Dear science teacher

Thank you for participating in this study.

This questionnaire asks for information about:

- Background information
- Your initial education and professional development
- Your school
- Science teaching practices

This information will help illustrate the similarities and differences between groups of teachers in order to better establish the context for students' test results. For example, the information provided may help to establish what effect the availability of resources may have on student achievement - both within and between countries.

The questionnaire should be completed by you only. It should take about 45 minutes to complete.

If you do not know an answer precisely, your best estimate will be adequate for the purpose of the study.

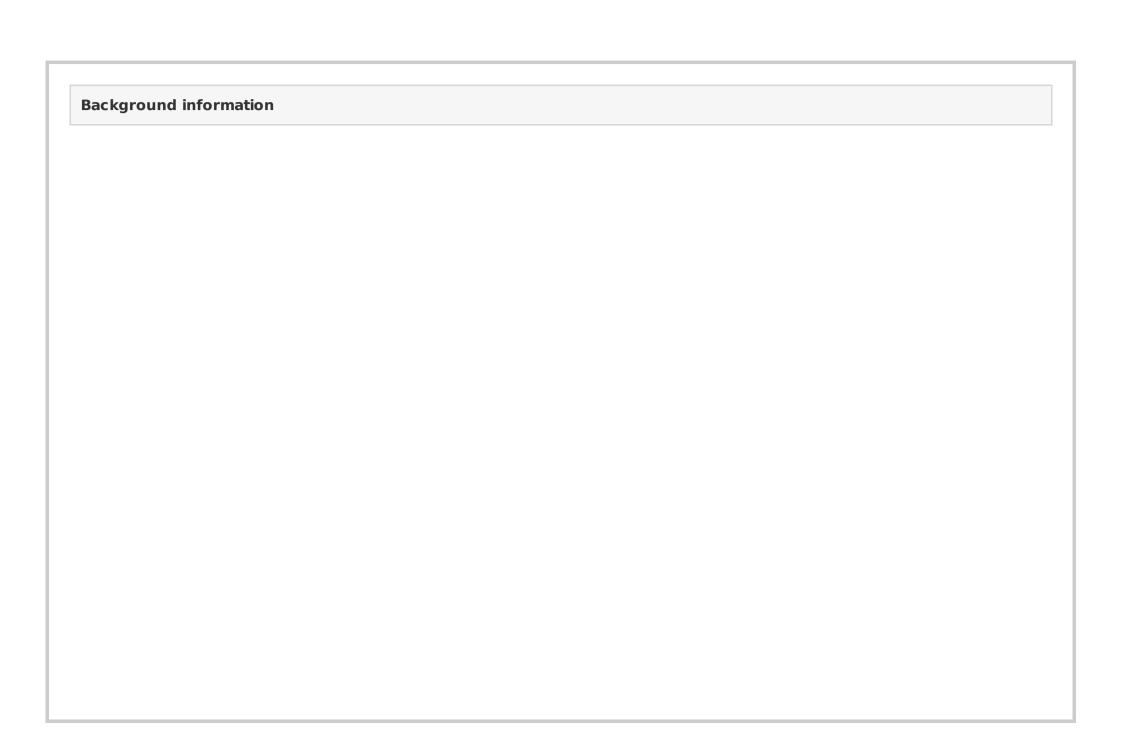
Please note that the forward button used to proceed to the next question is located at the bottom right hand corner of your screen. In some instances you may need to scroll down to the bottom of your screen to access this forward button.

Your answers will be kept confidential. They will be combined with answers from other teachers to calculate totals and averages from which no single teacher can be identified.

To answer questions in this questionnaire, please consider the following definitions:

School science includes all school sciences courses referring to the domains of physics, chemistry, biology, Earth science or geology, space science or astronomy, applied sciences and technology either taught in your curriculum as separate science subjects or taught within a single 'integrated-science' subject. It does NOT include related subjects such as mathematics, psychology, economics, nor possible Earth science topics included in geography courses. The term school science has been used to explicitly distinguish from natural science. Please consider this distinction.

