Science Teacher Questionnaire
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2018 NSSME+
Science Teacher Questionnaire

Teacher Background and Opinions

1. How many years have you taught prior to this school year: [Enter each response as a whole number (for example: 15).]

a.	any subject at the K–12 level?	
b.	science at the K–12 level?	
c.	at this school, any subject?	

2. At what grade levels do you currently teach science? [Select all that apply.]

□	K–5
□	6–8
□	9–12
□	I do not currently teach science.

3. ***[Presented to self-contained teachers only]***
Which best describes the science instruction provided to the entire class?
   - Do not consider pull-out instruction that some students may receive for remediation or enrichment.
   - Do not consider instruction provided to individual or small groups of students, for example by an English-language specialist, special educator, or teacher assistant.

○	This class receives science instruction only from you. ***[Presented only to teachers who answered in Q2 that they teach science]***
○	This class receives science instruction from you and other teachers (for example: a science specialist or a teacher you team with). ***[Presented only to teachers who answered in Q2 that they teach science]***
○	This class receives science instruction only from another teacher (for example: a science specialist or a teacher you team with). ***[Presented only to teachers who answered in Q2 that they do not currently teach science] [Teacher ineligible, exit survey]***
○	This class does not receive science instruction this year. ***[Presented only to teachers who answered in Q2 that they do not currently teach science] [Teacher ineligible, exit survey]***

4. Omitted – Used only for survey routing.

5. ***[Presented to self-contained teachers only]***
Which best describes your science teaching?

○	I teach science all or most days, every week of the year.
○	I teach science every week, but typically not every day of the week.
○	I teach science some weeks, but typically not every week. ***[Skip to Q7]***

6. ***[Presented to self-contained teachers only]***
In a typical week, how many days do you teach lessons on each of the following subjects and how many minutes per week are spent on each subject? [Enter each response as a whole number (for example: 5, 150).]

	NUMBER OF DAYS PER WEEK	TOTAL NUMBER OF MINUTES PER WEEK
a. Mathematics		
b. Science		
c. Social Studies		
d. Reading/Language Arts		

7. ***[Presented only to self-contained teachers who did not answer Q6]***
In a typical year, how many weeks do you teach lessons on each of the following subjects and how many minutes per week are spent on each subject? [Enter each response as a whole number (for example: 36, 150).]

	NUMBER OF WEEKS PER YEAR	AVERAGE NUMBER OF MINUTES PER WEEK WHEN TAUGHT
a. Mathematics		
b. Science		
c. Social Studies		
d. Reading/Language Arts		

8. ***[Presented to non-self-contained teachers only]***
In a typical week, how many different classes (sections) of each of the following are you currently teaching? [Select one on each row.]
- If you meet with the *same class of students* multiple times per week, count that class only once.
- If you teach the *same science or engineering* course to multiple classes of students, count each class separately.

	0	1	2	3	4	5	6	7	8	9	10
Science (may include some engineering content)		○	○	○	○	○	○	○	○	○	○
Engineering	○	○	○	○	○	○	○	○	○	○	○

9. ***[Presented to non-self-contained teachers only]***
For each science class you currently teach, select the course type and enter the number of students enrolled. Enter the classes in the order that you teach them. For teachers on an alternating day block schedule, please order your classes starting with the first class you teach this week. Select one course type on each row and enter the number of students as a whole number (for example: 25).]

CLASS	COURSE TYPE	NUMBER OF STUDENTS ENROLLED
Your 1st science class:		
Your 2nd science class:		
…		
Your 10th science class:		

COURSE TYPE LIST	
1	Science (Grades K–5)
2	Life Science (Grades 6–8)
3	Earth/Space Science (Grades 6–8)
4	Physical Science (Grades 6–8)
5	General or Integrated Science (Grades 6–8)
6	Multi-discipline science courses (for example: General Science, Integrated Science, Physical Science) (Grades 9–12)
7	Earth/Space Science (Grades 9–12)
8	Life Science/Biology (Grades 9–12)
9	Environmental Science/Ecology (Grades 9–12)
10	Chemistry (Grades 9–12)
11	Physics (Grades 9–12)

10. ***[Presented to non-self-contained grades 9–12 teachers only]***
Use the descriptions below to select the level that best describes the content addressed in each grades 9–12 science class you teach. [Select one on each row.]

LEVEL	DESCRIPTION
Non-college Prep	A course that does not count towards the entrance requirements of a 4-year college. For example: Life Science.
1st Year College Prep, Including Honors	The first course in a discipline that counts towards the entrance requirements of a 4-year college. For example: Biology, Chemistry I.
2nd Year Advanced	A course typically taken after a 1st year college prep course. For example: Anatomy and Physiology, Advanced Chemistry, Physics II. Include Advanced Placement, International Baccalaureate, and concurrent college and high school credit/dual enrollment.

CLASS	COURSE TYPE	NON-COLLEGE PREP	1ST YEAR COLLEGE PREP, INCLUDING HONORS	2ND YEAR ADVANCED
Your 1st science class:	*[course type(s) teacher selected in Q9]*	○	○	○
Your 2nd science class:		○	○	○
…				
Your 10th science class:		○	○	○

11. ***[Presented to non-self-contained teachers only]***
Later in this questionnaire, we will ask you questions about your *[[xth]]* science class, which you indicated was *[[level indicated in Q10]] [[course type indicated in Q9]]*. What is your school's title for this course? _____

12. Have you been awarded one or more bachelor's and/or graduate degrees in the following fields? (With regard to bachelor's degrees, count only areas in which you majored. Do not include endorsements or certificates.) [Select one on each row.]

		YES	NO
a.	Education (general or subject specific such as science education)	○	○
b.	Engineering	○	○
c.	Natural Sciences (for example: biology, chemistry, physics, Earth sciences)	○	○
d.	Other, including social sciences; please specify _____	○	○

13. ***[Presented only to teachers that selected "Yes" for Q12a]***
What type of education degree do you have? (With regard to bachelor's degrees, count only areas in which you majored.) [Select all that apply.]

□	Elementary Education
□	Mathematics Education
□	Science Education
□	Other education, please specify. _____

14. ***[Presented only to teachers that selected "Yes" for Q12b]***
What type of engineering degree do you have? (With regard to bachelor's degrees, count only areas in which you majored.) [Select all that apply.]

□	Aerospace/Aeronautical/Astronautical Engineering
□	Bioengineering/Biomedical Engineering
□	Chemical Engineering
□	Civil Engineering
□	Computer Engineering
□	Electrical/Electronics Engineering
□	Environmental Engineering
□	Industrial/Manufacturing Engineering
□	Mechanical Engineering
□	Other engineering, please specify _____

15. ***[Presented only to teachers that selected "Yes" for Q12c]***
What type of natural science degree do you have? (With regard to bachelor's degrees, count only areas in which you majored.) [Select all that apply.]

□	Biology/Life Science
□	Chemistry
□	Earth/Space Science
□	Environmental Science/Ecology
□	Physics
□	Other natural science, please specify _____

16. Did you complete any of the following types of biology/life science courses at the undergraduate or graduate level? [Select one on each row.]

		YES	NO
a.	General/introductory biology/life science courses (for example: Biology I, Introduction to Biology, Biology for Teachers)	○	○
b.	Biology/life science courses beyond the general/introductory level	○	○
c.	Biology/life science teaching methods courses	○	○

17. ***[Presented only to teachers that selected "Yes" for Q16b]***
Please indicate which of the following biology/life science courses you completed (beyond a general/introductory course) at the undergraduate or graduate level. [Select all that apply.]

□	Anatomy/Physiology
□	Biochemistry
□	Botany
□	Cell Biology
□	Ecology
□	Evolution
□	Genetics
□	Microbiology
□	Zoology
□	Other biology/life science beyond the general/introductory level

18. Did you complete any of the following types of chemistry courses at the undergraduate or graduate level? [Select one on each row.]

		YES	NO
a.	General/introductory chemistry courses (for example: Chemistry I, Introduction to Chemistry)	○	○
b.	Chemistry courses beyond the general/introductory level	○	○
c.	Chemistry teaching methods courses	○	○

19. ***[Presented only to teachers that selected "Yes" for Q18b]***
Please indicate which of the following chemistry courses you completed (beyond a general/ introductory course) at the undergraduate or graduate level. [Select all that apply.]

□	Analytic Chemistry
□	Biochemistry
□	Inorganic Chemistry
□	Organic Chemistry
□	Physical Chemistry
□	Quantum Chemistry
□	Other chemistry beyond the general/introductory level

20. Did you complete any of the following types of physics courses at the undergraduate or graduate level? [Select one on each row.]

		YES	NO
a.	General/introductory physics courses (for example: Physics I, Introduction to Physics)	○	○
b.	Physics courses beyond the general/introductory level	○	○
c.	Physics teaching methods courses	○	○

21. ***[Presented only to teachers that selected "Yes" for Q20b]***
Please indicate which of the following physics courses you completed (beyond a general/ introductory course) at the undergraduate or graduate level. [Select all that apply.]

□	Astronomy/Astrophysics
□	Electricity and Magnetism
□	Heat and Thermodynamics
□	Mechanics
□	Modern or Quantum Physics
□	Nuclear Physics
□	Optics
□	Other physics beyond the general/introductory level

22. Did you complete any of the following types of Earth/space science courses at the undergraduate or graduate level? [Select one on each row.]

		YES	NO
a.	General/introductory Earth/space science courses (for example: Earth Science I, Introduction to Earth Science, Introductory Astronomy)	○	○
b.	Earth/space science courses beyond the general/introductory level	○	○
c.	Earth/space science teaching methods courses	○	○

23. ***[Presented only to teachers that selected "Yes" for Q22b]***
Please indicate which of the following Earth/space science courses you completed (beyond a general/introductory course) at the undergraduate or graduate level. [Select all that apply.]

□	Astronomy/Astrophysics
□	Geology
□	Meteorology
□	Oceanography
□	Physical Geography
□	Other Earth/space science beyond the general/introductory level

24. Did you complete any of the following types of environmental science courses at the undergraduate or graduate level? [Select one on each row.]

		YES	NO
a.	General/introductory environmental science courses (for example: Environmental Science I, Introduction to Environmental Science)	○	○
b.	Environmental science courses beyond the general/introductory level	○	○
c.	Environmental science teaching methods courses	○	○

25. ***[Presented only to teachers that selected "Yes" for Q24b]***
Please indicate which of the following environmental science courses you completed (beyond a general/introductory course) at the undergraduate or graduate level. [Select all that apply.]

