



IEA

TIMSS

2023

Identification Label

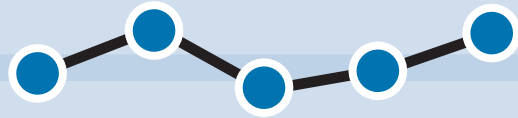
TRENDS IN INTERNATIONAL MATHEMATICS AND SCIENCE STUDY

# Teacher Questionnaire Science

<Grade 8>

<TIMSS National Research Center Name>

<Address>



IEA

**TIMSS & PIRLS**  
International Study Center  
Lynch School of Education  
BOSTON COLLEGE

# Teacher Questionnaire

Your school has agreed to participate in TIMSS 2023 (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 more than 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 2023

# About You

## 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

Which of these describes you?

Check **one** circle only.

- Female ---
- Male ---
- <Other> ---

## 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 -----           | <input type="radio"/> | <input type="radio"/> |
| b) Biology -----               | <input type="radio"/> | <input type="radio"/> |
| c) Physics -----               | <input type="radio"/> | <input type="radio"/> |
| d) Chemistry -----             | <input type="radio"/> | <input type="radio"/> |
| e) <Earth Science> -----       | <input type="radio"/> | <input type="radio"/> |
| f) Education—Mathematics ----- | <input type="radio"/> | <input type="radio"/> |
| g) Education—Science -----     | <input type="radio"/> | <input type="radio"/> |
| h) Education—General -----     | <input type="radio"/> | <input type="radio"/> |
| i) Other -----                 | <input type="radio"/> | <input type="radio"/> |

**6**

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

Check **one** circle for each line.

	<b>Very high</b> _____ <b>High</b> _____ <b>Medium</b> _____ <b>Low</b> _____ <b>Very low</b> _____
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' ability to inspire students -----	○ — ○ — ○ — ○ — ○
e) Parental involvement in school activities -----	○ — ○ — ○ — ○ — ○
f) Parental commitment to ensure that students are ready to learn -----	○ — ○ — ○ — ○ — ○
g) Parental expectations for student achievement -----	○ — ○ — ○ — ○ — ○
h) Parental support for student achievement -----	○ — ○ — ○ — ○ — ○
i) Students' desire to do well in school -----	○ — ○ — ○ — ○ — ○
j) Students' ability to reach school's academic goals -----	○ — ○ — ○ — ○ — ○
k) Students' respect for classmates who excel academically -----	○ — ○ — ○ — ○ — ○

**7**

**How much do you agree or disagree with the following statements about your current school?**

Check **one** circle for each line.

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

# About Being a Teacher

8

How often do you have these feelings 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 -----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
b) I find my work full of meaning and purpose -----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
c) I am enthusiastic about my job -----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
d) My work inspires me -----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
e) I am proud of the work I do -----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
f) I feel appreciated as a teacher -----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
g) I enjoy the challenges of teaching -----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

9

How much do you agree or disagree with the statements below?

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 -----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
b) I have too much material to cover in class -----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
c) I have too many teaching hours -----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
d) I need more time to prepare for class -----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
e) I need more time to assist individual students -----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
f) I feel too much pressure from parents -----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
g) I have difficulty keeping up with all of the changes to the curriculum -----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
h) I have too many administrative tasks -----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

# About Teaching the <TIMSS Class/Class with the TIMSS students>

**10** \_\_\_\_\_  
**How many students are in this class?**

\_\_\_\_\_ students  
 Write in the number.

**11** \_\_\_\_\_  
**How many <eighth grade> students experience difficulties understanding spoken <language of test>?**

\_\_\_\_\_ students in this class  
 Write in the number.

**12** \_\_\_\_\_  
**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) Communicate goals or objectives for the lesson to the students -----  —  —  —
- d) Ask students to complete challenging exercises that require them to go beyond the instruction -----  —  —  —
- e) Encourage classroom discussions among students -----  —  —  —
- f) Link new content to students' prior knowledge -----  —  —  —
- g) Ask students to decide their own problem solving procedures -----  —  —  —

**13** \_\_\_\_\_  
**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) Students absent from class -----  —  —
- e) Disruptive students -----  —  —
- f) Uninterested students -----  —  —
- g) Distracted students -----  —  —
- h) Students with mental, emotional, or psychological impairment -----  —  —
- i) Students with difficulties understanding the language of instruction -----  —  —

14

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.

15

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 -----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
b) Observe natural phenomena and describe what they see ---	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
c) Watch me demonstrate an experiment or investigation -----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
d) Read their textbooks or other resource materials -----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
e) Memorize facts and principles -----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
f) Use scientific formulas and laws to solve routine problems -----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
g) Do field work outside of class--	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
h) Work in mixed ability groups --	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
i) Work in same ability groups ---	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

# 16

How much emphasis do you place on the following when teaching science to students in this class?

Check **one** circle for each line.