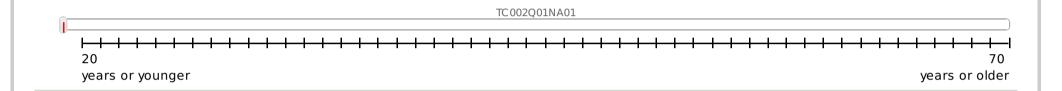
Natural science refers to all topics covered in academic or popular science and technology. This encompasses all possible disciplines in the natural sciences (e.g. physics, chemistry, biology, Earth science or geology, space science or astronomy), including applied sciences, technology and engineering. In contrast to school science, natural science is not limited to subjects or courses that are taught at school.



(Please select one response.)		
Female	TC001Q01NA01	
Male	TC001Q01NA02	

### How old are you?

(Please move the slider to the appropriate number of years.)



What is your employment status as a teacher <u>at this school</u> ?			
'Please select one response.)			
Permanent employment (an on-going contract with no fixed end-point before the age of retirement)	TC 004Q01NA01		
ixed-term contract for a period of more than 1 school year	TC 004Q01NA02		
ixed-term contract for a period of 1 school year or less	TC004Q01NA03		

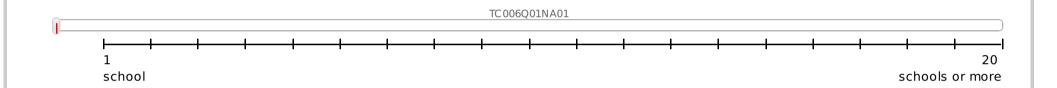
(Please consider your employment status at this school and for all your teaching employment together.)

	Full-time (more than 90% of full-time hours)	Part-time (71-90% of full- time hours)	Part-time (50-70% of full-time hours)	Part-time (less than 50% of full-time hours)
My employment status at this school	TC 005Q01NA01	TC 005Q01NA02	TC 005Q01NA03	TC005Q01NA04
All my teaching employments together	TC 005Q02NA01	TC 005Q02NA02	TC 005Q02NA03	TC005Q02NA04

#### In how many schools have you worked in the course of your teaching career?

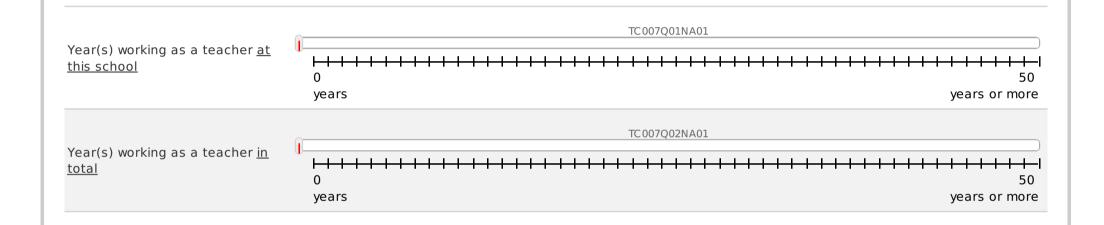
(Include all schools, even if you worked at several schools at once.)

(Please move the slider to the appropriate number of schools.)



#### How many years of work experience do you have?

(Please round up to whole years, regardless of whether you worked part-time or full-time, and move the slider to the appropriate number of years. If no option applies to you, select "0" (zero).)



### **Consistency check rule**

Rule: If ^TC007Q01NA01 > ^TC007Q02NA01

Message: The number of years working at this school is greater than the number of years working in total. Please check your response.

ur initial education and	l professional dev	elopment		

What is the highest level of formal education you have completed?			
(Please select one response.)			
Below tertiary education	TC012C01NA01		
Diploma from technical college or bacharelato	TC012C01NA02		
Bachelor's degree	TC012C01NA03		
Master's degree or above	TC012C01NA04		

Please select one response.)		
⁄es	TC013Q01NA01	
No	TC 013Q01NA02	

Did you complete a teacher education or training programme?			
(Please select one response.)			
Yes	TC014Q01NA01		
No	TC014Q01NA02		

How did you receive your teaching qualifications?		
Please select one response.)		
attended a standard teacher education or training programme at an educational institute which is eligible to educate or train teachers.	TC015Q01NA01	
attended an in-service teacher education or training programme.	TC 015Q01NA02	
attended a work-based teacher education or training programme.	TC 015Q01NA03	
attended training in another pedagogical profession.	TC 015Q01NA04	
Other	TC015Q01NA05	

Were any of the following included in your teacher education or training programme or other professional qualification and do you teach them to the Form 4 / Grade 10 (or Form 3 / Grade 9) in the current school year?

