

TRENDS IN INTERNATIONAL MATHEMATICS AND SCIENCE STUDY

# TIMSS



**TIMSS & PIRLS**  
International Study Center  
Lynch School of Education, Boston College



TIMSS 2011 User Guide  
for the International Database

## Supplement 3

Variables Derived from the Student, Home,  
Teacher, and School Questionnaire Data

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# Supplement 3

## *Variables Derived from the Student, Home, Teacher, and School Questionnaire Data*

### **Overview**

This supplement contains documentation on all the derived variables contained in the TIMSS 2011 data files that are based on background questionnaire variables. These variables were used to report background data in the TIMSS 2011 International Results in Mathematics and TIMSS 2011 International Results in Science reports, and are made available as part of this database to be used in secondary analyses. This supplement has eight sections corresponding to each background questionnaire from which reporting variables are derived.

Section 1:	Fourth Grade Student Questionnaire
Section 2:	Fourth Grade Home Questionnaire
Section 3:	Fourth Grade Teacher Questionnaire
Section 4:	Fourth Grade School Questionnaire
Section 5:	Eighth Grade Student Questionnaires
Section 6:	Eighth Grade Mathematics Teacher Questionnaire
Section 7:	Eighth Grade Science Teacher Questionnaire
Section 8:	Eighth Grade School Questionnaire

The following information is provided for each derived variable:

- Derived Variable Name
- Variable Label
- Title of International Report Exhibit
- Report Location
- A procedural description of how the derived variable was computed, including missing data rules if different from the general missing data rule described below
- Information about whether the variable was available in the previous cycle

## Derived Variable Naming Convention

The derived variables are named according to the variable-naming convention in the TIMSS 2011 international database (see Chapter 4). Exhibits 1 and 2 display the naming conventions and data sources for the derived variables for fourth and eighth grades.

**Exhibit 1 Variables Derived from Fourth Grade Data**

Variable Naming Convention	Data Source
ASDG****	Variables derived from student background data
ASDH****	Variables derived from home background data
ATDG****	Variables derived from general teacher background data
ATDM****	Variables derived from teacher background data related to mathematics
ATDS****	Variables derived from teacher background data related to science
ACDG****	Variables derived from school background data

**Exhibit 2 Variables Derived from Eighth Grade Data**

Variable Naming Convention	Data Source
BSDG****	Variables derived from general student background data
BSDM****	Variables derived from student background data related to mathematics
BSDS****	Variables derived from student background data related to science; these variables contain data only for countries administering the general/integrated version of the student questionnaire
BSDB****	Variables derived from student background data related to separate science subjects (biology, chemistry, physics, and earth science); these variables contain data only for countries administering the separate science subjects version of the student questionnaire
BSDC****	
BSDP****	
BSDE****	
BTDG****	Variables derived from general teacher background data
BTDM****	Variables derived from teacher background data related to mathematics
BTDS****	Variables derived from teacher background data related to science
BCDG****	Variables derived from school background data

## Missing Rule for Derived Variables

When calculating derived variables, students were only included if they had valid responses for at least 2/3 of the source variables. Students who did not have responses for 2/3 of the source variables were considered missing for the derived variable.

# Section 1

## Fourth Grade – Student Questionnaire



Derived Variable Name: ASDG05S

Variable Label: Number of Home Study Supports

Fourth Grade

**Title of International Report Exhibit**

Home Resources for Learning; Components of the Home Resources for Learning Scale

**Report Location**

Mathematics 4.1, 4.2;

Science 4.1, 4.2

**Procedure**

Based on responses to the following question in the Student Questionnaire:

Do you have any of these things in your home? SQG-05de

Own room (ASBG05D),

Internet connection (ASBG05E)

Response options: "Yes"; "No"

0 (ASBG05D = "No" and ASBG05E = "No") = Neither own room nor Internet connection

1 ((ASBG05D = "Yes" and ASBG05E = "No") or (ASBG05D = "No" and ASBG05E = "Yes")) = Either own room or Internet connection but not both

2 (ASBG05D = "Yes" and ASBG05E = "Yes") = Both own room and Internet connection

Set derived variable to missing if either source variable is missing.

0=Neither Own Room nor Internet Connection, 1=Either Own Room or Internet Connection, 2=Both Own Room and Internet Connection

# Section 2

## Fourth Grade - Home Questionnaire





Derived Variable Name: ASDHOCCP

Variable Label: Parents' Highest Occupation Level

Fourth Grade

**Title of International Report Exhibit**

Home Resources for Learning; Components of the Home Resources for Learning Scale

**Report Location**

Mathematics 4.1, 4.2;

Science 4.1, 4.2

**Procedure**

Based on responses to the following question in the Home Questionnaire:

What kind of work do the child's father (or stepfather or male guardian) and mother (or stepmother or female guardian) do for their main jobs? (HQ-20, ASBH20A, ASBH20B)

Response options: "Has never worked for pay"; "Small business owner"; "Clerk"; "Service or sales worker"; "Skilled agricultural or fishery worker"; "Craft or trade worker"; "Plant or machine operator"; "General laborer"; "Corporate manager or senior official"; "Professional"; "Technician or associate professional"; "Not applicable"

Collapse response options above into the following categories:

1 ("Corporate manager or senior official", "Professional", or "Technician or associate professional") = Professional

2 ("Small business owner") = Small business owner

3 ("Clerk" or "Service or sales worker") = Clerical

4 ("Skilled agricultural or fishery worker", "Craft or trade worker", or "Plant or machine operator") = Semi-professional

5 ("General laborer") = General laborer

6 ("Never worked for pay") = Never worked for pay

7 ("Not applicable") = Not applicable

Using these categories, the smaller value of the variables ASBH20A and ASBH20B is retained.

1=Professional, 2=Small Business Owner, 3=Clerical, 4=Skilled Worker, 5=General Laborer, 6=Never Worked Outside Home, 7=Not Applicable



Derived Variable Name: ASDHEDUP

Variable Label: Parents' Highest Education Level

Fourth Grade

**Title of International Report Exhibit**

Home Resources for Learning; Components of the Home Resources for Learning Scale

**Report Location**

Mathematics 4.1, 4.2;

Science 4.1, 4.2

**Procedure**

Based on responses to the following questions in the Home Questionnaire:

What is the highest level of education completed by the child's father (or stepfather or male guardian) and mother (or stepmother or female guardian)? HQ-17 (ASBH17A, ASBH17B)

Response options: "Did not go to school"; "Some &lt;ISCED Level 1 or 2&gt;"; "&lt;ISCED Level 2&gt;"; "&lt;ISCED Level 3&gt;"; "&lt;ISCED Level 4&gt;"; "&lt;ISCED Level 5b&gt;"; "&lt;ISCED Level 5a, first degree&gt;"; "Beyond &lt;ISCED Level 5a, first degree&gt;"; "Not applicable"

Collapse the response options above into the following categories:

1 (" &lt;ISCED Level 5a, first degree&gt;" or "Beyond &lt;ISCED Level 5a, first degree&gt;") = Finished University or higher

2 ("&lt;ISCED Level 4&gt;" or "&lt;ISCED Level 5b&gt;") = Finished Post-Secondary Education but not University

3 ("&lt;ISCED Level 3&gt;") = Finished Upper-secondary

4 ("&lt;ISCED Level 2&gt;") = Finished Lower-Secondary

5 ("Some &lt;ISCED Level 1 or 2&gt;" or "Did not go to school") = Finished some primary or lower-secondary or Did not go to school

6 ("Not applicable") = Not applicable

Using these categories, the smaller value (i.e., higher education level) of the variables ASBH17A and ASBH17B is retained.

1=Finished university or higher, 2=Finished post-secondary but not university, 3=Finished upper-secondary, 4=Finished lower-secondary, 5=Some primary, lower-sec. or no school

Derived Variable Name: ASDHAPS

Variable Label: Student Attended Preschool

Fourth Grade

**Title of International Report Exhibit**

Students Attended Preprimary Education

**Report Location**

Mathematics 4.10;

Science 4.9

**Procedure**

Based on responses to the following questions in the Home Questionnaire:

Did your child attend ISCED Level 0? HQ-04a (ASBH04A)

Response options: "Yes"; "No"

How long was he/she in &lt;ISCED Level 0&gt;? HQ-04b (ASBH04B)

Response options: "3 years or more"; "Between 2 and 3 years"; "2 years"; "Between 1 and 2 years"; "1 year or less"

1 (ASBH04A = "Yes" and ASBH04B = "3 years or more") = 3 years or more

2 (ASBH04A = "Yes" and ASBH04B = "Between 2 and 3 years" or "2 years") = Less than 3 years but more than 1 year

3 (ASBH04A = "Yes" and ASBH04B = "1 year or less") = 1 year or less

4 (ASBH04A = "No") = Did not attend

1=3 Years or More, 2=Less than 3 Years but More than 1 Year, 3=1 Year or Less, 4=Did Not Attend

# Section 3

## Fourth Grade – Teacher Questionnaire



Derived Variable Name: ATDM05

Variable Label: Teachers Majored in Ed and Math

Fourth Grade

**Title of International Report Exhibit**

Teachers Majored in Education and Mathematics

**Report Location**

Mathematics 7.3

**Procedure**

Based on the following questions:

During your &lt;post-secondary&gt;education, what was your major or main area(s) of study? TQG-05A abcdef

"Education- primary/elementary" (ATBG05AA)

"Education- secondary" (ATBG05AB)

"Mathematics" (ATBG05AC)

"Science" (ATBG05AD)

"&lt;Language of test&gt;" (ATBG05AE)

"Other" (ATBG05AF)

If your major or main area of study was education, did you have a &lt;specialization&gt; in any of the following? TQG-05Babcd

"Mathematics" (ATBG05BA)

"Science" (ATBG05BB)

"Language/reading" (ATBG05BC)

"Other" (ATBG05BD)

1 (ATBG05AA=1 AND (ATBG05AC=1 OR ATBG05BA=1)) = Major in primary education and major (or specialization) in mathematics

2 (ATBG05AA=1 AND ((ATBG05AC=2 OR ATBG05BA=2))) = Major in primary education but no major (or specialization) in mathematics

3 (ATBG05AA=2 AND (ATBG05AC=1 OR ATBG05BA=1)) = Major in mathematics but no major in primary education

4 (ATBG05AA=2 AND ((ATBG05AC=2 OR ATBG05BA=2))) = All other majors

Otherwise, set to missing.

