

SECTION 1:
FOURTH GRADE –
STUDENT
QUESTIONNAIRE

TIMSS 2015 USER GUIDE FOR THE
INTERNATIONAL DATABASE



IEA

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

Derived Variable Name: ASDG05S

Variable Label: Number of Home Study Supports

Fourth Grade

Title of International Report Exhibit

Home Resources for Learning

Report Location

Mathematics 4.1;

Science 4.1

Procedure

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

SQG-05d,e: Do you have any of these things in your home?

"Your own room" (ASBG05D)

"Internet connection" (ASBG05E)

Response options: 1 = "Yes"; 2 = "No"

Derive ASDG05S:

0 (ASBG05D = 2 AND ASBG05E = 2) = "Neither own room nor Internet connection"

1 ((ASBG05D = 1 AND ASBG05E = 2) OR (ASBG05D = 2 AND ASBG05E = 1)) = "Either own room or Internet connection but not both"

2 (ASBG05D = 1 AND ASBG05E = 1) = "Both own room and Internet connection"

Set ASDG05S 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"

Trend Comments

See ASDG05S in TIMSS 2011

SECTION 3:
FOURTH GRADE –
TEACHER
QUESTIONNAIRE

TIMSS 2015 USER GUIDE FOR THE
INTERNATIONAL DATABASE



IEA

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

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 8.3

Procedure

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

TQG-04: What is the highest level of formal education you have completed? (ATBG04)

Response options: 1 = "Did not complete <Upper secondary education—ISCED Level 3>", 2 = "<Upper secondary education—ISCED Level 3>", 3 = "<Post-secondary, non-tertiary education—ISCED Level 4>", 4 = "<Short-cycle tertiary education—ISCED Level 5>", 5 = "<Bachelor's or equivalent level—ISCED Level 6>", 6 = "<Master's or equivalent level—ISCED Level 7>", 7 = "<Doctor or equivalent level—ISCED Level 8>"

TQG-05Aa,b,c,d,e,f: During your <post-secondary>education, what was your major or main area(s) of study?

"Education- primary/elementary" (ATBG05AA)

"Education- secondary" (ATBG05AB)

"Mathematics" (ATBG05AC)

"Science" (ATBG05AD)

"<Language of test>" (ATBG05AE)

"Other" (ATBG05AF)

Response options: 1 = "Yes", 2 = "No"

TQG-05Ba,b,c,d: If your major or main area of study was education, did you have a <specialization> in any of the following?

"Mathematics" (ATBG05BA)

"Science" (ATBG05BB)

"Language/reading" (ATBG05BC)

"Other" (ATBG05BD)

Response options: 1 = "Yes", 2 = "No"

Derive ATDM05:

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 AND 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 AND ATBG05BA=2) = "All other majors"

5 (ATBG04 = 1 OR 2) = "No formal education beyond upper-secondary"

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", 5 = "No formal education beyond upper-secondary"

Trend Comments

See ATDM05 in TIMSS 2011

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 8.3

Procedure

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

TQG-04: What is the highest level of formal education you have completed? (ATBG04)

Response options: 1 = "Did not complete <Upper secondary education—ISCED Level 3>", 2 = "<Upper secondary education—ISCED Level 3>", 3 = "<Post-secondary, non-tertiary education—ISCED Level 4>", 4 = "<Short-cycle tertiary education—ISCED Level 5>", 5 = "<Bachelor's or equivalent level—ISCED Level 6>", 6 = "<Master's or equivalent level—ISCED Level 7>", 7 = "<Doctor or equivalent level—ISCED Level 8>"

TQG-05Aa,b,c,d,e,f: During your <post-secondary>education, what was your major or main area(s) of study?

"Education- primary/elementary" (ATBG05AA)

"Education- secondary" (ATBG05AB)

"Mathematics" (ATBG05AC)

"Science" (ATBG05AD)

"<Language of test>" (ATBG05AE)

"Other" (ATBG05AF)

Response options: 1 = "Yes", 2 = "No"

TQG-05Ba,b,c,d: If your major or main area of study was education, did you have a <specialization> in any of the following?

"Mathematics" (ATBG05BA)

"Science" (ATBG05BB)

"Language/reading" (ATBG05BC)

"Other" (ATBG05BD)

Response options: 1 = "Yes", 2 = "No"

Derive ATDS05:

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 AND 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 AND ATBG05BB=2) = "All other majors"

5 (ATBG04 = 1 OR 2) = "No formal education beyond upper-secondary"

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", 5 = "No formal education beyond upper-secondary"

Trend Comments

See ATDS05 in TIMSS 2011

Derived Variable Name: ATDM06NU

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 9.3

Procedure

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

TQ-M07Aa,b,c,d,e,f,g,h: 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."