(Because this is an international survey, we had to categorise many of the actual subjects taught in schools into broad categories. If the exact name of one of your subjects is not listed, please mark the category you think best fits the subject.)

(If you need further explanation for terms used in this question, please use the help button.)

(Please select all that apply.)

**Reading, writing and literature:** reading and writing (and literature) in the mother tongue, in the language of instruction, or in the tongue of the country (region) as a second language (for non-natives); language studies, public speaking, literature

Mathematics: mathematics, mathematics with statistics, geometry, algebra, etc.

**Science:** natural sciences, physics, physical science, chemistry, biology, human biology, earth and space sciences, environmental science, agriculture/horticulture/forestry

**Technology:** orientation in technology, including information technology, computer studies, construction/surveying, engineering, electronics, graphics and design, keyboard skills, word processing, workshop technology/design technology

**Social studies:** social studies, community studies, contemporary studies, economics, environmental studies, geography, history, humanities, legal studies, studies of the own country, social sciences, ethical thinking, philosophy

Modern foreign languages: languages different from the language of instruction

Ancient languages (e.g. Latin)

Arts: arts, music, visual arts, practical art, drama, performance music, photography, drawing, creative handicraft, creative needlework

Physical education: physical education, gymnastics, dance, health

Religion and/or ethics: religion, history of religions, religion culture, ethics

**Practical and vocational skills:** vocational skills (preparation for a specific occupation), technics, domestic science, accountancy, business studies, career education, clothing and textiles, driving, home economics, polytechnic courses, secretarial studies, tourism and hospitality, handicraft.

Included in my teacher education or training programme or other professional qualification

I teach it to the Form 4 / Grade 10 (or Form 3 / Grade 9) in the current school year

Reading, writing and literature	TC 018Q01NA01	TC 018Q01NB01
Mathematics	TC018Q02NA01	TC018Q02NB01
Science	TC018Q03NA01	TC018Q03NB01
Technology	TC018Q04NA01	TC018Q04NB01
Social studies	TC018Q05NA01	TC018Q05NB01
Modern foreign languages	TC018Q06NA01	TC018Q06NB01
Ancient languages (e.g. Latin)	TC018Q07NA01	TC018Q07NB01
Arts	TC018Q08NA01	TC018Q08NB01
Physical education	TC018Q09NA01	TC018Q09NB01
Religion and/or ethics	TC018Q10NA01	TC018Q10NB01
Practical and vocational skills	TC018Q11NA01	TC018Q11NB01

#### **Consistency check rule**

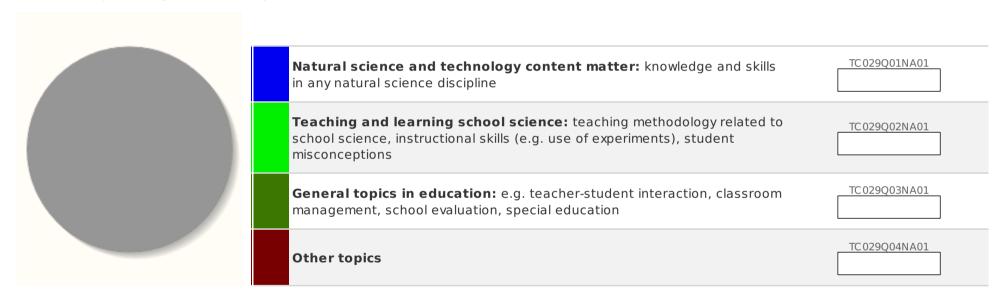
```
Rule: If (^TC018Q01NA01=0 and ^TC018Q02NA01=0 and ^TC018Q03NA01=0 and ^TC018Q04NA01=0 and ^TC018Q05NA01=0 and ^TC018Q06NA01=0 and ^TC018Q07NA01=0 and ^TC018Q08NA01=0 and ^TC018Q09NA01=0 and ^TC018Q10NA01=0 and ^TC018Q11NA01=0 and (^TC018Q01NB01=0 and ^TC018Q02NB01=0 and ^TC018Q03NB01=0 and ^TC018Q04NB01=0 and ^TC018Q05NB01=0 and ^TC018Q09NB01=0 and ^TC018Q09NB01=0 and ^TC018Q10NB01=0 and ^TC018Q10NB01=0 and ^TC018Q1NB01=0))
```

Message: Please select a response.