1=Major in Primary Education and Major (or Specialization) in Mathematics, 2=Major in Primary Education but No Major (or Specialization) in Mathematics, 3=Major in Mathematics but No Major in Primary Education, 4=All Other Majors

**Trend Comments**

See ATDMPREP in TIMSS 2007

Derived Variable Name: ATDS05

Variable Label: Teachers Majored in Ed and Science

Fourth Grade

**Title of International Report Exhibit**

Teachers Majored in Education and Science

**Report Location**

Science 7.3

**Procedure**

Based on the following questions:

During your &lt;post-secondary&gt;education, what was your major or main area(s) of study? TQG-05A abcdef

"Education- primary/elementary" (ATBG05AA)

"Education- secondary" (ATBG05AB)

"Mathematics" (ATBG05AC)

"Science" (ATBG05AD)

"&lt;Language of test&gt;" (ATBG05AE)

"Other" (ATBG05AF)

If your major or main area of study was education, did you have a &lt;specialization&gt; in any of the following? TQG-05Babcd

"Mathematics" (ATBG05BA)

"Science" (ATBG05BB)

"Language/reading" (ATBG05BC)

"Other" (ATBG05BD)

1 (ATBG05AA=1 AND (ATBG05AD=1 OR ATBG05BB=1)) = Major in primary education and major (or specialization) in science

2 (ATBG05AA=1 AND ((ATBG05AD=2 OR ATBG05BB=2))) = Major in primary education but no major (or specialization) in science

3 (ATBG05AA=2 AND (ATBG05AD=1 OR ATBG05BB=1)) = Major in science but no major in primary education

4 (ATBG05AA=2 AND ((ATBG05AD=2 OR ATBG05BB=2))) = All other majors

Otherwise, set to missing.

1=Major in Primary Education and Major (or Specialization) in Science, 2=Major in Primary Education but No Major (or Specialization) in Science, 3=Major in Science but No Major in Primary Education, 4=All Other Majors

**Trend Comments**

See ATDSPREP in TIMSS 2007

Derived Variable Name: ATDG01

Variable Label: Teachers Years of Experience

Fourth Grade

**Title of International Report Exhibit**

Teachers' Years of Experience

**Report Location**

Mathematics 7.5;

Science 7.5

**Procedure**

Based on the following questionnaire from the Teacher Questionnaire, TQG-01 (ATBG01):

By the end of this school year, how many years will you have been teaching altogether?

(Open-response item)

1 (ATBG01  $\geq$  20) = 20 years or more,2 (ATBG01  $\geq$  10 and ATBG01  $<$  20) = At Least 10 But Less Than 20 Years,3 (ATBG01  $\geq$  5 and ATBG01  $<$  10) = At Least 5 But Less Than 10 Years,4 (ATBGG01  $<$  5) = Less than 5 years

Set the derived variable to missing if the source variable is missing.

1=20 Years or More, 2=At Least 10 but Less than 20 Years, 3=At Least 5 but Less than 10 Years, 4=Less than 5 Years

Derived Variable Name: ATDM12NU

Variable Label: Teachers Prepared to Teach Number

Fourth Grade

**Title of International Report Exhibit**

Teachers Feel "Very Well" Prepared to Teach TIMSS Mathematics Topics

**Report Location**

Mathematics 7.9

**Procedure**

Based on the teachers' responses to the following question:

How well prepared do you feel you are to teach the following mathematics topics? If a topic is not in the fourth-grade curriculum or you are not responsible for teaching this topic, please choose "Not applicable."

TQM-12Aa-h:

Concepts of whole numbers, including place value and ordering (ATBM12AA),  
 Adding, subtracting, multiplying and/or dividing with whole numbers (ATBM12AB),  
 Concepts of fractions (ATBM12AC),  
 Adding and subtracting with fractions (ATBM12AD),  
 Concepts of decimals, including place value and ordering (ATBM12AE),  
 Adding and subtracting with decimals (ATBM12AF),  
 Number sentences (ATBM12AG),  
 Number patterns (ATBM12AH)

Response options: "Not applicable"; "Very well prepared"; "Somewhat prepared"; "Not well prepared"

Compute percent of students whose teachers indicate "Very well prepared" (Code 2) for each of the topics. Then, compute the average across the percentage of students whose teachers indicate "Very well prepared" for the content domain. Code to "Missing" if more than one-third of the source topics (variables) are missing or "Not applicable" (Code 1).



Derived Variable Name: ATDM12GE

Variable Label: Teachers Prepared to Teach Geo and Meas

Fourth Grade

**Title of International Report Exhibit**

Teachers Feel "Very Well" Prepared to Teach TIMSS Mathematics Topics

**Report Location**

Mathematics 7.9

**Procedure**

Based on the teachers' responses to the following question:

How well prepared do you feel you are to teach the following mathematics topics? If a topic is not in the fourth-grade curriculum or you are not responsible for teaching this topic, please choose "Not applicable."

TQM-12Ba-g:

Lines: measuring, estimating of; parallel and perpendicular lines (ATBM12BA),

Comparing and drawing angles (ATBM12BB),

Using informal coordinate systems to locate points in a plane (ATBM12BC),

Elementary properties of common geometric shapes (ATBM12BD),

Reflections and rotations (ATBM12BE),

Relationships between two-dimensional and three-dimensional shapes (ATBM12BF),

Finding and estimating areas, perimeters and volumes (ATBM12BG)

Response options: "Not applicable"; "Very well prepared"; "Somewhat prepared"; "Not well prepared"

Compute percent of students whose teachers indicate "Very well prepared" (Code 2) for each of the topics. Then, compute the average across the percentage of students whose teachers indicate "Very well prepared" for the content domain. Code to "Missing" if more than one-third of the source topics (variables) are missing or "Not applicable" (Code 1).

Derived Variable Name: ATDM12DA

Variable Label: Teachers Prepared to Teach Data

Fourth Grade

**Title of International Report Exhibit**

Teachers Feel "Very Well" Prepared to Teach TIMSS Mathematics Topics

**Report Location**

Mathematics 7.9

**Procedure**

Based on the teachers' responses to the following question:

How well prepared do you feel you are to teach the following mathematics topics? If a topic is not in the fourth-grade curriculum or you are not responsible for teaching this topic, please choose "Not applicable."

TQM-12Ca-c:

Reading data from tables, pictographs, and bar graphs (ATBM12CA),

Drawing conclusions from data displays (ATBM12CB),

Displaying data using tables, pictographs, and bar graphs (ATBM12CC)

Response options: "Not applicable"; "Very well prepared"; "Somewhat prepared"; "Not well prepared"

Recode "Not applicable" (code 1) to "Not well prepared" (code 4).

Compute percent of students whose teachers indicate "Very well prepared" (Code 2) for each of the topics. Then, compute the average across the percentage of students whose teachers indicate "Very well prepared" for the content domain.

Code to "Missing" if more than one-third of the source topics (variables) are missing or "Not applicable" (Code 1).

Derived Variable Name: ATDS11LI

Variable Label: Teachers Prepared to Teach Life Science

Fourth Grade

**Title of International Report Exhibit**

Teachers Feel "Very Well" Prepared to Teach TIMSS Science Topics

**Report Location**

Science 7.9

**Procedure**

Based on the teachers' responses to the following question:

How well prepared do you feel you are to teach the following science topics? If a topic is not in the fourth-grade curriculum or you are not responsible for teaching this topic, please choose "Not applicable."

TQS-11Aa-f:

Major body structures and their functions in humans and other organisms (ATBS11AA),

Life cycles and reproduction in plants and animals (ATBS11AB),

Physical features, behavior, and survival of organisms living in different environments (ATBS11AC),

Relationships in a given community (ATBS11AD),

Changes in environments (ATBS11AE),

Human health (ATBS11AF)

Response options: "Not applicable"; "Very well prepared"; "Somewhat prepared"; "Not well prepared"

Compute percent of students whose teachers indicate "Very well prepared" (Code 2) for each of the topics. Then, compute the average across the percentage of students whose teachers indicate "Very well prepared" for the content domain. Code to "Missing" if more than one-third of the source topics (variables) are missing or "Not applicable" (Code 1).

Derived Variable Name: ATDS11PH

Variable Label: Teachers Prepared to Teach Physical Sci

Fourth Grade

**Title of International Report Exhibit**

Teachers Feel "Very Well" Prepared to Teach TIMSS Science Topics

**Report Location**

Science 7.9

**Procedure**

Based on the teachers' responses to the following question:

How well prepared do you feel you are to teach the following science topics? If a topic is not in the fourth-grade curriculum or you are not responsible for teaching this topic, please choose "Not applicable."

TQS-11Ba-h:

States of matter and differences in their physical properties including changes in state of matter by heating and cooling (ATBS11BA),

Classification of objects/materials based on physical properties (ATBS11BB),

Forming and separating mixtures (ATBS11BC),

Familiar changes in materials (ATBS11BD),

Common energy sources/forms and their practical uses (ATBS11BE),

Light (ATBS11BF),

Electrical circuits and properties of magnets (ATBS11BG),

Forces that cause objects to move (ATBS11BH)

Response options: "Not applicable"; "Very well prepared"; "Somewhat prepared"; "Not well prepared"

Compute percent of students whose teachers indicate "Very well prepared" (Code 2) for each of the topics. Then, compute the average across the percentage of students whose teachers indicate "Very well prepared" for the content domain.

Code to "Missing" if more than one-third of the source topics (variables) are missing or "Not applicable" (Code 1).

Derived Variable Name: ATDS11ES

Variable Label: Teachers Prepared to Teach Earth Science

Fourth Grade

**Title of International Report Exhibit**

Teachers Feel "Very Well" Prepared to Teach TIMSS Science Topics

**Report Location**

Science 7.9

**Procedure**

Based on the teachers' responses to the following question:

How well prepared do you feel you are to teach the following science topics? If a topic is not in the fourth-grade curriculum or you are not responsible for teaching this topic, please choose "Not applicable."

TQS-11Ca-f:

Water on Earth and air (ATBS11CA),

Common features of Earth's landscape and relationship to human use (ATBS11CB),

Weather conditions from day to day or over the seasons (ATBS11CC),

Fossils of animals and plants (ATBS11CD),

Earth's solar system (ATBS11CE),

Day, night, and shadows due to Earth's rotation and its relationship to the Sun (ATBS11CF)

Response options: "Not applicable"; "Very well prepared"; "Somewhat prepared"; "Not well prepared"

For "Earth Science" topics (ATBS11CA, ATBS11CB, ATBS11CC, ATBS11CD, ATBS11CE, ATBS11CF), recode "Not applicable" (code 1) to "Not well prepared" (code 4).

Compute percent of students whose teachers indicate "Very well prepared" (Code 2) for each of the topics. Then, compute the average across the percentage of students whose teachers indicate "Very well prepared" for the content domain.

Code to "Missing" if more than one-third of the source topics (variables) are missing or "Not applicable" (Code 1).

Derived Variable Name: ATDMHW

Variable Label: Mathematics Instructional Hours per Week

Fourth Grade

**Title of International Report Exhibit**

Instructional Time Spent on Mathematics

**Report Location**

Mathematics 8.6

**Procedure**

Based on the teachers' responses to the following questions:

In a typical week, how much time do you spend teaching mathematics to the students in this class? TQM-01AB (ATBM01A, ATBM01B)

(Open-response item)

Compute mathematics instructional hours per week:

If hours (ATBM01BA) is missing, use ATBM01BB divided by 60,

if minutes (ATBM01BB) is missing, use ATBM01BA,

otherwise use ATBM01BB divided by 60, plus ATBM01BA.

If both minutes and hours are missing, set result to missing.