□	Conservation Biology
□	Ecology
□	Forestry
□	Hydrology
□	Oceanography
□	Toxicology
□	Other environmental science beyond the general/introductory level

26. ***[Presented only to teachers who did not select Q12b]***
Did you complete one or more engineering courses at the undergraduate or graduate level?

○	Yes
○	No

27. Which of the following best describes the program you completed to earn your teaching credential (sometimes called certification or license)?

○	An undergraduate program leading to a bachelor's degree and a teaching credential
○	A post-baccalaureate credentialing program (no master's degree awarded)
○	A master's program that also led to a teaching credential
○	I have not completed a program to earn a teaching credential. ***[Skip to Q29]***

28. ***[Presented only to high school teachers]***
In which of the following areas are you certified (have a credential, endorsement, or license) to teach at the high school level? [Select all that apply.]

□	Biology/life science
□	Chemistry
□	Earth/space science
□	Ecology/environmental science
□	Engineering
□	Physics

29. After completing your undergraduate degree and prior to becoming a teacher, did you have a full-time job in a science- or engineering-related field?

○	Yes
○	No

Professional Development

The questions in this section ask about your participation in professional development focused on science/engineering or science/engineering teaching. When answering these questions, please include:

- face-to-face and/or online courses;
- professional meetings/conferences;
- workshops;
- professional learning communities/lesson studies/teacher study groups; and
- coaching and mentoring.

Do not include:

- courses you took prior to becoming a teacher; and
- time spent providing professional development (including coaching and mentoring) for other teachers.

30. When did you **last participate** in professional development focused on science/engineering or science/engineering teaching?

○	In the last 12 months
○	1–3 years ago
○	4–6 years ago
○	7–10 years ago
○	More than 10 years ago
○	Never

} *[Skip to Q35]*

31. **In the last 3 years,** which of the following types of professional development related to science/engineering or science/engineering teaching have you had? [Select one on each row.]

		YES	NO
a.	I attended a professional development program/workshop.	○	○
b.	I attended a national, state, or regional science teacher association meeting.	○	○
c.	I completed an online course/webinar.	○	○
d.	I participated in a professional learning community/lesson study/teacher study group	○	○
e.	I received assistance or feedback from a formally designated coach/mentor.	○	○
f.	I took a formal course for college credit.	○	○

32. What is the **total** amount of time you have spent on professional development related to science/engineering or science/engineering teaching **in the last 3 years**?

○	Less than 6 hours
○	6–15 hours
○	16–35 hours
○	36–80 hours
○	More than 80 hours

33. Considering all of your science- and engineering-related professional development **in the last 3 years**, to what extent does each of the following describe your experiences? [Select one on each row.]

		NOT AT ALL		SOMEWHAT		TO A GREAT EXTENT
a.	I had opportunities to engage in science investigations/engineering design challenges.	①	②	③	④	⑤
b.	I had opportunities to experience lessons, as my students would, from the textbook/modules I use in my classroom.	①	②	③	④	⑤
c.	I had opportunities to examine classroom artifacts (for example: student work samples, videos of classroom instruction).	①	②	③	④	⑤
d.	I had opportunities to rehearse instructional practices during the professional development (meaning: try out, receive feedback, and reflect on those practices).	①	②	③	④	⑤
e.	I had opportunities to apply what I learned to my classroom and then come back and talk about it as part of the professional development.	①	②	③	④	⑤
f.	I worked closely with other teachers from my school.	①	②	③	④	⑤
g.	I worked closely with other teachers who taught the same grade and/or subject whether or not they were from my school.	①	②	③	④	⑤

34. Thinking about all of your science- and engineering-related professional development **in the last 3 years**, to what extent was each of the following emphasized? [Select one on each row.]

		NOT AT ALL		SOMEWHAT		TO A GREAT EXTENT
a.	Deepening your own science content knowledge	①	②	③	④	⑤
b.	Deepening your understanding of how science is done (for example: developing scientific questions, developing and using models, engaging in argumentation)	①	②	③	④	⑤
c.	Deepening your understanding of how engineering is done (for example: identifying criteria and constraints, designing solutions, optimizing solutions)	①	②	③	④	⑤
d.	Implementing the science textbook/modules to be used in your classroom	①	②	③	④	⑤
e.	Learning about difficulties that students may have with particular science ideas	①	②	③	④	⑤
f.	Finding out what students think or already know prior to instruction on a topic	①	②	③	④	⑤
g.	Monitoring student understanding during science instruction	①	②	③	④	⑤
h.	Differentiating science instruction to meet the needs of diverse learners	①	②	③	④	⑤
i.	Incorporating students' cultural backgrounds into science instruction	①	②	③	④	⑤
j.	Learning how to provide science instruction that integrates engineering, mathematics, and/or computer science	①	②	③	④	⑤

Preparedness to Teach

35. ***[Presented only to grades K–5 teachers; sub-items e-h for self-contained teachers only]***
Many teachers feel better prepared to teach some subject areas than others. How well prepared do you feel to teach each of the following subjects **at the grade level(s) you teach**, whether or not they are currently included in your teaching responsibilities? [Select one on each row.]

		NOT ADEQUATELY PREPARED	SOMEWHAT PREPARED	FAIRLY WELL PREPARED	VERY WELL PREPARED
a.	Life Science	①	②	③	④
b.	Earth/Space Science	①	②	③	④
c.	Physical Science	①	②	③	④
d.	Engineering	①	②	③	④
e.	Mathematics	①	②	③	④
f.	Reading/Language Arts	①	②	③	④
g.	Social Studies	①	②	③	④
h.	Computer Science/Programming	①	②	③	④

36. ***[Subset of items related to topic of randomly selected class presented to non-self-contained teachers]***

Within science, many teachers feel better prepared to teach some topics than others. How well prepared do you feel to teach each of the following topics **at the grade level(s) you teach**, whether or not they are currently included in your teaching responsibilities? [Select one on each row.]

	NOT ADEQUATELY PREPARED	SOMEWHAT PREPARED	FAIRLY WELL PREPARED	VERY WELL PREPARED
a. Earth/Space Science				
i. Earth's features and physical processes	①	②	③	④
ii. The solar system and the universe	①	②	③	④
iii. Climate and weather	①	②	③	④
b. Biology/Life Science				
i. Cell biology	①	②	③	④
ii. Structures and functions of organisms	①	②	③	④
iii. Ecology/ecosystems	①	②	③	④
iv. Genetics	①	②	③	④
v. Evolution	①	②	③	④
c. Chemistry				
i. Atomic structure	①	②	③	④
ii. Chemical bonding, equations, nomenclature, and reactions	①	②	③	④
iii. Elements, compounds, and mixtures	①	②	③	④
iv. The Periodic Table	①	②	③	④
v. Properties of solutions	①	②	③	④
vi. States, classes, and properties of matter	①	②	③	④
d. Physics				
i. Forces and motion	①	②	③	④
ii. Energy transfers, transformations, and conservation	①	②	③	④
iii. Properties and behaviors of waves	①	②	③	④
iv. Electricity and magnetism	①	②	③	④
v. Modern physics (for example: special relativity)	①	②	③	④
e. Engineering				
i. Defining engineering problems	①	②	③	④
ii. Developing possible solutions	①	②	③	④
iii. Optimizing a design solution	①	②	③	④
f. Environmental and resource issues (for example: land and water use, energy resources and consumption, sources and impacts of pollution)	①	②	③	④

37. How well prepared do you feel to do each of the following in your science instruction? [Select one on each row.]

		NOT ADEQUATELY PREPARED	SOMEWHAT PREPARED	FAIRLY WELL PREPARED	VERY WELL PREPARED
a.	Develop students' conceptual understanding of the science ideas you teach	①	②	③	④
b.	Develop students' abilities to do science (for example: develop scientific questions; design and conduct investigations; analyze data; develop models, explanations, and scientific arguments)	①	②	③	④
c.	Develop students' awareness of STEM careers	①	②	③	④
d.	Provide science instruction that is based on students' ideas (whether completely correct or not) about the topics you teach	①	②	③	④
e.	Use formative assessment to monitor student learning	①	②	③	④
f.	Differentiate science instruction to meet the needs of diverse learners	①	②	③	④
g.	Incorporate students' cultural backgrounds into science instruction	①	②	③	④
h.	Encourage students' interest in science and/or engineering	①	②	③	④
i.	Encourage participation of all students in science and/or engineering	①	②	③	④

Opinions about Science Instruction

38. Please provide your opinion about each of the following statements. [Select one on each row.]

		STRONGLY DISAGREE	DISAGREE	NO OPINION	AGREE	STRONGLY AGREE
a.	Students learn science best in classes with students of similar abilities.	①	②	③	④	⑤
b.	It is better for science instruction to focus on ideas in depth, even if that means covering fewer topics.	①	②	③	④	⑤
c.	At the beginning of instruction on a science idea, students should be provided with definitions for new scientific vocabulary that will be used.	①	②	③	④	⑤
d.	Teachers should explain an idea to students before having them consider evidence that relates to the idea.	①	②	③	④	⑤
e.	Most class periods should provide opportunities for students to share their thinking and reasoning.	①	②	③	④	⑤
f.	Hands-on/laboratory activities should be used primarily to reinforce a science idea that the students have already learned.	①	②	③	④	⑤
g.	Teachers should ask students to support their conclusions about a science concept with evidence.	①	②	③	④	⑤
h.	Students learn best when instruction is connected to their everyday lives.	①	②	③	④	⑤
i.	Most class periods should provide opportunities for students to apply scientific ideas to real-world contexts.	①	②	③	④	⑤
j.	Students should learn science by doing science (for example: developing scientific questions; designing and conducting investigations; analyzing data; developing models, explanations, and scientific arguments).	①	②	③	④	⑤

Leadership Experiences

39. **In the last 3 years** have you… [Select one on each row.]

