TIMSS 2015

Identification Label

TRENDS IN INTERNATIONAL MATHEMATICS AND SCIENCE STUDY

Teacher Questionnaire Science

<Grade 8>

<TIMSS National Research Center Name>
<Address>

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

Teacher *Questionnaire*

Your school has agreed to participate in TIMSS 2015 (Trends in International Mathematics and Science Study), an educational research project sponsored by the International Association for the Evaluation of Educational Achievement (IEA). TIMSS measures trends in student achievement in mathematics and science and studies differences in national education systems in almost 60 countries in order to help improve teaching and learning worldwide.

This questionnaire is addressed to teachers of <eighth grade> students, and seeks information about teachers' academic and professional backgrounds, classroom resources, instructional practices, and attitudes toward teaching. Since your class has been selected as part of a nationwide sample, your responses are very important in helping to describe secondary education in <country>.

Some of the questions in the questionnaire refer to the **"TIMSS class"** or **"this class"**. This is the class that is identified on the front of this booklet, and which will be tested as part of TIMSS in your school. If you teach some but not all of the students in the TIMSS class, please think only of the students that you teach when answering these class-specific questions. It is important that you answer each question carefully so that the information that you provide reflects your situation as accurately as possible.

Since TIMSS is an international study and all countries are using the same questionnaire, you may find that some of the questions seem unusual or are not entirely relevant to you or schools in <country>. Nevertheless, it is important that you do your best to answer all of the questions so comparisons can be made across countries in the studies.

It is estimated that you will need approximately 35 minutes to complete this questionnaire. We appreciate the time and effort that this takes and thank you for your cooperation and contribution.

When you have completed the questionnaire, please place it in the accompanying envelope and return it to:

<Insert country-specific information here>.

Thank you.

TIMSS 2015

1

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

_____ years

*Please **round** to the nearest whole number.*

2

Are you female or male?

*Check **one** circle only.*

Female ---
Male ---

3

How old are you?

*Check **one** circle only.*

Under 25 ---
25–29 ---
30–39 ---
40–49 ---
50–59 ---
60 or more ---

4

What is the highest level of formal education you have completed?

*Check **one** circle only.*

Did not complete <Upper secondary education—ISCED Level 3> ---

<Upper secondary education—ISCED Level 3> ---

(If you have not completed <post-secondary or tertiary education>, go to #6)

<Post-secondary, non-tertiary education—ISCED Level 4> ---

<Short-cycle tertiary education—ISCED Level 5> ---

<Bachelor's or equivalent level—ISCED Level 6> ---

<Master's or equivalent level—ISCED Level 7> ---

<Doctor or equivalent level—ISCED Level 8> ---

5

During your <post-secondary> education, what was your major or main area(s) of study?

*Check **one** circle for each line.*

	Yes	No
a) Mathematics	◯	◯
b) Biology	◯	◯
c) Physics	◯	◯
d) Chemistry	◯	◯
e) <Earth Science>	◯	◯
f) Education–Mathematics	◯	◯
g) Education–Science	◯	◯
h) Education–General	◯	◯
i) Other	◯	◯

6

How would you characterize each of the following within your school?

*Check **one** circle for each line.*

	Very high	High	Medium	Low	Very low
a) Teachers' understanding of the school's curricular goals	○	○	○	○	○
b) Teachers' degree of success in implementing the school's curriculum	○	○	○	○	○
c) Teachers' expectations for student achievement	○	○	○	○	○
d) Teachers working together to improve student achievement	○	○	○	○	○
e) Teachers' ability to inspire students	○	○	○	○	○
f) Parental involvement in school activities	○	○	○	○	○
g) Parental commitment to ensure that students are ready to learn	○	○	○	○	○
h) Parental expectations for student achievement	○	○	○	○	○
i) Parental support for student achievement	○	○	○	○	○
j) Parental pressure for the school to maintain high academic standards	○	○	○	○	○

*Check **one** circle for each line.*

	Very high	High	Medium	Low	Very low
k) Students' desire to do well in school	○	○	○	○	○
l) Students' ability to reach school's academic goals	○	○	○	○	○
m) Students' respect for classmates who excel in school	○	○	○	○	○
n) Clarity of the school's educational objectives	○	○	○	○	○
o) Collaboration between school leadership and teachers to plan instruction	○	○	○	○	○
p) Amount of instructional support provided to teachers by school leadership	○	○	○	○	○
q) School leadership's support for teachers' professional development	○	○	○	○	○

7

Thinking about your current school, indicate the extent to which you agree or disagree with each of the following statements.

