



Identification Label

TRENDS IN INTERNATIONAL MATHEMATICS AND SCIENCE STUDY

Educator Questionnaire Science

Grade 9

Human Sciences Research Council
134 Pretorius Street, Pretoria, 0002
South Africa

© IEA, 2018

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

Educator Questionnaire

Your school has agreed to participate in TIMSS 2019 (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 learner 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 educators of Grade 9 learners, and seeks information about educators' 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 South Africa.

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 learners in the TIMSS class, please think only of the learners 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 South Africa. 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 return it to the test administrator.

Thank you.

TIMSS 2019

About You

1

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

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

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

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

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

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

2

Are you female or male?

Tick **one** circle only.

Female ---

Male ---

3

How old are you?

Tick **one** circle only.

Under 25 ---

25–29 ---

30–39 ---

40–49 ---

50–59 ---

60 or older ---

4

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

Tick **one** circle only.

Did not complete Grade 12 ---

Completed Grade 12 ---

Finished post-matric certificate ---

Finished Diploma ---

Finished First Degree ---

Finished Honour's Degree ---

Finished Master's Degree ---

Finished Doctoral Degree ---

(If you have not completed tertiary education, please go to #6)



5

During your tertiary education, what was your **major or main** area(s) of study?

Tick **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 or Environmental 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) Language/Reading----- | <input type="radio"/> | <input type="radio"/> |
| j) Other ----- | <input type="radio"/> | <input type="radio"/> |

School Emphasis on Academic Success

6

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

Tick **one** circle for each line.

Very high
High
Medium
Low
Very low

a) Educators' understanding of the school's curricular goals --- --- --- --- ---

b) Educators' degree of success in implementing the school's curriculum ----- --- --- --- ---

c) Educators' expectations for learner achievement ----- --- --- --- ---

d) Educators working together to improve learner achievement - --- --- --- ---

e) Educators' ability to inspire learners ----- --- --- --- ---

f) Educators' job satisfaction ----- --- --- --- ---

g) Parental involvement in school activities ----- --- --- --- ---

h) Parental commitment to ensure that learners are ready to learn ----- --- --- --- ---

i) Parental expectations for learner achievement ----- --- --- --- ---

j) Parental support for learner achievement ----- --- --- --- ---

k) Parental pressure for the school to maintain high academic standards ----- --- --- --- ---

l) Learners' desire to do well in school ----- --- --- --- ---

m) Learners' ability to reach school's academic goals ----- --- --- --- ---

n) Learners' respect for classmates who excel academically ----- --- --- --- ---

Very high
High
Medium
Low
Very low

o) Collaboration between school management (including master educators) and educators to plan instruction ----- --- --- --- ---

p) Amount of instructional support provided to educators by school management ----- --- --- --- ---

q) School management's support for educators' professional development ----- --- --- --- ---

r) School management's observation of teaching practices through classroom visits ----- --- --- --- ---

s) School management's commitment to protecting teaching and learning time ----- --- --- --- ---

t) Level of use of Curriculum and Policy Statements (CAPS) documents ----- --- --- --- ---

7

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

Tick **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 neighbourhood -----	<input type="radio"/> — <input type="radio"/> — <input type="radio"/> — <input type="radio"/>
b) I feel safe at this school -----	<input type="radio"/> — <input type="radio"/> — <input type="radio"/> — <input type="radio"/>
c) This school's security policies and practices are sufficient -----	<input type="radio"/> — <input type="radio"/> — <input type="radio"/> — <input type="radio"/>
d) The learners behave in an orderly manner -----	<input type="radio"/> — <input type="radio"/> — <input type="radio"/> — <input type="radio"/>
e) The learners are respectful of the educators -----	<input type="radio"/> — <input type="radio"/> — <input type="radio"/> — <input type="radio"/>
f) The learners respect school property -----	<input type="radio"/> — <input type="radio"/> — <input type="radio"/> — <input type="radio"/>
g) This school has clear rules about learner conduct -----	<input type="radio"/> — <input type="radio"/> — <input type="radio"/> — <input type="radio"/>
h) This school's rules are enforced in a fair and consistent manner -----	<input type="radio"/> — <input type="radio"/> — <input type="radio"/> — <input type="radio"/>

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

Tick **one** circle for each line.