		YES	NO
a.	Served as a lead teacher or department chair in science?	○	○
b.	Served as a ***formal*** mentor or coach for a science teacher? (Do not include supervision of student teachers.)	○	○
c.	Supervised a student teacher in your classroom?	○	○
d.	Served on a school or district/diocese-wide science committee (for example: developing curriculum, developing pacing guides, selecting instructional materials)?	○	○
e.	Led or co-led a workshop or professional learning community (for example: teacher study group, lesson study) for other teachers focused on science or science teaching?	○	○
f.	Taught a science lesson for other teachers in your school to observe?	○	○
g.	Observed another teacher's science lesson for the purpose of giving him/her feedback?	○	○

Your Science Instruction

The rest of this questionnaire is about your science instruction in your *[[xth]]* science class, which you indicated is *[[level indicated in Q10]] [[type indicated in Q9]]* and is titled *[[title provided in Q11]]*. ***[Instructions presented to non-self-contained teachers only]***

40. ***[Presented to non-self-contained teachers only]***
On average, how many minutes per week does this class meet? [Enter your response as a whole number (for example: 300).] _____

The rest of this questionnaire is about your science instruction in this randomly selected class. ***[Instructions presented to self-contained teachers only]***

41. Enter the number of students for each grade represented in this class. [Enter each response as a whole number (for example: 15).]

Kindergarten	
1st grade	
2nd grade	
3rd grade	
4th grade	
5th grade	
6th grade	
7th grade	
8th grade	
9th grade	
10th grade	
11th grade	
12th grade	

42. For the *[sum of Q41]* students in this class, indicate the number of males and females in each of the following categories of race/ethnicity. [Enter each response as a whole number (for example: 15).]

		MALES	FEMALES
a.	American Indian or Alaskan Native		
b.	Asian		
c.	Black or African American		
d.	Hispanic or Latino		
e.	Native Hawaiian or Other Pacific Islander		
f.	White		
g.	Two or more races		

43. Which of the following best describes the prior science achievement levels of the students in this class relative to other students in this school?

○	Mostly low achievers
○	Mostly average achievers
○	Mostly high achievers
○	A mixture of levels

44. How much control do you have over each of the following for science instruction in this class? [Select one on each row.]

		NO CONTROL		MODERATE CONTROL		STRONG CONTROL
a.	Determining course goals and objectives	①	②	③	④	⑤
b.	Selecting curriculum materials (for example: textbooks/modules)	①	②	③	④	⑤
c.	Selecting content, topics, and skills to be taught	①	②	③	④	⑤
d.	Selecting the sequence in which topics are covered	①	②	③	④	⑤
e.	Determining the amount of instructional time to spend on each topic	①	②	③	④	⑤
f.	Selecting teaching techniques	①	②	③	④	⑤
g.	Determining the amount of homework to be assigned	①	②	③	④	⑤
h.	Choosing criteria for grading student performance	①	②	③	④	⑤

45. Think about your plans for this class for the entire course/year. By the end of the course/ year, how much emphasis will each of the following student objectives receive? [Select one on each row.]

		NONE	MINIMAL EMPHASIS	MODERATE EMPHASIS	HEAVY EMPHASIS
a.	Learning science vocabulary and/or facts	①	②	③	④
b.	Understanding science concepts	①	②	③	④
c.	Learning about different fields of science/engineering	①	②	③	④
d.	Learning how to do science (develop scientific questions; design and conduct investigations; analyze data; develop models, explanations, and scientific arguments)	①	②	③	④
e.	Learning how to do engineering (for example: identify criteria and constraints, design solutions, optimize solutions)	①	②	③	④
f.	Learning about real-life applications of science/engineering	①	②	③	④
g.	Increasing students' interest in science/engineering	①	②	③	④
h.	Developing students' confidence that they can successfully pursue careers in science/engineering	①	②	③	④
i.	Learning test-taking skills/strategies	①	②	③	④

46. How often do **you** do each of the following in your science instruction in this class? [Select one on each row.]

	NEVER	RARELY (FOR EXAMPLE: A FEW TIMES A YEAR)	SOMETIMES (FOR EXAMPLE: ONCE OR TWICE A MONTH)	OFTEN (FOR EXAMPLE: ONCE OR TWICE A WEEK)	ALL OR ALMOST ALL SCIENCE LESSONS
a. Explain science ideas to the whole class	①	②	③	④	⑤
b. Engage the whole class in discussions	①	②	③	④	⑤
c. Have students work in small groups	①	②	③	④	⑤
d. Have students do hands-on/laboratory activities	①	②	③	④	⑤
e. Use flipped instruction (have students watch lectures/demonstrations outside of class to prepare for in-class activities)	①	②	③	④	⑤
f. Have students read from a textbook, module, or other material in class, either aloud or to themselves	①	②	③	④	⑤
g. Engage the class in project-based learning (PBL) activities	①	②	③	④	⑤
h. Have students write their reflections (for example: in their journals, on exit tickets) in class or for homework	①	②	③	④	⑤
i. Focus on literacy skills (for example: informational reading or writing strategies)	①	②	③	④	⑤
j. Have students practice for standardized tests	①	②	③	④	⑤

47. How often do you have **students** do each of the following during science instruction in this class? [Select one on each row.]

	NEVER	RARELY (FOR EXAMPLE: A FEW TIMES A YEAR)	SOMETIMES (FOR EXAMPLE: ONCE OR TWICE A MONTH)	OFTEN (FOR EXAMPLE: ONCE OR TWICE A WEEK)	ALL OR ALMOST ALL SCIENCE LESSONS
a. Determine whether or not a question is "scientific" (meaning it requires an answer supported by evidence gathered through systematic investigation)	①	②	③	④	⑤
b. Generate scientific questions based on their curiosity, prior knowledge, careful observation of real-world phenomena, scientific models, or preliminary data from an investigation	①	②	③	④	⑤
c. Determine what data would need to be collected in order to answer a scientific question (regardless of who generated the question)	①	②	③	④	⑤
d. Develop procedures for a scientific investigation to answer a scientific question (regardless of who generated the question)	①	②	③	④	⑤
e. Conduct a scientific investigation (regardless of who developed the procedures)	①	②	③	④	⑤
f. Organize and/or represent data using tables, charts, or graphs in order to facilitate analysis of the data	①	②	③	④	⑤
g. Compare data from multiple trials or across student groups for consistency in order to identify potential sources of error or inconsistencies in the data	①	②	③	④	⑤
h. Analyze data using grade-appropriate methods in order to identify patterns, trends, or relationships	①	②	③	④	⑤

i.	Consider how missing data or measurement error can affect the interpretation of data	①	②	③	④	⑤
j.	Make and support claims (proposed answers to scientific questions) with evidence	①	②	③	④	⑤
k.	Use multiple sources of evidence (for example: different investigations, scientific literature) to develop an explanation	①	②	③	④	⑤
l.	Revise their explanations (claims supported by evidence and reasoning) for real-world phenomena based on additional evidence	①	②	③	④	⑤
m.	Develop scientific models—physical, graphical, or mathematical representations of real-world phenomena—based on data and reasoning	①	②	③	④	⑤
n.	Identify the strengths and limitations of a scientific model—in terms of accuracy, clarity, generalizability, accessibility to others, strength of evidence supporting it—regardless of who created the model	①	②	③	④	⑤
o.	Select and use grade-appropriate mathematical and/or statistical techniques to analyze data (for example: determining the best measure of central tendency, examining variation in data, or developing a fit line)	①	②	③	④	⑤
p.	Use mathematical and/or computational models to generate data to support a scientific claim	①	②	③	④	⑤
q.	Determine what details about an investigation (for example: its design, implementation, and results) might persuade a targeted audience about a scientific claim (regardless of who made the claim)	①	②	③	④	⑤
r.	Use data and reasoning to defend, verbally or in writing, a claim or refute alternative scientific claims about a real-world phenomenon (regardless of who made the claims)	①	②	③	④	⑤
s.	Evaluate the strengths and weaknesses of competing scientific explanations (claims supported by evidence) for a real-world phenomenon	①	②	③	④	⑤
t.	Construct a persuasive case, verbally or in writing, for the best scientific model or explanation for a real-world phenomenon	①	②	③	④	⑤
u.	Pose questions that elicit relevant details about the important aspects of a scientific argument (for example: the claims/models/explanations, research design, implementation, data analysis)	①	②	③	④	⑤
v.	Evaluate the credibility of scientific information—for example: its reliability, validity, consistency, logical coherence, lack of bias, or methodological strengths and weaknesses (regardless of whether it is from their own or others' work)	①	②	③	④	⑤
w.	Summarize patterns, similarities, and differences in scientific information obtained from multiple sources (regardless of whether it is from their own or others' work)	①	②	③	④	⑤

48. Thinking about your instruction in this class over the entire year, about how often do you incorporate engineering into your science instruction?

○	Never
○	Rarely (for example: A few times per year)
○	Sometimes (for example: Once or twice a month)
○	Often (for example: Once or twice a week)
○	All or almost all science lessons

49. Thinking about your instruction in this class over the entire year, about how often do you have students use coding to develop or revise computer programs as part of your science instruction (for example: use Scratch or Python as part of doing science)?

○	Never
○	Rarely (for example: A few times per year)
○	Sometimes (for example: Once or twice a month)
○	Often (for example: Once or twice a week)
○	All or almost all science lessons

50. In a typical week, how much time outside of this class are students expected to spend on science assignments?

○	None
○	1–15 minutes per week
○	16–30 minutes per week
○	31–60 minutes per week
○	61–90 minutes per week
○	91–120 minutes per week
○	More than 2 hours per week

51. How often are students in this class required to take science tests that you did not choose to administer, for example state assessments or district benchmarks? Do not include Advanced Placement or International Baccalaureate exams or students retaking a test because of failure.

○	Never
○	Once a year
○	Twice a year
○	Three or four times a year
○	Five or more times a year

52. Please indicate the availability of each of the following for your science instruction in this class. [Select one on each row.]

		LOCATED IN YOUR CLASSROOM	AVAILABLE IN ANOTHER ROOM	NOT AVAILABLE
a.	Lab tables	○	○	○
b.	Electric outlets	○	○	○
c.	Faucets and sinks	○	○	○
d.	Gas for burners *[Grades 9-12 only]*	○	○	○
e.	Fume hoods *[Grades 9–12 only]*	○	○	○

53. Please indicate the availability of each of the following for your science instruction in this class. [Select one on each row.]

		ALWAYS AVAILABLE IN YOUR CLASSROOM	AVAILABLE UPON REQUEST	NOT AVAILABLE
a.	Probes for collecting data (for example: motion sensors, temperature probes)	○	○	○
b.	Microscopes	○	○	○
c.	Balances (for example: pan, triple beam, digital scale)	○	○	○
d.	Projection devices (for example: Smartboard, document camera, LCD projector)	○	○	○

54. Science courses may benefit from the availability of particular resources. Considering what you have available, how adequate is each of the following for teaching this science class? [Select one on each row.]