Derived Variable Name: ATDSHW

Variable Label: Science Instructional Hours per Week

Fourth Grade

**Title of International Report Exhibit**

Instructional Time Spent on Science

**Report Location**

Science 8.6

**Procedure**

Based on the teachers' responses to the following questions:

In a typical week, how much time do you spend teaching science to the students in this class? TQS-01AB (ATBS01BA, ATBS01BB)

(Open-response item)

Compute science instructional hours per week:

If hours (ATBS01BA) is missing, use ATBS01BB divided by 60,

if minutes (ATBS01BB) is missing, use ATBS01BA,

otherwise use ATBS01BB divided by 60, plus ATBS01BA.

If both minutes and hours are missing, set result to missing.



Derived Variable Name: ATDM07NU

Variable Label: Pct Students Taught Number Topics

Fourth Grade

**Title of International Report Exhibit**

Percentage of Students Taught the TIMSS Mathematics Topics

**Report Location**

Mathematics 8.8

**Procedure**

Based on the responses to the following questions in the teacher questionnaire:

The following list includes the main topics addressed by the TIMSS mathematics test. Choose the response that best describes when the students in this class have been taught each topic. If a topic was in the curriculum before the fourth grade, please choose "Mostly taught before this year." If a topic was taught half this year but not yet completed, please choose "Mostly taught this year." If a topic is not in the curriculum, please choose "Not yet taught or just introduced."

TQM-07Aa-h

Concepts of whole numbers, including place value and ordering (ATBM07AA),

Adding, subtracting, multiplying and/or dividing with whole numbers (ATBM07AB),

Concepts of fractions (ATBM07AC),

Adding and subtracting with fractions (ATBM07AD),

Concepts of decimals, including place value and ordering (ATBM07AE),

Adding and subtracting with decimals (ATBM07AF),

Number sentences (ATBM07AG),

Number patterns (ATBM07AH)

Response options: "Mostly taught before this year"; "Mostly taught this year"; "Not yet taught or just introduced"

For each topic, compute the percent of students whose teachers selected "Mostly taught before this year" (Code 1) OR "Mostly taught this year" (Code 2).

Then compute the average across the percentages of students taught the content domain.

Code as "Missing" if more than one-third of the source topics (variables) are missing.

Derived Variable Name: ATDM07GE

Variable Label: Pct Students Taught Geo and Meas Topics

Fourth Grade

**Title of International Report Exhibit**

Percentage of Students Taught the TIMSS Mathematics Topics

**Report Location**

Mathematics 8.8

**Procedure**

Based on the responses to the following questions in the teacher questionnaire:

The following list includes the main topics addressed by the TIMSS mathematics test. Choose the response that best describes when the students in this class have been taught each topic. If a topic was in the curriculum before the fourth grade, please choose "Mostly taught before this year." If a topic was taught half this year but not yet completed, please choose "Mostly taught this year." If a topic is not in the curriculum, please choose "Not yet taught or just introduced."

TQM-07Ba-g:

Lines: measuring, estimating of; parallel and perpendicular lines (ATBM07BA),

Comparing and drawing angles (ATBM07BB),

Using informal coordinate systems to locate points in a plane (ATBM07BC),

Elementary properties of common geometric shapes (ATBM07BD),

Reflections and rotations (ATBM07BE),

Relationships between two-dimensional and three-dimensional shapes (ATBM07BF),

Finding and estimating areas, perimeters and volumes (ATBM07BG)

Response options: "Mostly taught before this year"; "Mostly taught this year"; "Not yet taught or just introduced"

For each topic, compute the percent of students whose teachers selected "Mostly taught before this year" (Code 1) OR "Mostly taught this year" (Code 2).

Then compute the average across the percentages of students taught the content domain.

Code as "Missing" if more than one-third of the source topics (variables) are missing.

Derived Variable Name: ATDM07DA

Variable Label: Pct Students Taught Data Topics

Fourth Grade

**Title of International Report Exhibit**

Percentage of Students Taught the TIMSS Mathematics Topics

**Report Location**

Mathematics 8.8

**Procedure**

Based on the responses to the following questions in the teacher questionnaire:

The following list includes the main topics addressed by the TIMSS mathematics test. Choose the response that best describes when the students in this class have been taught each topic. If a topic was in the curriculum before the fourth grade, please choose "Mostly taught before this year." If a topic was taught half this year but not yet completed, please choose "Mostly taught this year." If a topic is not in the curriculum, please choose "Not yet taught or just introduced."

TQM-07Ca-c:

Reading data from tables, pictographs, and bar graphs (ATBM07CA),

Drawing conclusions from data displays (ATBM07CB),

Displaying data using tables, pictographs, and bar graphs (ATBM07CC)

Response options: "Mostly taught before this year"; "Mostly taught this year"; "Not yet taught or just introduced"

For each topic, compute the percent of students whose teachers selected "Mostly taught before this year" (Code 1) OR "Mostly taught this year" (Code 2).

Then compute the average across the percentages of students taught the content domain.

Code as "Missing" if more than one-third of the source topics (variables) are missing.

Derived Variable Name: ATDS06LI

Variable Label: Pct Students Taught Life Sci Topics

Fourth Grade

**Title of International Report Exhibit**

Percentage of Students Taught the TIMSS Science Topics

**Report Location**

Science 8.8

**Procedure**

Based on the responses to the following questions in the teacher questionnaire:

The following list includes the main topics addressed by the TIMSS science test. Choose the response that best describes when the students in this class have been taught each topic. If a topic was in the curriculum before the fourth grade, please choose "Mostly taught before this year." If a topic was taught half this year but not yet completed, please choose "Mostly taught this year." If a topic is not in the curriculum, please choose "Not yet taught or just introduced."

TQS-06Aa-f

Major body structures and their functions in humans and other organisms (ATBS06AA),

Life cycles and reproduction in plants and animals (ATBS06AB),

Physical features, behavior, and survival of organisms living in different environments (ATBS06AC),

Relationships in a given community (ATBS06AD),

Changes in environments (ATBS06AE),

Human health (ATBS06AF)

Response options: "Mostly taught before this year"; "Mostly taught this year"; "Not yet taught or just introduced"

For each topic, compute the percent of students whose teachers selected "Mostly taught before this year" (Code 1) OR "Mostly taught this year" (Code 2).

Then compute the average across the percentages of students taught the content domain.

Code as "Missing" if more than one-third of the source topics (variables) are missing.

Derived Variable Name: ATDS06PH

Variable Label: Pct Students Taught Phy Sci Topics

Fourth Grade

**Title of International Report Exhibit**

Percentage of Students Taught the TIMSS Science Topics

**Report Location**

Science 8.8

**Procedure**

Based on the responses to the following questions in the teacher questionnaire:

The following list includes the main topics addressed by the TIMSS science test. Choose the response that best describes when the students in this class have been taught each topic. If a topic was in the curriculum before the fourth grade, please choose "Mostly taught before this year." If a topic was taught half this year but not yet completed, please choose "Mostly taught this year." If a topic is not in the curriculum, please choose "Not yet taught or just introduced."

TQS-06Ba-h:

States of matter and differences in their physical properties including changes in state of matter by heating and cooling (ATBS06BA),

Classification of objects/materials based on physical properties (ATBS06BB),

Forming and separating mixtures (ATBS06BC),

Familiar changes in materials (ATBS06BD),

Common energy sources/forms and their practical uses (ATBS06BE),

Light (ATBS06BF),

Electrical circuits and properties of magnets (ATBS06BG),

Forces that cause objects to move (ATBS06BH)

Response options: "Mostly taught before this year"; "Mostly taught this year"; "Not yet taught or just introduced"

For each topic, compute the percent of students whose teachers selected "Mostly taught before this year" (Code 1) OR "Mostly taught this year" (Code 2).

Then compute the average across the percentages of students taught the content domain.

Code as "Missing" if more than one-third of the source topics (variables) are missing.

Derived Variable Name: ATDS06ES

Variable Label: Pct Students Taught Earth Sci Topics

Fourth Grade

**Title of International Report Exhibit**

Percentage of Students Taught the TIMSS Science Topics

**Report Location**

Science 8.8

**Procedure**

Based on the responses to the following questions in the teacher questionnaire:

The following list includes the main topics addressed by the TIMSS science test. Choose the response that best describes when the students in this class have been taught each topic. If a topic was in the curriculum before the fourth grade, please choose "Mostly taught before this year." If a topic was taught half this year but not yet completed, please choose "Mostly taught this year." If a topic is not in the curriculum, please choose "Not yet taught or just introduced."

TQS-06Ca-f:

Water on Earth and air (ATBS06CA),

Common features of Earth's landscape and relationship to human use (ATBS06CB),

Weather conditions from day to day or over the seasons (ATBS06CC),

Fossils of animals and plants (ATBS06CD),

Earth's solar system (ATBS06CE),

Day, night, and shadows due to Earth's rotation and its relationship to the Sun (ATBS06CF)

Response options: "Mostly taught before this year"; "Mostly taught this year"; "Not yet taught or just introduced"

For each topic, compute the percent of students whose teachers selected "Mostly taught before this year" (Code 1) OR "Mostly taught this year" (Code 2).

Then compute the average across the percentages of students taught the content domain.

Code as "Missing" if more than one-third of the source topics (variables) are missing.

# Section 4

## Fourth Grade – School Questionnaire





Derived Variable Name: ACDG03

Variable Label: School Composition by Student Backgd

Fourth Grade

**Title of International Report Exhibit**

School Composition by Student Economic Background

**Report Location**

Mathematics 5.3;

Science 5.3

**Procedure**

Based on the following question:

Approximately what percentage of students in your school have the following backgrounds? SCQ-3 (ACBG03A and ACBG03B)

Response options: "0 to 10%"; "11 to 25%"; "26 to 50%"; "More than 50%"

1 (ACBG03A  $\leq$  2 ("0 to 10% or "11 to 25%") and ACBG03B  $\geq$  3 ("26 to 50%"; "More than 50%")) = Schools With More Affluent Than Disadvantaged Students

3 (ACBG03A  $\geq$  3 ("26 to 50%"; "More than 50%") and ACBG03B  $\leq$  2 ("0 to 10% or "11 to 25%")) = Schools With More Disadvantaged Than Affluent Students

2 (All other combinations) = Schools with Neither More Affluent nor More Disadvantaged Students

Set the derived variable to missing if either source variable is missing.

1=Schools with More Affluent than Disadvantaged Students, 2= Schools with Neither More Affluent nor More Disadvantaged students, 3= Schools with More Disadvantaged than Affluent Students

Derived Variable Name: ACDGENS

Variable Label: Students Having Early Numeracy Skills

Fourth Grade

**Title of International Report Exhibit**

Schools Where Students Enter the Primary Grades with Early Numeracy Skills

**Report Location**

Mathematics 5.7

**Procedure**

Based on the following questions:

About how many of the students in your school can do the following when they begin primary/elementary school? SCQ-16fgh

Count up to 100 or higher (ACBG16F),

Recognize all 10 written numbers from 1 to 10 (ACBG16G),

Write all numbers from 1-10 (ACBG16H)

Response options: 1="Less than 25%"; 2="25-50%"; 3="51-75%"; 4="More than 75%"

Responses to the items are then averaged.

