:5; missing:9; not admin.:8;	0 0 0.5 0 1.5 0 4 0 6 0 0 1 0 1
ASBGDAY9	GEN\OUTSIDE SCHL\STUDYING OTHER SUBJ	no time:1; less than 1 hour:2; 1-2 hours:3; 3-4 hours:4; more than 4 hours:5; missing:9; not admin.:8;	0 0 0.5 0 1.5 0 4 0 6 0 0 1 0 1
ASBGADU1	GEN\STUDENT LIVES WITH\MOTHER	yes:1; no:2; missing:9; not admin.:8;	1 0 0 1 0 0 0 0
ASBGADU2	GEN\STUDENT LIVES WITH\FATHER	yes:1; no:2; missing:9; not admin.:8;	1 0 0 1 0 0 0 0
ASBGADU3	GEN\STUDENT LIVES WITH\BROTHER(S)	yes:1; no:2; missing:9; not admin.:8;	1 0 0 1 0 0 0 0
ASBGADU4	GEN\STUDENT LIVES WITH\SISTER(S)	yes:1; no:2; missing:9; not admin.:8;	1 0 0 1 0 0 0 0
ASBGADU5	GEN\STUDENT LIVES WITH\STEPMOTHER	yes:1; no:2; missing:9; not admin.:8;	1 0 0 1 0 0 0 0
ASBGADU6	GEN\STUDENT LIVES WITH\STEPFATHER	yes:1; no:2; missing:9; not admin.:8;	1 0 0 1 0 0 0 0
ASBGADU7	GEN\STUDENT LIVES WITH\GRANDPRNT(S)	yes:1; no:2; missing:9; not admin.:8;	1 0 0 1 0 0 0 0
ASBGADU8	GEN\STUDENT LIVES WITH\RELATIVE(S)	yes:1; no:2; missing:9; not admin.:8;	1 0 0 1 0 0 0 0

Table D.1 Dummy Variable Construction for Input into Principal Components Population 1(Continued)

Variable Name	Variable Label	Original Coding	New Coding
ASBGADU9	GEN\STUDENT LIVES WITH\OTHER(S)	yes:1; no:2; missing:9; not admin.:8;	1 0 0 1 0 0 0 0
ASBGHOME	GEN\# OF PEOPLE LIVING IN HOME	number of people:1-60; missing:99; not admin.:98;	1-60 0 0 1 0 1
ASBGBRNM	GEN\BORN IN COUNTRY\MOTHER	yes:1; no:2; missing:9; not admin.:8;	1 0 0 1 0 0 0 0
ASBGBRNF	GEN\BORN IN COUNTRY\FATHER	yes:1; no:2; missing:9; not admin.:8;	1 0 0 1 0 0 0 0
ASBGBOOK	GEN\# OF BOOKS IN STUDENT'S HOME	0-10 books:1; 11-25 books:2; 26-100 books:3; 101-200 books:4; more than 200 books:5; missing:9; not admin.:8;	1 1 0 2 4 0 3 9 0 4 16 0 5 25 0 0 0 1 0 0 1
ASBGPS01	GEN\HOME POSSESS\CALCULA-TOR	yes:1; no:2; missing:9; not admin.:8;	1 0 0 1 0 0 0 0
ASBGPS02	GEN\HOME POSSESS\COMPUTER	yes:1; no:2; missing:9; not admin.:8;	1 0 0 1 0 0 0 0
ASBGPS03	GEN\HOME POSSESS\STUDY DESK	yes:1; no:2; missing:9; not admin.:8;	1 0 0 1 0 0 0 0
ASBGPS04	GEN\HOME POSSESS\DICTIONARY	yes:1; no:2; missing:9; not admin.:8;	1 0 0 1 0 0 0 0
ASBSMIP1	SCI\MOTHER IMPT\DO WELL IN SCI-ENCE	yes:1; no:2; missing:9; not admin.:8;	3 0 2 0 0 1 0 1
ASBMMIP2	MAT\MOTHER IMPT\DO WELL IN MATH	yes:1; no:2; missing:9; not admin.:8;	1 0 0 0 0 1 0 1

Table D.1 Dummy Variable Construction for Input into Principal Components Population 1(Continued)