		NOT ADEQUATE		SOMEWHAT ADEQUATE		ADEQUATE
a.	Instructional technology (for example: calculators, computers, probes/sensors)	①	②	③	④	⑤
b.	Consumable supplies (for example: chemicals, living organisms, batteries)	①	②	③	④	⑤
c.	Equipment (for example: thermometers, magnifying glasses, microscopes, beakers, photogate timers, Bunsen burners)	①	②	③	④	⑤
d.	Facilities (for example: lab tables, electric outlets, faucets and sinks)	①	②	③	④	⑤

This item asks about different types of instructional materials; please read the entire list of materials before answering

55. Thinking about your instruction in this class over the entire year, about how often is instruction based on materials from each of the following sources? [Select one on each row.]

	NEVER	RARELY (FOR EXAMPLE: A FEW TIMES A YEAR)	SOMETIMES (FOR EXAMPLE: ONCE OR TWICE A MONTH)	OFTEN (FOR EXAMPLE: ONCE OR TWICE A WEEK)	ALL OR ALMOST ALL SCIENCE LESSONS
a. Commercially published textbooks (printed or electronic), including the supplementary materials (for example: worksheets, laboratory handouts) that accompany the textbooks	①	②	③	④	⑤
b. Commercially published kits/modules (printed or electronic)	①	②	③	④	⑤
c. State, county, or district/diocese-developed units or lessons	①	②	③	④	⑤
d. Online units or courses that students work through at their own pace (for example: i-Ready, Edgenuity)	①	②	③	④	⑤
e. Lessons or resources from websites that have a subscription fee or per lesson cost (for example: BrainPOP, Discovery Ed, Teachers Pay Teachers)	①	②	③	④	⑤
f. Lessons or resources from websites that are free (for example: Khan Academy, PhET)	①	②	③	④	⑤
g. Units or lessons you created (either by yourself or with others)	①	②	③	④	⑤
h. Units or lessons you collected from any other source (for example: conferences, journals, colleagues, university or museum partners)	①	②	③	④	⑤

56. Does your school/district/diocese designate instructional materials (textbooks, kits, modules, units, or lessons) to be used in this class?

○	Yes
○	No *[Skip to Q58]*

57. Which of the following types of instructional materials does your school/district/diocese designate to be used in this class? [Select all that apply.]

□	Commercially published textbooks (printed or electronic), including the supplementary materials (for example: worksheets, laboratory handouts) that accompany the textbooks
□	Commercially published kits/modules (printed or online)
□	State, county, or district/diocese-developed instructional materials
□	Online units or courses that students work through at their own pace (for example: i-Ready, Edgenuity)
□	Lessons or resources from websites that have a subscription fee or per lesson cost (for example: BrainPOP, Discovery Ed, Teachers Pay Teachers)
□	Lessons or resources from websites that are free (for example: Khan Academy, PhET)

58. Omitted – Used only for survey routing.

59. ***[Presented only to teachers who selected "Sometimes" "Often" or "All" for Q55a, b, or d]*** [Version for teachers who indicate using a commercial textbook most often] Please indicate the title, author, most recent copyright year, and ISBN code of the commercially published textbook or kits/modules (printed or electronic) used most often by the students in this class.

- If you use multiple kits/modules, select one to enter the information for.
- The 10- or 13-character ISBN code can be found on the copyright page and/or the back cover of the textbook or kit/module.
- Do not include the dashes when entering the ISBN.
- Example ISBN:

[Version for teachers who indicate using an online course most often] Please indicate the title and URL of the online units or courses used most often by the students in this class.

Title:	
First Author: [for teachers who indicate using a commercial textbook most often]	
Year: [for teachers who indicate using a commercial textbook most often]	
ISBN: [for teachers who indicate using a commercial textbook most often]	
URL: [for teachers who indicate using an online program most often]	

60. Please rate how each of the following affects your science instruction in this class. [Select one on each row.]

		INHIBITS EFFECTIVE INSTRUCTION		NEUTRAL OR MIXED		PROMOTES EFFECTIVE INSTRUCTION	N/A
a.	Current state standards	①	②	③	④	⑤	○
b.	District/diocese and/or school pacing guides	①	②	③	④	⑤	○
c.	State/district/diocese testing/accountability policies ***[Not presented to non-Catholic private schools]***	①	②	③	④	⑤	○
d.	Textbook/module selection policies	①	②	③	④	⑤	○
e.	Teacher evaluation policies	①	②	③	④	⑤	○
f.	College entrance requirements **[Presented to grades 9–12 teachers only]**	①	②	③	④	⑤	○
g.	Students' prior knowledge and skills	①	②	③	④	⑤	○
h.	Students' motivation, interest, and effort in science	①	②	③	④	⑤	○
i.	Parent/guardian expectations and involvement	①	②	③	④	⑤	○
j.	Principal support	①	②	③	④	⑤	○
k.	Amount of time for you to plan, individually and with colleagues	①	②	③	④	⑤	○
l.	Amount of time available for your professional development	①	②	③	④	⑤	○
m.	Amount of instructional time devoted to science **[Presented to grades K–5 teachers only]**	①	②	③	④	⑤	○

Your Most Recently Completed Science Unit in this Class

The questions in this section are about the most recently completed science unit in this class which you indicated is *[level indicated in Q10]* *[type indicated in Q9]* and is titled *[title provided in Q11]*.

- Depending on the structure of your class and the instructional materials you use, a unit may range from a few to many class periods.
- Do not be concerned if this unit was not typical of your instruction.

61. Which one of the following best describes the content of this unit?

○	Earth/space science
○	Life science/biology
○	Environmental science/ecology
○	Chemistry
○	Physics
○	Engineering

62. ***[Presented only to teachers who selected "Sometimes" "Often" or "All" for Q55a, b, or c]***
Was this unit based primarily on a commercially published textbook/kit/module or state, county, or district/diocese-developed materials?

○	Yes
○	No ***[Skip to Q66]***

This next set of items is about the commercially published textbook/kit/module or state, county, or district/diocese-developed lessons you used in this unit.

63. Please indicate the extent to which you did each of the following while teaching this unit. [Select one on each row.]

		NOT AT ALL		SOMEWHAT		TO A GREAT EXTENT
a.	I used these materials to guide the structure and content emphasis of the unit.	①	②	③	④	⑤
b.	I picked what is important from these materials and skipped the rest.	①	②	③	④	⑤
c.	I incorporated activities (for example: problems, investigations, readings) from other sources to supplement what these materials were lacking.	①	②	③	④	⑤
d.	I modified activities from these materials.	①	②	③	④	⑤

64. ***[Presented only to teachers who did not select "Not at all" for Q63b]***
During this unit, when you skipped activities (for example: problems, investigations, readings) in these materials, how much was each of the following a factor in your decisions? [Select one on each row.]

		NOT A FACTOR	A MINOR FACTOR	A MAJOR FACTOR
a.	The science ideas addressed in the activities I skipped are not included in my pacing guide/standards.	①	②	③
b.	I did not have the materials needed to implement the activities I skipped.	①	②	③
c.	I did not have the knowledge needed to implement the activities I skipped			
d.	The activities I skipped were too difficult for my students.	①	②	③
e.	My students already knew the science ideas or were able to learn them without the activities I skipped.	①	②	③
f.	I have different activities for those science ideas that work better than the ones I skipped.	①	②	③
g.	I did not have enough instructional time for the activities I skipped.	①	②	③

65. ***[Presented only to teachers who did not select "Not at all" for Q63c]***
During this unit, when you supplemented these materials with additional activities, how much was each of the following a factor in your decisions? [Select one on each row.]

		NOT A FACTOR	A MINOR FACTOR	A MAJOR FACTOR
a.	My pacing guide indicated that I should use supplemental activities.	①	②	③
b.	Supplemental activities were needed to prepare students for standardized tests.	①	②	③
c.	Supplemental activities were needed to provide students with additional practice.	①	②	③
d.	Supplemental activities were needed so students at different levels of achievement could increase their understanding of the ideas targeted in each activity.	①	②	③
e.	I had additional activities that I liked.	①	②	③

66. ***[Presented only to teachers who did not select "Not at all" in Q63d]***
During this unit, when you modified activities from these materials, how much was each of the following a factor in your decisions? [Select one on each row.]

		NOT A FACTOR	A MINOR FACTOR	A MAJOR FACTOR
a.	I did not have the necessary materials/supplies for the original activities.	①	②	③
b.	The original activities were too difficult conceptually for my students.	①	②	③
c.	The original activities were too easy conceptually for my students.	①	②	③
d.	I did not have enough instructional time to implement the activities as designed.	①	②	③
e.	The original activities were too structured for my students.	①	②	③
f.	The original activities were not structured enough for my students.	①	②	③

67. How well prepared did you feel to do each of the following as part of your instruction on this particular unit? [Select one on each row.]

		NOT ADEQUATELY PREPARED	SOMEWHAT PREPARED	FAIRLY WELL PREPARED	VERY WELL PREPARED
a.	Anticipate difficulties that students may have with particular science ideas and procedures in this unit	①	②	③	④
b.	Find out what students thought or already knew about the key science ideas	①	②	③	④
c.	Implement the instructional materials (for example: textbook, module) to be used during this unit	①	②	③	④
d.	Monitor student understanding during this unit	①	②	③	④
e.	Assess student understanding at the conclusion of this unit	①	②	③	④

Your Most Recent Science Lesson in this Class

The next set of questions refer to the most recent science lesson in this class which you indicated is *[level indicated in Q10] [type indicated in Q9]* and is titled *[title provided in Q11]*, even if it included activities and/or interruptions that are not typical (for example: a test, students working on projects, a fire drill). If the lesson spanned multiple days, please answer for the most recent day.

