IEA TIMSS 2019

Identification Label

TRENDS IN INTERNATIONAL MATHEMATICS AND SCIENCE STUDY

# Educator Questionnaire Science

## Grade 5

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



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 5 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 primary school 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

## G1

**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 <u>science</u>?**

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

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

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

## G2

**Are you female or male?**

*Tick **one** circle only.*

Female --- ◯
Male --- ◯

## G3

**How old are you?**

*Tick **one** circle only.*

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

## G4

**What is the <u>highest</u> level of formal education you have completed?**

*Tick **one** circle only.*

Did not complete Grade 12 --- ◯
Finished Grade 12 --- ◯

**(If you have not completed tertiary education, go to #G6)**

Finished post-matric certificate --- ◯
Finished diploma --- ◯
Finished first degree --- ◯
Finished Honour's degree --- ◯
Finished Master's degree --- ◯
Finished Doctoral degree --- ◯

## G5

**A. During your tertiary education, what was your <u>major or main</u> area(s) of study?**

*Tick **all** that apply.*

a) Education—Primary ---------- ◯
b) Education—Secondary ---------- ◯
c) Mathematics ---------- ◯
d) Science ---------- ◯
e) English ---------- ◯
f) Other ---------- ◯

**B. If your major or main area of study was education, did you specialise in any of the following?**

*Tick **all** that apply.*

a) Mathematics ---------- ◯
b) Science ---------- ◯
c) Language/reading ---------- ◯
d) Other subject ---------- ◯

## School Emphasis on Academic Success

### G6

**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' ability to inspire learners | ○ | ○ | ○ | ○ | ○ |
| e) Parental involvement in school activities | ○ | ○ | ○ | ○ | ○ |
| f) Parental commitment to ensure that learners are ready to learn | ○ | ○ | ○ | ○ | ○ |
| g) Parental expectations for learner achievement | ○ | ○ | ○ | ○ | ○ |
| h) Parental support for learner achievement | ○ | ○ | ○ | ○ | ○ |
| i) Learners' desire to do well in school | ○ | ○ | ○ | ○ | ○ |
| j) Learners' ability to reach school's academic goals | ○ | ○ | ○ | ○ | ○ |
| k) Learners' respect for classmates who excel academically | ○ | ○ | ○ | ○ | ○ |
| l) Collaboration between school management and educators to plan instruction | ○ | ○ | ○ | ○ | ○ |
| m) Educators' job satisfaction | ○ | ○ | ○ | ○ | ○ |
| n) School management's observation of teaching practices through classroom visits | ○ | ○ | ○ | ○ | ○ |
| o) School management's commitment to protecting teaching and learning time | ○ | ○ | ○ | ○ | ○ |
| p) Level of use of Curriculum and Policy Statements (CAPS) documents | ○ | ○ | ○ | ○ | ○ |

## School Environment

### G7

**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 | ○ | ○ | ○ | ○ |
| b) I feel safe at this school | ○ | ○ | ○ | ○ |
| c) This school's security policies and practices are sufficient | ○ | ○ | ○ | ○ |
| d) The learners behave in an orderly manner | ○ | ○ | ○ | ○ |
| e ) The learners are respectful of the educators | ○ | ○ | ○ | ○ |
| f ) The learners respect school property | ○ | ○ | ○ | ○ |
| g) This school has clear rules about learners conduct | ○ | ○ | ○ | ○ |
| h) This school's rules are enforced in a fair and consistent manner | ○ | ○ | ○ | ○ |

**G7** **(continued)**

**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 | ○ | ○ | ○ | ○ |
| b) The principal puts suggestions made by the teaching staff into operation | ○ | ○ | ○ | ○ |
| c) The principal explores all sides of topics and recognises that other opinions exist | ○ | ○ | ○ | ○ |
| d) The principal treats all the teaching staff as his or her equal | ○ | ○ | ○ | ○ |
| e) The principal is willing to make changes | ○ | ○ | ○ | ○ |
| f) The principal lets the teaching staff know what is expected of them | ○ | ○ | ○ | ○ |
| g) The principal maintains definite standards of performance | ○ | ○ | ○ | ○ |