Variable Name	Variable Label	Original Coding	New Coding
ASBGMIP3	GEN\MOTHER IMPT\GOOD IN SPORTS	yes:1; no:2; missing:9; not admin.:8;	1 0 0 0 0 1 0 1
ASBGMIP4	GEN\MOTHER IMPT\HAVE TIME FOR FUN	yes:1; no:2; missing:9; not admin.:8;	1 0 0 0 0 1 0 1
ASBSFIP1	SCI\FRIENDS IMPT\DO WELL IN SCIENCE	yes:1; no:2; missing:9; not admin.:8;	1 0 0 0 0 1 0 1
ASBMFIP2	MAT\FRIENDS IMPT\DO WELL IN MATH	yes:1; no:2; missing:9; not admin.:8;	1 0 0 0 0 1 0 1
ASBGFIP3	GEN\FRIENDS IMPT\GOOD IN SPORTS	yes:1; no:2; missing:9; not admin.:8;	1 0 0 0 0 1 0 1
ASBGFIP4	GEN\FRIENDS IMPT\HAVE TIME FOR FUN	yes:1; no:2; missing:9; not admin.:8;	1 0 0 0 0 1 0 1
ASBSSIP1	SCI\SELF IMPT\DO WELL IN SCIENCE	yes:1; no:2; missing:9; not admin.:8;	1 0 0 0 0 1 0 1
ASBMSIP2	MAT\SELF IMPT\DO WELL IN MATH	yes:1; no:2; missing:9; not admin.:8;	1 0 0 0 0 1 0 1
ASBGSIP3	GEN\SELF IMPT\GOOD IN SPORTS	yes:1; no:2; missing:9; not admin.:8;	1 0 0 0 0 1 0 1
ASBGSIP4	GEN\SELF IMPT\HAVE TIME FOR FUN	yes:1; no:2; missing:9; not admin.:8;	1 0 0 0 0 1 0 1
ASBM-GOOD	MAT\USUALLY DO WELL IN MATH	strongly agree:1; agree:2; disagree:3; strongly disagree:4; missing:9; not admin.:8;	3 0 2 0 1 0 0 0 0 1 0 1

Table D.1 Dummy Variable Construction for Input into Principal Components Population 1(Continued)

Variable Name	Variable Label	Original Coding	New Coding
ASBSGOOD	SCI\USUALLY DO WELL IN SCIENCE	strongly agree:1; agree:2; disagree:3; strongly disagree:4; missing:9; not admin.:8;	3 0 2 0 1 0 0 0 0 1 0 1
ASBGSSTL	GEN\STUDENT HAD SOMETHING STOLEN	yes:1; no:2; missing:9; not admin.:8;	0 0 1 0 0 1 0 1
ASBGSHRT	GEN\STUDENT THOUGHT MIGHT GET HURT	yes:1; no:2; missing:9; not admin.:8;	0 0 1 0 0 1 0 1
ASBGFSTL	GEN\FRIEND HAD SOMETHING STOLEN	yes:1; no:2; missing:9; not admin.:8;	0 0 1 0 0 1 0 1
ASBGFHRT	GEN\FRIEND THOUGHT MIGHT GET HURT	yes:1; no:2; missing:9; not admin.:8;	0 0 1 0 0 1 0 1
ASBMDOW 1	MAT\DO WELL\NATURAL TALENT	strongly agree:1; agree:2; disagree:3; strongly disagree:4; missing:9; not admin.:8;	3 0 2 0 1 0 0 0 0 1 0 1
ASBMDOW 2	MAT\DO WELL\GOOD LUCK	strongly agree:1; agree:2; disagree:3; strongly disagree:4; missing:9; not admin.:8;	3 0 2 0 1 0 0 0 0 1 0 1
ASBMDOW 3	MAT\DO WELL\HARD WORK STUDYING	strongly agree:1; agree:2; disagree:3; strongly disagree:4; missing:9; not admin.:8;	3 0 2 0 1 0 0 0 0 1 0 1
ASBMDOW 4	MAT\DO WELL\MEMORIZE NOTES	strongly agree:1; agree:2; disagree:3; strongly disagree:4; missing:9; not admin.:8;	3 0 2 0 1 0 0 0 0 1 0 1

Table D.1 Dummy Variable Construction for Input into Principal Components Population 1(Continued)

Variable Name	Variable Label	Original Coding	New Coding
ASBSDOW1	SCI\DO WELL\NATURAL TALENT	strongly agree:1; agree:2; disagree:3; strongly disagree:4; missing:9; not admin.:8;	3 0 2 0 1 0 0 0 0 1 0 1
ASBSDOW2	SCI\DO WELL\GOOD LUCK	strongly agree:1; agree:2; disagree:3; strongly disagree:4; missing:9; not admin.:8;	3 0 2 0 1 0 0 0 0 1 0 1
ASBSDOW3	SCI\DO WELL\HARD WORK STUDYING	strongly agree:1; agree:2; disagree:3; strongly disagree:4; missing:9; not admin.:8;	3 0 2 0 1 0 0 0 0 1 0 1
ASBSDOW4	SCI\DO WELL\MEMORIZE NOTES	strongly agree:1; agree:2; disagree:3; strongly disagree:4; missing:9; not admin.:8;	3 0 2 0 1 0 0 0 0 1 0 1
ASBMLIKE	MAT\LIKE MATHEMATICS	like a lot:1; like:2; dislike:3; dislike a lot:4; missing:9; not admin.:8;	0 0 1 0 2 0 3 0 0 1 0 1
ASBSLIKE	SCI\LIKE SCIENCE	like a lot:1; like:2; dislike:3; dislike a lot:4; missing:9; not admin.:8;	0 0 1 0 2 0 3 0 0 1 0 1
ASBMCMLK	MAT\LIKE COMPUTERS\MATH CLASS	don't use computers:1; like a lot:2; like:3; dislike:4; dislike a lot:5; missing:9; not admin.:8;	1 0 0 0 1 0 0 2 0 0 3 0 0 4 0 0 0 1 0 0 1