68. How many minutes was that day's science lesson? Answer for the entire length of the class period, even if there were interruptions. [Enter your response as a non-zero whole number (for example: 50).] _____

69. Of these *[[answer to Q68]]* minutes, how many were spent on the following: [Enter each response as a whole number (for example: 15).]

a.	Non-instructional activities (for example: attendance taking, interruptions)	
b.	Whole class activities (for example: lectures, explanations, discussions)	
c.	Small group work	
d.	Students working individually (for example: reading textbooks, completing worksheets, taking a test or quiz)	

70. Which of the following activities took place during that day's science lesson? [Select all that apply.]

□	Teacher explaining a science idea to the whole class
□	Teacher conducting a demonstration while students watched
□	Whole class discussion
□	Students working in small groups
□	Students completing textbook/worksheet problems
□	Students doing hands-on/laboratory activities
□	Students reading about science
□	Students writing about science (do not include students taking notes)
□	Practicing for standardized tests
□	Test or quiz
□	None of the above

Demographic Information

71. Are you:

○	Female
○	Male
○	Other

72. Are you of Hispanic or Latino origin?

○	Yes
○	No

73. What is your race? [Select all that apply.]

□	American Indian or Alaskan Native
□	Asian
□	Black or African American
□	Native Hawaiian or Other Pacific Islander
□	White

74. In what year were you born? [Enter your response as a whole number (for example: 1969).]

_____

Thank you!

Science Teacher Questionnaire Tables

Table STQ 1
Number of Years Science Teachers Spent Teaching Prior to This School Year, by Grade Range

	MEAN NUMBER OF YEARS		
	ELEMENTARY	MIDDLE	HIGH
Any subject at the K–12 level	13 (0.3)	13 (0.5)	13 (0.3)
Science at the K–12 level	12 (0.3)	11 (0.4)	13 (0.3)
At this school, any subject	9 (0.3)	8 (0.4)	9 (0.2)

Table STQ 2
Grade Levels Taught by Science Teachers

	PERCENT OF TEACHERS
Grades K–5	79 (0.8)
Grades 6–8	12 (0.6)
Grades 9–12	12 (0.5)

Table STQ 3
Instructional Arrangements for Science in Self-Contained Elementary School Classes

	PERCENT OF TEACHERS
This class receives science instruction only from you.	84 (1.8)
This class receives science instruction from you and other teachers (e.g., a science specialist or a teacher you team with).	16 (1.8)

There is no table for STQ 4.

Table STQ 5
Frequency With Which Self-Contained Elementary School Teachers Provide Science Instruction

	PERCENT OF TEACHERS
I teach science all or most days, every week of the year.	18 (1.5)
I teach science every week, but typically not every day of the week.	43 (2.1)
I teach science some weeks, but typically not every week.	39 (1.9)

Table STQ 6 and 7
Average Number of Minutes Per Day Spent Teaching Each Subject in Self-Contained Elementary School Classes†

	AVERAGE NUMBER OF MINUTES
Mathematics	59 (0.9)
Science	21 (0.6)
Social Studies	17 (0.5)
Reading/Language Arts	86 (1.7)

† Includes only self-contained elementary teachers who indicated they teach reading/language arts, mathematics, science, and social studies to one class of students.

Table STQ 8.1
Number of Sections of Science and Engineering Classes Taught Per Week by Non-Self-Contained Elementary School Teachers

	PERCENT OF TEACHERS	
	SCIENCE	ENGINEERING
0 Sections	n/a	82 (4.5)
1 Section	20 (7.3)	2 (1.0)
2 Sections	42 (5.9)	10 (3.6)
3 Sections	24 (4.6)	4 (1.7)
4 Sections	5 (1.7)	1 (0.6)
5 Sections	2 (0.9)	0 (0.2)
6 Sections	1 (0.6)	0 ---†
7 Sections	0 ---†	0 ---†
8 Sections	1 (0.7)	1 (0.6)
9 Sections	1 (1.1)	0 ---†
10 Sections	5 (2.6)	1 (0.8)

† No non-self-contained elementary school science teachers in the sample selected this response option. Thus, it is not possible to calculate the standard error of this estimate.

Table STQ 8.2
Number of Sections of Science and Engineering Classes Taught Per Week by Middle School Teachers

	PERCENT OF TEACHERS	
	SCIENCE	ENGINEERING
0 Sections	n/a	90 (1.5)
1 Section	6 (1.2)	3 (0.6)
2 Sections	10 (1.6)	2 (0.8)
3 Sections	14 (2.1)	1 (0.6)
4 Sections	23 (2.4)	1 (0.2)
5 Sections	25 (2.3)	1 (0.4)
6 Sections	19 (1.9)	1 (0.3)
7 Sections	2 (0.5)	0 ---†
8 Sections	0 (0.2)	0 ---†
9 Sections	0 (0.3)	0 (0.1)
10 Sections	0 (0.2)	0 (0.1)

† No middle school science teachers in the sample selected this response option. Thus, it is not possible to calculate the standard error of this estimate.

Table STQ 8.3
Number of Sections of Science and Engineering Classes Taught Per Week by High School Teachers

	PERCENT OF TEACHERS	
	SCIENCE	ENGINEERING
0 Sections	n/a	93 (0.8)
1 Section	5 (0.7)	3 (0.5)
2 Sections	7 (0.9)	2 (0.5)
3 Sections	19 (1.6)	1 (0.1)
4 Sections	16 (1.5)	1 (0.3)
5 Sections	26 (1.7)	0 (0.1)
6 Sections	22 (1.5)	0 (0.0)
7 Sections	4 (0.6)	0 (0.2)
8 Sections	0 (0.1)	0 ---†
9 Sections	0 (0.0)	0 ---†
10 Sections	0 (0.1)	0 (0.1)

† No high school science teachers in the sample selected this response option. Thus, it is not possible to calculate the standard error of this estimate.

There is no table for STQ 9.

There is no table for STQ 10.

There is no table for STQ 11.

Table STQ 12
Subjects of Science Teachers' Degrees, by Grade Range

	PERCENT OF TEACHERS		
	ELEMENTARY	MIDDLE	HIGH
Education (general or subject specific such as science education)	95 (0.8)	80 (1.9)	70 (1.6)
Engineering	0 (0.1)	3 (1.4)	3 (0.4)
Natural Sciences (e.g., biology, chemistry, physics, Earth sciences)	3 (0.5)	39 (2.2)	77 (1.5)
Other Subject	18 (1.3)	22 (2.0)	17 (1.3)

Table STQ 13
Science Teachers With Education Degrees, by Grade Range

	PERCENT OF TEACHERS†		
	ELEMENTARY	MIDDLE	HIGH
Elementary Education	90 (1.5)	35 (2.7)	2 (0.5)
Mathematics Education	0 (0.3)	5 (1.6)	3 (1.0)
Science Education	1 (0.3)	36 (2.8)	57 (2.1)
Other Education	21 (1.7)	30 (2.4)	22 (1.9)

† Teachers indicating in Q12 that they do not have an education degree are treated as not having a degree in these areas.

Table STQ 14
Science Teachers With Engineering Degrees, by Grade Range

	PERCENT OF TEACHERS†		
	ELEMENTARY	MIDDLE	HIGH
Aerospace/Aeronautical/Astronautical Engineering	0 ---‡	2 (1.5)	0 (0.0)
Bioengineering/Biomedical Engineering	0 ---‡	0 ---‡	0 (0.1)
Chemical Engineering	0 ---‡	0 ---‡	1 (0.3)
Civil Engineering	0 ---‡	2 (1.4)	0 (0.1)
Computer Engineering	0 ---‡	0 ---‡	0 ---‡
Electrical/Electronics Engineering	0 ---‡	0 (0.1)	0 (0.1)
Environmental Engineering	0 ---‡	0 ---‡	0 (0.1)
Industrial/Manufacturing Engineering	0 ---‡	0 (0.2)	0 (0.1)
Mechanical Engineering	0 ---‡	0 ---‡	0 (0.1)
Other engineering	0 (0.1)	0 (0.1)	1 (0.4)

† Teachers indicating in Q12 that they do not have an engineering degree are treated as not having a degree in this area.

‡ No science teachers at this grade range in the sample selected this response option. Thus, it is not possible to calculate the standard error of this estimate.

Table STQ 15
Science Teachers With Natural Science Degrees, by Grade Range

	PERCENT OF TEACHERS†		
	ELEMENTARY	MIDDLE	HIGH
Biology/Life Science	1 (0.4)	25 (2.0)	47 (1.7)
Chemistry	0 (0.1)	4 (0.9)	16 (1.2)
Earth/Space Science	0 (0.2)	3 (0.5)	4 (0.7)
Environmental Science/Ecology	0 (0.0)	4 (1.0)	4 (0.6)
Physics	0 (0.1)	1 (0.2)	6 (0.6)
Other natural science	1 (0.4)	8 (1.1)	11 (1.1)

† Teachers indicating in Q12 that they do not have a natural science degree are treated as not having a degree in this area.

Table STQ 16
Biology/Life Science College Courses Completed by Science Teachers, by Grade Range

	PERCENT OF TEACHERS		
	ELEMENTARY	MIDDLE	HIGH
General/introductory biology/life science courses (e.g., Biology I, Introduction to Biology, Biology for Teachers)	85 (1.4)	88 (2.0)	92 (0.8)
Biology/life science courses beyond the general/introductory level	29 (1.8)	65 (2.3)	79 (1.5)
Biology/life science teaching methods courses	40 (2.0)	52 (2.2)	52 (1.7)

Table STQ 17
Advanced Biology/Life Science College Courses Completed by Science Teachers, by Grade Range

	PERCENT OF TEACHERS†		
	ELEMENTARY	MIDDLE	HIGH
Anatomy/Physiology	13 (1.4)	37 (2.1)	51 (1.8)
Biochemistry	2 (0.6)	22 (2.0)	43 (1.9)
Botany	3 (0.7)	27 (2.1)	40 (1.7)
Cell Biology	5 (0.8)	34 (2.3)	50 (1.7)
Ecology	6 (0.9)	34 (2.6)	50 (1.8)
Evolution	2 (0.5)	21 (2.1)	32 (1.8)
Genetics	4 (0.7)	33 (2.2)	56 (1.7)
Microbiology	4 (0.8)	28 (1.7)	48 (1.7)
Zoology	4 (0.8)	24 (1.9)	37 (1.6)
Other biology/life science beyond the general/introductory level	13 (1.2)	33 (2.3)	45 (1.9)

† Teachers indicating in Q16 that they have not taken biology/life science courses beyond the general/introductory level are treated as not having taken any of these courses.