*Check **one** circle for each line.*

	Agree a lot	Agree a little	Disagree a little	Disagree a lot
a) This school is located in a safe neighborhood	○	○	○	○
b) I feel safe at this school	○	○	○	○
c) This school's security policies and practices are sufficient	○	○	○	○
d) The students behave in an orderly manner	○	○	○	○
e) The students are respectful of the teachers	○	○	○	○
f) The students respect school property	○	○	○	○
g) This school has clear rules about student conduct	○	○	○	○
h) This school's rules are enforced in a fair and consistent manner	○	○	○	○

8

In your current school, how severe is each problem?

*Check **one** circle for each line.*

	Not a problem	Minor problem	Moderate problem	Serious problem
a) The school building needs significant repair	○	○	○	○
b) Teachers do not have adequate workspace (e.g., for preparation, collaboration, or meeting with students)	○	○	○	○
c) Teachers do not have adequate instructional materials and supplies	○	○	○	○
d) The school classrooms are not cleaned often enough	○	○	○	○
e) The school classrooms need maintenance work	○	○	○	○
f) Teachers do not have adequate technological resources	○	○	○	○
g) Teachers do not have adequate support for using technology	○	○	○	○

9

How often do you have the following types of interactions with other teachers?

*Check **one** circle for each line.*

	Very often	Often	Sometimes	Never or almost never
a) Discuss how to teach a particular topic	○	○	○	○
b) Collaborate in planning and preparing instructional materials	○	○	○	○
c) Share what I have learned about my teaching experiences	○	○	○	○
d) Visit another classroom to learn more about teaching	○	○	○	○
e) Work together to try out new ideas	○	○	○	○
f) Work as a group on implementing the curriculum	○	○	○	○
g) Work with teachers from other grades to ensure continuity in learning	○	○	○	○

10

How often do you feel the following way about being a teacher?

*Check **one** circle for each line.*

	Very often	Often	Sometimes	Never or almost never
a) I am content with my profession as a teacher	○	○	○	○
b) I am satisfied with being a teacher at this school	○	○	○	○
c) I find my work full of meaning and purpose	○	○	○	○
d) I am enthusiastic about my job	○	○	○	○
e) My work inspires me	○	○	○	○
f) I am proud of the work I do	○	○	○	○
g) I am going to continue teaching for as long as I can	○	○	○	○

11

Indicate the extent to which you agree or disagree with each of the following statements.

*Check **one** circle for each line.*

	Agree a lot	Agree a little	Disagree a little	Disagree a lot
a) There are too many students in the classes	○	○	○	○
b) I have too much material to cover in class	○	○	○	○
c) I have too many teaching hours	○	○	○	○
d) I need more time to prepare for class	○	○	○	○
e) I need more time to assist individual students	○	○	○	○
f) I feel too much pressure from parents	○	○	○	○
g) I have difficulty keeping up with all of the changes to the curriculum	○	○	○	○
h) I have too many administrative tasks	○	○	○	○

12

How many students are in this class?

_____ students
Write in the number.

13

How many <eighth grade> students experience difficulties understanding <u>spoken</u> <language of test>?

_____ students in this class
Write in the number.

14

How often do you do the following in teaching this class?

*Check **one** circle for each line.*

	Every or almost every lesson	About half the lessons	Some lessons	Never
a) Relate the lesson to students' daily lives	○	○	○	○
b) Ask students to explain their answers	○	○	○	○
c) Ask students to complete challenging exercises that require them to go beyond the instruction	○	○	○	○
d) Encourage classroom discussions among students	○	○	○	○
e) Link new content to students' prior knowledge	○	○	○	○
f) Ask students to decide their own problem solving procedures	○	○	○	○
g) Encourage students to express their ideas in class	○	○	○	○

15

In your view, to what extent do the following limit how you teach this class?

