

**Identification Label**

<TIMSS National Research Center Name>  
<Address>

Teacher Name: \_\_\_\_\_

Class Name: \_\_\_\_\_

Teacher ID: \_\_\_\_\_ Teacher Link # \_\_\_\_\_

**IEA** Trends in International Mathematics and Science Study

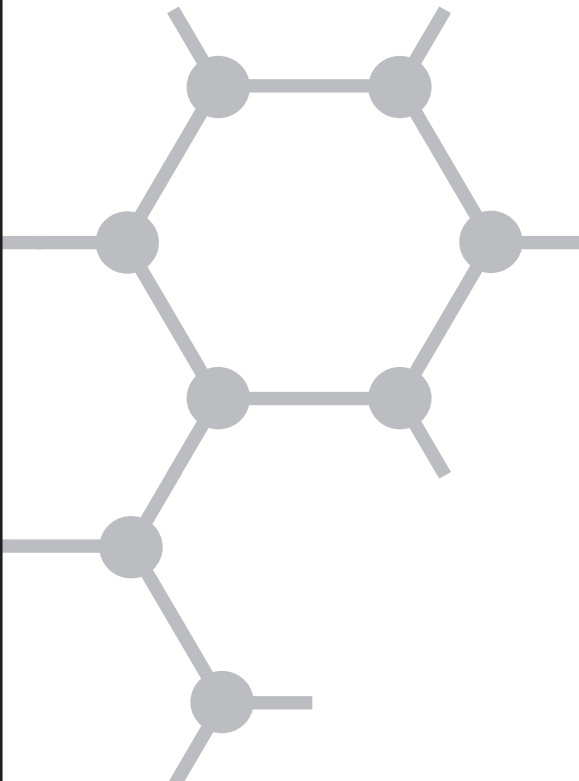
**T I M S S**

**2003**

**Main Survey**

**Teacher  
Questionnaire**

Science  
<Grade 8>



# General Directions

Your school has agreed to participate in TIMSS 2003, a large international study of student learning in mathematics and science in more than 50 countries around the world. Sponsored by the International Association for the Evaluation of Educational Achievement (IEA), TIMSS (for Trends in International Mathematics and Science Study) is measuring trends in student achievement and studying differences in national education systems in order to help improve the teaching and learning of mathematics and science worldwide.

As part of the study, students in a nationwide sample of <eighth-grade> classes in <country> will complete the TIMSS mathematics and science tests. This questionnaire is addressed to teachers who teach science to these students, and seeks information about teachers' academic and professional background, instructional practices, and attitudes toward teaching science. As a teacher of science to students in one of these sampled classes, your responses to these questions are very important in helping to describe science education in <country>.

Some of the questions in this questionnaire refer specifically to students in the "TIMSS class." This is the class that is identified on the cover of this questionnaire, and that will be tested as part of TIMSS 2003 in your school. If you teach science to some but not all of the students in the TIMSS class, please think of teaching the science class these students are in 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.

Please identify a time and place where you will be able to complete this questionnaire without being interrupted. This should require no more than 45 minutes. To make it as easy as possible for you to respond, most questions may be answered simply by checking or filling the appropriate circle.

Once you have completed the questionnaire, place it in the return envelope provided and return it to: <Country Specific Information>

Thank you very much for the time and effort you have put into responding to this questionnaire.

## Background Information

**1** \_\_\_\_\_

**How old are you?**

*Fill in **one** circle only*

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

**2** \_\_\_\_\_

**Are you female or male?**

*Fill in **one** circle only*

- Female -----
- Male -----

**3** \_\_\_\_\_

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

\_\_\_\_\_  
*Number of years you have taught*

## Preparation to Teach

**4** \_\_\_\_\_

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

*Fill in **one** circle only*

- Did not complete <ISCED 3> -----
- Finished <ISCED 3> -----
- Finished <ISCED 4B> -----
- Finished <ISCED 5B> -----
- Finished <ISCED 5A, first degree> -----
- Finished <ISCED 5A, second degree> or higher -----

**5** \_\_\_\_\_

**How many years of <pre-service teacher training> did you have? Please round to the nearest whole number.**

*Fill in **one** circle only*

- 0 years -----
- 1 year -----
- 2 years -----
- 3 years -----
- 4 years -----
- 5 years -----
- More than 5 years -----

6

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

Fill in **one** circle for each row

Yes | No

- a) Biology -----○ ---○
- b) Physics -----○ ---○
- c) Chemistry -----○ ---○
- d) <Earth Science> -----○ ---○
- e) Education - Science -----○ ---○
- f) Mathematics -----○ ---○
- g) Education - Mathematics -----○ ---○
- h) Education - General -----○ ---○
- i) Other -----○ ---○

7

What requirements did you have to satisfy in order to become a science teacher at <grade 8>?