1 (Average &gt; 3.25) = More than 75% Enter with Skills

2 (2.5 &lt; Average &lt;= 3.25) = 51-75% Enter with Skills

3 (1.75 &lt;= Average &lt;= 2.5) = 25-50% Enter with Skills

4 (Average &lt; 1.75) = Less than 25% Enter with Skills

1=Schools Where More than 75% Enter with Skills, 2=Schools Where 51-75% Enter with Skills, 3= Schools Where 25-50% Enter with Skills, 4= Schools Where Less than 25% Enter with Skills

Derived Variable Name: ACDG09

Variable Label: School Library Books

Fourth Grade

**Title of International Report Exhibit**

Size of School Library

**Report Location**

Mathematics 5.13;

Science 5.12

**Procedure**

Based on the following questions:

Does your school have a library? SCQ-09 (ACBG09)

Response options: "Yes"; "No"

Approximately how many books with different titles does your school library have (exclude magazines and periodicals)? (ACBG09A)

Response options: "250 or fewer"; "251-500"; "501-2,000"; "2,001-5,000"; "5,001-10,000"; "More than 10,000"

Assign students to four categories:

1 (ACBG09=1 ("Yes") and ACBG09A&gt;4 ("5,001-10,000" or "More than 10,000")) = School Library with More than 5,000 Books

2 (ACBG09=1 ("Yes") and ACBG09A=3 or 4 ("501-2,000" or "2,001-5,000")) = School Library with 501-5,000 Books

3 (ACBG09=1 ("Yes") and ACBG09A&lt;3 ("250 or fewer" or "251-500")) = School Library with 500 Books or Less

4 (ACBG09=2 ("No")) = No School Library

1=School Library with More than 5,000 Books, 2=School Library with 500-5,000 Books, 3=School Library with 500 Books or Less, 4=No School Library

Derived Variable Name: ACDGCMP

Variable Label: Computer Availability for Instruction

Fourth Grade

**Title of International Report Exhibit**

Schools with Computers Available for Instruction

**Report Location**

Mathematics 5.14;

Science 5.13

**Procedure**

Based on the following questions:

What is the total enrollment of fourth grade students in your school as of the first day of the month TIMSS 2011 testing begins? SCQ-02 (ACBG02)

(Open-response item)

What is the total number of computers that can be used for instructional purposes by fourth grade students? SCQ-07 (ACBG07)

(Open-response item)

Compute number of students per computer by dividing the number of students by number of computers.

Set number of students per computer to missing if any of the source variables are missing except if the number of computers equals zero.

1 (Number of students per computer  $\leq 2.5$ ) = 1 Computer for 1-2 Students

2 (Number of students per computer  $> 2.5$  and  $< 5.5$ ) = 1 Computer for 3-5 Students

3 (Number of students per computer  $\geq 5.5$ ) = 1 Computer for 6 or More Students

4 (ACBG07 = 0) = No computer

1=1 Computer for 1-2 Students, 2=1 Computer for 3-5 Students, 3=1 Computer for 6 or More Students, 4=No Computers Available

Derived Variable Name: ACDG06HY

Variable Label: Total Instructional Hours per Year

Fourth Grade

**Title of International Report Exhibit**

Instructional Time Spent on Mathematics/Science

**Report Location**

Mathematics 8.6;

Science 8.6

**Procedure**

Based on the principals' responses to the following questions:

How many days per year is your school open for instruction? SCQ-06A (ACBG06A)

(Open-response item)

What is the total instructional time, excluding breaks, in a typical day? SCQ-06Bab (ACBG06BA, ACBG06BB)

(Open-response item)

Step 1: Compute instructional hours per day:

If hours (ACBG06BA) is missing, use ACBG06BB divided by 60,

if minutes (ACBG06BB) is missing use ACBG06BA,

otherwise use ACBG06BB divided by 60, plus ACBG06BA.

If both minutes and hours are missing, set result to missing.

Step 2: Compute hours of school per year: Multiply the result of Step 1 by ACBG06A.

Derived Variable Name: ACDG06

Variable Label: Number of Days per Week for Instruction

Fourth Grade

**Title of International Report Exhibit**

Instructional Time Spent on Mathematics/Science

**Report Location**

Mathematics 8.6;

Science 8.6

**Procedure**

Based on the principals' responses to the following questions:

In one calendar week, how many days is the school open for instruction? SCQ-06C (ACBG06C)

Response options: "6 days"; "5 1/2 days"; "5 days"; "4 1/2 days"; "4 days"; "Other"

Compute number of days per week for instruction, ACDG06, by recoding ACBG06C as follows:

1 ("6 days") = 6

2 ("5 1/2 days") = 5.5

3 ("5 days") = 5

4 ("4 1/2 days") = 4.5

5 ("4 days") = 4

6 ("Other") = 3



# Section 5

## Eighth Grade – Student Questionnaires





Derived Variable Name: BSDG05S

Variable Label: Number of Home Study Supports

Eighth Grade

**Title of International Report Exhibit**

Home Educational Resources; Components of the Home Educational Resources Scale

**Report Location**

Mathematics 4.3, 4.4;

Science 4.3, 4.4

**Procedure**

Based on responses to the following question in the Student Questionnaire:

Do you have any of these things in your home?

Own room, SQIS-05D/SQSS-05D (BSBG05D),

Internet connection, SQIS-05E/SQSS-05E (BSBG05E)

Response options: "Yes"; "No"

0 (BSBG05D = "No" and BSBG05E = "No") = Neither own room nor Internet connection

1 ((BSBG05D = "Yes" and BSBG05E = "No") or (BSBG05D = "No" and BSBG05E = "Yes")) = Either own room or Internet connection but not both

2 (BSBG05D = "Yes" and BSBG05E = "Yes") = Both own room and Internet connection

Set derived variable to missing if either source variable is missing.

0=Neither Own Room nor Internet Connection, 1=Either Own Room or Internet Connection, 2=Both Own Room and Internet Connection

Derived Variable Name: BSDGEDUP

Variable Label: Parents' Highest Education Level

Eighth Grade

**Title of International Report Exhibit**

Home Educational Resources; Components of the Home Educational Resources Scale

**Report Location**

Mathematics 4.3, 4.4;

Science 4.3, 4.4

**Procedure**

Based on responses to the following questions in the Student Questionnaire:

What is the highest level of education completed by your mother (or stepmother or female guardian) and father (or stepfather or male guardian)? SQIS-06A/SQSS-06A and SQIS-06B/SQSS-06B (BSBG06A, BSBG06B)

Response options: "Did not go to school"; "Some &lt;ISCED Level 1 or 2&gt;"; "&lt;ISCED Level 2&gt;"; "&lt;ISCED Level 3&gt;"; "&lt;ISCED Level 4&gt;"; "&lt;ISCED Level 5b&gt;"; "&lt;ISCED Level 5a, first degree&gt;"; "Beyond &lt;ISCED Level 5a, first degree&gt;"; "Not applicable"

Collapse the response options above into the following categories:

1 (" &lt;ISCED Level 5a, first degree&gt;" or "Beyond &lt;ISCED Level 5a, first degree&gt;") = Finished University or higher

2 ("&lt;ISCED Level 4&gt;" or "&lt;ISCED Level 5b&gt;") = Finished Post-Secondary Education but not University

3 ("&lt;ISCED Level 3&gt;") = Finished Upper-secondary

4 ("&lt;ISCED Level 2&gt;") = Finished Lower-Secondary

5 ("Some &lt;ISCED Level 1 or 2&gt;" or "Did not go to school") = Finished some primary or lower-secondary or Did not go to school

6 ("Not applicable") = Not applicable

Using these categories, the smaller value (i.e., higher education level) of the variables BSBG06A and BSBG06B is retained.

1=University, 2=Post-Secondary but Not University, 3=Upper Secondary, 4=Lower Secondary, 5=Some Primary, Lower Secondary, or No School, 6=Not Applicable

**Trend Comments**

See BSDGEDUP in TIMSS 2007

Derived Variable Name: BSDMWKHW

Variable Label: Weekly Time Spent on Math Homework

Eighth Grade

**Title of International Report Exhibit**

Weekly Time Students Spend on Mathematics Homework

**Report Location**

Mathematics 8.31

**Procedure**

Based on the following questions from the Student questionnaire:

How often does your teacher give you homework in mathematics? SQM\_20A (BSBM20A)

Response options: "Every day"; "3 or 4 times a week"; "1 or 2 times a week"; "Less than once a week"; "Never"

When your teacher gives you mathematics homework, about how many minutes do you usually spend on your homework?

SQM\_20B (BSBM20B)

Response options: "My teacher never gives me homework in mathematics"; "1–15 minutes"; "16–30 minutes"; "31–60 minutes"; "61–90 minutes"; "More than 90 minutes"

Recode BSBM20A as follows:

1 ("Every day") = 5

2 ("3 or 4 times a week") = 3.5

3 ("1 or 2 times a week") = 1.5

4 ("Less than once a week") = 0.5

5 ("Never") = 0

Recode BSBM20B as follows:

1 ("My teacher never gives me homework in mathematics") = 0

2 ("15 minutes") = 8

3 ("16-30 minutes") = 23

4 ("31-60 minutes") = 45

5 ("61-90 minutes") = 75

6 ("More than 90 minutes") = 105

Multiply recoded BSBM20A and recoded BSBM20B to compute weekly time students spend on homework.

Assign students to three categories:

Product of recoded BSBM20A and recoded BSBM20B  $\geq$  180 minutes (3 hours) = "3 Hours or More"Product of recoded BSBM20A and recoded BSBM20B  $>$  45 minutes AND  $<$  180 minutes (3 hours) = "More Than 45 Minutes But Less Than 3 Hours"Product of recoded BSBM20A and recoded BSBM20B  $\leq$  45 minutes = "45 Minutes or Less"

1=3 Hours or More, 2=More than 45 Minutes but Less than 3 Hours, 3=45 Minutes or Less

Derived Variable Name: BSDSWKHW

Variable Label: Weekly Time Spent on Science Homework

Eighth Grade

**Title of International Report Exhibit**

Weekly Time Students Spend on Science Homework

**Report Location**

Science 8.31

**Procedure**

Based on the following questions from the Student questionnaire:

How often does your teacher give you homework in science? SQS\_21A (BSBS21A)

Response options: "Every day"; "3 or 4 times a week"; "1 or 2 times a week"; "Less than once a week"; "Never"

When your teacher gives you science homework, about how many minutes do you usually spend on your homework?

SQS\_21B (BSBS21B)

Response options: "My teacher never gives me homework in science"; "1–15 minutes"; "16–30 minutes"; "31–60 minutes"; "61–90 minutes"; "More than 90 minutes"

Recode BSBS21A as follows:

- 1 ("Every day") = 5
- 2 ("3 or 4 times a week") = 3.5
- 3 ("1 or 2 times a week") = 1.5
- 4 ("Less than once a week") = 0.5
- 5 ("Never") = 0

Recode BSBS21B as follows:

- 1 ("My teacher never gives me homework in science") = 0
- 2 ("15 minutes") = 8
- 3 ("16-30 minutes") = 23
- 4 ("31-60 minutes") = 45
- 5 ("61-90 minutes") = 75
- 6 ("More than 90 minutes") = 105

Multiply recoded BSBS21A and recoded BSBS21B to compute weekly time students spend on homework.