Table D.1 Dummy Variable Construction for Input into Principal Components Population 1(Continued)

Variable Name	Variable Label	Original Coding	New Coding
ASBSCMLK	SCI\LIKE COMPUTERS\SCIENCE CLASS	don't use computers:1; like a lot: 2;like: 3;dislike:4; dislike a lot:5; missing:9; not admin.:8;	1 0 0 0 1 0 0 2 0 0 3 0 0 4 0 0 0 1 0 0 1
ASBMENJY	MAT\THINK\ENJOY LEARNING MATH	strongly agree:1; agree:2; disagree:3; strongly disagree:4; missing:9; not admin.:8;	3 0 2 0 1 0 0 0 0 1 0 1
ASBMBORE	MAT\THINK\MATH IS BORING	strongly agree:1; agree:2; disagree:3; strongly disagree:4; missing:9; not admin.:8;	3 0 2 0 1 0 0 0 0 1 0 1
ASBMEASY	MAT\THINK\MATH IS AN EASY SUBJECT	strongly agree:1; agree:2; disagree:3; strongly disagree:4; missing:9; not admin.:8;	3 0 2 0 1 0 0 0 0 1 0 1
ASBSENJY	SCI\THINK\ENJOY LEARNING SCIENCE	strongly agree:1; agree:2; disagree:3; strongly disagree:4; missing:9; not admin.:8;	3 0 2 0 1 0 0 0 0 1 0 1
ASBSBORE	SCI\THINK\SCIENCE IS BORING	strongly agree:1; agree:2; disagree:3; strongly disagree:4; missing:9; not admin.:8;	3 0 2 0 1 0 0 0 0 1 0 1
ASBSEASY	SCI\THINK\SCIENCE IS AN EASY SUBJECT	strongly agree:1; agree:2; disagree:3; strongly disagree:4; missing:9; not admin.:8;	3 0 2 0 1 0 0 0 0 1 0 1
ASBMPROB	MAT\TEACHER SHOW HOW TO DO PROBLEMS	most lessons:1; some lessons:2; never:3; missing:9; not admin.:8;	2 0 1 0 0 0 0 1 0 1

Table D.1 Dummy Variable Construction for Input into Principal Components Population 1(Continued)

Variable Name	Variable Label	Original Coding	New Coding
ASBMNOTE	MAT\COPY NOTES FROM THE BOARD	most lessons:1; some lessons:2; never:3; missing:9; not admin.:8;	2 0 1 0 0 0 0 1 0 1
ASBMTEST	MAT\HAVE A QUIZ OR TEST	most lessons:1; some lessons:2; never:3; missing:9; not admin.:8;	2 0 1 0 0 0 0 1 0 1
ASBMWSHT	MAT\WORK FROM WORKSHEETS ON OWR OWN	most lessons:1; some lessons:2; never:3; missing:9; not admin.:8;	2 0 1 0 0 0 0 1 0 1
ASBMPROJ	MAT\WORK ON PROJECTS	most lessons:1; some lessons:2; never:3; missing:9; not admin.:8;	2 0 1 0 0 0 0 1 0 1
ASBMCALC	MAT\USE CALCULATORS	most lessons:1; some lessons:2; never:3; missing:9; not admin.:8;	2 0 1 0 0 0 0 1 0 1
ASBMCOMP	MAT\USE COMPUTERS	most lessons:1; some lessons:2; never:3; missing:9; not admin.:8;	2 0 1 0 0 0 0 1 0 1
ASBMSGRP	MAT\WORK IN PAIRS OR SMALL GROUPS	most lessons:1; some lessons:2; never:3; missing:9; not admin.:8;	2 0 1 0 0 0 0 1 0 1
ASBMEVLF	MAT\SOLVE WITH EVERYDAY LIFE THINGS	most lessons:1; some lessons:2; never:3; missing:9; not admin.:8;	2 0 1 0 0 0 0 1 0 1
ASBMH-WGV	MAT\TEACHER GIVES HOMEWORK	most lessons:1; some lessons:2; never:3; missing:9; not admin.:8;	2 0 1 0 0 0 0 1 0 1