Fill in **one** circle for each row

Yes | No

- a) Complete <ISCED 5A, first degree> ----○ ---○
- b) Complete a probationary period -----○ ---○
- c) Complete a minimum number of education courses -----○ ---○
- d) Complete a minimum number of science courses -----○ ---○
- e) Pass a licensing examination -----○ ---○

8

A. Do you have a teaching license or certificate?

Yes | No

Fill in **one** circle only -----○ ---○

If **No**, please go to question 9



B. What type of license or certificate do you hold?

Fill in **one** circle only

- <Full certificate> -----○
- <Provisional certificate> -----○
- <Emergency certificate> -----○
- Other -----○
- (Please specify: \_\_\_\_\_)

Considering your training and experience in both science content and instruction, how ready do you feel you are to teach these topics at the <eighth> grade?

Fill in **one** circle for each row

	<b>Not ready</b>	
	<b>Ready</b>	
	<b>Very ready</b>	

**A. Biology**

- a) Major organs and organ systems in humans and other organisms (structure/function, life processes that maintain stable bodily conditions) ----- ○ --- ○ --- ○
- b) Cells and their functions, including respiration and photosynthesis as cellular processes ----- ○ --- ○ --- ○
- c) Reproduction (sexual and asexual) and heredity (passing on of traits, inherited versus acquired/learned characteristics) ----- ○ --- ○ --- ○
- d) Role of variation and adaptation in survival/extinction of species in a changing environment ----- ○ --- ○ --- ○
- e) Interaction of living organisms and the physical environment in an ecosystem (energy flow, food webs, effect of changes, cycling of materials) ----- ○ --- ○ --- ○

**B. Chemistry**

- a) Classification and composition of matter (characteristics of elements, compounds, mixtures) ----- ○ --- ○ --- ○
- b) Particulate structure of matter (molecules, atoms, protons, neutrons, and electrons) ----- ○ --- ○ --- ○
- c) Properties of 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 and rusting) ----- ○ --- ○ --- ○

**C. Physics**

- a) Physical states and changes in matter (explanations of properties in terms of movement/distance between particles; phase change by supplying/removing heat/energy, thermal expansion and changes in volume and/or pressure) ----- ○ --- ○ --- ○
- b) Energy types, sources, and conversions, including heat transfer ----- ○ --- ○ --- ○
- c) Basic properties/behaviors of light (reflection, refraction, light and color, simple ray diagrams) and sound (production by vibration, transmission through media, relative speed of light and sound) ----- ○ --- ○ --- ○
- d) Electric circuits (flow of current; types of circuits - opened/closed and parallel/series; current/voltage relationship) ----- ○ --- ○ --- ○
- e) Forces and motion (types of forces, basic description of motion, use of distance/time graphs, effects of density and pressure) ----- ○ --- ○ --- ○



## 9 continued

Considering your training and experience in both science content and instruction, how ready do you feel you are to teach these topics at the <eighth> grade?

Fill in **one** circle for each row

<b>Not ready</b>		
<b>Ready</b>		
<b>Very ready</b>		

### D. Earth Science

- a) Earth's structure and physical features (Earth's crust, mantle and core; use of topographic maps) -----○---○---○
- b) Earth's processes, cycles and history (rock cycle; water cycle; weather patterns; major geological events; formation of fossils and fossil fuels) -----○---○---○
- c) 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; the Sun as a star) -----○---○---○

### E. Environmental Science

- a) Trends in human population and its effects on the environment -----○---○---○
- b) Use and conservation of Earth's natural resources (renewable/non-renewable resources, human use of land/soil and water resources) -----○---○---○
- c) Changes in environments (role of human activity, global environmental concerns, impact of natural hazards) -----○---○---○

# Teaching Time

10

**A. In one typical calendar week from Monday to Sunday, what is the total number of single periods for which you are formally <scheduled/time-tabled/assigned>? Count a double period as two periods.**