# What proportion of your teacher education or training programme or other professional qualification was dedicated to each of the following areas?

(For each area please enter an approximate percentage, e.g. "20" in the first row to indicate 20% of initial education time used for natural science and technology content matter.)

(Note that the percentages must add up to 100.)



### **Consistency check rule**

Rule: If ((^TC029Q01NA01 + ^TC029Q02NA01 + ^TC029Q03NA01 + ^TC029Q04NA01) >100) OR ((^TC029Q01NA01 + ^TC029Q02NA01 + ^TC029Q03NA01 + ^TC029Q04NA01) < 100)

Message: Sum does not add to 100%, please check your response.

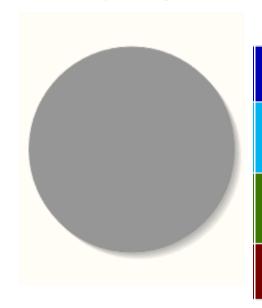
### During the last 12 months, did you participate in any of the following activities?

	Yes	No
Qualification programme (e.g. a degree programme)	TC020Q01NA01	TC 020Q01NA02
Participation in a network of teachers formed specifically for the professional development of teachers	TC 020Q02NA01	TC 020Q02NA02
Individual or collaborative research on a topic of interest to you professionally	TC 020Q03NA01	TC 020Q03NA02
Mentoring and/or peer observation and coaching, as part of a formal school arrangement	TC 020Q04NA01	TC 020Q04NA02
Reading professional literature (e.g. journals, evidence-based papers, thesis papers)	TC 020Q05NA01	TC 020Q05NA02
Engaging in informal dialogue with your colleagues on how to improve your teaching	TC 020Q06NA01	TC 020Q06NA02

# During the last 12 months, what proportion of your professional development activities was dedicated to each of the following areas?

(For each area please enter an approximate percentage, e.g. "20" in the first row to indicate 20% of professional development activity time used for natural science and technology content matter.)

(Note that the percentages must add up to 100.)



Natural science and technology content matter: knowledge and skills in any natural science discipline

Teaching and learning school science: teaching methodology related to school science, instructional skills (e.g. use of experiments), student misconceptions

General topics in education: e.g. teacher-student interaction, classroom management, school evaluation, special education, special education