Assign students to three categories:

Product of recoded BSBS21A and recoded BSBS21B  $\geq$  180 minutes (3 hours) = "3 Hours or More"Product of recoded BSBS21A and recoded BSBS21B  $>$  45 minutes AND  $<$  180 minutes (3 hours) = "More Than 45 Minutes But Less Than 3 Hours"Product of recoded BSBS21A and recoded BSBS21B  $\leq$  45 minutes = "45 Minutes or Less"

1=3 Hours or More, 2=More than 45 Minutes but Less than 3 Hours, 3=45 Minutes or Less

Derived Variable Name: BSDBWKHW

Variable Label: Weekly Time Spent on Biology Homework

Eighth Grade

**Title of International Report Exhibit**

Weekly Time Students Spend on Science Homework

**Report Location**

Science 8.31

**Procedure**

Based on the following questions from the Student questionnaire:

How often does your teacher give you homework in biology? SQSS\_33AB (BSBB33AB)

Response options: "Every day"; "3 or 4 times a week"; "1 or 2 times a week"; "Less than once a week"; "Never"

When your teacher gives you biology homework, about how many minutes do you usually spend on your homework?

SQSS\_33BB (BSBB33BB)

Response options: "My teacher never gives me homework in biology"; "1–15 minutes"; "16–30 minutes"; "31–60 minutes"; "61–90 minutes"; "More than 90 minutes"

Recode BSBB33AB as follows:

1 ("Every day") = 5

2 ("3 or 4 times a week") = 3.5

3 ("1 or 2 times a week") = 1.5

4 ("Less than once a week") = 0.5

5 ("Never") = 0

Recode BSBB33BB as follows:

1 ("My teacher never gives me homework in biology") = 0

2 ("15 minutes") = 8

3 ("16-30 minutes") = 23

4 ("31-60 minutes") = 45

5 ("61-90 minutes") = 75

6 ("More than 90 minutes") = 105

Multiply recoded BSBB33AB and recoded BSBB33BB to compute weekly time students spend on homework.

Assign students to three categories:

Product of recoded BSBB33AB and recoded BSBB33BB  $\geq$  180 minutes (3 hours) = "3 Hours or More"Product of recoded BSBB33AB and recoded BSBB33BB  $>$  45 minutes AND  $<$  180 minutes (3 hours) = "More Than 45 Minutes But Less Than 3 Hours"Product of recoded BSBB33AB and recoded BSBB33BB  $\leq$  45 minutes = "45 Minutes or Less"

1=3 Hours or More, 2=More than 45 Minutes but Less than 3 Hours, 3=45 Minutes or Less

Derived Variable Name: BSDCWKHW

Variable Label: Weekly Time Spent on Chemistry Homework

Eighth Grade

**Title of International Report Exhibit**

Weekly Time Students Spend on Science Homework

**Report Location**

Science 8.31

**Procedure**

Based on the following questions from the Student questionnaire:

How often does your teacher give you homework in chemistry? SQSS\_33AD (BSBC33AD)

Response options: "Every day"; "3 or 4 times a week"; "1 or 2 times a week"; "Less than once a week"; "Never"

When your teacher gives you chemistry homework, about how many minutes do you usually spend on your homework?

SQSS\_33BD (BSBC33BD)

Response options: "My teacher never gives me homework in chemistry"; "1–15 minutes"; "16–30 minutes"; "31–60 minutes"; "61–90 minutes"; "More than 90 minutes"

Recode BSBC33AD as follows:

1 ("Every day") = 5

2 ("3 or 4 times a week") = 3.5

3 ("1 or 2 times a week") = 1.5

4 ("Less than once a week") = 0.5

5 ("Never") = 0

Recode BSBC33BD as follows:

1 ("My teacher never gives me homework in chemistry") = 0

2 ("15 minutes") = 8

3 ("16-30 minutes") = 23

4 ("31-60 minutes") = 45

5 ("61-90 minutes") = 75

6 ("More than 90 minutes") = 105

Multiply recoded BSBC33AD and recoded BSBC33BD to compute weekly time students spend on homework.

Assign students to three categories:

Product of recoded BSBC33AD and recoded BSBC33BD  $\geq$  180 minutes (3 hours) = "3 Hours or More"Product of recoded BSBC33AD and recoded BSBC33BD  $>$  45 minutes AND  $<$  180 minutes (3 hours) = "More Than 45 Minutes But Less Than 3 Hours"Product of recoded BSBC33AD and recoded BSBC33BD  $\leq$  45 minutes = "45 Minutes or Less"

1=3 Hours or More, 2=More than 45 Minutes but Less than 3 Hours, 3=45 Minutes or Less

Derived Variable Name: BSDPWKHW

Variable Label: Weekly Time Spent on Physics Homework

Eighth Grade

**Title of International Report Exhibit**

Weekly Time Students Spend on Science Homework

**Report Location**

Science 8.31

**Procedure**

Based on the following questions from the Student questionnaire:

How often does your teacher give you homework in physics? SQSS\_33AE (BSBP33AE)

Response options: "Every day"; "3 or 4 times a week"; "1 or 2 times a week"; "Less than once a week"; "Never"

When your teacher gives you physics homework, about how many minutes do you usually spend on your homework?

SQSS\_33BE (BSBP33BE)

Response options: "My teacher never gives me homework in physics"; "1–15 minutes"; "16–30 minutes"; "31–60 minutes"; "61–90 minutes"; "More than 90 minutes"

Recode BSBP33AE as follows:

1 ("Every day") = 5

2 ("3 or 4 times a week") = 3.5

3 ("1 or 2 times a week") = 1.5

4 ("Less than once a week") = 0.5

5 ("Never") = 0

Recode BSBP33BE as follows:

1 ("My teacher never gives me homework in physics") = 0

2 ("15 minutes") = 8

3 ("16-30 minutes") = 23

4 ("31-60 minutes") = 45

5 ("61-90 minutes") = 75

6 ("More than 90 minutes") = 105

Multiply recoded BSBP33AE and recoded BSBP33BE to compute weekly time students spend on homework.

Assign students to three categories:

Product of recoded BSBP33AE and recoded BSBP33BE  $\geq$  180 minutes (3 hours) = "3 Hours or More"Product of recoded BSBP33AE and recoded BSBP33BE  $>$  45 minutes AND  $<$  180 minutes (3 hours) = "More Than 45 Minutes But Less Than 3 Hours"Product of recoded BSBP33AE and recoded BSBP33BE  $\leq$  45 minutes = "45 Minutes or Less"

1=3 Hours or More, 2=More than 45 Minutes but Less than 3 Hours, 3=45 Minutes or Less

Derived Variable Name: BSDEWKHW

Variable Label: Weekly Time Spent on Earth Sci Homework

Eighth Grade

**Title of International Report Exhibit**

Weekly Time Students Spend on Science Homework

**Report Location**

Science 8.31

**Procedure**

Based on the following questions from the Student questionnaire:

How often does your teacher give you homework in earth science? SQSS\_33AC (BSBE33AC)

Response options: "Every day"; "3 or 4 times a week"; "1 or 2 times a week"; "Less than once a week"; "Never"

When your teacher gives you earth science homework, about how many minutes do you usually spend on your homework?

SQSS\_33BC (BSBE33BC)

Response options: "My teacher never gives me homework in earth science"; "1–15 minutes"; "16–30 minutes"; "31–60 minutes"; "61–90 minutes"; "More than 90 minutes"

Recode BSBE33AC as follows:

1 ("Every day") = 5

2 ("3 or 4 times a week") = 3.5

3 ("1 or 2 times a week") = 1.5

4 ("Less than once a week") = 0.5

5 ("Never") = 0

Recode BSBE33BC as follows:

1 ("My teacher never gives me homework in earth science") = 0

2 ("15 minutes") = 8

3 ("16-30 minutes") = 23

4 ("31-60 minutes") = 45

5 ("61-90 minutes") = 75

6 ("More than 90 minutes") = 105

Multiply recoded BSBE33AC and recoded BSBE33BC to compute weekly time students spend on homework.

Assign students to three categories:

Product of recoded BSBE33AC and recoded BSBE33BC  $\geq$  180 minutes (3 hours) = "3 Hours or More"Product of recoded BSBE33AC and recoded BSBE33BC  $>$  45 minutes AND  $<$  180 minutes (3 hours) = "More Than 45 Minutes But Less Than 3 Hours"Product of recoded BSBE33AC and recoded BSBE33BC  $\leq$  45 minutes = "45 Minutes or Less"

1=3 Hours or More, 2=More than 45 Minutes but Less than 3 Hours, 3=45 Minutes or Less





# Section 6

## Eighth Grade – Mathematics Teacher Questionnaire



Derived Variable Name: BTDM05

Variable Label: Teachers Majored in Ed and Math

Eighth Grade

**Title of International Report Exhibit**

Teachers Majored in Education and Mathematics

**Report Location**

Mathematics 7.4

**Procedure**

Based on the following questions:

During your &lt;post-secondary&gt;education, what was your major or main area(s) of study? TQG-05A abcdefghi

"Mathematics" (BTBG05A)

"Biology" (BTBG05B)

"Physics" (BTBG05C)

"Chemistry" (BTBG05D)

"Earth science" (BTBG05E)

"Education-mathematics" (BTBG05F)

"Education-science" (BTBG05G)

"Education-general" (BTBG05H)

"Another subject" (BTBG05I)

1 (BTBG05A=1 AND BTBG05F=1) = Major in mathematics and mathematics education

2 (BTBG05A=2 AND BTBG05F=1) = Major in mathematics education but no major in mathematics

3 (BTBG05A=1 AND BTBG05F=2) = Major in mathematics but no major in mathematics education

4 (BTBG05A=2 AND BTBG05F=2) = All other majors

Otherwise, set to missing.

1=Major in Mathematics and Mathematics Education, 2=Major in Mathematics Education but No Major in Mathematics,

3=Major in Mathematics but No Major in Mathematics Education, 4=All Other Majors

Derived Variable Name: BTDG01

Variable Label: Teachers Years of Experience

Eighth Grade

**Title of International Report Exhibit**

Teachers' Years of Experience

**Report Location**

Science 7.6

**Procedure**

Based on the following questionnaire from the Teacher Questionnaire, TQG-01 (BTBG01):

By the end of this school year, how many years will you have been teaching altogether?

(Open-response item)

1 (BTBG01  $\geq$  20) = 20 years or more,2 (BTBG01  $\geq$  10 and BTBG01 < 20) = At Least 10 But Less Than 20 Years,3 (BTBG01  $\geq$  5 and BTBG01 < 10) = At Least 5 But Less Than 10 Years,

4 (BTBGG01 &lt; 5) = Less than 5 years

Set the derived variable to missing if the source variable is missing.

1=20 Years or More, 2=At Least 10 but Less than 20 Years, 3=At Least 5 but Less than 10 Years, 4=Less than 5 Years

Derived Variable Name: BTDM30NU

Variable Label: Teachers Prepared to Teach Number

Eighth Grade

**Title of International Report Exhibit**

Teachers Feel "Very Well" Prepared to Teach TIMSS Mathematics Topics

**Report Location**

Mathematics 7.10

**Procedure**

Based on the teachers' responses to the following question:

How well prepared do you feel you are to teach the following mathematics topics? If a topic is not in the fourth-grade curriculum or you are not responsible for teaching this topic, please choose "Not applicable."