\_\_\_\_\_ *Write in the number of periods*

**B. Of these formally <scheduled/time-tabled/assigned> periods, how many are you assigned to do each of the following?**

*Write in the number of periods*

- a) Teach <general> science ----- \_\_\_\_\_
- b) Teach physical science ----- \_\_\_\_\_
- c) Teach physics ----- \_\_\_\_\_
- d) Teach chemistry ----- \_\_\_\_\_
- e) Teach life science/biology ----- \_\_\_\_\_
- f) Teach Earth science ----- \_\_\_\_\_
- g) Teach mathematics ----- \_\_\_\_\_
- h) Teach other subjects ----- \_\_\_\_\_
- i) Perform other duties ----- \_\_\_\_\_

**Total** ----- \_\_\_\_\_  
*Should match number in 10A*

**C. How many minutes are in a typical single period?**

\_\_\_\_\_ *Write in the number of minutes*

11

**Outside the formal school day, approximately how many hours per week do you normally spend on each of these activities? Do not include the time already accounted for in Question 10. Please round to the nearest whole number.**

*Write in the number of hours per week*

- a) Grading student tests, exams, or other student work ----- \_\_\_\_\_
- b) Planning lessons ----- \_\_\_\_\_
- c) Administrative and record-keeping tasks including staff meetings ----- \_\_\_\_\_
- d) Other ----- \_\_\_\_\_

**12**

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

Fill in **one** circle for each row

	Daily or almost daily			
	1-3 times per week			
	2 or 3 times per month			
	Never or almost never			

- a) Discussions about how to teach a particular concept --  ---  ---  ---
- b) Working on preparing instructional materials -----  ---  ---  ---
- c) Visits to another teacher's classroom to observe his/her teaching -----  ---  ---  ---
- d) Informal observations of **my** classroom by another teacher -----  ---  ---  ---

**13**

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

Fill in **one** circle for each row

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 -----  ---

**14**

**To what extent do you agree or disagree with each of the following statements?**

Fill in **one** circle for each row

	Disagree a lot			
	Disagree			
	Agree			
	Agree a lot			

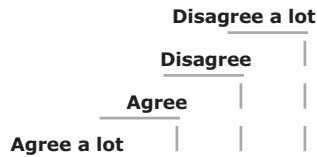
- a) More than one representation (picture, concrete material, symbols, etc.) should be used in teaching a science topic -----  ---  ---  ---
- b) Solving science problems often involves hypothesizing, estimating, testing, and modifying findings -----  ---  ---  ---
- c) Learning science mainly involves memorizing -----  ---  ---  ---
- d) There are many ways to conduct scientific investigation -----  ---  ---  ---
- e) Getting the correct answer is the most important outcome of a student's scientific experiment -----  ---  ---  ---
- f) Scientific theories are subject to change -----  ---  ---  ---
- g) Science is taught primarily to give students the skills and knowledge to explain natural phenomena -  ---  ---  ---
- h) Modeling natural phenomena is essential to teaching science -----  ---  ---  ---
- i) Most scientific discoveries have no practical value -----  ---  ---  ---



15

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

Fill in **one** circle for each row

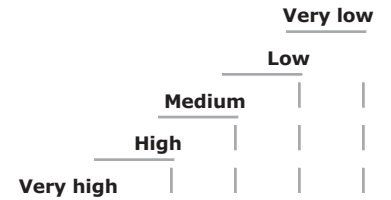


- a) This school facility (building and grounds) is in need of significant repair ----- ○ ---○ ---○ ---○
- b) This school is located in a safe neighborhood ----- ○ ---○ ---○ ---○
- c) I feel safe at this school ----- ○ ---○ ---○ ---○
- d) This school's security policies and practices are sufficient - ○ ---○ ---○ ---○

16

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

Fill in **one** circle for each row



- a) Teachers' job satisfaction ----- ○ ---○ ---○ ---○
- b) Teachers' understanding of the school's curricular goals ----- ○ ---○ ---○ ---○
- c) Teachers' degree of success in implementing the school's curriculum ○ ---○ ---○ ---○
- d) Teachers' expectations for student achievement ----- ○ ---○ ---○ ---○
- e) Parental support for student achievement -- ○ ---○ ---○ ---○
- f) Parental involvement in school activities ----- ○ ---○ ---○ ---○
- g) Students' regard for school property ----- ○ ---○ ---○ ---○
- h) Students' desire to do well in school ----- ○ ---○ ---○ ---○

## The TIMSS Class

The remaining questions refer to the <TIMSS class / class with the TIMSS students>. Remember, "the TIMSS class" is the class which is identified on the cover of this questionnaire, and which will be tested as part of TIMSS 2003 in your school.