Other topics

TC030Q01NA01

TC030Q02NA01

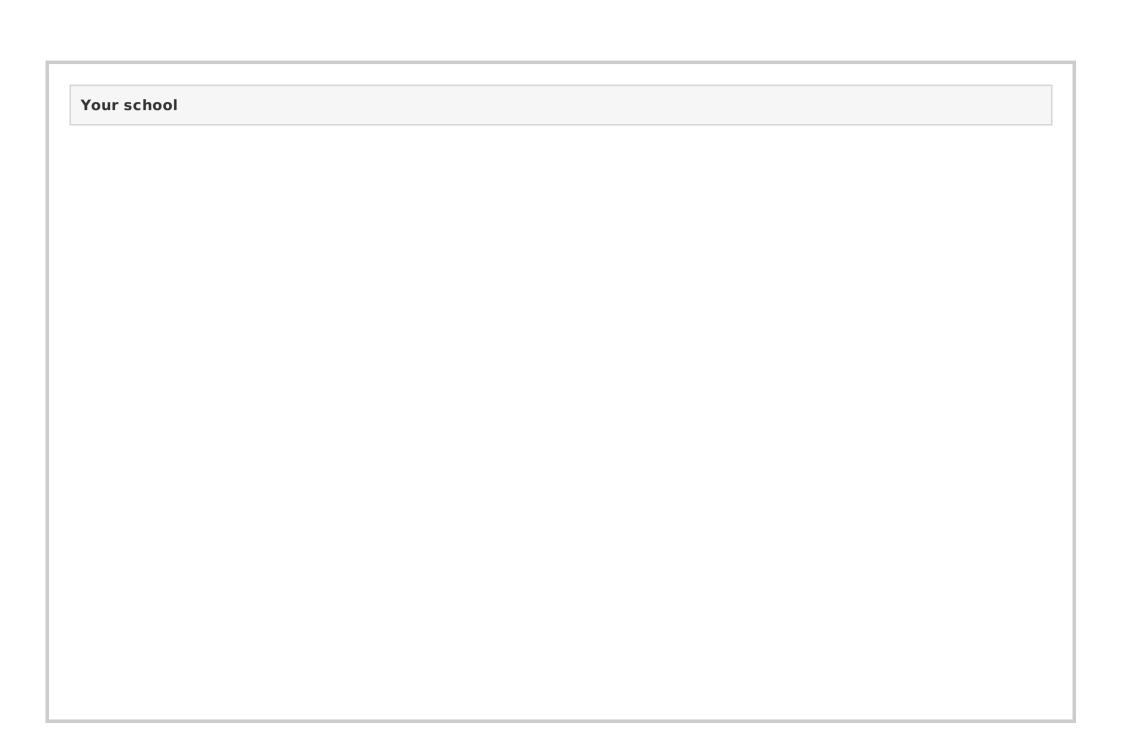
TC030Q03NA01

### **Consistency check rule**

Rule: If ((  $^{TC030Q01NA01} + ^{TC030Q02NA01} + ^{TC030Q03NA01} + ^{TC030Q04NA01} > 100) OR (( <math>^{TC030Q01NA01} + ^{TC030Q02NA01} + ^{TC030Q03NA01} + ^{TC030Q04NA01} < 100)$ 

Message: Sum does not add to 100%, please check your response.

Are you required to take part in professional development activities?			
(Please select one response.)			
Yes	TC021Q01NA01		
No	TC021Q01NA02		



### Is your school's capacity to provide instruction hindered by any of the following issues?

	Not at all	Very little	To some extent	A lot
A lack of teaching staff.	TC028Q01NA01	TC 028Q01NA02	TC 028Q01NA03	TC028Q01NA04
Inadequate or poorly qualified teaching staff.	TC 028Q02NA01	TC 028Q02NA02	TC 028Q02NA03	TC 028Q02NA04
A lack of assisting staff.	TC 028Q03NA01	TC 028Q03NA02	TC 028Q03NA03	TC 028Q03NA04
Inadequate or poorly qualified assisting staff.	TC 028Q04NA01	TC 028Q04NA02	TC 028Q04NA03	TC 028Q04NA04
A lack of educational material (e.g. textbooks, IT equipment, library or laboratory material).	TC 028Q05NA01	TC 028Q05NA02	TC 028Q05NA03	TC 028Q05NA04
Inadequate or poor quality educational material (e.g. textbooks, IT equipment, library or laboratory material).	TC 028Q06NA01	TC 028Q06NA02	TC 028Q06NA03	TC 028Q06NA04
A lack of physical infrastructure (e.g. building, grounds, heating/cooling, lighting and acoustic systems).	TC 028Q07NA01	TC 028Q07NA02	TC 028Q07NA03	TC 028Q07NA04
Inadequate or poor quality physical infrastructure (e.g. building, grounds, heating/cooling, lighting and acoustic systems).	TC028Q08NA01	TC 028Q08NA02	TC 028Q08NA03	TC 028Q08NA04



science in Form 4 / Grade 10 (or Form 3 / Grade 9)?	
olicies.)	
TC039Q01NA01	
<u> </u>	
TC 039Q01NA02	
	TC 039Q01NA01 O TC 039Q01NA02

## **Branching rule**

Rule: If (^TC039Q01NA01=1) then GOTO ^TC041 else GOTO ^TC031

# How much emphasis is given to the following approaches and processes in the intended school science curriculum for Form 4 / Grade 10 (or Form 3 / Grade 9)?