TQM-30Aa-e:

Computing, estimating, or approximating with whole numbers (BTBM30AA),

Concepts of fractions and computing with fractions (BTBM30AB),

Concepts of decimals and computing with decimals (BTBM30AC),

Representing, comparing, ordering, and computing with integers (BTBM30AD),

Problem solving involving percents and proportions (BTBM30AE)

Response options: "Not applicable"; "Very well prepared"; "Somewhat prepared"; "Not well prepared"

For "Number" topics (BTBM30AA, BTBM30AB, BTBM30AC, BTBM30AD, BTBM30AE), recode "Not applicable" (code 1) to "Very well prepared" (code 2). Compute percent of students whose teachers indicate "Very well prepared" (Code 2) for each of the topics. Then, compute the average across the percentage of students whose teachers indicate "Very well prepared" over the content domain. Code to "Missing" if more than one-third of the source topics (variables) are missing or "Not applicable" (Code 1).

Derived Variable Name: BTDM30AL

Variable Label: Teachers Prepared to Teach Algebra

Eighth Grade

**Title of International Report Exhibit**

Teachers Feel “Very Well” Prepared to Teach TIMSS Mathematics Topics

**Report Location**

Mathematics 7.10

**Procedure**

Based on the teachers’ responses to the following question:

How well prepared do you feel you are to teach the following mathematics topics? If a topic is not in the fourth-grade curriculum or you are not responsible for teaching this topic, please choose “Not applicable.”

TQM-30Ba-e:

Numeric, algebraic, and geometric patterns or sequences (BTBM30BA),

Simplifying and evaluating algebraic expressions (BTBM30BB),

Simple linear equations and inequalities (BTBM30BC),

Simultaneous (two variables) equations (BTBM30BD),

Representation of functions as ordered pairs, tables, graphs, words, or equations (BTBM30BE)

Response options: "Not applicable"; "Very well prepared"; "Somewhat prepared"; "Not well prepared"

Compute percent of students whose teachers indicate “Very well prepared” (Code 2) for each of the topics. Then, compute the average across the percentage of students whose teachers indicate “Very well prepared” over the content domain. Code to “Missing” if more than one-third of the source topics (variables) are missing or “Not applicable” (Code 1).

Derived Variable Name: BTDM30GE

Variable Label: Teachers Prepared to Teach Geometry

Eighth Grade

**Title of International Report Exhibit**

Teachers Feel “Very Well” Prepared to Teach TIMSS Mathematics Topics

**Report Location**

Mathematics 7.10

**Procedure**

Based on the teachers’ responses to the following question:

How well prepared do you feel you are to teach the following mathematics topics? If a topic is not in the fourth-grade curriculum or you are not responsible for teaching this topic, please choose “Not applicable.”

TQM-30Ca-f:

Based on the teachers’ responses to the following question:

Geometric properties of angles and geometric shapes (BTBM30CA),

Congruent figures and similar triangles (BTBM30CB),

Relationship between three-dimensional shapes and their two-dimensional representations (BTBM30CC),

Using appropriate measurement formulas for perimeters, circumferences, areas, surface areas, and volumes (BTBM30CD),

Points on the Cartesian plane (BTBM30CE),

Translation, reflection, and rotation (BTBM30CF)

Response options: "Not applicable"; "Very well prepared"; "Somewhat prepared"; "Not well prepared"

Compute percent of students whose teachers indicate “Very well prepared” (Code 2) for each of the topics. Then, compute the average across the percentage of students whose teachers indicate “Very well prepared” over the content domain. Code to “Missing” if more than one-third of the source topics (variables) are missing or “Not applicable” (Code 1).

Derived Variable Name: BTDM30DA

Variable Label: Teachers Prepared to Teach Data

Eighth Grade

**Title of International Report Exhibit**

Teachers Feel “Very Well” Prepared to Teach TIMSS Mathematics Topics

**Report Location**

Mathematics 7.10

**Procedure**

Based on the teachers’ responses to the following question:

How well prepared do you feel you are to teach the following mathematics topics? If a topic is not in the fourth-grade curriculum or you are not responsible for teaching this topic, please choose “Not applicable.”

TQM-30Da-c:

Based on the teachers’ responses to the following question:

Reading and displaying data using tables, pictographs, bar graphs, pie charts and line graphs (BTBM30DA),

Interpreting data sets (BTBM30DB),

Judging, predicting, and determining the chances of possible outcomes (BTBM30DC)

Response options: "Not applicable"; "Very well prepared"; "Somewhat prepared"; "Not well prepared"

For “Data and Chance” topics, recode “Not applicable” (code 1) to “Not well prepared” (code 4).

Compute percent of students whose teachers indicate “Very well prepared” (Code 2) for each of the topics. Then, compute the average across the percentage of students whose teachers indicate “Very well prepared” over the content domain.

Code to “Missing” if more than one-third of the source topics (variables) are missing or “Not applicable” (Code 1).



Derived Variable Name: BTDMHW

Variable Label: Mathematics Instructional Hours per Week

Eighth Grade

**Title of International Report Exhibit**

Instructional Time Spent on Mathematics

**Report Location**

Mathematics 8.7

**Procedure**

Based on the teachers' responses to the following questions:

In a typical week, how much time do you spend teaching mathematics to the students in this class? TQM-17AB (BTBM17A, BTBM17B)

(Open-response item)

Compute mathematics instructional hours per week:

If hours (BTBM17A) is missing, use BTBM17B divided by 60,

if minutes (BTBM17B) is missing, use BTBM17A,

otherwise use BTBM17B divided by 60, plus BTBM17A.

If both minutes and hours are missing, set result to missing.

Derived Variable Name: BTDM23NU

Variable Label: Pct Students Taught Number Topics

Eighth Grade

**Title of International Report Exhibit**

Percentage of Students Taught the TIMSS Mathematics Topics

**Report Location**

Mathematics 8.9

**Procedure**

Based on the responses to the following questions in the teacher questionnaire:

The following list includes the main topics addressed by the TIMSS mathematics test. Choose the response that best describes when the students in this class have been taught each topic. If a topic was in the curriculum before the fourth grade, please choose "Mostly taught before this year." If a topic was taught half this year but not yet completed, please choose "Mostly taught this year." If a topic is not in the curriculum, please choose "Not yet taught or just introduced."

TQM-23Aa-e:

Computing, estimating, or approximating with whole numbers (BTBM23AA),

Concepts of fractions and computing with fractions (BTBM23AB),

Concepts of decimals and computing with decimals (BTBM23AC),

Representing, comparing, ordering, and computing with integers (BTBM23AD),

Problem solving involving percents and proportions (BTBM23AE)

Response options: "Mostly taught before this year"; "Mostly taught this year"; "Not yet taught or just introduced"

For each topic, compute the percent of students whose teachers selected "Mostly Taught Before This Year" (Code 1) OR "Mostly Taught This Year" (Code 2).

Then compute the average across the percentages of students taught the content domain.

Code as "Missing" if more than one-third of the source topics (variables) are missing.

Derived Variable Name: BTDM23AL

Variable Label: Pct Students Taught Algebra Topics

Eighth Grade

**Title of International Report Exhibit**

Percentage of Students Taught the TIMSS Mathematics Topics

**Report Location**

Mathematics 8.9

**Procedure**

Based on the responses to the following questions in the teacher questionnaire:

The following list includes the main topics addressed by the TIMSS mathematics test. Choose the response that best describes when the students in this class have been taught each topic. If a topic was in the curriculum before the fourth grade, please choose "Mostly taught before this year." If a topic was taught half this year but not yet completed, please choose "Mostly taught this year." If a topic is not in the curriculum, please choose "Not yet taught or just introduced."

TQM-23Ba-e:

Numeric, algebraic, and geometric patterns or sequences (BTBM23BA),

Simplifying and evaluating algebraic expressions (BTBM23BB),

Simple linear equations and inequalities (BTBM23BC),

Simultaneous (two variables) equations (BTBM23BD),

Representation of functions as ordered pairs, tables, graphs, words, or equations (BTBM23BE)

Response options: "Mostly taught before this year"; "Mostly taught this year"; "Not yet taught or just introduced"

For each topic, compute the percent of students whose teachers selected "Mostly Taught Before This Year" (Code 1) OR "Mostly Taught This Year" (Code 2).

Then compute the average across the percentages of students taught the content domain.

Code as "Missing" if more than one-third of the source topics (variables) are missing.

Derived Variable Name: BTDM23GE

Variable Label: Pct Students Taught Geometry Topics

Eighth Grade

**Title of International Report Exhibit**

Percentage of Students Taught the TIMSS Mathematics Topics

**Report Location**

Mathematics 8.9

**Procedure**

Based on the responses to the following questions in the teacher questionnaire:

The following list includes the main topics addressed by the TIMSS mathematics test. Choose the response that best describes when the students in this class have been taught each topic. If a topic was in the curriculum before the fourth grade, please choose "Mostly taught before this year." If a topic was taught half this year but not yet completed, please choose "Mostly taught this year." If a topic is not in the curriculum, please choose "Not yet taught or just introduced."

TQM-23Ca-f:

Based on the teachers' responses to the following question:

Geometric properties of angles and geometric shapes (BTBM23CA),

Congruent figures and similar triangles (BTBM23CB),

Relationship between three-dimensional shapes and their two-dimensional representations (BTBM23CC),

Using appropriate measurement formulas for perimeters, circumferences, areas, surface areas, and volumes (BTBM23CD),

Points on the Cartesian plane (BTBM23CE),

Translation, reflection, and rotation (BTBM23CF)

Response options: "Mostly taught before this year"; "Mostly taught this year"; "Not yet taught or just introduced"

For each topic, compute the percent of students whose teachers selected "Mostly Taught Before This Year" (Code 1) OR "Mostly Taught This Year" (Code 2).

Then compute the average across the percentages of students taught the content domain.

Code as "Missing" if more than one-third of the source topics (variables) are missing.

Derived Variable Name: BTDM23DA

Variable Label: Pct Students Taught Data Topics

Eighth Grade

**Title of International Report Exhibit**

Percentage of Students Taught the TIMSS Mathematics Topics

**Report Location**

Mathematics 8.9

**Procedure**

Based on the responses to the following questions in the teacher questionnaire:

The following list includes the main topics addressed by the TIMSS mathematics test. Choose the response that best describes when the students in this class have been taught each topic. If a topic was in the curriculum before the fourth grade, please choose "Mostly taught before this year." If a topic was taught half this year but not yet completed, please choose "Mostly taught this year." If a topic is not in the curriculum, please choose "Not yet taught or just introduced."

TQM-23Da-c:

Based on the teachers' responses to the following question:

Reading and displaying data using tables, pictographs, bar graphs, pie charts and line graphs (BTBM23DA),

Interpreting data sets (BTBM23DB),

Judging, predicting, and determining the chances of possible outcomes (BTBM23DC)

Response options: "Mostly taught before this year"; "Mostly taught this year"; "Not yet taught or just introduced"

For each topic, compute the percent of students whose teachers selected "Mostly Taught Before This Year" (Code 1) OR "Mostly Taught This Year" (Code 2).