*Check **one** circle for each line.*

	Not at all	Some	A lot
a) Students lacking prerequisite knowledge or skills	○	○	○
b) Students suffering from lack of basic nutrition	○	○	○
c) Students suffering from not enough sleep	○	○	○
d) Disruptive students	○	○	○
e) Uninterested students	○	○	○
f) Students with physical disabilities	○	○	○
g) Students with mental, emotional, or psychological disabilities	○	○	○

16

In a typical week, how much time do you spend teaching science to the students in this class?

_____ minutes per week

Write in the number of minutes per week.
Please convert the number of hours into minutes.

17

In teaching science to this class, how would you characterize your confidence in doing the following?

*Check **one** circle for each line.*

	Very high	High	Medium	Low
a) Inspiring students to learn science	○	○	○	○
b) Explaining science concepts or principles by doing science experiments	○	○	○	○
c) Providing challenging tasks for the highest achieving students	○	○	○	○
d) Adapting my teaching to engage students' interest	○	○	○	○
e) Helping students appreciate the value of learning science	○	○	○	○
f) Assessing student comprehension of science	○	○	○	○
g) Improving the understanding of struggling students	○	○	○	○
h) Making science relevant to students	○	○	○	○
i) Developing students' higher-order thinking skills	○	○	○	○
j) Teaching science using inquiry methods	○	○	○	○

18

In teaching science to the students in this class, how often do you ask them to do the following?

*Check **one** circle for each line.*

	Every or almost every lesson	About half the lessons	Some lessons	Never
a) Listen to me explain new science content	○	○	○	○
b) Observe natural phenomena and describe what they see	○	○	○	○
c) Watch me demonstrate an experiment or investigation	○	○	○	○
d) Design or plan experiments or investigations	○	○	○	○
e) Conduct experiments or investigations	○	○	○	○
f) Present data from experiments or investigations	○	○	○	○
g) Interpret data from experiments or investigations	○	○	○	○
h) Use evidence from experiments or investigations to support conclusions	○	○	○	○
i) Read their textbooks or other resource materials	○	○	○	○
j) Have students memorize facts and principles	○	○	○	○
k) Use scientific formulas and laws to solve routine problems	○	○	○	○
l) Do field work outside of class	○	○	○	○
m) Take a written test or quiz	○	○	○	○
n) Work in mixed ability groups	○	○	○	○
o) Work in same ability groups	○	○	○	○

19

A. Do the students in this class have computers (including tablets) available to use during their science lessons?

*Check **one** circle only.*

Yes ○

No ○ → **(If No, go to #20)**

If Yes,

B. What access do the students have to computers?

*Check **one** circle for each line.*

	Yes	No
a) Each student has a computer	○	○
b) The class has computers that students can share	○	○
c) The school has computers that the class can use sometimes	○	○

C. How often do you have the students do the following activities on computers during science lessons?

*Check **one** circle for each line.*

	Every or almost every day	Once or twice a week	Once or twice a month	Never or almost never
a) Practice skills and procedures	○	○	○	○
b) Look up ideas and information	○	○	○	○
c) Do scientific procedures or experiments	○	○	○	○
d) Study natural phenomena through simulations	○	○	○	○
e) Process and analyze data	○	○	○	○

20

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 <eighth 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."