17

**How many students are in the <TIMSS class/ class with the TIMSS students>?**

\_\_\_\_\_ *Write in the number of students*

18

**How many minutes per week do you teach science to the <TIMSS class>?**

\_\_\_\_\_ *Write in the number of minutes per week*

19

**A. Do you use a textbook(s) in teaching science to the <TIMSS class>?**

No  
|  
Yes

Fill in **one** circle only -----○-----○

*If No, please go to question 20* 

**B. How do you use a textbook(s) in teaching science to the <TIMSS class>?**

Fill in **one** circle only

As the primary basis for my lessons -----○

As a supplementary resource -----○

20

**In a typical week of science lessons for the <TIMSS class>, what percentage of time do students spend on each of the following activities?**

*Write in the percent  
The total should add to 100%*

- a) Reviewing homework -----○-----%
- b) Listening to lecture-style presentations -----○-----%
- c) Working problems with your guidance -----○-----%
- d) Working problems on their own without your guidance -----○-----%
- e) Listening to you re-teach and clarify content/procedures -----○-----%
- f) Taking tests or quizzes -----○-----%
- g) Participating in classroom management tasks not related to the lesson's content/purpose (e.g., interruptions and keeping order) -----○-----%
- h) Other student activities -----○-----%

**Total** -----○----- 100%

# Teaching Science to the TIMSS Class

21

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

Fill in **one** circle for each row

- |  | Every or almost every lesson | About half the lessons | Some lessons          | Never                 |
|--|------------------------------|------------------------|-----------------------|-----------------------|
| a) Watch me demonstrate an experiment or investigation -----                   | <input type="radio"/>        | <input type="radio"/>  | <input type="radio"/> | <input type="radio"/> |
| b) Formulate hypotheses or predictions to be tested -----                      | <input type="radio"/>        | <input type="radio"/>  | <input type="radio"/> | <input type="radio"/> |
| c) Design or plan experiments or investigations -----                          | <input type="radio"/>        | <input type="radio"/>  | <input type="radio"/> | <input type="radio"/> |
| d) Conduct experiments or investigations -----                                 | <input type="radio"/>        | <input type="radio"/>  | <input type="radio"/> | <input type="radio"/> |
| e) Work together in small groups on experiments or investigations -----        | <input type="radio"/>        | <input type="radio"/>  | <input type="radio"/> | <input type="radio"/> |
| f) Write explanations about what was observed and why it happened -----        | <input type="radio"/>        | <input type="radio"/>  | <input type="radio"/> | <input type="radio"/> |
| g) Put events or objects in order and give a reason for the organization ----- | <input type="radio"/>        | <input type="radio"/>  | <input type="radio"/> | <input type="radio"/> |
| h) Study the impact of technology on society -----                             | <input type="radio"/>        | <input type="radio"/>  | <input type="radio"/> | <input type="radio"/> |
| i) Learn about the nature of science and inquiry -----                         | <input type="radio"/>        | <input type="radio"/>  | <input type="radio"/> | <input type="radio"/> |
| j) Relate what they are learning in science to their daily lives -----         | <input type="radio"/>        | <input type="radio"/>  | <input type="radio"/> | <input type="radio"/> |
| k) Present their work to the class -----                                       | <input type="radio"/>        | <input type="radio"/>  | <input type="radio"/> | <input type="radio"/> |