"Concepts of whole numbers, including place value and ordering" (ATBM06AA)

"Adding, subtracting, multiplying and/or dividing with whole numbers" (ATBM06AB)

"Concepts of multiples and factors; odd and even numbers" (ATBM07AC)

"Concepts of fractions (fractions as parts of a whole or of a collection, or as a location on a number line)" (ATBM06AD)

"Adding and subtracting with fractions, comparing and ordering fractions" (ATBM07AE)

"Concepts of decimals, including place value and ordering, adding and subtracting with decimals" (ATBM07AF)

"Number sentences (finding the missing number, modeling simple situations with number sentences)" (ATBM07AG)

"Number patterns (extending number patterns and finding missing terms)" (ATBM07AH)

Response options: 1 = "Mostly taught before this year", 2 = "Mostly taught this year", 3 = "Not yet taught or just introduced"

Derive ATDM06NU:

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

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

Set ATDM06NU to missing if more than one-third of the source variables are missing.

Derived Variable Name: ATDM06GE | 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 9.3

Procedure

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

TQM-06Ba,b,c,d,e,f,g: 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."

"Lines: measuring, estimating length of; parallel and perpendicular lines" (ATBM06BA)

"Comparing and drawing angles" (ATBM06BB)

"Using informal coordinate systems to locate points in a plane (e.g., in square B4)" (ATBM06BC)

"Elementary properties of common geometric shapes" (ATBM06BD)

"Reflections and rotations" (ATBM06BE)

"Relationships between two-dimensional and three-dimensional shapes" (ATBM06BF)

"Finding and estimating areas, perimeters and volumes" (ATBM06BG)

Response options: 1 = "Mostly taught before this year", 2 = "Mostly taught this year", 3 = "Not yet taught or just introduced"

Derive ATDM06GE:

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

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

Set ATDM06GE to missing if more than one-third of the source variables are missing.

Trend Comments

See ATDM07GE in TIMSS 2011

Derived Variable Name: ATDM06DT

Variable Label: Pct Students Taught Data Display Topics

Fourth Grade

Title of International Report Exhibit

Percentage of Students Taught the TIMSS Mathematics Topics*

Report Location

Mathematics 9.3

Procedure

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

TQM-07Ca,b: 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."

"Reading and representing data from tables, pictographs, bar graphs, or pie charts" (ATBM06CA)

"Drawing conclusions from data displays" (ATBM06CB)

Response options: 1 = "Mostly taught before this year"; 2 = "Mostly taught this year"; 3 = "Not yet taught or just introduced"

Derive ATDM06DT:

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

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

Set ATDM06DT to missing if more than one-third of the source variables are missing.

Derived Variable Name: ATDS05LI

Variable Label: Pct Students Taught Life Science Topics

Fourth Grade

Title of International Report Exhibit

Percentage of Students Taught the TIMSS Science Topics*

Report Location

Science 9.3

Procedure

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

TQS-05Aa,b,c,d,e,f,g: 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."

"Characteristics of living things and the major groups of living things (e.g., mammals, birds, insects, flowering plants)" (ATBS05AA)

"Major body structures and their functions in humans, other animals, and plants" (ATBS05AB)

"Life cycles of common plants and animals (e.g., humans, butterflies, frogs, flowering plants)" (ATBS05AC)

"Understanding that some characteristics are inherited and some are the result of the environment" (ATBS05AD)

"How physical features and behaviors help living things survive in their environments" (ATBS05AE)

"Relationships in communities and ecosystems (e.g., simple food chains, predator-prey relationships, human impacts on the environment)" (ATBS05AF)

"Human health (transmission and prevention of diseases, symptoms of health and illness, importance of a healthy diet and exercise)" (ATBS05AG)

Response options: 1 = "Mostly taught before this year", 2 = "Mostly taught this year", 3 = "Not yet taught or just introduced"

Derive ATDS05LI:

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

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

Set ATDS05LI to missing if more than one-third of the source variables are missing.

Derived Variable Name: ATDS05PH | Variable Label: Pct Students Taught Physical Science Topics | Fourth Grade

Title of International Report Exhibit

Percentage of Students Taught the TIMSS Science Topics*

Report Location

Science 9.3

Procedure

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

TQS-05Ba,b,c,d,e,f,g,h,i: 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."