*Check **one** circle for each line.*

	Mostly taught before this year	Mostly taught this year	Not yet taught or just introduced
A. Biology			
a) Differences among major taxonomic groups of organisms (plants, animals, fungi, mammals, birds, reptiles, fish, amphibians)	○	○	○
b) Major organs and organ systems in humans and other organisms (structure/function, life processes that maintain stable bodily conditions)	○	○	○
c) Cells, their structure and functions, including respiration and photosynthesis as cellular processes	○	○	○
d) Life cycles, sexual reproduction, and heredity (passing on of traits, inherited versus acquired/learned characteristics)	○	○	○
e) Role of variation and adaptation in survival/extinction of species in a changing environment (including fossil evidence for changes in life on Earth over time)	○	○	○
f) Interdependence of populations of organisms in an ecosystem (e.g., energy flow, food webs, competition, predation) and factors affecting population size in an ecosystem	○	○	○
g) Human health (causes of infectious diseases, methods of infection, prevention, immunity) and the importance of diet and exercise in maintaining health	○	○	○
B. Chemistry			
a) Classification, composition, and particulate structure of matter (elements, compounds, mixtures, molecules, atoms, protons, neutrons, electrons)	○	○	○
b) Physical and chemical properties of matter	○	○	○
c) Mixtures and solutions (solvent, solute, concentration/dilution, effect of temperature on solubility)	○	○	○
d) Properties and uses of common acids and bases	○	○	○
e) Chemical change (transformation of reactants, evidence of chemical change, conservation of matter, common oxidation reactions – combustion, rusting, tarnishing)	○	○	○
f) The role of electrons in chemical bonds	○	○	○

20 **(continued)**

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 <eighth 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."

*Check **one** circle for each line.*

	Mostly taught before this year	Mostly taught this year	Not yet taught or just introduced
C. Physics			
a) Physical states and changes in matter (explanations of properties in terms of movement and distance between particles; phase change, thermal expansion, and changes in volume and/or pressure)	○	○	○
b) Energy forms, transformations, heat, and temperature	○	○	○
c) Basic properties/behaviors of light (reflection, refraction, light and color, simple ray diagrams) and sound (transmission through media, loudness, pitch, amplitude, frequency)	○	○	○
d) Electric circuits (flow of current; types of circuits - parallel/series) and properties and uses of permanent magnets and electromagnets	○	○	○
e) Forces and motion (types of forces, basic description of motion, effects of density and pressure)	○	○	○
D. Earth Science			
a) Earth's structure and physical features (Earth's crust, mantle, and core; composition and relative distribution of water, and composition of air)	○	○	○
b) Earth's processes, cycles, and history (rock cycle; water cycle; weather versus climate; major geological events; formation of fossils and fossil fuels)	○	○	○
c) Earth's resources, their use and conservation (e.g., renewable/nonrenewable resources, human use of land/soil, water resources)	○	○	○
d) Earth in the solar system and the universe (phenomena on Earth - day/night, tides, phases of moon, eclipses, seasons; physical features of Earth compared to other bodies)	○	○	○

Science Homework for the <TIMSS Class/Class with the TIMSS students>

21

A. How often do you usually assign science homework to the students in this class?

*Check **one** circle only.*

- I do not assign science homework --- ○ → **(Go to #22)**
- Less than once a week --- ○
- 1 or 2 times a week --- ○
- 3 or 4 times a week --- ○
- Every day --- ○

B. When you assign science homework to the students in this class, about how many minutes do you usually assign? (Consider the time it would take an average student in your class.)

*Check **one** circle only.*

- 15 minutes or less --- ○
- 16–30 minutes --- ○
- 31–60 minutes --- ○
- 61–90 minutes --- ○
- More than 90 minutes --- ○

C. How often do you do the following with the science homework assignments for this class?

*Check **one** circle for each line.*

	Always or almost always	Sometimes	Never or almost never
a) Correct assignments and give feedback to students	○	○	○
b) Have students correct their own homework	○	○	○
c) Discuss the homework in class	○	○	○
d) Monitor whether or not the homework was completed	○	○	○
e) Use the homework to contribute towards students' grades or marks	○	○	○

Science Assessment of the <TIMSS Class/Class with the TIMSS students>

22

How much emphasis do you place on the following sources to monitor students' progress in science?

*Check **one** circle for each line.*

	Major emphasis	Some emphasis	Little or no emphasis
a) Assessment of students' ongoing work	○	○	○
b) Classroom tests (for example, teacher-made or textbook tests)	○	○	○
c) National or regional achievement tests	○	○	○

23

In the past two years, have you participated in professional development in any of the following?