Table D.1 Dummy Variable Construction for Input into Principal Components Population 1(Continued)

Variable Name	Variable Label	Original Coding	New Coding
ASBMHWCL	MAT\BEGIN HOMEWORK IN CLASS	most lessons:1; some lessons:2; never:3; missing:9; not admin.:8;	2 0 1 0 0 0 0 1 0 1
ASBMHWTC	MAT\TEACHER CHECKS HOME-WORK	most lessons:1; some lessons:2; never:3; missing:9; not admin.:8;	2 0 1 0 0 0 0 1 0 1
ASBMHWFC	MAT\CHECK EACH OTHER'S HOME-WORK	most lessons:1; some lessons:2; never:3; missing:9; not admin.:8;	2 0 1 0 0 0 0 1 0 1
ASBMHWDS	MAT\DISCUSS COMPLETED HOME-WORK	most lessons:1; some lessons:2; never:3; missing:9; not admin.:8;	2 0 1 0 0 0 0 1 0 1
ASBSPROB	SCI\TEACHER SHOW HOW TO DO PROBLEMS	most lessons:1; some lessons:2; never:3; missing:9; not admin.:8;	2 0 1 0 0 0 0 1 0 1
ASBSNOTE	SCI\COPY NOTES FROM THE BOARD	most lessons:1; some lessons:2; never:3; missing:9; not admin.:8;	2 0 1 0 0 0 0 1 0 1
ASBSTEST	SCI\HAVE A QUIZ OR TEST	most lessons:1; some lessons:2; never:3; missing:9; not admin.:8;	2 0 1 0 0 0 0 1 0 1
ASBSPROJ	SCI\WORK ON PROJECTS	most lessons:1; some lessons:2; never:3; missing:9; not admin.:8;	2 0 1 0 0 0 0 1 0 1
ASBSWSHT	SCI\WORK FROM WORKSHEETS ON OWR OWN	most lessons:1; some lessons:2; never:3; missing:9; not admin.:8;	2 0 1 0 0 0 0 1 0 1

Table D.1 Dummy Variable Construction for Input into Principal Components Population 1(Continued)

Variable Name	Variable Label	Original Coding	New Coding
ASBSCALC	SCI\USE CALCULATORS	most lessons:1; some lessons:2; never:3; missing:9; not admin.:8;	2 0 1 0 0 0 0 1 0 1
ASBSCOMP	SCI\USE COMPUTERS	most lessons:1; some lessons:2; never:3; missing:9; not admin.:8;	2 0 1 0 0 0 0 1 0 1
ASBSEVLF	SCI\SOLVE WITH EVERYDAY LIFE THINGS	most lessons:1; some lessons:2; never:3; missing:9; not admin.:8;	2 0 1 0 0 0 0 1 0 1
ASBSSGRP	SCI\WORK IN PAIRS OR SMALL GROUPS	most lessons:1; some lessons:2; never:3; missing:9; not admin.:8;	2 0 1 0 0 0 0 1 0 1
ASBSHWGV	SCI\TEACHER GIVES HOMEWORK	most lessons:1; some lessons:2; never:3; missing:9; not admin.:8;	2 0 1 0 0 0 0 1 0 1
ASBSHWCL	SCI\BEGIN HOMEWORK IN CLASS	most lessons:1; some lessons:2; never:3; missing:9; not admin.:8;	2 0 1 0 0 0 0 1 0 1
ASBSHWTC	SCI\TEACHER CHECKS HOME-WORK	most lessons:1; some lessons:2; never:3; missing:9; not admin.:8;	2 0 1 0 0 0 0 1 0 1
ASBSHWFC	SCI\CHECK EACH OTHER'S HOME-WORK	most lessons:1; some lessons:2; never:3; missing:9; not admin.:8;	2 0 1 0 0 0 0 1 0 1
ASBSHWDS	SCI\DISCUSS COMPLETED HOME-WORK	most lessons:1; some lessons:2; never:3; missing:9; not admin.:8;	2 0 1 0 0 0 0 1 0 1

Table D.1 Dummy Variable Construction for Input into Principal Components Population 1(Continued)