Then compute the average across the percentages of students taught the content domain.

Code as "Missing" if more than one-third of the source topics (variables) are missing.

# Section 7

## Eighth Grade – Science Teacher Questionnaire



Derived Variable Name: BTDS05

Variable Label: Teachers Majored in Ed and Science

Eighth Grade

**Title of International Report Exhibit**

Teachers Majored in Education and Science

**Report Location**

Science 7.4

**Procedure**

Based on the following questions:

During your &lt;post-secondary&gt;education, what was your major or main area(s) of study? TQG-05A abcdefghi

"Mathematics" (BTBG05A)

"Biology" (BTBG05B)

"Physics" (BTBG05C)

"Chemistry" (BTBG05D)

"Earth science" (BTBG05E)

"Education-mathematics" (BTBG05F)

"Education-science" (BTBG05G)

"Education-general" (BTBG05H)

"Another subject" (BTBG05I)

1 ((BTBG05B=1 OR BTBG05C=1 OR BTBG05D=1 OR BTBG05E=1) AND BTBG05G=1) = Major in science and science education

2 ((BTBG05B=2 AND BTBG05C=2 AND BTBG05D=2 AND BTBG05E=2) AND BTBG05G=1) = Major in science education but no major in science

3 ((BTBG05B=1 OR BTBG05C=1 OR BTBG05D=1 OR BTBG05E=1) AND BTBG05G=2) = Major in science but no major in science education

4 ((BTBG05B=2 AND BTBG05C=2 AND BTBG05D=2 AND BTBG05E=2) AND BTBG05G=2) = All other majors

Otherwise, set to missing.

1=Major in Science and Science Education, 2=Major in Science Education but No Major in Science, 3=Major in Science but No Major in Science Education, 4=All Other Majors

Derived Variable Name: BTDG01

Variable Label: Teachers Years of Experience

Eighth Grade

**Title of International Report Exhibit**

Teachers' Years of Experience

**Report Location**

Science 7.6

**Procedure**

Based on the following questionnaire from the Teacher Questionnaire, TQG-01 (BTBG01):

By the end of this school year, how many years will you have been teaching altogether?

(Open-response item)

1 (BTBG01  $\geq$  20) = 20 years or more,2 (BTBG01  $\geq$  10 and BTBG01  $<$  20) = At Least 10 But Less Than 20 Years,3 (BTBG01  $\geq$  5 and BTBG01  $<$  10) = At Least 5 But Less Than 10 Years,4 (BTBGG01  $<$  5) = Less than 5 years

Set the derived variable to missing if the source variable is missing.

1=20 Years or More, 2=At Least 10 but Less than 20 Years, 3=At Least 5 but Less than 10 Years, 4=Less than 5 Years



Derived Variable Name: BTDS29BI

Variable Label: Teachers Prepared to Teach Biology

Eighth Grade

**Title of International Report Exhibit**

Teachers Feel "Very Well" Prepared to Teach TIMSS Science Topics

**Report Location**

Science 7.10

**Procedure**

Based on the teachers' responses to the following question:

How well prepared do you feel you are to teach the following science topics? If a topic is not in the eighth-grade curriculum or you are not responsible for teaching this topic, please choose "Not applicable."

TQS-29Aabcdefg

Major organs and organ systems in humans and other organisms (BTBS29AA),

Cells and their functions, including respiration and photosynthesis as cellular processes (BTBS29AB),

Reproduction (sexual and asexual) and heredity (BTBS29AC),

Role of variation and adaptation in survival/extinction of species in a changing environment (BTBS29AD),

Interdependence of populations of organisms in an ecosystem and the impact of changes in the physical environment on populations (BTBS29AE),

Reasons for increase in world's human population, and the effects of population growth on the environment (BTBS29AF),

Human health and the importance of diet and exercise in maintaining health (BTBS29AG)

Response options: "Not applicable"; "Very well prepared"; "Somewhat prepared"; "Not well prepared"

For each topic in Grade 8, percents are computed after filtering by ITCOURSE variable:

Biology: ITCOURSE = 3, 6, 9, 14, 15

Compute percent of students whose teachers indicate "Very well prepared" (Code 2) for each of the topics. Then, compute the average across the percentage of students whose teachers indicate "Very well prepared" over the content domain. Code to "missing" if more than one-third of the source topics (variables) are missing or "Not applicable" (Code 1).

Derived Variable Name: BTDS29CH

Variable Label: Teachers Prepared to Teach Chemistry

Eighth Grade

**Title of International Report Exhibit**

Teachers Feel "Very Well" Prepared to Teach TIMSS Science Topics

**Report Location**

Science 7.10

**Procedure**

Based on the teachers' responses to the following question:

How well prepared do you feel you are to teach the following science topics? If a topic is not in the eighth-grade curriculum or you are not responsible for teaching this topic, please choose "Not applicable."

TQS-29Babcd

Classification, composition, and particulate structure of matter (BTBS29BA),

Solutions (BTBS29BB),

Properties and uses of common acids and bases (BTBS29BC),

Chemical change (BTBS29BD)

Response options: "Not applicable"; "Very well prepared"; "Somewhat prepared"; "Not well prepared"

For each topic in Grade 8, percents are computed after filtering by ITCOURSE variable:

Chemistry: ITCOURSE = 4, 6, 8, 14, 15

Compute percent of students whose teachers indicate "Very well prepared" (Code 2) for each of the topics. Then, compute the average across the percentage of students whose teachers indicate "Very well prepared" over the content domain. Code to "missing" if more than one-third of the source topics (variables) are missing or "Not applicable" (Code 1).

Derived Variable Name: BTDS29PH

Variable Label: Teachers Prepared to Teach Physics

Eighth Grade

**Title of International Report Exhibit**

Teachers Feel "Very Well" Prepared to Teach TIMSS Science Topics

**Report Location**

Science 7.10

**Procedure**

Based on the teachers' responses to the following question:

How well prepared do you feel you are to teach the following science topics? If a topic is not in the eighth-grade curriculum or you are not responsible for teaching this topic, please choose "Not applicable."

TQS-29Cabcde

Physical states and changes in matter (BTBS29CA),

Energy forms, transformations, heat, and temperature (BTBS29CB),

Basic properties/behaviors of light and sound (BTBS29CC),

Electric circuits and properties and uses of permanent magnets and electromagnets (BTBS29CD),

Forces and motion (BTBS29CE)

Response options: "Not applicable"; "Very well prepared"; "Somewhat prepared"; "Not well prepared"

For each topic in Grade 8, percents are computed after filtering by ITCOURSE variable:

Physics: ITCOURSE = 2, 6, 8, 14, 15

Compute percent of students whose teachers indicate "Very well prepared" (Code 2) for each of the topics. Then, compute the average across the percentage of students whose teachers indicate "Very well prepared" over the content domain. Code to "missing" if more than one-third of the source topics (variables) are missing or "Not applicable" (Code 1).

Derived Variable Name: BTDS29ES

Variable Label: Teachers Prepared to Teach Earth Science

Eighth Grade

**Title of International Report Exhibit**

Teachers Feel "Very Well" Prepared to Teach TIMSS Science Topics

**Report Location**

Science 7.10

**Procedure**

Based on the teachers' responses to the following question:

How well prepared do you feel you are to teach the following science topics? If a topic is not in the eighth-grade curriculum or you are not responsible for teaching this topic, please choose "Not applicable."

TQS-29Dabcd

Earth's structure and physical features (BTBS29DA),

Earth's processes, cycles and history (BTBS29DB),

Earth's resources, their use and conservation (BTBS29DC),

Earth in the solar system and the universe (BTBS29DD)

Response options: "Not applicable"; "Very well prepared"; "Somewhat prepared"; "Not well prepared"

For "Earth Science" topics (BTBS29DA, BTBS29DB, BTBS29DC, BTBS29DD), recode "Not applicable" (code 1) to "Not well prepared" (code 4).

For each topic in Grade 8, percents are computed after filtering by ITCOURSE variable:

Earth Science: ITCOURSE = 5, 6, 9, 14, 15

Compute percent of students whose teachers indicate "Very well prepared" (Code 2) for each of the topics. Then, compute the average across the percentage of students whose teachers indicate "Very well prepared" over the content domain. Code to "missing" if more than one-third of the source topics (variables) are missing or "Not applicable" (Code 1).

Derived Variable Name: BTDSHW

Variable Label: Science Instructional Hours per Week

Eighth Grade

**Title of International Report Exhibit**

Instructional Time Spent on Science

**Report Location**

Science 8.7

**Procedure**

Based on the teachers' responses to the following questions:

In a typical week, how much time do you spend teaching science to the students in this class? TQS-17AB (BTBS17A, BTBS17B)  
(Open-response item)

Compute science instructional hours per week:

If hours (BTBS17A) is missing, use BTBS17B divided by 60,

if minutes (BTBS17B) is missing, use BTBS17A,

otherwise use BTBS17B divided by 60, plus BTBS17A.

If both minutes and hours are missing, set result to missing.

Derived Variable Name: BTDBHW

Variable Label: Biology Instructional Hours per Week

Eighth Grade

**Title of International Report Exhibit**

Instructional Time Spent on Science

**Report Location**

Science 8.7

**Procedure**

Based on the teachers' responses to the following questions:

In a typical week, how much time do you spend teaching science to the students in this class? TQS-17AB (BTBS17A, BTBS17B)  
(Open-response item)

Compute science instructional hours per week:

If hours (BTBS17A) is missing, use BTBS17B divided by 60,

if minutes (BTBS17B) is missing, use BTBS17A,

otherwise use BTBS17B divided by 60, plus BTBS17A.

If both minutes and hours are missing, set result to missing.

Filter by teachers who teach biology.

Derived Variable Name: BTDCHW

Variable Label: Chemistry Instructional Hours per Week

Eighth Grade

**Title of International Report Exhibit**

Instructional Time Spent on Science

**Report Location**

Science 8.7

**Procedure**

Based on the teachers' responses to the following questions:

In a typical week, how much time do you spend teaching science to the students in this class? TQS-17AB (BTBS17A, BTBS17B)  
(Open-response item)

Compute science instructional hours per week:

If hours (BTBS17A) is missing, use BTBS17B divided by 60,

if minutes (BTBS17B) is missing, use BTBS17A,

otherwise use BTBS17B divided by 60, plus BTBS17A.

If both minutes and hours are missing, set result to missing.

Filter by teachers who teach chemistry.

Derived Variable Name: BTDPHW

Variable Label: Physics Instructional Hours per Week

Eighth Grade

**Title of International Report Exhibit**

Instructional Time Spent on Science

**Report Location**

Science 8.7

**Procedure**

Based on the teachers' responses to the following questions:

In a typical week, how much time do you spend teaching science to the students in this class? TQS-17AB (BTBS17A, BTBS17B)  
(Open-response item)

Compute science instructional hours per week:

If hours (BTBS17A) is missing, use BTBS17B divided by 60,

if minutes (BTBS17B) is missing, use BTBS17A,

otherwise use BTBS17B divided by 60, plus BTBS17A.