*Check **one** circle for each line.*

	Yes	No
a) Science content	◯	◯
b) Science pedagogy/instruction	◯	◯
c) Science curriculum	◯	◯
d) Integrating information technology into science	◯	◯
e) Improving students' critical thinking or inquiry skills	◯	◯
f) Science assessment	◯	◯
g) Addressing individual students' needs	◯	◯

24

In the past two years, how many hours in total have you spent in formal <in-service/professional development> (e.g., workshops, seminars, etc.) for science?

*Check **one** circle only.*

- None ◯
- Less than 6 hours ◯
- 6–15 hours ◯
- 16–35 hours ◯
- More than 35 hours ◯

25

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."

*Check **one** circle for each line.*

	Not applicable	Very well prepared	Somewhat prepared	Not well prepared
A. Biology				
a) Differences among major taxonomic groups of organisms (plants, animals, fungi, mammals, birds, reptiles, fish, amphibians)	○	○	○	○
b) Major organs and organ systems in humans and other organisms (structure/function, life processes that maintain stable bodily conditions)	○	○	○	○
c) Cells, their structure and functions, including respiration and photosynthesis as cellular processes	○	○	○	○
d) Life cycles, sexual reproduction, and heredity (passing on of traits, inherited versus acquired/learned characteristics)	○	○	○	○
e) Role of variation and adaptation in survival/extinction of species in a changing environment (including fossil evidence for changes in life on Earth over time)	○	○	○	○
f) Interdependence of populations of organisms in an ecosystem (e.g., energy flow, food webs, competition, predation) and factors affecting population size in an ecosystem	○	○	○	○
g) Human health (causes of infectious diseases, methods of infection, prevention, immunity) and the importance of diet and exercise in maintaining health	○	○	○	○
B. Chemistry				
a) Classification, composition, and particulate structure of matter (elements, compounds, mixtures, molecules, atoms, protons, neutrons, electrons)	○	○	○	○
b) Physical and chemical properties of matter	○	○	○	○
c) Mixtures and solutions (solvent, solute, concentration/dilution, effect of temperature on solubility)	○	○	○	○
d) Properties and uses of common acids and bases	○	○	○	○
e) Chemical change (transformation of reactants, evidence of chemical change, conservation of matter, common oxidation reactions – combustion, rusting, tarnishing)	○	○	○	○
f) The role of electrons in chemical bonds	○	○	○	○

25 **(continued)**

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."

*Check **one** circle for each line.*

	Not applicable	Very well prepared	Somewhat prepared	Not well prepared
C. Physics				
a) Physical states and changes in matter (explanations of properties in terms of movement and distance between particles; phase change, thermal expansion, and changes in volume and/or pressure)	○	○	○	○
b) Energy forms, transformations, heat, and temperature	○	○	○	○
c) Basic properties/behaviors of light (reflection, refraction, light and color, simple ray diagrams) and sound (transmission through media, loudness, pitch, amplitude, frequency)	○	○	○	○
d) Electric circuits (flow of current; types of circuits - parallel/series) and properties and uses of permanent magnets and electromagnets	○	○	○	○
e) Forces and motion (types of forces, basic description of motion, effects of density and pressure)	○	○	○	○
D. Earth Science				
a) Earth's structure and physical features (Earth's crust, mantle, and core; composition and relative distribution of water, and composition of air)	○	○	○	○
b) Earth's processes, cycles, and history (rock cycle; water cycle; weather versus climate; major geological events; formation of fossils and fossil fuels)	○	○	○	○
c) Earth's resources, their use and conservation (e.g., renewable/nonrenewable resources, human use of land/soil, water resources)	○	○	○	○
d) Earth in the solar system and the universe (phenomena on Earth - day/night, tides, phases of moon, eclipses, seasons; physical features of Earth compared to other bodies)	○	○	○	○

Thank You

Thank you for the thought, time, and effort you have put into completing this questionnaire.

TIMSS 2015

BOSTON COLLEGE

TRENDS IN INTERNATIONAL MATHEMATICS AND SCIENCE STUDY

Teacher Questionnaire Science

<Grade 8>

International Association
for the Evaluation of
Educational Achievement

timss.bc.edu