Variable Name	Variable Label	Original Coding	New Coding
ASBSDEMO	SCI\TEACHER GIVES DEMONSTRATION	most lessons:1; some lessons:2; never:3; missing:9; not admin.:8;	2 0 1 0 0 0 0 1 0 1
ASBSEXPR	SCI\DO EXPERIMENT IN CLASS	most lessons:1; some lessons:2; never:3; missing:9; not admin.:8;	2 0 1 0 0 0 0 1 0 1
ASBGACT1	GEN\READ A BOOK	about every day:1; about once a week:2; about once a month:3; rarely:4; missing:9; not admin.:8;	3 0 2 0 1 0 0 0 0 1 0 1
ASBGACT2	GEN\VISIT A MUSEUM	about every day:1; about once a week:2; about once a month:3; rarely:4; missing:9; not admin.:8;	3 0 2 0 1 0 0 0 0 1 0 1
ASBGACT3	GEN\ATTEMD A CONCERT	about every day:1; about once a week:2; about once a month:3; rarely:4; missing:9; not admin.:8;	3 0 2 0 1 0 0 0 0 1 0 1
ASBGACT4	GEN\GO TO THE THEATRE	about every day:1; about once a week:2; about once a month:3; rarely:4; missing:9; not admin.:8;	3 0 2 0 1 0 0 0 0 1 0 1
ASBGACT5	GEN\GO TO THE MOVIES	about every day:1; about once a week:2; about once a month:3; rarely:4; missing:9; not admin.:8;	3 0 2 0 1 0 0 0 0 1 0 1
ASBGNEWS	GEN\WATCH NEWS OR DOCUMENTARIES	about every day:1; about once a week:2; about once a month:3; rarely:4; missing:9; not admin.:8;	3 0 2 0 1 0 0 0 0 1 0 1

Table D.1 Dummy Variable Construction for Input into Principal Components Population 1(Continued)

Variable Name	Variable Label	Original Coding	New Coding
ASBGOPER	GEN\WATCH OPERA, BALLET OR CLASSICS	about every day:1; about once a week:2; about once a month:3; rarely:4; missing:9; not admin.:8;	3 0 2 0 1 0 0 0 0 1 0 1
ASBGNATR	GEN\WATCH NATURE, WILDLIFE OR HISTORY	about every day:1; about once a week:2; about once a month:3; rarely:4; missing:9; not admin.:8;	3 0 2 0 1 0 0 0 0 1 0 1
ASBGPOPU	GEN\WATCH POPULAR MUSIC	about every day:1; about once a week:2; about once a month:3; rarely:4; missing:9; not admin.:8;	3 0 2 0 1 0 0 0 0 1 0 1
ASBGSPRT	GEN\WATCH SPORTS	about every day:1; about once a week:2; about once a month:3; rarely:4; missing:9; not admin.:8;	3 0 2 0 1 0 0 0 0 1 0 1
ASBGVIDE	GEN\WATCH VIDEO GAMES	about every day:1; about once a week:2; about once a month:3; rarely:4; missing:9; not admin.:8;	3 0 2 0 1 0 0 0 0 1 0 1
ASBGCRTN	GEN\WATCH CARTOONS	about every day:1; about once a week:2; about once a month:3; rarely:4; missing:9; not admin.:8;	3 0 2 0 1 0 0 0 0 1 0 1
ASBGCMDY	GEN\WATCH COMEDY, ADVENTURE OR SUSPENSE	about every day:1; about once a week:2; about once a month:3; rarely:4; missing:9; not admin.:8;	3 0 2 0 1 0 0 0 0 1 0 1
ASDAGE	GEN\STUDENTS AGE	number 1-97; missing 99; not admin 98;	1-97 0 0 1 0 1

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TIMSS was truly a collaborative effort among hundreds of individuals around the world. Staff from the national research centers, the international management, advisors, and funding agencies worked closely to design and implement the most ambitious study of international comparative achievement ever undertaken. TIMSS would not have been possible without the tireless efforts of all involved. Below, the individuals and organizations are acknowledged for their contributions. Given that implementing TIMSS has spanned more than seven years and involved so many people and organizations, this list may not pay heed to all who contributed throughout the life of the project. Any omission is inadvertent. TIMSS also acknowledges the students, teachers, and school principals who contributed their time and effort to the study.

MANAGEMENT AND OPERATIONS

Since 1993, TIMSS has been directed by the International Study Center at Boston College in the United States. Prior to this, the study was coordinated by the International Coordinating Center at the University of British Columbia in Canada. Although the study was directed centrally by the International Study Center and its staff members implemented various parts of TIMSS, important activities also were carried out in centers around the world. The data were processed centrally by the IEA Data Processing Center in Hamburg, Germany. Statistics Canada was responsible for collecting and evaluating the sampling documentation from each country and for calculating the sampling weights. The Australian Council for Educational Research conducted the scaling of the achievement data.