**G8**

**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 feel tired all the time | ○ | ○ | ○ | ○ |
| g) I feel overwhelmed by the amount of work | ○ | ○ | ○ | ○ |
| h) I feel sick and rundown | ○ | ○ | ○ | ○ |
| i) I don't feel like getting things done at work | ○ | ○ | ○ | ○ |
| j) I feel like the learners and school would be better off without me | ○ | ○ | ○ | ○ |
| k) I have lost interest in my usually enjoyable school activities | ○ | ○ | ○ | ○ |

## G9

**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 | ○ | ○ | ○ | ○ |
| 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 learners | ○ | ○ | ○ | ○ |
| 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 | ○ | ○ | ○ | ○ |



## G10

**A. How many learners are in this class?**

_____ learners

*Write in the number.*

**B. How many of the learners in G10A are in Grade 5?**

_____ Grade 5 learners

*Write in the number. If this is not a multi-grade class please repeat the answer from G10 A.*

## G11

**How many Grade 5 learners experience difficulties understanding <u>spoken</u> English?**

_____ learners in this class

*Write in the number.*

## G12

**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) Bring interesting materials to class | ○ | ○ | ○ | ○ |
| d) Ask learners to complete challenging exercises that require them to go beyond the instruction | ○ | ○ | ○ | ○ |
| e) Encourage classroom discussions among learners | ○ | ○ | ○ | ○ |
| f) Link new content to learners' prior knowledge | ○ | ○ | ○ | ○ |
| g) Ask learners to decide their own problem solving procedures | ○ | ○ | ○ | ○ |
| h) Encourage learners to express their ideas in class | ○ | ○ | ○ | ○ |

## G13

**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 | ○ | ○ | ○ |

## G14

**If the language of learning and teaching is <u>different</u> 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 the learners ○
- Using both the language of learning and teaching and the learners' home language ○

## S1

**A. Is science taught mainly as a separate subject (i.e., not integrated with other subjects) to the learners in this class?**

*Tick **one** circle only.*

Yes --- ◯

No --- ◯

**B. Please estimate the time that you spend on science topics with learners in this class.**

_____ minutes per week

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

## S2

**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 | ◯ | ◯ | ◯ | ◯ |
| b) Observe natural phenomena such as the weather or a plant growing 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 memorise facts and principles | ◯ | ◯ | ◯ | ◯ |
| k) Do field work outside the class | ◯ | ◯ | ◯ | ◯ |
| l) Work in mixed ability groups | ◯ | ◯ | ◯ | ◯ |
| m) Work in same ability groups | ◯ | ◯ | ◯ | ◯ |

## S3

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

*Tick **one** circle only.*

Yes ---

No ---

**(If No, go to #S4)**

**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 | | |
| b) The class has computers that learners can share | | |
| c) The school has computers that the class can use sometimes | | |

**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 | | | | |
| b) Low-performing learners | | | | |
| c) High-performing learners | | | | |
| d) Learners with special needs | | | | |