	No emphasis	Very little emphasis	Some emphasis	A lot of emphasis
Knowing basic science facts and principles	TC041Q01NA01	TC 041Q01NA02	TC041Q01NA03	TC041Q01NA04
Observing natural phenomena and describing what is seen	TC041Q02NA01	TC 041Q02NA02	TC 041Q02NA03	TC 041Q02NA04
Providing explanations of what is being studied	TC041Q03NA01	TC 041Q03NA02	TC041Q03NA03	TC 041Q03NA04
Designing and planning experiments or investigations	TC041Q04NA01	TC 041Q04NA02	TC041Q04NA03	TC 041Q04NA04
Conducting experiments or investigations	TC 041Q05NA01	TC 041Q05NA02	TC 041Q05NA03	TC 041Q05NA04
Integrating science with other subjects	TC041Q06NA01	TC 041Q06NA02	TC041Q06NA03	TC 041Q06NA04
Relating what students are learning to their daily lives	TC041Q07NA01	TC 041Q07NA02	TC041Q07NA03	TC 041Q07NA04
Incorporating the experiences of different ethnic/cultural groups	TC041Q08NA01	TC 041Q08NA02	TC041Q08NA03	TC 041Q08NA04



(Please select one response.)	
Yes	TC 043Q01NA01
No	TC 043Q01NA02

# To what extent do you disagree or agree with the following statements about regular cooperation among your fellow school science teachers and yourself?

	Strongly disagree	Disagree	Agree	Strongly agree
We discuss the achievement requirements for school science when setting tests.	TC031Q04NA01	TC031Q04NA02	TC 031Q04NA03	TC031Q04NA04
It is natural for us to cooperate on what homework to give to our students.	TC 031Q07NA01	TC031Q07NA02	TC 031Q07NA03	TC 031Q07NA04
We discuss the criteria we use to grade written tests.	TC031Q11NA01	TC031Q11NA02	TC 031Q11NA03	TC 031Q11NA04
We exchange tasks for lessons and homework that cover a range of different levels of difficulty.	TC031Q13NA01	TC031Q13NA02	TC 031Q13NA03	TC 031Q13NA04
I prepare a selection of teaching units with my fellow school science teachers.	TC 031Q14NA01	TC031Q14NA02	TC 031Q14NA03	TC 031Q14NA04
We discuss ways to teach learning strategies and techniques to our students.	TC 031Q15NA01	TC031Q15NA02	TC 031Q15NA03	TC 031Q15NA04
My fellow school science teachers benefit from my specific skills and interests.	TC031Q18NA01	TC031Q18NA02	TC 031Q18NA03	TC 031Q18NA04
We discuss ways to better identify students' individual strengths and weaknesses.	TC031Q20NA01	TC031Q20NA02	TC 031Q20NA03	TC 031Q20NA04



# We would like to know how you generally feel about your job. How strongly do you agree or disagree with the following statements?

	Strongly disagree	Disagree	Agree	Strongly agree
The advantages of being a teacher clearly outweigh the disadvantages.	TC 026Q01NA01	TC 026Q01NA02	TC 026Q01NA03	TC 026Q01NA04
If I could decide again, I would still choose to work as a teacher.	TC 026Q02NA01	TC 026Q02NA02	TC 026Q02NA03	TC 026Q02NA04
I regret that I decided to become a teacher.	TC026Q04NA01	TC 026Q04NA02	TC 026Q04NA03	TC 026Q04NA04
I enjoy working at this school.	TC 026Q05NA01	TC 026Q05NA02	TC 026Q05NA03	TC 026Q05NA04
I wonder whether it would have been better to choose another profession.	TC026Q06NA01	TC 026Q06NA02	TC 026Q06NA03	TC 026Q06NA04
I would recommend my school as a good place to work.	TC026Q07NA01	TC 026Q07NA02	TC 026Q07NA03	TC 026Q07NA04
I am satisfied with my performance in this school.	TC 026Q09NA01	TC 026Q09NA02	TC 026Q09NA03	TC 026Q09NA04
All in all, I am satisfied with my job.	TC026Q10NA01	TC 026Q10NA02	TC 026Q10NA03	TC026Q10NA04