22

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

Fill in **one** circle for each row

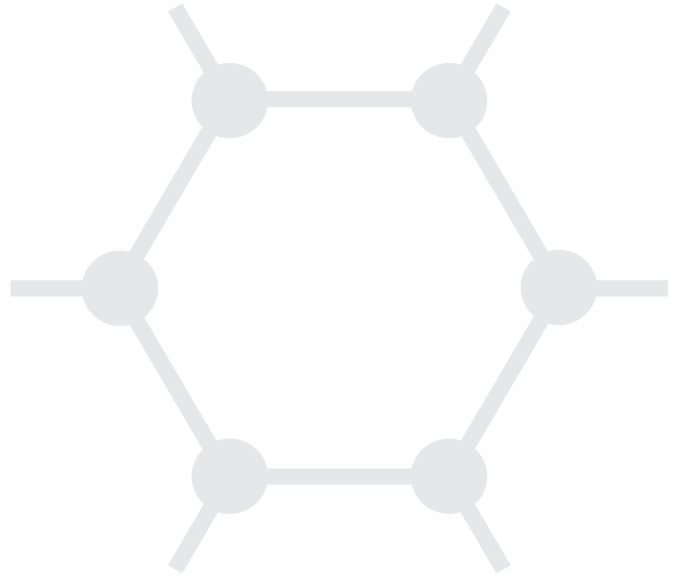
- |  | Not applicable        | Not at all            | A little              | Some                  | A lot                 |
|--|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| <b>Students</b>  |                       |                       |                       |                       |                       |
| a) Students with different academic abilities -----  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| b) Students who come from a wide range of backgrounds (e.g., economic, language) --  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| c) Students with special needs (e.g., hearing, vision, speech impairment, physical disabilities, mental or emotional/psychological impairment) ----- | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| d) Uninterested students -   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| e) Low morale among students -----   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| f) Disruptive students-----  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <b>Resources</b>   |                       |                       |                       |                       |                       |
| g) Shortage of computer hardware ---   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| h) Shortage of computer software ----  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| i) Shortage of support for using computers ---   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| j) Shortage of textbooks for student use -----   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| k) Shortage of other instructional equipment for students' use -----   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| l) Shortage of equipment for your use in demonstrations and other exercises ---  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| m) Inadequate physical facilities -----  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| n) High student/teacher ratio-----   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

23

**By the end of this school year, approximately what percentage of teaching time will you have spent during this school year on each of the following science content areas for the <TIMSS class>?**

*Write in the percent  
The total should add to 100%*

- a) Life science (e.g., types, characteristics, and classification of living things; structure/function and life processes in organisms; cells and their functions; development, reproduction and heredity; diversity, adaptation and natural selection; ecosystems; and human health) ----- \_\_\_\_\_ %
- b) Chemistry (e.g., classification, composition and particulate structure of matter; properties and uses of water; acids and bases; and chemical change) ----- \_\_\_\_\_ %
- c) Physics (e.g., physical states and changes in matter; energy types, sources and conversions; heat and temperature; light; sound and vibration; electricity and magnetism; forces and motion) ----- \_\_\_\_\_ %
- d) Earth science (e.g., Earth's structure and physical features; Earth's processes, cycles and history; the solar system and universe) ----- \_\_\_\_\_ %
- e) Environmental science (e.g., changes in population; use and conservation of natural resources; and changes in environments) ----- \_\_\_\_\_ %
- f) Other, please specify:  
\_\_\_\_\_ ----- \_\_\_\_\_ %
- Total** ----- 100%



The following list includes the main topics addressed by the TIMSS science test. Choose the response that best describes when students in the TIMSS class have been taught each topic. If a topic was taught half this year and half before this year, please choose "Mostly taught this year."

Fill in **one** circle for each row

	<b>Not yet taught or just introduced</b>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	<b>Mostly taught this year</b>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	<b>Mostly taught before this year</b>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**A. Biology**

- a) Classification of organisms on the basis of a variety of physical and behavioral characteristics -----  ---  ---
- b) The major organ systems in humans and other organisms -----  ---  ---
- c) How the systems function to maintain stable bodily conditions -----  ---  ---
- d) Cell structures and functions -----  ---  ---
- e) Photosynthesis and respiration as processes of cells and organisms, including substances used and produced -----  ---  ---
- f) Life cycles of organisms, including humans, plants, birds, insects -----  ---  ---
- g) Reproduction (sexual and asexual), and heredity (passing on of traits), inherited versus acquired/learned characteristics -----  ---  ---
- h) The role of variation and adaptation in survival/extinction of species in a changing environment -----  ---  ---
- i) The interaction of living organisms in an ecosystem (energy flow, food chains and food webs, food pyramids, and the effects of change upon the system) -----  ---  ---
- j) Cycling of materials in nature (water, carbon/oxygen cycle, decomposition of organisms) -----  ---  ---
- k) Causes of common infectious diseases, methods of infection/transmission, prevention, and the body's natural resistance and healing capabilities -----  ---  ---
- l) Preventive medicine methods (diet, hygiene, exercise and lifestyle) -----  ---  ---



## 24 continued

The following list includes the main topics addressed by the TIMSS science test. Choose the response that best describes when students in the TIMSS class have been taught each topic. If a topic was taught half this year and half before this year, please choose "Mostly taught this year."