**S4**

**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 5, 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. Life Science** | | | |
| a) Physical and behavioural characteristics of living things and major groups of living things (e.g., mammals, birds, insects, flowering plants) | ○ | ○ | ○ |
| b) Major body structures and their functions in humans, other animals, and plants | ○ | ○ | ○ |
| c) Life cycles of common plants and animals (e.g., flowering plants, butterflies, frogs) | ○ | ○ | ○ |
| d) Characteristics of plants and animals that are inherited | ○ | ○ | ○ |
| e) Interactions between organisms and their environments (e.g., physical features and behaviours that help living things survive in their environments) | ○ | ○ | ○ |
| f) Relationships in ecosystems (e.g., simple food chains, predator-prey relationships, competition) | ○ | ○ | ○ |
| g) Human health (transmission and prevention of diseases, everyday behaviors that promote good health) | ○ | ○ | ○ |
| **B. Physical Science** | | | |
| a) States of matter (solid, liquid, gas) and their properties (volume, shape) | ○ | ○ | ○ |
| b) Classifying materials based on physical properties (e.g., weight/mass, volume, state of matter, conductivity of heat or electricity) | ○ | ○ | ○ |
| c) Mixtures, including methods for separating a mixture into its components (e.g., sifting, filtering, evaporation, using a magnet) | ○ | ○ | ○ |
| d) Properties of magnets (e.g., like poles repel and opposite poles attract, magnets can attract some objects) | ○ | ○ | ○ |
| e) Physical changes in everyday life (e.g., changes of state, dissolving) | ○ | ○ | ○ |
| f) Chemical changes in everyday life (e.g., decaying, burning, rusting, cooking) | ○ | ○ | ○ |
| g) Common sources of energy (e.g., the Sun, wind, oil) and uses of energy (heating and cooling homes, providing light) | ○ | ○ | ○ |
| h) Light and sound in everyday life (e.g., shadows and reflections, vibrating objects make sound) | ○ | ○ | ○ |
| i) Heat transfer (e.g., energy flows from a hot object to a colder object) | ○ | ○ | ○ |
| j) Electricity and simple electrical circuits (e.g., a circuit must be complete to work correctly) | ○ | ○ | ○ |
| k) Forces that cause objects to move (e.g., gravity, pushing/pulling) or change their motion (e.g., friction) | ○ | ○ | ○ |
| l) Simple machines (e.g., levers, pulleys, wheels, ramps) that help make motion easier | ○ | ○ | ○ |

**S4** **(continued)**

**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 5, 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." Please consult the Social Sciences educator if you do not teach this subject.**

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

| | Mostly taught before this year | Mostly taught this year | Not yet taught or just introduced |
|---|---|---|---|
| **C. Earth Science** | | | |
| a) Physical makeup of Earth's surface (e.g., land and water in unequal proportions, sources of fresh and salt water) | ○ | ○ | ○ |
| b) Earth's resources used in everyday life (e.g., water, wind, soil, forests, oil, natural gas, minerals) | ○ | ○ | ○ |
| c) Changes in Earth's surface over time (e.g., mountain building, weathering, erosion) | ○ | ○ | ○ |
| d) Fossils and what they can tell us about past conditions on Earth | ○ | ○ | ○ |
| e) Weather and climate (e.g., daily, seasonal, and locational variations versus long term trends) | ○ | ○ | ○ |
| f) Objects in the Solar System (the Sun, the Earth, the Moon, and other planets) and their movements | ○ | ○ | ○ |
| g) Earth's motion and related patterns observed on Earth (e.g., day and night, seasons) | ○ | ○ | ○ |

## Science Homework for the TIMSS Class

### S5

**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 #S6)**
- 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 ◯
- More than 60 minutes ◯

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

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

| | Always or almost always | Sometimes | Never or almost never |
|---|---|---|---|
| a) Correct assignments and give feedback to learners | ◯ | ◯ | ◯ |
| b) Discuss the homework in class | ◯ | ◯ | ◯ |
| c) Monitor whether or not the homework was completed | ◯ | ◯ | ◯ |

## Science Assessment of the TIMSS Class

### S6

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

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

| | A Lot | Some | None |
|---|---|---|---|
| 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 | ◯ | ◯ | ◯ |

### S7

**About how often do Grade 5 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 ◯

## S8

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

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

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

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

| | A. Yes | A. No | B. Yes | B. No |
|---|---|---|---|---|
| a) Science content | ◯ | ◯ | ◯ | ◯ |
| b) Science pedagogy/ instruction | ◯ | ◯ | ◯ | ◯ |
| c) Science curriculum | ◯ | ◯ | ◯ | ◯ |
| d) Integrating technology into science instruction | ◯ | ◯ | ◯ | ◯ |
| e) Improving learners' critical thinking or problem solving skills | ◯ | ◯ | ◯ | ◯ |
| f) Science assessment | ◯ | ◯ | ◯ | ◯ |
| g) Addressing individual learners' needs | ◯ | ◯ | ◯ | ◯ |
| h) Integrating science with other subjects (e.g., mathematics, technology) | ◯ | ◯ | ◯ | ◯ |

## S9

**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 ◯
- 36- 50 hours ◯
- 51- 80 hours ◯
- More than 80 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.**

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# Grade 5


International Association
for the Evaluation of
Educational Achievement