International Study Center (1993-)

Albert E. Beaton, International Study Director
Michael O. Martin, Deputy International Study Director
Ina V.S. Mullis, Co-Deputy International Study Director
Eugenio J. Gonzalez, Director of Operations and Data Analysis
Dana L. Kelly, Research Associate
Teresa A. Smith, Research Associate
Cheryl L. Flaherty, Research Associate
Maryellen Harmon, Performance Assessment Coordinator
Robert Jin, Computer Programmer
Ce Shen, Computer Programmer
William J. Crowley, Fiscal Administrator
Thomas M. Hoffmann, Publications Coordinator
José Rafael Nieto, Senior Production Specialist

International Study Center (Continued)

Ann G.A. Tan, Conference Coordinator
Mary C. Howard, Office Supervisor
Diane Joyce, Secretary
Joanne E. McCourt, Secretary
Kelvin D. Gregory, Graduate Assistant
Kathleen A. Haley, Graduate Assistant (former)
Craig D. Hoyle, Graduate Assistant

International Coordinating Center (1991-93)

David F. Robitaille, International Coordinator
Robert A. Garden, Deputy International Coordinator
Barry Anderson, Director of Operations
Beverley Maxwell, Director of Data Management

Statistics Canada

Pierre Foy, Senior Methodologist
Suzelle Giroux, Senior Methodologist
Jean Dumais, Senior Methodologist
Nancy Darcovich, Senior Methodologist
Marc Joncas, Senior Methodologist
Laurie Reedman, Junior Methodologist
Claudio Perez, Junior Methodologist

IEA Data Processing Center

Jens Brockmann, Research Assistant
Michael Bruneforth, Senior Researcher (former)
Jedidiah Harris, Research Assistant
Dirk Hastedt, Senior ResearcherSvenja Moeller, Research Assistant
Knut Schwippert, Senior Researcher
Heiko Sibberns, Senior Researcher
Jockel Wolff, Research Assistant

Australian Council for Educational Research

Raymond J. Adams, Principal Research Fellow
Margaret Wu, Research Fellow
Nikolai Volodin, Research Fellow
David Roberts, Research Officer
Greg Macaskill, Research Officer

IEA Secretariat

Tjeerd Plomp, Chairperson
Hans Wagemaker, Executive Director
Barbara Malak-Minkiewicz, Manager Membership Relations
Leendert Dijkhuizen, Financial Officer
Karin Baddane, Secretary

FUNDING AGENCIES

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NATIONAL RESEARCH COORDINATORS

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

NATIONAL RESEARCH COORDINATORS

Argentina

Carlos Mansilla
Universidad del Chaco
Av. Italia 350
3500 Resistencia
Chaco, Argentina

Australia

Jan Lokan
Raymond Adams *
Australian Council for Educational Research
19 Prospect Hill
Private Bag 55
Camberwell, Victoria 3124
Australia

Austria

Guenter Haider
Austrian IEA Research Centre
Universität Salzburg
Akademiestraße 26/2
A-5020 Salzburg, Austria

Belgium (Flemish)

Christiane Brusselmans-Dehairs
Rijksuniversiteit Ghent
Vakgroep Onderwijskunde &
The Ministry of Education
Henri Dunantlaan 2
B-9000 Ghent, Belgium

Belgium (French)

Georges Henry
Christian Monseur
Universite de Liège
B32 Sart-Tilman
4000 Liège 1, Belgium

Bulgaria

Kiril Bankov
Foundation for Research, Communication,
Education and Informatics
Tzarigradsko Shausse 125, Bl. 5
1113 Sofia, Bulgaria

Canada

Alan Taylor
Applied Research & Evaluation Services
University of British Columbia
2125 Main Mall
Vancouver, B.C. V6T 1Z4
Canada

Colombia

Carlos Jairo Diaz
Universidad del Valle
Facultad de Ciencias
Multitaller de Materiales Didacticos
Ciudad Universitaria Meléndez
Apartado Aereo 25360
Cali, Colombia

Cyprus

Constantinos Papanastasiou
Department of Education
University of Cyprus
Kallipoleos 75
P.O. Box 537
Nicosia 133, Cyprus

Czech Republic

Jana Strakova
Vladislav Tomasek
Institute for Information on Education
Senovazne Nam. 26
111 21 Praha 1, Czech Republic

*Past National Research Coordinator.