Fill in **one** circle for each row

	Not yet taught or just introduced	Mostly taught this year	Mostly taught before this year

### B. Chemistry

- a) Classification and composition of matter (physical and chemical characteristics, pure substances and mixtures, separation techniques) ----- ○ --- ○ --- ○
- b) Properties of solutions (solvents, solutes, effects of temperature on solubility) ----- ○ --- ○ --- ○
- c) Particulate structure of matter (molecules, atoms, protons, neutrons, and electrons) ----- ○ --- ○ --- ○
- d) Properties and uses of water (composition, melting/boiling points, changes in density/volume) ----- ○ --- ○ --- ○
- e) The properties and uses of common acids and bases ----- ○ --- ○ --- ○
- f) Chemical change (transformation of reactants, evidence of chemical change, conservation of matter) ----- ○ --- ○ --- ○
- g) The need for oxygen in common oxidation reactions (combustion, rusting) and the relative tendency of familiar substances to undergo these reactions ----- ○ --- ○ --- ○
- h) Classification of familiar chemical transformations as releasing or absorbing heat/energy ----- ○ --- ○ --- ○

## 24 continued

The following list includes the main topics addressed by the TIMSS science test. Choose the response that best describes when students in the TIMSS class have been taught each topic. If a topic was taught half this year and half before this year, please choose "Mostly taught this year."

Fill in **one** circle for each row

	Not yet taught or just introduced	Mostly taught this year

### C. Physics

- a) Physical states and changes in matter (explanations of properties including volume, shape, density and compressibility in terms of movement/distance between particles) ----- ○ --- ○ --- ○
- b) The processes of melting, freezing, evaporation, and condensation (phase change by supplying/removing heat; melting/boiling points; effects of pressure and purity of substances) ----- ○ --- ○ --- ○
- c) Energy types, sources, and conversions, including heat transfer ----- ○ --- ○ --- ○
- d) Thermal expansion and changes in volume and/or pressure ----- ○ --- ○ --- ○
- e) Basic properties/behavior of light (reflection, refraction, light and color, simple ray diagrams) --- ○ --- ○ --- ○
- f) Properties of sound (production by vibration, transmission through media, ways of describing sound (intensity, pitch), relative speed) ----- ○ --- ○ --- ○
- g) Electric circuits (flow of current, types of circuits – open/closed, parallel/series) and relationship between voltage and current ----- ○ --- ○ --- ○
- h) Properties of permanent magnets and electromagnets ----- ○ --- ○ --- ○
- i) Forces and motion (types of forces, basic description of motion), use of distance/time graphs ----- ○ --- ○ --- ○
- j) Effects of density and pressure ----- ○ --- ○ --- ○



**24 continued**

The following list includes the main topics addressed by the TIMSS science test. Choose the response that best describes when students in the TIMSS class have been taught each topic. If a topic was taught half this year and half before this year, please choose "Mostly taught this year."

Fill in **one** circle for each row

	Not yet taught or just introduced	Mostly taught this year	

**D. Earth Science**

- a) Earth's structure and physical features  
(Earth's crust, mantle, and core; topographic maps) ----- ○ --- ○ --- ○
- b) The physical state, movement, composition, and relative distribution of water on the Earth ----- ○ --- ○ --- ○
- c) The Earth's atmosphere and the relative abundance of its main components ----- ○ --- ○ --- ○
- d) Earth's water cycle (steps, role of sun's energy, circulation/renewal of fresh water) ----- ○ --- ○ --- ○
- e) Processes in the rock cycle and the formation of igneous, metamorphic,  
and sedimentary rock ----- ○ --- ○ --- ○
- f) Weather data/maps, and changes in weather patterns  
(e.g., seasonal changes, effects of latitude, altitude and geography) ----- ○ --- ○ --- ○
- g) Geological processes occurring over billions of years  
(e.g., erosion, mountain building, plate movement) ----- ○ --- ○ --- ○
- h) Formation of fossils and fossil fuels ----- ○ --- ○ --- ○
- i) Explanation of phenomena on Earth based on position/movement of bodies in the  
solar sytem and universe (e.g., day/night, tides, year, phases of the moon,  
eclipses, seasons, appearance of sun, moon, planets, and constellations) ----- ○ --- ○ --- ○
- j) The physical features of Earth compared with the moon and other planets  
(e.g., atmosphere, temperature, water, distance from sun, period of revolution/rotation,  
ability to support life) ----- ○ --- ○ --- ○
- k) The sun as a star ----- ○ --- ○ --- ○