Table STQ 18
Chemistry College Courses Completed by Science Teachers, by Grade Range

	PERCENT OF TEACHERS		
	ELEMENTARY	MIDDLE	HIGH
General/introductory chemistry courses (e.g., Chemistry I, Introduction to Chemistry)	44 (1.8)	79 (2.2)	95 (0.6)
Chemistry courses beyond the general/introductory level	6 (0.8)	41 (2.3)	72 (1.7)
Chemistry teaching methods courses	5 (0.9)	15 (1.9)	23 (1.3)

Table STQ 19
Advanced Chemistry College Courses Completed by Science Teachers, by Grade Range

	PERCENT OF TEACHERS†		
	ELEMENTARY	MIDDLE	HIGH
Analytic Chemistry	0 (0.2)	7 (1.2)	25 (1.2)
Biochemistry	2 (0.4)	20 (2.0)	40 (1.7)
Inorganic Chemistry	2 (0.6)	18 (1.7)	42 (1.8)
Organic Chemistry	3 (0.6)	32 (2.1)	64 (1.7)
Physical Chemistry	2 (0.5)	12 (1.4)	26 (1.3)
Quantum Chemistry	0 (0.1)	2 (0.4)	7 (0.6)
Other chemistry beyond the general/introductory level	1 (0.3)	8 (1.0)	17 (1.5)

† Teachers indicating in Q18 that they have not taken chemistry courses beyond the general/introductory level are treated as not having taken any of these courses.

Table STQ 20
Physics College Courses Completed by Science Teachers, by Grade Range

	PERCENT OF TEACHERS		
	ELEMENTARY	MIDDLE	HIGH
General/introductory physics courses (e.g., Physics I, Introduction to Physics)	29 (1.6)	67 (2.4)	84 (1.4)
Physics courses beyond the general/introductory level	3 (0.5)	19 (1.8)	31 (1.6)
Physics teaching methods courses	5 (0.8)	16 (1.9)	15 (1.3)

Table STQ 21
Advanced Physics College
Courses Completed by Science Teachers, by Grade Range

	PERCENT OF TEACHERS†		
	ELEMENTARY	MIDDLE	HIGH
Astronomy/Astrophysics	1 (0.3)	10 (1.4)	13 (1.1)
Electricity and Magnetism	0 (0.2)	6 (1.0)	17 (1.1)
Heat and Thermodynamics	0 (0.1)	6 (1.3)	14 (1.2)
Mechanics	0 (0.3)	6 (1.3)	19 (1.3)
Modern or Quantum Physics	0 (0.2)	3 (0.7)	13 (1.0)
Nuclear Physics	0 ---‡	1 (0.3)	6 (0.7)
Optics	0 (0.1)	2 (0.7)	9 (1.2)
Other physics beyond the general/introductory level	1 (0.4)	8 (0.9)	13 (1.2)

† Teachers indicating in Q20 that they have not taken physics courses beyond the general/introductory level are treated as not having taken any of these courses.

‡ No elementary school science teachers in the sample selected this response option. Thus, it is not possible to calculate the standard error of this estimate.

Table STQ 22
Earth/Space Science College
Courses Completed by Science Teachers, by Grade Range

	PERCENT OF TEACHERS		
	ELEMENTARY	MIDDLE	HIGH
General/introductory Earth/space science courses (e.g., Earth Science I, Introduction to Earth Science, Introductory Astronomy)	63 (1.5)	68 (2.6)	58 (1.6)
Earth/space science courses beyond the general/introductory level	10 (1.0)	29 (2.1)	24 (1.4)
Earth/space science teaching methods courses	15 (1.2)	22 (1.8)	11 (1.1)

Table STQ 23
Advanced Earth/Space Science College
Courses Completed by Science Teachers, by Grade Range

	PERCENT OF TEACHERS†		
	ELEMENTARY	MIDDLE	HIGH
Astronomy/Astrophysics	4 (0.7)	15 (1.7)	13 (1.2)
Geology	5 (0.8)	22 (1.8)	19 (1.3)
Meteorology	1 (0.4)	9 (1.4)	9 (1.0)
Oceanography	2 (0.5)	8 (0.9)	8 (0.9)
Physical Geography	4 (0.7)	13 (1.6)	9 (1.0)
Other Earth/space science beyond the general/introductory level	2 (0.4)	11 (1.3)	11 (1.1)

† Teachers indicating in Q22 that they have not taken Earth/space science courses beyond the general/introductory level are treated as not having taken any of these courses.

Table STQ 24
Environmental Science College Courses Completed by Science Teachers, by Grade Range

	PERCENT OF TEACHERS		
	ELEMENTARY	MIDDLE	HIGH
General/introductory environmental science courses (e.g., Environmental Science I, Introduction to Environmental Science)	37 (1.7)	55 (2.4)	52 (1.2)
Environmental science courses beyond the general/introductory level	5 (0.8)	19 (1.7)	26 (1.4)
Environmental science teaching methods courses	9 (1.4)	14 (1.9)	7 (0.6)

Table STQ 25
Advanced Environmental Science College Courses Completed by Science Teachers, by Grade Range

	PERCENT OF TEACHERS†		
	ELEMENTARY	MIDDLE	HIGH
Conservation Biology	1 (0.5)	8 (1.2)	11 (0.9)
Ecology	2 (0.6)	15 (1.4)	22 (1.3)
Forestry	1 (0.3)	4 (1.3)	5 (1.0)
Hydrology	0 (0.0)	3 (0.6)	4 (0.6)
Oceanography	1 (0.3)	5 (0.6)	8 (1.0)
Toxicology	0 (0.2)	2 (0.4)	3 (0.5)
Other environmental science beyond the general/introductory level	2 (0.6)	8 (1.2)	13 (1.1)

† Teachers indicating in Q24 that they have not taken environmental science courses beyond the general/introductory level are treated as not having taken any of these courses.

Table STQ 26
Science Teachers Having Completed One or More College Courses in Engineering

	PERCENT OF TEACHERS
Elementary	3 (0.5)
Middle	10 (1.7)
High	13 (1.1)

Table STQ 27
Science Teachers' Paths to Certification, by Grade Range

	PERCENT OF TEACHERS		
	ELEMENTARY	MIDDLE	HIGH
An undergraduate program leading to a bachelor's degree and a teaching credential	65 (1.9)	53 (2.8)	40 (1.9)
A post-baccalaureate credentialing program (no master's degree awarded)	11 (1.5)	20 (2.3)	25 (1.7)
A master's program that also led to a teaching credential	22 (1.8)	24 (2.7)	28 (2.2)
I have not completed a program to earn a teaching credential.	1 (0.5)	4 (1.3)	7 (1.0)

Table STQ 28
High School Science Teachers' Areas of Certification

	PERCENT OF TEACHERS
Biology/life science	71 (1.6)
Chemistry	51 (2.2)
Earth/space science	37 (2.1)
Ecology/environmental science	32 (2.0)
Engineering	5 (0.8)
Physics	33 (1.6)

Table STQ 29
Science Teachers With Full-Time Job Experience in a Science- or Engineering-Related Field Prior to Teaching

	PERCENT OF TEACHERS
Elementary	3 (0.7)
Middle	23 (2.8)
High	36 (2.1)

Table STQ 30
Science Teachers' Most Recent Participation in Science/Engineering-Focused Professional Development, by Grade Range

	PERCENT OF TEACHERS		
	ELEMENTARY	MIDDLE	HIGH
In the last 12 months	36 (2.2)	57 (2.5)	59 (1.8)
1–3 years ago	22 (1.7)	21 (2.2)	24 (1.5)
4–6 years ago	8 (1.2)	6 (1.4)	5 (0.8)
7–10 years ago	5 (0.7)	2 (0.8)	2 (0.4)
More than 10 years ago	6 (1.0)	3 (0.8)	2 (0.6)
Never	24 (1.5)	11 (1.6)	7 (0.9)

Table STQ 31
Science Teachers Participating in Various Science/Engineering-Focused Professional Development Activities in the Last Three Years, by Grade Range

	PERCENT OF TEACHERS†		
	ELEMENTARY	MIDDLE	HIGH
I attended a professional development program/workshop.	89 (2.0)	94 (1.2)	91 (1.5)
I attended a national, state, or regional science teacher association meeting.	12 (1.8)	37 (3.2)	40 (2.0)
I completed an online course/webinar.	9 (1.5)	29 (3.0)	34 (2.2)
I participated in a professional learning community/lesson study/teacher study group.	42 (2.9)	61 (3.1)	55 (1.7)
I received assistance or feedback from a formally designated coach/mentor.	28 (2.6)	33 (3.4)	35 (2.1)
I took a formal course for college credit.	5 (1.3)	9 (1.5)	16 (1.4)

† Includes only science teachers indicating in Q30 that they participated in science/engineering-focused professional development in the last three years.

Table STQ 32
Time Spent by Science Teachers on Science/Engineering-Focused Professional Development in the Last Three Years, by Grade Range

	PERCENT OF TEACHERS†		
	ELEMENTARY	MIDDLE	HIGH
Less than 6 hours	35 (2.5)	10 (1.4)	10 (1.5)
6–15 hours	36 (2.4)	30 (2.6)	22 (1.9)
16–35 hours	22 (2.0)	27 (2.1)	26 (1.5)
36–80 hours	6 (1.3)	20 (1.9)	25 (1.7)
More than 80 hours	2 (0.6)	13 (1.5)	16 (1.1)

† Includes only science teachers indicating in Q30 that they participated in science/engineering-focused professional development in the last three years.

Table STQ 33.1
Elementary School Science Teachers' Descriptions of Science/Engineering-Focused Professional Development in the Last Three Years

	PERCENT OF TEACHERS†				
	NOT AT ALL		SOMEWHAT		TO A GREAT EXTENT
	1	2	3	4	5
I had opportunities to engage in science investigations/engineering design challenges.	18 (2.3)	13 (2.1)	32 (2.8)	25 (2.6)	13 (2.4)
I had opportunities to experience lessons, as my students would, from the textbook/modules I use in my classroom.	21 (2.3)	12 (2.1)	24 (2.5)	29 (3.0)	14 (2.0)
I had opportunities to examine classroom artifacts (e.g., student work samples, videos of classroom instruction).	23 (2.8)	15 (2.4)	32 (2.9)	22 (2.6)	8 (1.6)
I had opportunities to rehearse instructional practices during the professional development (i.e., try out, receive feedback, and reflect on those practices).	32 (2.5)	20 (2.2)	26 (2.3)	17 (2.0)	6 (1.5)
I had opportunities to apply what I learned to my classroom and then come back and talk about it as part of the professional development.	32 (2.9)	16 (2.3)	22 (2.2)	21 (2.2)	10 (1.8)
I worked closely with other teachers from my school.	12 (1.7)	12 (1.8)	19 (2.8)	29 (3.0)	28 (2.8)
I worked closely with other teachers who taught the same grade and/or subject whether or not they were from my school.	19 (2.5)	11 (1.8)	23 (2.3)	27 (2.8)	20 (2.4)

† Includes only elementary school science teachers indicating in Q30 that they participated in science/engineering-focused professional development in the last three years.