	Agree a lot Agree a little Disagree a little Disagree a lot
a) The principal is friendly and approachable -----	<input type="radio"/> — <input type="radio"/> — <input type="radio"/> — <input type="radio"/>
b) The principal puts suggestions made by the teaching staff into operation -----	<input type="radio"/> — <input type="radio"/> — <input type="radio"/> — <input type="radio"/>
c) The principal explores all sides of topics and recognises that other opinions exist -----	<input type="radio"/> — <input type="radio"/> — <input type="radio"/> — <input type="radio"/>
d) The principal treats all the teaching staff as his or her equal -----	<input type="radio"/> — <input type="radio"/> — <input type="radio"/> — <input type="radio"/>
e) The principal is willing to make changes -----	<input type="radio"/> — <input type="radio"/> — <input type="radio"/> — <input type="radio"/>
f) The principal lets the teaching staff know what is expected of them -----	<input type="radio"/> — <input type="radio"/> — <input type="radio"/> — <input type="radio"/>
g) The principal maintains definite standards of performance -----	<input type="radio"/> — <input type="radio"/> — <input type="radio"/> — <input type="radio"/>

8

In your current school, how severe is each problem?

Tick **one** circle for each line.

Not a problem **Minor problem** **Moderate problem** **Serious problem**

a) The school building needs significant repair ----- — — —

b) Educators do not have adequate instructional materials and supplies ----- — — —

c) The school classrooms need maintenance work ----- — — —

d)) Educators do not have adequate technological resources ----- — — —

e) Educators do not have adequate support for using technology ----- — — —

9

How often do you feel the following way about being an educator?

Tick **one** circle for each line.

Very often **Often** **Sometimes** **Never or almost never**

a) I am content with my profession as an educator ----- — — —

b) I find my work full of meaning and purpose ----- — — —

c) I am enthusiastic about my job ----- — — —

d) My work inspires me ----- — — —

e) I am proud of the work I do ----- — — —

f) I am satisfied with being an educator at this school ----- — — —

g) I am going to continue teaching for as long as I can ----- — — —

h) I feel tired all the time ----- — — —

i) I feel overwhelmed by the amount of work ----- — — —

j) I feel sick and rundown ----- — — —

k) I don't feel like getting things done at work ----- — — —

l) I feel like the learners and school would be better off without me ----- — — —

m) I have lost interest in my usually enjoyable school activities ----- — — —

10

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

Tick **one** circle for each line.

	Agree a lot	Agree a little	Disagree a little	Disagree a lot
a) There are too many learners 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 learners -----	<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

11

How many learners are in this class?

_____ learners
Write in the number.

12

How many Grade 9 learners experience difficulties understanding spoken English?

_____ learners in this class
Write in the number.

13

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

Tick **one** circle for each line.

Every or almost every lesson
About half the lessons
Some lessons
Never

- a) Relate the lesson to learners' daily lives ----- — — —
- b) Ask learners to explain their answers ----- — — —
- c) Ask learners to complete challenging exercises that require them to go beyond the instruction ----- — — —
- d) Encourage classroom discussions among learners ----- — — —
- e) Link new content to learners' prior knowledge ----- — — —
- f) Ask learners to decide their own problem solving procedures ----- — — —
- g) Encourage learners to express their ideas in class ----- — — —
- h) Bring interesting materials to class ----- — — —

14

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

Tick **one** circle for each line.

Not at all
Some
A lot

- a) Learners lacking prerequisite knowledge or skills ----- — —
- b) Learners suffering from lack of basic nutrition ----- — —
- c) Learners suffering from not enough sleep ----- — —
- d) Learners absent from class ----- — —
- e) Disruptive learners ----- — —
- f) Uninterested learners ----- — —
- g) Learners with mental, emotional, or psychological impairment ----- — —
- h) Learners with difficulties understanding the language of instruction ----- — —

15

If the language of learning and teaching is different to the majority of the learners' home language, how do you communicate with your learners?

Tick **one** circle only.

- Only using the language of learning and teaching -----
- Only using the home language of learners -----
- Using both the language of learning and teaching and the learners' home language -----

16

In a typical week, how much time do you spend teaching science to the learners 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 the learners in this class, how often do you ask them to do the following?

Tick **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) Design or plan experiments or investigations -----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
e) Conduct experiments or investigations -----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
f) Present data from experiments or investigations -----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
g) Interpret data from experiments or investigations -----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
h) Use evidence from experiments or investigations to support conclusions -----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
i) Read their textbooks or other resource materials -----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
j) Have learners memorise facts and principles -----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
k) Use scientific formulas and laws to solve routine problems -----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
l) Do field work outside of class--	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
m) Work in mixed ability groups --	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
n) Work in same ability groups ---	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
o) Take a written test or quiz-----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

18

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

*Tick **one** circle only.*

Yes ---

No ---

(If No, go to #19)

If Yes,

B. What access do the learners have to computers?

*Tick **one** circle for each line.*

	Yes	No
a) Each learner has a computer-----	<input type="radio"/>	<input type="radio"/>
b) The class has computers that learners can share -----	<input type="radio"/>	<input type="radio"/>
c) The school has computers that the class can use sometimes -----	<input type="radio"/>	<input type="radio"/>

C. How often do you do activities on computers during science lessons to support learning for:

*Tick **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) Whole class -----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
b) Low-performing learners -----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
c) High-performing learners -----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
d) Learners with special needs -----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

The following list includes the main topics addressed by the TIMSS science test. Choose the response that best describes when the learners in this class have been taught each topic. If a topic was in the curriculum before Grade 9, 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."