	A lot	Some	None
a) Encouraging students to ask questions about scientific phenomena -----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
b) Having students predict the outcomes of experiments or investigations -----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
c) Having students discuss variation in data from experiments or investigations -----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
d) Having students use multiple sources of evidence to explain scientific phenomena -----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
e) Having students create representations (e.g., models, graphs) to explain scientific phenomena -----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
f) Having students use scientific concepts to explain phenomena -----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
g) Having students argue about science questions -----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
h) Having students conduct experiments (hands-on or virtually)-----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

# 17

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

Check **one** circle for each line.

	At least once a week	Once or twice a month	A few times a year	Never or almost never
a) Develop students' positive attitudes toward the natural environment -----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
b) Encourage students to use less resources (e.g., <water, energy>) -----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
c) Discuss how student actions in and outside of school can help the natural environment -	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
d) Discuss environmental issues (e.g., <climate change, endangered animals>)-----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>





20

**A. Do the students in this class have digital devices (including computers, tablets, or smartphones) available to use during science lessons?**

Check **one** circle only.

Yes ---

No ---

(If No, go to #21)

**If Yes,**

**B. What access do the students have to digital devices?**

Check **one** circle for each line.

	Yes	No
a) The class has digital devices for each student to use -----	<input type="radio"/>	<input type="radio"/>
b) The class has digital devices that students can share -----	<input type="radio"/>	<input type="radio"/>
c) The school has digital devices that the class can use sometimes -----	<input type="radio"/>	<input type="radio"/>
d) Students bring their own digital devices -----	<input type="radio"/>	<input type="radio"/>

**C. How often do you have students use digital devices during science instruction?**

Check **one** circle only.

At least once a week ---

Once or twice a month ---

A few times a year ---

Never or almost never ---

**D. How often do you ask the students in your class to use digital devices to do these science activities?**

Check **one** circle for each line.

	At least once a week	Once or twice a month	A few times a year	Never or almost never
a) Solve extended or contextualized problems -----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
b) Create graphs, tables, or other data displays -----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
c) Play games involving science concepts -----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
d) Conduct virtual experiments or other simulations -----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
e) Read the textbook or watch instructional videos -----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
f) Take a test -----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

21

**How much do each of these keep you from incorporating digital devices into science instruction?**

Check **one** circle for each line.

	Not at all	Somewhat	A lot
a) Not knowing how to use digital devices to improve student learning -----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
b) Not enough access to digital devices -----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
c) Keeping students on task when the class is using digital devices -----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
d) Lack of technical support from the school -----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

The following list includes topics and concepts addressed by the TIMSS science test. Choose the response that best describes when each topic or concept is taught for students in this class.

If a topic or concept was in the curriculum before <eighth grade>, choose “Mostly taught before this year.” If you have taught a topic this year, choose “Mostly taught this year.” If a topic is not in the <eighth grade> curriculum for this year or you have not yet taught a topic, choose “Not yet taught.”

Check **one** circle for each line.

Mostly taught before this year

Mostly taught this year

Not yet taught

**A. Biology**

- a) Defining characteristics of major taxonomic groups of organisms -----  —  —
- b) Structures and functions of major organs and organ systems -----  —  —
- c) How animals maintain stable body conditions -----  —  —
- d) Major structures and functions in plant and animal cells -----  —  —
- e) Basic processes of photosynthesis -----  —  —
- f) Basic processes of cellular respiration -----  —  —
- g) Life cycles of mammals, birds, amphibians, insects, and plants -----  —  —
- h) Processes for reproduction and inheritance in plants and animals -----  —  —
- i) How variation in traits relates to natural selection and changes in life on Earth over time -----  —  —
- j) Interpreting food web diagrams and the flow of energy in ecosystems -----  —  —
- k) Cycling of water, oxygen, and carbon through ecosystems -----  —  —
- l) Predation, competition, and symbiosis in ecosystems -----  —  —
- m) How changes in an ecosystem affect the populations of organisms that live there -----  —  —
- n) How human actions can positively or negatively impact the environment -----  —  —
- o) How to prevent transmission of common diseases among humans -----  —  —
- p) Importance of diet, exercise, and lifestyle choices for maintaining good human health -----  —  —

**B. Chemistry**

- a) Structure of atoms (i.e., protons, neutrons, electrons) and molecules -----  —  —
- b) Differences among elements, compounds, and mixtures -----  —  —
- c) How to interpret the periodic table of elements -----  —  —
- d) Classifying matter according to physical and chemical properties -----  —  —
- e) Methods for separating mixtures -----  —  —
- f) Solution concentration and rate of dissolving -----  —  —
- g) Properties of acids and bases -----  —  —
- h) Matter and energy in chemical reactions, including evidence of chemical change -----  —  —
- i) How to change the rate of chemical reactions -----  —  —
- j) Chemical bonds (e.g., role of electrons) -----  —  —

Choose the response that best describes when each topic or concept is taught for students in this class.