"States of matter (solid, liquid, gas) and properties of the states of matter (volume, shape); how the state of matter changes by heating or cooling" (ATBS05BA)

"Classifying materials based on physical properties (e.g., weight/mass, volume, conducting heat, conducting electricity, magnetic attraction)" (ATBS05BB)

"Mixtures and how to separate a mixture into its components (e.g., sifting, filtering, evaporation, using a magnet)" (ATBS05BC)

"Chemical changes in everyday life (e.g., decaying, burning, rusting, cooking)" (ATBS05BD)

"Common sources of energy (e.g., the Sun, electricity, wind) and uses of energy (heating and cooling homes, providing light)" (ATBS05BE)

"Light and sound in everyday life (e.g., understanding shadows and reflection, understanding that vibrating objects make sound)" (ATBS05BF)

"Electricity and simple circuits (e.g., identifying materials that are conductors, recognizing that electricity can be changed to light or sound, knowing that a circuit must be complete to work correctly)" (ATBS05BG)

"Properties of magnets (e.g., knowing that like poles repel and opposite poles attract, recognizing that magnets can attract some objects)" (ATBS05BH)

"Forces that cause objects to move (e.g., gravity, pushing/pulling)" (ATBS05BI)

Response options: 1 = "Mostly taught before this year", 2 = "Mostly taught this year", 3 = "Not yet taught or just introduced"

Derive ATDS05PH:

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

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

Set ATDS05PH to missing if more than one-third of the source variables are missing.

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| Derived Variable Name: ATDS05ES | Variable Label: Pct Students Taught Earth Science Topics | Fourth Grade |
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Title of International Report Exhibit

Percentage of Students Taught the TIMSS Science Topics*

Report Location

Science 9.3

Procedure

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

TQS-05Ca,b,c,d,e,f,g: 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,

"Common features of the Earth's landscape (e.g., mountains, plains, deserts, rivers, oceans) and their relationship to human use (farming, irrigation, land development)" (ATBS05CA)

"Where water is found on the Earth and how it moves in and out of the air (e.g., evaporation, rainfall, cloud formation, dew formation)" (ATBS05CB)

"Understanding that weather can change from day to day, from season to season, and by geographic location" (ATBS05CC)

"Understanding what fossils are and what they can tell us about past conditions on Earth" (ATBS05CD)

"Objects in the solar system (the Sun, the Earth, the Moon, and other planets) and their movements (the Earth and other planets revolve around the Sun, the Moon revolves around the Earth)" (ATBS05CE)

"Understanding how day and night result from the Earth's rotation on its axis and how the Earth's rotation results in changing shadows throughout the day" (ATBS05CF)

"Understanding how seasons are related to the Earth's annual movement around the Sun" (ATBS05CG)

Response options: 1 = "Mostly taught before this year", 2 = "Mostly taught this year", 3 = "Not yet taught or just introduced"

Derive ATDS05ES:

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

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

Set ATDS05ES as missing if more than one-third of the source variables are missing.

SECTION 4:
FOURTH GRADE –
SCHOOL
QUESTIONNAIRE

TIMSS 2015 USER GUIDE FOR THE
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TIMSS & PIRLS
International Study Center
Lynch School of Education, Boston College

Derived Variable Name: ACDG03

Variable Label: School Composition by Std Background

Fourth Grade

Title of International Report Exhibit

School Composition by Economic Background of the Student Body

Report Location

Mathematics 5.1;

Science 5.1

Procedure

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

SCQ-3: Approximately what percentage of students in your school have the following backgrounds?

"Come from economically disadvantaged homes" (ACBG03A)

"Come from economically affluent homes" (ACBG03B)

Response options: 1 = "0 to 10%", 2 = "11 to 25%", 3 = "26 to 50%", 4 = "More than 50%"

Derive ACDG03:

1 (ACBG03A <=2 AND ACBG03B >= 3) = "Schools With More Affluent Than Disadvantaged Students"

3 (ACBG03A >=3 AND ACBG03B <= 2) = "Schools With More Disadvantaged Than Affluent Students"

2 (All other combinations of ACBG03A and ACBG03B) = "Schools with Neither More Affluent nor More Disadvantaged Students"

Set ACDG03 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"

Trend Comments

See ACDG03 in TIMSS 2011

Derived Variable Name: ACDG08HY

Variable Label: Total Instructional Hours per Year

Fourth Grade

Title of International Report Exhibit

Instructional Time Spent on Mathematics; Instructional Time Spent on Science

Report Location

Mathematics 9.1;

Science 9.1

Procedure

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

SCQ-08A: How many days per year is your school open for instruction? (ACBG08A)
(Open-response item)

SCQ-08B: What is the total instructional time, excluding breaks, in a typical day? (ACBG08B)
(Open-response item; response is in terms of minutes)

Derive ACDG08HY:

Step 1: Compute instructional hours per day:

Divide ACBG08B by 60.

Step 2: Compute hours of school per year:

Multiply the result of Step 1 by ACBG08A.

Set ACDG08HY to missing if either source variable is missing.

Trend Comments

See ACDG06HY in TIMSS 2011