Table STQ 33.2
Middle School Science Teachers' Descriptions of Science/Engineering-Focused Professional Development in the Last Three Years

	PERCENT OF TEACHERS†				
	NOT AT ALL		SOMEWHAT		TO A GREAT EXTENT
	1	2	3	4	5
I had opportunities to engage in science investigations/engineering design challenges.	9 (1.4)	9 (2.3)	36 (3.3)	30 (3.3)	16 (2.1)
I had opportunities to experience lessons, as my students would, from the textbook/modules I use in my classroom.	18 (2.9)	11 (1.6)	31 (2.7)	24 (2.6)	17 (2.7)
I had opportunities to examine classroom artifacts (e.g., student work samples, videos of classroom instruction).	13 (1.9)	16 (2.2)	33 (2.8)	27 (3.0)	11 (2.6)
I had opportunities to rehearse instructional practices during the professional development (i.e., try out, receive feedback, and reflect on those practices).	25 (2.9)	15 (1.6)	33 (3.1)	17 (1.9)	10 (2.0)
I had opportunities to apply what I learned to my classroom and then come back and talk about it as part of the professional development.	20 (2.1)	13 (2.3)	27 (2.9)	29 (3.0)	11 (1.8)
I worked closely with other teachers from my school.	9 (2.8)	9 (1.9)	20 (2.6)	30 (2.5)	32 (3.0)
I worked closely with other teachers who taught the same grade and/or subject whether or not they were from my school.	7 (1.2)	14 (2.6)	26 (2.3)	28 (2.4)	25 (2.8)

† Includes only middle school science teachers indicating in Q30 that they participated in science/engineering-focused professional development in the last three years.

Table STQ 33.3
High School Science Teachers' Descriptions of Science/Engineering-Focused Professional Development in the Last Three Years

	PERCENT OF TEACHERS†				
	NOT AT ALL		SOMEWHAT		TO A GREAT EXTENT
	1	2	3	4	5
I had opportunities to engage in science investigations/engineering design challenges.	13 (1.2)	8 (1.1)	33 (2.1)	28 (2.0)	18 (2.0)
I had opportunities to experience lessons, as my students would, from the textbook/modules I use in my classroom.	17 (1.9)	12 (1.3)	25 (2.4)	27 (1.8)	18 (1.8)
I had opportunities to examine classroom artifacts (e.g., student work samples, videos of classroom instruction).	15 (1.7)	16 (1.5)	29 (1.7)	25 (1.7)	14 (1.7)
I had opportunities to rehearse instructional practices during the professional development (i.e., try out, receive feedback, and reflect on those practices).	22 (2.2)	18 (1.5)	24 (1.9)	24 (2.2)	11 (1.6)
I had opportunities to apply what I learned to my classroom and then come back and talk about it as part of the professional development.	19 (1.6)	14 (1.4)	24 (1.9)	29 (2.3)	14 (1.4)
I worked closely with other teachers from my school.	12 (1.6)	9 (1.3)	24 (1.7)	24 (1.6)	31 (2.2)
I worked closely with other teachers who taught the same grade and/or subject whether or not they were from my school.	10 (1.4)	11 (1.6)	25 (1.9)	28 (2.2)	26 (1.9)

† Includes only high school science teachers indicating in Q30 that they participated in science/engineering-focused professional development in the last three years.

Table STQ 34.1
Elementary School Science Teachers' Perceptions of Topics Emphasized During Professional Development in the Last Three Years

	PERCENT OF TEACHERS†				
	NOT AT ALL 1	2	SOMEWHAT 3	4	TO A GREAT EXTENT 5
Deepening your own science content knowledge	8 (2.0)	16 (2.5)	36 (3.1)	25 (2.3)	15 (2.0)
Deepening your understanding of how science is done (e.g., developing scientific questions, developing and using models, engaging in argumentation)	12 (1.9)	14 (1.8)	35 (3.0)	27 (3.0)	12 (1.7)
Deepening your understanding of how engineering is done (e.g., identifying criteria and constraints, designing solutions, optimizing solutions)	30 (2.9)	21 (2.6)	24 (2.4)	18 (2.7)	7 (1.5)
Implementing the science textbook/modules to be used in your classroom	22 (2.7)	16 (2.3)	27 (2.7)	23 (2.5)	11 (2.2)
Learning about difficulties that students may have with particular science ideas	28 (3.0)	17 (2.6)	29 (3.5)	21 (3.1)	5 (1.3)
Finding out what students think or already know prior to instruction on a topic	16 (2.2)	14 (2.1)	35 (2.7)	25 (2.8)	10 (2.1)
Monitoring student understanding during science instruction	15 (2.3)	12 (2.1)	33 (2.8)	30 (3.2)	11 (1.8)
Differentiating science instruction to meet the needs of diverse learners	21 (2.7)	16 (2.1)	30 (2.6)	24 (2.8)	9 (1.6)
Incorporating students' cultural backgrounds into science instruction	33 (2.8)	21 (2.3)	27 (3.1)	13 (2.1)	6 (1.3)
Learning how to provide science instruction that integrates engineering, mathematics, and/or computer science	19 (2.6)	16 (2.1)	29 (2.8)	24 (3.0)	12 (1.9)

† Includes only elementary school science teachers indicating in Q30 that they participated in science/engineering-focused professional development in the last three years.

Table STQ 34.2
Middle School Science Teachers' Perceptions of Topics Emphasized During Professional Development in the Last Three Years

	PERCENT OF TEACHERS†				
	NOT AT ALL		SOMEWHAT		TO A GREAT EXTENT
	1	2	3	4	5
Deepening your own science content knowledge	4 (0.9)	11 (2.1)	34 (2.6)	31 (3.1)	20 (2.4)
Deepening your understanding of how science is done (e.g., developing scientific questions, developing and using models, engaging in argumentation)	3 (0.9)	11 (2.4)	27 (3.0)	40 (3.3)	18 (2.3)
Deepening your understanding of how engineering is done (e.g., identifying criteria and constraints, designing solutions, optimizing solutions)	17 (1.9)	17 (2.2)	33 (3.2)	25 (3.4)	9 (1.9)
Implementing the science textbook/modules to be used in your classroom	23 (3.0)	18 (2.8)	28 (2.8)	18 (2.1)	13 (2.5)
Learning about difficulties that students may have with particular science ideas	14 (2.3)	19 (2.7)	32 (2.9)	27 (2.9)	8 (1.2)
Finding out what students think or already know prior to instruction on a topic	8 (1.3)	19 (2.9)	30 (2.9)	35 (3.7)	7 (1.0)
Monitoring student understanding during science instruction	7 (1.2)	11 (1.8)	34 (4.0)	33 (3.5)	14 (2.4)
Differentiating science instruction to meet the needs of diverse learners	7 (1.2)	15 (2.5)	29 (3.3)	35 (2.5)	14 (1.5)
Incorporating students' cultural backgrounds into science instruction	24 (2.4)	25 (2.4)	24 (2.8)	21 (2.0)	6 (1.2)
Learning how to provide science instruction that integrates engineering, mathematics, and/or computer science	9 (1.6)	13 (1.7)	29 (3.1)	37 (3.4)	12 (2.0)

† Includes only middle school science teachers indicating in Q30 that they participated in science/engineering-focused professional development in the last three years.

Table STQ 34.3
High School Science Teachers' Perceptions of Topics Emphasized During Professional Development in the Last Three Years

	PERCENT OF TEACHERS†				
	NOT AT ALL		SOMEWHAT		TO A GREAT EXTENT
	1	2	3	4	5
Deepening your own science content knowledge	11 (1.3)	12 (1.8)	33 (1.9)	25 (1.9)	20 (1.7)
Deepening your understanding of how science is done (e.g., developing scientific questions, developing and using models, engaging in argumentation)	7 (1.0)	9 (1.0)	34 (2.3)	33 (1.9)	18 (1.6)
Deepening your understanding of how engineering is done (e.g., identifying criteria and constraints, designing solutions, optimizing solutions)	29 (2.0)	22 (2.0)	25 (1.9)	17 (1.6)	6 (0.9)
Implementing the science textbook/modules to be used in your classroom	22 (1.8)	24 (1.8)	26 (2.0)	20 (1.6)	9 (1.0)
Learning about difficulties that students may have with particular science ideas	11 (1.2)	16 (1.7)	33 (2.0)	29 (1.9)	11 (1.3)
Finding out what students think or already know prior to instruction on a topic	11 (1.5)	18 (1.4)	34 (1.6)	28 (1.7)	9 (1.0)
Monitoring student understanding during science instruction	9 (1.1)	13 (1.9)	30 (1.8)	31 (1.8)	16 (1.5)
Differentiating science instruction to meet the needs of diverse learners	9 (0.9)	14 (1.6)	31 (2.0)	32 (2.0)	14 (1.4)
Incorporating students' cultural backgrounds into science instruction	25 (2.1)	24 (1.8)	28 (2.4)	15 (1.7)	8 (1.4)
Learning how to provide science instruction that integrates engineering, mathematics, and/or computer science	16 (1.5)	19 (1.5)	32 (1.8)	24 (2.0)	9 (1.1)

† Includes only high school science teachers indicating in Q30 that they participated in science/engineering-focused professional development in the last three years.

Table STQ 35
Elementary School Science Teachers' Perceptions of Their Preparedness to Teach Various Subjects

	PERCENT OF TEACHERS			
	NOT ADEQUATELY PREPARED	SOMEWHAT PREPARED	FAIRLY WELL PREPARED	VERY WELL PREPARED
Life Science	3 (0.7)	24 (1.8)	49 (1.8)	24 (1.5)
Earth/Space Science	6 (0.8)	27 (1.5)	47 (1.7)	20 (1.5)
Physical Science	11 (1.3)	35 (1.6)	41 (2.1)	13 (1.1)
Engineering	51 (2.2)	33 (1.8)	14 (1.2)	3 (0.6)
Mathematics†	0 (0.1)	4 (0.7)	23 (1.6)	73 (1.6)
Reading/Language Arts†	0 (0.2)	3 (0.6)	17 (1.4)	80 (1.6)
Social Studies†	3 (0.5)	13 (1.4)	43 (1.9)	41 (1.9)
Computer Science/Programming†	43 (2.1)	35 (2.1)	16 (1.5)	6 (1.0)

† This item was presented only to self-contained elementary school teachers.