If a topic or concept was in the curriculum before <eighth grade>, choose “Mostly taught before this year.” If you have taught a topic this year, choose “Mostly taught this year.” If a topic is not in the <eighth grade> curriculum for this year or you have not yet taught a topic, choose “Not yet taught.”

Check **one** circle for each line.

Mostly taught before this year  
 Mostly taught this year  
 Not yet taught

**C. Physics**

- a) Separation and motion of atoms/molecules in solids, liquids, and gases -----○ — ○ — ○
- b) Characteristics of matter and energy during state changes -----○ — ○ — ○
- c) Types of energy (e.g., kinetic, potential, thermal) and examples of energy transformations -----○ — ○ — ○
- d) Thermal conductivity and the transfer of thermal energy between objects of different temperatures -----○ — ○ — ○
- e) Reflection, refraction, or absorption of light -----○ — ○ — ○
- f) Characteristics of sound (i.e., amplitude, frequency) and its transmission, reflection, and absorption -----○ — ○ — ○
- g) Electrical conductors and simple electrical circuits -----○ — ○ — ○
- h) Polarity, strength, and uses of permanent magnets and electromagnets -----○ — ○ — ○
- i) Speed as distance changing over time -----○ — ○ — ○
- j) Acceleration as speed changing over time -----○ — ○ — ○
- k) Effects of common forces on speed and direction of motion -----○ — ○ — ○
- l) Density and buoyancy -----○ — ○ — ○
- m) Functioning of simple machines (e.g., levers, inclined planes, pulleys) -----○ — ○ — ○

**D. Earth Science**

- a) Earth’s structure and distribution of water on its surface -----○ — ○ — ○
- b) Gases present in Earth’s atmosphere and their relative abundance -----○ — ○ — ○
- c) Changes in temperature and pressure based on altitude -----○ — ○ — ○
- d) How geological events impact Earth’s surface -----○ — ○ — ○
- e) Processes in the rock cycle (e.g., lava cooling, weathering) -----○ — ○ — ○
- f) How fossils form and what they show about Earth’s history -----○ — ○ — ○
- g) Processes in Earth’s water cycle -----○ — ○ — ○
- h) Differences between weather and climate and geographic factors affecting climate -----○ — ○ — ○
- i) Evidence for climate change -----○ — ○ — ○
- j) Use and conservation of Earth’s resources, including land, water, and renewable and nonrenewable energy sources -----○ — ○ — ○
- k) Phenomena caused by the motion of Earth and the Moon (e.g., seasons, tides, Moon phases) -----○ — ○ — ○
- l) The Sun as a star and physical features of the Earth, Moon, and other planets -----○ — ○ — ○

**23**

**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 #24)**
- Less than once a week ---
- 1 or 2 times a week ---
- 3 or 4 times a week ---
- Every day ---

**B. 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 -----                | <input type="radio"/>   | <input type="radio"/> | <input type="radio"/> |
| b) Have students correct their own homework -----                         | <input type="radio"/>   | <input type="radio"/> | <input type="radio"/> |
| c) Discuss the homework in class -----                                    | <input type="radio"/>   | <input type="radio"/> | <input type="radio"/> |
| d) Monitor whether or not the homework was completed -----                | <input type="radio"/>   | <input type="radio"/> | <input type="radio"/> |
| e) Use the homework to contribute towards students' grades or marks ----- | <input type="radio"/>   | <input type="radio"/> | <input type="radio"/> |

**24**

**How much importance do you place on these strategies to assess students' learning in science?**

Check **one** circle for each line.

- |   | A lot                 | Some                  | None                  |
|---|-----------------------|-----------------------|-----------------------|
| a) Observing students as they work -----                  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| b) Asking students to answer questions during class ----- | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| c) Short, regular written assessments -----               | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| d) Longer tests (e.g., unit tests or exams) -----         | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| e) Long-term projects -----                               | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

25

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

Check **one** circle for each line.

**B. Do you need future professional development in any of the following?**

Check **one** circle for each line.

	Yes	No	Yes	No
a) Science content -----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
b) Science pedagogy/ instruction-----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
c) Science curriculum -----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
d) Integrating technology into science instruction ---	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
e) Improving students' critical thinking or inquiry skills-----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
f) Science assessment -----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
g) Addressing individual students' needs-----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
h) Integrating environmentalism and sustainability into science instruction -----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

# Thank You

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

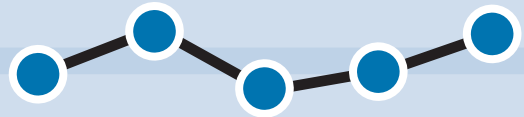
---



BOSTON  
COLLEGE

[timss.bc.edu](http://timss.bc.edu)

<Grade 8>



© IEA, 2022  
International Association  
for the Evaluation of  
Educational Achievement