Tick **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, insects) ----- — —
- b) Major organs and organ systems in humans and other organisms (structure/function, life processes) ----- — —
- c) Cells, their structure and functions, including respiration and photosynthesis as cellular processes ----- — —
- d) Life cycles, sexual reproduction, and heredity (inherited versus acquired/learned characteristics) ----- — —
- e) Role of variation and adaptation in survival/extinction of species (including fossil evidence) ----- — —
- f) Interdependence of populations of organisms in an ecosystem (e.g., carbon and water cycles, energy flow, food webs, competition, predation, human impacts on ecosystems) ----- — —
- g) Human health (e.g., causes, transmission, and prevention of common infectious diseases, immunity) and the importance of diet, exercise, and other lifestyle choices in maintaining health ----- — —

B. Chemistry

- a) Particulate structure, classification, and composition of matter (protons, neutrons, electrons, atoms, molecules, elements, compounds, mixtures) ----- — —
- b) The periodic table as an organising principle for the known elements ----- — —
- c) Physical and chemical properties of matter ----- — —
- d) Mixtures and solutions (e.g., solvent, solute, concentration/dilution) ----- — —
- e) Properties of common acids and bases (e.g., acids have pH less than 7, reactions with indicators produce colour changes, acids and bases neutralise each other) ----- — —
- f) Characteristics of chemical reactions (e.g., transformation of reactants, evidence of chemical change) ----- — —
- g) Matter and energy in chemical reactions (conservation of matter, familiar exothermic and endothermic reactions, factors affecting reaction rates) ----- — —
- h) The role of electrons in chemical bonds ----- — —

(continued)

19

Choose the response that best describes when the learners in this class have been taught each topic. If a topic was in the curriculum before **Grade 9**, 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.”

Tick **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, changes in volume and/or pressure, physical changes) ----- — —
- b) Energy transformation and transfer (e.g., forms of energy, energy conservation, heat temperature, equilibrium)----- — —
- c) Basic properties/behaviours of light (reflection, refraction, colour, shadows, simple ray diagrams)----- — —
- d) Basic properties/behaviours of sound (vibrations that produce sound, transmission through media, loudness, pitch) ----- — —
- e) Electric circuits (e.g., electrical conductors/insulators and the flow of electricity in series/parallel circuits)----- — —
- f) Properties and uses of permanent magnets and electromagnets----- — —
- g) Motion and forces (e.g., basic description of motion, common mechanical forces, properties of forces, effects of forces, simple machines, buoyancy, effects of density and pressure)----- — —


D. Earth Science

- a) Earth’s structure and physical features (e.g., Earth’s crust, mantle, and core; composition and relative distribution of water; composition of Earth’s atmosphere) ----- — —
- b) Earth’s processes, cycles, and history (e.g., rock cycle, major geological events, formation of fossils and fossil fuels, water cycle, weather versus climate)----- — —
- c) Earth’s resources, their use, and conservation (e.g., renewable/non-renewable resources, human use of land and water resources) ----- — —
- d) Earth in the Solar System and the universe (phenomena on Earth: seasons, eclipses, tides, phases of moon; members of the Solar System; physical features of Earth)----- — —

20

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

Tick one circle only.

- I do not assign science homework ---  **(Go to #21)**
- 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 learners in this class, about how many minutes do you usually assign? (Consider the time it would take an average learner in your class.)

Tick 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?

Tick one circle for each line.



- a) Correct assignments and give feedback to learners ----- — —
- b) Have learners 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 learners' grades or marks ----- — —

21

How much importance do you place on the following assessment strategies in science?

Tick one circle for each line.



- a) Observing learners as they work ----- — —
- b) Asking learners to answer questions during class ----- — —
- c) Short, regular written assessments ----- — —
- d) Longer tests (e.g., unit tests or exams) ----- — —
- e) Long-term projects ----- — —

22

About how often do Grade 9 learners in this class take science tests on computers or tablets?

Tick one circle only.

- More than once a month ---
- Once a month ---
- Twice a year --
- Once a year ---
- Never ---

23

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

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

Tick **one** circle for each line.

Tick **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 learners' 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 learners' needs -----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

24

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

Tick **one** circle only.

None ---

Less than 6 hours ---

6–15 hours ---

16–35 hours ---

More than 35 hours ---

B. When does educator professional development usually take place?

Tick **one** circle only.

During school hours ---

After school ---

On weekends ---

During school holidays ---

Thank You

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



BOSTON
COLLEGE

timss.bc.edu

Grade 9



© IEA, 2018
International Association
for the Evaluation of
Educational Achievement