Denmark

Peter Weng
Peter Allerup
Borge Prien*
The Danish National Institute for
Educational Research
28 Hermodsgade
Dk-2200 Copenhagen N, Denmark

England

Wendy Keys
Derek Foxman*
National Foundation for
Educational Research
The Mere, Upton Park
Slough, Berkshire SL1 2DQ
England

France

Anne Servant
Ministère de l'Education Nationale
142, rue du Bac
75007 Paris, France

Josette Le Coq*
Centre International d'Etudes
Pédagogiques (CIEP)
1 Avenue Léon Journault
93211 Sèvres, France

Germany

Rainer Lehmann
Humboldt-Universitaet zu Berlin
Institut Fuer Allgemeine
Erziehungswissenschaft
Geschwister-Scholl-Str. 6
10099 Berlin, Germany

Juergen Baumert
Wilfried Bos
Rainer Waterman
Max-Planck Institute for Human
Development and Education
Lentzeallee 94
14191 Berlin, Germany

Manfred Lehrke
Universität Kiel
IPN Olshausen Str. 62
24098 Kiel, Germany

Greece

Georgia Kontogiannopoulou-Polydorides
Department of Education (Nipiagogon)
University of Athens
Navarinou 13A, Neochimio
Athens 10680, Greece

Joseph Solomon
Department of Education
University of Patras
Patras 26500, Greece

Hong Kong

Frederick Leung
Nancy Law
The University of Hong Kong
Department of Curriculum Studies
Pokfulam Road, Hong Kong

Hungary

Péter Vari
National Institute of Public Education
Centre for Evaluation Studies
Dorottya U. 8, P.O. Box 120
1051 Budapest, Hungary

Iceland

Einar Gudmundsson
Institute for Educational Research
Department of Educational Testing
and Measurement
Surdgata 39
101 Reykjavik, Iceland

Indonesia

Jahja Umar
Ministry of Education and Culture
Examination Development Center
Jalan Gunung Sahari - 4
Jakarta 10000, Indonesia

Ireland

Deirdre Stuart
Michael Martin*
Educational Research Centre
St. Patrick's College
Drumcondra
Dublin 9, Ireland

*Past National Research Coordinator.

Iran, Islamic Republic

Ali Reza Kiamanesh
Ministry of Education
Center for Educational Research
Iranshahr Shomali Avenue
Teheran 15875, Iran

Israel

Pinchas Tamir
The Hebrew University
Israel Science Teaching Center
Jerusalem 91904, Israel

Ruth Zuzovsky
Tel Aviv University
School of Education
Ramat Aviv
PO Box 39040
Tel Aviv 69978, Israel

Italy

Anna Maria Caputo
Ministero della Pubblica Istruzione
Centro Europeo dell'Educazione
Villa Falconieri
00044 Frascati, Italy

Japan

Masao Miyake
Eizo Nagasaki
National Institute for Educational Research
6-5-22 Shimomeguro
Meguro-Ku, Tokyo 153, Japan

Korea

Jingyu Kim
Hyung Im*
National Board of Educational Evaluation
Evaluation Research Division
Chungdam-2 Dong 15-1, Kangnam-Ku
Seoul 135-102, Korea

Kuwait

Mansour Hussein
Ministry of Education
P. O. Box 7
Safat 13001, Kuwait

Latvia

Andrejs Geske
University of Latvia
Faculty of Education & Psychology
Jurmalas Gatve 74/76, Rm. 204a
Riga, Lv-1083, Latvia

Lithuania

Algirdas Zabulionis
University of Vilnius
Faculty of Mathematics
Naugarduko 24
2006 Vilnius, Lithuania

Mexico

Fernando Córdova Calderón
Director de Evaluación de Politicas y
Sistemas Educativos
Netzahualcoyotl #127 2ndo Piso
Colonia Centro
Mexico 1, D.F., Mexico

Netherlands

Wilmad Kuiper
Klaas Bos
Anja Knuver
University of Twente
Faculty of Educational Science
and Technology
Department of Curriculum
P.O. Box 217
7500 AE Enschede, Netherlands

New Zealand

Megan Chamberlain
Steve May
Hans Wagemaker*
Ministry of Education
Research and International Section
P.O. Box 1666
45-47 Pipitea Street
Wellington, New Zealand

*Past National Research Coordinator.

Norway

Svein Lie
University of Oslo
SLS Postboks 1099
Blindern 0316
Oslo 3, Norway

Gard Brekke
Alf Andersensv 13
3670 Notodden, Norway

Philippines

Milagros Ibe
University of the Philippines
Institute for Science and Mathematics
Education Development
Diliman, Quezon City
Philippines

Ester Ogena
Science Education Institute
Department of Science and Technology
Bicutan, Taquig
Metro Manila 1604, Philippines

Portugal

Gertrudes Amaro
Ministerio da Educacao
Instituto de Inovação Educacional
Rua Artilharia Um 105
1070 Lisboa, Portugal

Romania

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

Russian Federation

Galina Kovalyova
The Russian Academy of Education
Institute of General Secondary School
Ul. Pogodinskaya 8
Moscow 119905, Russian Federation

Scotland

Brian Semple
Scottish Office, Education &
Industry Department
Victoria Quay
Edinburgh, E86 6QQ
Scotland