### How often do these things happen in your school science lessons?

	Never or almost never	Some lessons	Many lessons	Every lesson or almost every lesson
Students are asked to draw conclusions from an experiment they have conducted.	TC037Q01NA01	TC037Q01NA02	TC037Q01NA03	TC037Q01NA04
Students are given opportunities to explain their ideas.	TC 037Q02NA01	TC 037Q02NA02	TC 037Q02NA03	TC 037Q02NA04
I explain scientific ideas.	TC 037Q03NA01	TC 037Q03NA02	TC 037Q03NA03	TC 037Q03NA04
A small group discussion between students takes place.	TC 037Q04NA01	TC 037Q04NA02	TC 037Q04NA03	TC 037Q04NA04
A whole class discussion takes place in which I participate.	TC 037Q05NA01	TC 037Q05NA02	TC 037Q05NA03	TC 037Q05NA04
Current scientific issues are discussed.	TC 037Q06NA01	TC 037Q06NA02	TC 037Q06NA03	TC 037Q06NA04
Students make calculations using scientific formulas.	TC037Q07NA01	TC 037Q07NA02	TC 037Q07NA03	TC 037Q07NA04
I use an interactive whiteboard.	TC 037Q08NA01	TC 037Q08NA02	TC 037Q08NA03	TC 037Q08NA04
Students do their own scientific study and related research.	TC 037Q09NA01	TC 037Q09NA02	TC 037Q09NA03	TC 037Q09NA04
	TC037010NA01	TC 037010N Δ02	TC 037010N Δ03	TC 037010N Δ04

I discuss questions that students ask.	0	0	0	0
Students carry out practical work.	TC037Q11NA01	TC037Q11NA02	TC037Q11NA03	TC037Q11NA04
Students write up laboratory reports.	TC037Q12NA01	TC037Q12NA02	TC037Q12NA03	TC037Q12NA04
I demonstrate an idea.	TC037Q13NA01	TC037Q13NA02	TC 037Q13NA03	TC037Q13NA04
I discuss questions of practical relevance.	TC037Q14NA01	TC 037Q14NA02	TC 037Q14NA03	TC037Q14NA04
Students read materials from a textbook.	TC037Q15NA01	TC 037Q15NA02	TC 037Q15NA03	TC037Q15NA04
Students take notes from the board.	TC037Q16NA01	TC037Q16NA02	TC037Q16NA03	TC037Q16NA04
Students discuss materials from a textbook.	TC037Q17NA01	TC037Q17NA02	TC037Q17NA03	TC037Q17NA04
Students watch videos.	TC037Q18NA01	TC037Q18NA02	TC037Q18NA03	TC037Q18NA04
Students use the Internet.	TC037Q19NA01	TC037Q19NA02	TC037Q19NA03	TC037Q19NA04
The class corrects homework or a test.	TC037Q20NA01	TC 037Q20NA02	TC 037Q20NA03	TC037Q20NA04
Students fill out worksheets.	TC037Q21NA01	TC 037Q21NA02	TC 037Q21NA03	TC037Q21NA04
Students present something to the rest of the class.	TC037Q22NA01	TC 037Q22NA02	TC 037Q22NA03	TC037Q22NA04



## To what extent can (or could) you do the following?

	Not at all	Very little	To some extent	To a large extent
Design experiments and hands-on activities for inquiry-based learning	TC 033Q04NA01	TC 033Q 04NA 02	TC 033Q04NA03	TC 033Q04NA04
Assign tailored tasks to the weakest as well as to the best students	TC 033Q05NA01	TC 033Q 05 NA 02	TC 033Q05NA03	TC 033Q05NA04
Use a variety of assessment strategies	TC 033Q06NA01	TC 033Q 06N A 02	TC 033Q 06N A 03	TC 033Q06NA04
Facilitate a discussion among students on how to interpret experimental findings	TC033Q08NA01	TC 033Q 08NA02	TC 033Q 08NA 03	TC 033Q08NA04

#### To what extent can (or could) you do the following?

(If you need further explanation of the term my scientific discipline, please use the help button.)

(Please select one response in each row.)

Your scientific discipline refers to one specific natural science discipline your main school science subject belongs to. If you teach the same number of hours for several school science subjects, you should choose only one and relate your answer to it.

	Not at all	Very little	To some extent	To a large extent
Explain a complex scientific concept to a fellow teacher	TC034Q01NA01	TC 034Q01NA02	TC 034Q01NA03	TC034Q01NA04
State and defend an informed position on ethical problems relating to natural science	TC034Q02NA01	TC 034Q02NA02	TC034Q02NA03	TC 034Q02NA04
Read state-of-the art papers in my scientific discipline	TC034Q04NA01	TC 034Q04NA02	TC034Q04NA03	TC 034Q04NA04
Explain the links between biology, physics and chemistry	TC034Q06NA01	TC034Q06NA02	TC 034Q06NA03	TC034Q06NA04