If both minutes and hours are missing, set result to missing.

Filter by teachers who teach physics.



Derived Variable Name: BTDEHW

Variable Label: Earth Sci Instructional Hours per Week

Eighth Grade

**Title of International Report Exhibit**

Instructional Time Spent on Science

**Report Location**

Science 8.7

**Procedure**

Based on the teachers' responses to the following questions:

In a typical week, how much time do you spend teaching science to the students in this class? TQS-17AB (BTBS17A, BTBS17B)  
(Open-response item)

Compute science instructional hours per week:

If hours (BTBS17A) is missing, use BTBS17B divided by 60,

if minutes (BTBS17B) is missing, use BTBS17A,

otherwise use BTBS17B divided by 60, plus BTBS17A.

If both minutes and hours are missing, set result to missing.

Filter by teachers who teach earth science.

Derived Variable Name: BTDS22BI

Variable Label: Pct Students Taught Biology Topics

Eighth Grade

**Title of International Report Exhibit**

Percentage of Students Taught the TIMSS Science Topics

**Report Location**

Science 8.9

**Procedure**

Based on the responses to the following questions in the teacher questionnaire:

The following list includes the main topics addressed by the TIMSS science test. Choose the response that best describes when the students in this class have been taught each topic. If a topic was in the curriculum before the fourth grade, please choose "Mostly taught before this year." If a topic was taught half this year but not yet completed, please choose "Mostly taught this year." If a topic is not in the curriculum, please choose "Not yet taught or just introduced."

TQS-22Aabcdefg

Major organs and organ systems in humans and other organisms (BTBS22AA),

Cells and their functions, including respiration and photosynthesis as cellular processes (BTBS22AB),

Reproduction (sexual and asexual) and heredity (BTBS22AC),

Role of variation and adaptation in survival/extinction of species in a changing environment (BTBS22AD),

Interdependence of populations of organisms in an ecosystem and the impact of changes in the physical environment on populations (BTBS22AE),

Reasons for increase in world's human population, and the effects of population growth on the environment (BTBS22AF),

Human health and the importance of diet and exercise in maintaining health (BTBS22AG)

Response options: "Mostly taught before this year"; "Mostly taught this year"; "Not yet taught or just introduced"

For each topic in Grade 8, percents are computed after filtering by ITCOURSE variable:

Biology: ITCOURSE = 3, 6, 9, 14, 15

For each topic, compute the percent of students whose teachers selected "Mostly Taught Before This Year" (Code 1) OR "Mostly Taught This Year" (Code 2).

Then compute the average across the percentages of students taught the content domain.

Code as "Missing" if more than one-third of the source topics (variables) are missing.

Derived Variable Name: BTDS22CH

Variable Label: Pct Students Taught Chemistry Topics

Eighth Grade

**Title of International Report Exhibit**

Percentage of Students Taught the TIMSS Science Topics

**Report Location**

Science 8.9

**Procedure**

Based on the responses to the following questions in the teacher questionnaire:

The following list includes the main topics addressed by the TIMSS science test. Choose the response that best describes when the students in this class have been taught each topic. If a topic was in the curriculum before the fourth grade, please choose "Mostly taught before this year." If a topic was taught half this year but not yet completed, please choose "Mostly taught this year." If a topic is not in the curriculum, please choose "Not yet taught or just introduced."

TQS-22Babcd

Classification, composition, and particulate structure of matter (BTBS22BA),

Solutions (BTBS22BB),

Properties and uses of common acids and bases (BTBS22BC),

Chemical change (BTBS22BD)

Response options: "Mostly taught before this year"; "Mostly taught this year"; "Not yet taught or just introduced"

For each topic in Grade 8, percents are computed after filtering by ITCOURSE variable:

Chemistry: ITCOURSE = 4, 6, 8, 14, 15

For each topic, compute the percent of students whose teachers selected "Mostly Taught Before This Year" (Code 1) OR "Mostly Taught This Year" (Code 2).

Then compute the average across the percentages of students taught the content domain.

Code as "Missing" if more than one-third of the source topics (variables) are missing.

Derived Variable Name: BTDS22PH

Variable Label: Pct Students Taught Physics Topics

Eighth Grade

**Title of International Report Exhibit**

Percentage of Students Taught the TIMSS Science Topics

**Report Location**

Science 8.9

**Procedure**

Based on the responses to the following questions in the teacher questionnaire:

The following list includes the main topics addressed by the TIMSS science test. Choose the response that best describes when the students in this class have been taught each topic. If a topic was in the curriculum before the fourth grade, please choose "Mostly taught before this year." If a topic was taught half this year but not yet completed, please choose "Mostly taught this year." If a topic is not in the curriculum, please choose "Not yet taught or just introduced."

TQS-22Cabcde

Physical states and changes in matter (BTBS22CA),

Energy forms, transformations, heat, and temperature (BTBS22CB),

Basic properties/behaviors of light and sound (BTBS22CC),

Electric circuits and properties and uses of permanent magnets and electromagnets (BTBS22CD),

Forces and motion (BTBS22CE)

Response options: "Mostly taught before this year"; "Mostly taught this year"; "Not yet taught or just introduced"

For each topic in Grade 8, percents are computed after filtering by ITCOURSE variable:

Physics: ITCOURSE = 2, 6, 8, 14, 15

For each topic, compute the percent of students whose teachers selected "Mostly Taught Before This Year" (Code 1) OR "Mostly Taught This Year" (Code 2).

Then compute the average across the percentages of students taught the content domain.

Code as "Missing" if more than one-third of the source topics (variables) are missing.

Derived Variable Name: BTDS22ES

Variable Label: Pct Students Taught Earth Sci Topics

Eighth Grade

**Title of International Report Exhibit**

Percentage of Students Taught the TIMSS Science Topics

**Report Location**

Science 8.9

**Procedure**

Based on the responses to the following questions in the teacher questionnaire:

The following list includes the main topics addressed by the TIMSS science test. Choose the response that best describes when the students in this class have been taught each topic. If a topic was in the curriculum before the fourth grade, please choose "Mostly taught before this year." If a topic was taught half this year but not yet completed, please choose "Mostly taught this year." If a topic is not in the curriculum, please choose "Not yet taught or just introduced."

TQS-22Dabcd

Earth's structure and physical features (BTBS22DA),

Earth's processes, cycles and history (BTBS22DB),

Earth's resources, their use and conservation (BTBS22DC),

Earth in the solar system and the universe (BTBS22DD)

Response options: "Mostly taught before this year"; "Mostly taught this year"; "Not yet taught or just introduced"

For each topic in Grade 8, percents are computed after filtering by ITCOURSE variable:

Earth Science: ITCOURSE = 5, 6, 9, 14, 15

For each topic, compute the percent of students whose teachers selected "Mostly Taught Before This Year" (Code 1) OR "Mostly Taught This Year" (Code 2).

Then compute the average across the percentages of students taught the content domain.

Code as "Missing" if more than one-third of the source topics (variables) are missing.

# Section 8

## Eighth Grade – School Questionnaire



Derived Variable Name: BCDG03

Variable Label: School Composition by Student Backgd

Eighth Grade

**Title of International Report Exhibit**

School Composition by Student Economic Background

**Report Location**

Mathematics 5.4;

Science 5.4

**Procedure**

Based on the following question:

Approximately what percentage of students in your school have the following backgrounds? SCQ-3 (BCBG03A and BCBG03B)

Response options: "0 to 10%"; "11 to 25%"; "26 to 50%"; "More than 50%"

1 (BCBG03A  $\leq$  2 ("0 to 10% or "11 to 25%") and BCBG03B  $\geq$  3 ("26 to 50%"; "More than 50%")) = Schools With More Affluent Than Disadvantaged Students

3 (BCBG03A  $\geq$  3 ("26 to 50%"; "More than 50%") and BCBG03B  $\leq$  2 ("0 to 10% or "11 to 25%")) = Schools With More Disadvantaged Than Affluent Students

2 (All other combinations) = Schools with Neither More Affluent nor More Disadvantaged Students

Set the derived variable to missing if either source variable is missing.

1=More Affluent than Disadvantaged Students, 2=Neither More Affluent nor More Disadvantaged students, 3=More Disadvantaged than Affluent Students

Derived Variable Name: BCDGCMP

Variable Label: Computer Availability for Instruction

Eighth Grade

**Title of International Report Exhibit**

Schools with Computers Available for Instruction

**Report Location**

Mathematics 5.15;

Science 5.14

**Procedure**

Based on the following questions:

What is the total enrollment of fourth grade students in your school as of the first day of the month TIMSS 2011 testing begins? SCQ-02 (BCBG02)

(Open-response item)

What is the total number of computers that can be used for instructional purposes by fourth grade students? SCQ-07 (BCBG07)

(Open-response item)

Compute number of students per computer by dividing the number of students by number of computers.

Set number of students per computer to missing if any of the source variables are missing except if the number of computers equals zero.

1 (Number of students per computer  $\leq 2.5$ ) = 1 Computer for 1-2 Students

2 (Number of students per computer  $> 2.5$  and  $< 5.5$ ) = 1 Computer for 3-5 Students

3 (Number of students per computer  $\geq 5.5$ ) = 1 Computer for 6 or More Students

4 (ACBG07 = 0) = No computer

1=1 Computer for 1-2 Students, 2=1 Computer for 3-5 Students, 3=1 Computer for 6 or More Students, 4=No Computers Available



Derived Variable Name: BCDG06HY

Variable Label: Total Instructional Hours per Year

Eighth Grade

**Title of International Report Exhibit**

Instructional Time Spent on Mathematics/Science

**Report Location**

Mathematics 8.7;

Science 8.7

**Procedure**

Based on the principals' responses to the following questions:

How many days per year is your school open for instruction? SCQ-06A (BCBG06A)

(Open-response item)

What is the total instructional time, excluding breaks, in a typical day? SCQ-06Bab (BCBG06BA, BCBG06BB)

(Open-response item)

Step 1: Compute instructional hours per day:

If hours (BCBG06BA) is missing, use BCBG06BB divided by 60,

if minutes (BCBG06BB) is missing use BCBG06BA,

otherwise use BCBG06BB divided by 60, plus BCBG06BA.

If both minutes and hours are missing, set result to missing.

Step 2: Compute hours of school per year: Multiply the result of Step 1 by BCBG06A.

Derived Variable Name: BCDG06

Variable Label: Number of Days per Week for Instruction

Eighth Grade

**Title of International Report Exhibit**

Instructional Time Spent on Mathematics/Science

**Report Location**

Mathematics 8.7;

Science 8.7

**Procedure**

Based on the principals' responses to the following questions:

In one calendar week, how many days is the school open for instruction? SCQ-06C (BCBG06C)

Response options: "6 days"; "5 1/2 days"; "5 days"; "4 1/2 days"; "4 days"; "Other"

Compute number of days per week for instruction, BCDG06, by recoding BCBG06C as follows:

1 ("6 days") = 6

2 ("5 1/2 days") = 5.5

3 ("5 days") = 5

4 ("4 1/2 days") = 4.5

5 ("4 days") = 4

6 ("Other") = 3



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