Singapore

Wong Cheow Cher
Chan Siew Eng*
Research and Evaluation Branch
Block A Belvedere Building
Ministry of Education
Kay Siang Road
Singapore 248922

Slovak Republic

Maria Berova
Vladimir Burjan*
SPU-National Institute for Education
Pluhova 8
P.O. Box 26
830 00 Bratislava
Slovak Republic

Slovenia

Marjan Setinc
Barbara Japelj
Pedagoski Institut Pri Univerzi v Ljubljana
Gerbiceva 62, P.O. Box 76
61111 Ljubljana, Slovenia

South Africa

Sarah Howie
Derek Gray*
Human Sciences Research Council
134 Pretorius Street
Private Bag X41
Pretoria 0001, South Africa

Spain

José Antonio Lopez Varona
Instituto Nacional de Calidad y Evaluación
C/San Fernando del Jarama No. 14
28071 Madrid, Spain

*Past National Research Coordinator.

Sweden

Ingemar Wedman
Anna Hofslagare
Kjell Gisselberg*
Umeå University
Department of Educational Measurement
S-901 87 Umeå, Sweden

Switzerland

Erich Ramseier
Amt Für Bildungsforschung der Erziehungs-
direktion des Kantons Bern
Sulgeneck Straße 70
Ch-3005 Bern, Switzerland

Thailand

Suwaporn Semheng
Institute for the Promotion of Teaching Science
and Technology
924 Sukhumvit Road
Bangkok 10110, Thailand

United States

William Schmidt
Michigan State University
Department of Educational Psychology
463 Erikson Hall
East Lansing, MI 48824-1034
United States

*Past National Research Coordinator.

TIMSS ADVISORY COMMITTEES

The TIMSS International Study Center was supported in its work by several advisory committees. The TIMSS International Steering Committee provided guidance to the International Study Director on policy issues and general direction of the study. The TIMSS Technical Advisory Committee provided guidance on issues related to design, sampling, instrument construction, analysis, and reporting, ensuring that the TIMSS methodologies and procedures were technically sound. The Subject Matter Advisory Committee ensured that current thinking in mathematics and science education were addressed by TIMSS, and was instrumental in the development of the TIMSS tests. The Free-Response Item Coding Committee developed the coding rubrics for the free-response items. The Performance Assessment Committee worked with the Performance Assessment Coordinator to develop the TIMSS performance assessment. The Quality Assurance Committee helped to develop the quality assurance program.

International Steering Committee

Tjeerd Plomp (Chair), the Netherlands
Lars Ingelstam, Sweden
Daniel Levine, United States
Senta Raizen, United States
David Robitaille, Canada
Toshio Sawada, Japan
William Schmidt, United States
Benny Suprapto Brotosiswojo, Indonesia

Technical Advisory Committee

Raymond Adams, Australia
Pierre Foy, Canada
Andreas Schleicher, Germany
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Trevor Williams, United States

Sampling Referee

Keith Rust, United States

Subject Area Coordinators

Robert Garden, New Zealand (Mathematics)
Graham Orpwood, Canada (Science)

Special Mathematics Consultant

Chancey Jones

Subject Matter Advisory Committee

Svein Lie (Chair), Norway
Antoine Bodin, France
Peter Fensham, Australia
Robert Garden, New Zealand
Geoffrey Howson, England
Curtis McKnight, United States
Graham Orpwood, Canada
Senta Raizen, United States
David Robitaille, Canada
Pinchas Tamir, Israel
Alan Taylor, Canada
Ken Travers, United States
Theo Wubbels, the Netherlands

Free-Response Item Coding Committee

Svein Lie (Chair), Norway
Vladimir Burjan, Slovak Republic
Kjell Gisselberg, Sweden
Galina Kovalyova, Russian Federation
Nancy Law, Hong Kong
Josette Le Coq, France
Jan Lokan, Australia
Curtis McKnight, United States
Graham Orpwood, Canada
Senta Raizen, United States
Alan Taylor, Canada
Peter Weng, Denmark
Algirdas Zabulionis, Lithuania

Performance Assessment Committee

Derek Foxman, England
Robert Garden, New Zealand
Per Morten Kind, Norway
Svein Lie, Norway
Jan Lokan, Australia
Graham Orpwood, Canada

Quality Control Committee

Jules Goodison, United States
Hans Pelgrum, The Netherlands
Ken Ross, Australia

Editorial Committee

David F. Robitaille (Chair), Canada
Albert Beaton, International Study Director
Paul Black, England
Svein Lie, Norway
Rev. Ben Nebres, Philippines
Judith Torney-Purta, United States
Ken Travers, United States
Theo Wubbels, the Netherlands