**E. Environmental Science**

- a) Trends in human population and its effects on the environment ----- ○ --- ○ --- ○
- b) Use and conservation of natural resources  
(renewable/non-renewable resources, human use of land/soil and water resources) ----- ○ --- ○ --- ○
- c) Changes in environments (role of human activity, effects/prevention of pollution,  
global environmental concerns, impact of natural hazards) ----- ○ --- ○ --- ○




# Computers in the TIMSS Class

25

**A. Do students in the TIMSS class have computers available to use during their science lessons?**

No  
|  
Yes

Fill in **one** circle only -----○ ---○

If **No**, please go to question **27** 

**B. Do any of the computers have access to the Internet?**

No  
|  
Yes

Fill in **one** circle only -----○ ---○

26

**In teaching science to the <TIMSS class>, how often do you have students use a computer for the following activities?**

Fill in **one** circle for each row

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

- a) Do scientific procedures or experiments -----○ ---○ ---○ ---○
- b) Study natural phenomena through simulations -----○ ---○ ---○ ---○
- c) Practice skills and procedures -----○ ---○ ---○ ---○
- d) Look up ideas and information -----○ ---○ ---○ ---○
- e) Process and analyze data -----○ ---○ ---○ ---○


# Homework

**27** \_\_\_\_\_

**Do you assign science homework to the <TIMSS class>?**

	No
Yes	

Fill in **one** circle only -----○---

If **No**, please go to question **32** 

**28** \_\_\_\_\_

**How often do you usually assign science homework to the <TIMSS class>?**

Fill in **one** circle only

- Every or almost every lesson -----○
- About half the lessons -----○
- Some lessons -----○

**29** \_\_\_\_\_

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

Fill in **one** circle only

- Fewer than 15 minutes -----○
- 15-30 minutes -----○
- 31-60 minutes -----○
- 61-90 minutes -----○
- More than 90 minutes -----○

**30** \_\_\_\_\_

**How often do you assign the following kinds of science homework to the <TIMSS class>?**

Fill in **one** circle for each row

	Never or almost never	
	Sometimes	
	Always or almost always	

- a) Doing problem/question sets -----○---
- b) Finding one or more applications of the content covered -----○---
- c) Reading from a textbook or supplementary materials -----○---
- d) Writing definitions or other short writing assignments -----○---
- e) Working on projects -----○---
- f) Working on small investigations or gathering data -----○---
- g) Preparing reports -----○---

**31** \_\_\_\_\_

**How often do you do the following with the science homework assignments?**

Fill in **one** circle for each row

	Never or almost never	
	Sometimes	
	Always or almost always	

- a) Monitor whether or not the homework was completed -----○---
- b) Correct assignments and then give feedback to students -----○---
- c) Have students correct their own homework in class -----○---
- d) Use the homework as a basis for class discussion -----○---
- e) Use the homework to contribute towards students' grades or marks -----○---

**32**

**How often do you give a science test or examination to the <TIMSS class>?**

*Fill in **one** circle only*

- About once a week ----- ○
- About every two weeks ----- ○
- About once a month ----- ○
- A few times a year ----- ○
- Never ----- ○

*If **Never**, you have completed the questionnaire* ●

**33**

**What item formats do you typically use in your science tests or examinations?**

*Fill in **one** circle only*

- Only constructed-response ----- ○
- Mostly constructed-response ----- ○
- About half constructed-response and half objective (e.g., multiple-choice) ----- ○
- Mostly objective ----- ○
- Only objective ----- ○

**34**

**How often do you include the following types of questions in your science tests or examinations?**

*Fill in **one** circle for each row*

	Never or almost never		Sometimes		Always or almost always

- a) Questions requiring understanding of concepts, relationships, and processes ----- ○ ---○ ---○
- b) Questions involving hypotheses and conclusions ----- ○ ---○ ---○
- c) Questions based on recall of facts or procedures ----- ○ ---○ ---○

**Thank You**  
for completing  
this questionnaire



**TIMSS International Study Center**

Boston College  
Chestnut Hill, MA 02467

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