There is no table for elementary teachers for STQ 36.

Table STQ 36.2
Middle School Science Teachers' Perceptions of Their Preparedness to Teach Various Topics

	PERCENT OF TEACHERS†			
	NOT ADEQUATELY PREPARED	SOMEWHAT PREPARED	FAIRLY WELL PREPARED	VERY WELL PREPARED
Earth/Space Science				
Earth's features and physical processes	5 (1.6)	19 (2.3)	34 (2.5)	42 (2.2)
The solar system and the universe	8 (1.8)	25 (2.4)	35 (3.1)	32 (2.0)
Climate and weather	6 (1.1)	23 (2.4)	40 (2.8)	31 (2.3)
Biology/Life Science				
Cell biology	6 (1.7)	18 (2.2)	25 (2.2)	50 (2.6)
Structures and functions of organisms	5 (1.6)	15 (1.9)	25 (2.7)	55 (2.7)
Ecology/ecosystems	3 (0.9)	12 (2.0)	33 (3.0)	52 (3.0)
Genetics	8 (1.9)	17 (2.2)	30 (2.7)	46 (3.0)
Evolution	12 (2.6)	20 (2.1)	27 (2.4)	40 (2.8)
Chemistry				
Atomic structure	9 (2.0)	17 (2.7)	29 (3.0)	46 (3.2)
Chemical bonding, equations, nomenclature, and reactions	15 (2.6)	25 (2.8)	31 (2.8)	28 (2.6)
Elements, compounds, and mixtures	8 (2.2)	15 (2.5)	32 (3.2)	45 (2.6)
The Periodic Table	7 (2.1)	15 (2.5)	31 (3.3)	47 (3.0)
Properties of solutions	8 (2.2)	30 (2.8)	32 (2.9)	30 (2.2)
States, classes, and properties of matter	5 (2.0)	13 (2.2)	26 (2.5)	55 (2.6)
Physics				
Forces and motion	4 (1.8)	15 (1.9)	37 (3.2)	44 (3.5)
Energy transfers, transformations, and conservation	5 (1.8)	17 (2.2)	38 (2.9)	39 (3.0)
Properties and behaviors of waves	10 (2.2)	29 (2.8)	40 (3.5)	21 (2.1)
Electricity and magnetism	15 (2.3)	32 (2.6)	35 (3.0)	19 (2.0)
Modern physics (e.g., special relativity)	36 (2.9)	37 (2.6)	20 (2.2)	7 (1.3)
Engineering				
Defining engineering problems	29 (2.1)	35 (2.3)	24 (2.0)	12 (1.6)
Developing possible solutions	28 (2.2)	32 (2.2)	26 (1.9)	14 (1.8)
Optimizing a design solution	32 (2.2)	33 (2.2)	24 (1.9)	10 (1.6)
Environmental and resource issues (e.g., land and water use, energy resources and consumption, sources and impacts of pollution)	3 (0.8)	22 (3.2)	44 (3.4)	31 (2.8)

† Middle school science teachers were shown only those topics related to their randomly selected class, with the exception of engineering which was presented to all teachers.

Table STQ 36.3
High School Science Teachers' Perceptions of Their Preparedness to Teach Various Topics

	PERCENT OF TEACHERS†			
	NOT ADEQUATELY PREPARED	SOMEWHAT PREPARED	FAIRLY WELL PREPARED	VERY WELL PREPARED
Earth/Space Science				
Earth's features and physical processes	0 (0.4)	5 (2.4)	30 (7.7)	64 (7.0)
The solar system and the universe	1 (0.5)	10 (5.1)	29 (6.8)	60 (7.0)
Climate and weather	1 (0.7)	6 (2.5)	33 (7.8)	60 (7.0)
Biology/Life Science				
Cell biology	2 (1.2)	5 (1.6)	19 (1.8)	74 (2.6)
Structures and functions of organisms	2 (1.3)	4 (1.0)	24 (2.6)	70 (3.3)
Ecology/ecosystems	2 (1.1)	8 (1.3)	26 (2.9)	65 (2.5)
Genetics	1 (1.0)	6 (1.4)	23 (2.5)	70 (3.2)
Evolution	2 (1.3)	9 (1.3)	27 (3.1)	63 (2.5)
Chemistry				
Atomic structure	0 ---‡	3 (2.0)	9 (2.3)	87 (2.9)
Chemical bonding, equations, nomenclature, and reactions	1 (0.6)	6 (2.8)	11 (2.3)	83 (3.3)
Elements, compounds, and mixtures	0 ---‡	5 (2.8)	8 (1.6)	87 (3.0)
The Periodic Table	1 (0.9)	2 (1.8)	7 (1.7)	89 (2.4)
Properties of solutions	2 (1.8)	7 (1.9)	15 (1.8)	76 (3.1)
States, classes, and properties of matter	0 ---‡	3 (1.8)	9 (1.6)	88 (2.4)
Physics				
Forces and motion	0 (0.2)	3 (2.6)	18 (3.8)	79 (4.2)
Energy transfers, transformations, and conservation	3 (2.5)	6 (2.7)	20 (3.8)	72 (4.6)
Properties and behaviors of waves	6 (3.7)	10 (2.9)	27 (3.4)	57 (4.8)
Electricity and magnetism	1 (0.4)	17 (3.7)	37 (4.9)	45 (4.4)
Modern physics (e.g., special relativity)	17 (3.9)	26 (2.9)	38 (3.8)	19 (2.7)
Engineering				
Defining engineering problems	38 (1.8)	38 (1.7)	18 (1.2)	7 (0.7)
Developing possible solutions	34 (1.9)	36 (1.9)	22 (1.4)	8 (0.8)
Optimizing a design solution	42 (1.8)	36 (1.7)	16 (1.1)	6 (0.7)
Environmental and resource issues (e.g., land and water use, energy resources and consumption, sources and impacts of pollution)	1 (1.1)	6 (4.6)	29 (5.9)	63 (6.7)

† High school science teachers were shown only those topics related to their randomly selected class, with the exception of engineering which was presented to all teachers.

‡ No high school science teachers in the sample selected this response option. Thus, it is not possible to calculate the standard error of this estimate.

Table STQ 37.1
Elementary School Science Teachers' Perceptions of Their Preparedness for Each of a Number of Tasks

	PERCENT OF TEACHERS			
	NOT ADEQUATELY PREPARED	SOMEWHAT PREPARED	FAIRLY WELL PREPARED	VERY WELL PREPARED
Develop students' conceptual understanding of the science ideas you teach	3 (0.6)	23 (1.6)	52 (2.1)	23 (1.5)
Develop students' abilities to do science (e.g., develop scientific questions; design and conduct investigations; analyze data; develop models, explanations, and scientific arguments)	6 (0.8)	31 (1.7)	46 (1.9)	17 (1.5)
Develop students' awareness of STEM careers	21 (1.4)	39 (1.8)	31 (1.7)	9 (0.9)
Provide science instruction that is based on students' ideas (whether completely correct or not) about the topics you teach	13 (1.2)	35 (1.7)	40 (1.6)	12 (1.1)
Use formative assessment to monitor student learning	4 (0.6)	25 (2.0)	43 (2.2)	28 (1.7)
Differentiate science instruction to meet the needs of diverse learners	12 (1.2)	32 (1.6)	37 (1.6)	19 (1.3)
Incorporate students' cultural backgrounds into science instruction	19 (1.3)	39 (1.3)	31 (1.7)	11 (1.1)
Encourage students' interest in science and/or engineering	6 (1.0)	25 (1.6)	43 (1.7)	26 (1.3)
Encourage participation of all students in science and/or engineering	4 (0.8)	21 (1.4)	44 (1.6)	31 (1.6)

Table STQ 37.2
Middle School Science Teachers' Perceptions of Their Preparedness for Each of a Number of Tasks

	PERCENT OF TEACHERS			
	NOT ADEQUATELY PREPARED	SOMEWHAT PREPARED	FAIRLY WELL PREPARED	VERY WELL PREPARED
Develop students' conceptual understanding of the science ideas you teach	1 (0.4)	11 (1.9)	47 (2.2)	42 (2.2)
Develop students' abilities to do science (e.g., develop scientific questions; design and conduct investigations; analyze data; develop models, explanations, and scientific arguments)	2 (0.7)	17 (2.2)	43 (2.3)	38 (1.9)
Develop students' awareness of STEM careers	8 (1.2)	38 (2.5)	33 (2.1)	21 (1.8)
Provide science instruction that is based on students' ideas (whether completely correct or not) about the topics you teach	7 (1.4)	28 (2.6)	44 (2.6)	21 (1.8)
Use formative assessment to monitor student learning	1 (0.3)	10 (1.9)	41 (2.5)	48 (2.2)
Differentiate science instruction to meet the needs of diverse learners	3 (0.6)	24 (2.1)	40 (2.0)	33 (2.0)
Incorporate students' cultural backgrounds into science instruction	16 (1.9)	32 (2.1)	37 (2.2)	15 (1.3)
Encourage students' interest in science and/or engineering	1 (0.3)	15 (1.7)	42 (2.4)	42 (2.2)
Encourage participation of all students in science and/or engineering	1 (0.4)	13 (1.7)	42 (2.3)	44 (2.3)

Table STQ 37.3
High School Science Teachers' Perceptions of Their Preparedness for Each of a Number of Tasks

	PERCENT OF TEACHERS			
	NOT ADEQUATELY PREPARED	SOMEWHAT PREPARED	FAIRLY WELL PREPARED	VERY WELL PREPARED
Develop students' conceptual understanding of the science ideas you teach	0 (0.1)	5 (0.6)	37 (1.5)	58 (1.5)
Develop students' abilities to do science (e.g., develop scientific questions; design and conduct investigations; analyze data; develop models, explanations, and scientific arguments)	0 (0.3)	12 (1.4)	42 (1.5)	46 (1.6)
Develop students' awareness of STEM careers	7 (0.8)	29 (1.7)	43 (2.0)	21 (1.2)
Provide science instruction that is based on students' ideas (whether completely correct or not) about the topics you teach	5 (0.8)	24 (1.3)	46 (1.8)	25 (1.4)
Use formative assessment to monitor student learning	1 (0.4)	9 (1.2)	38 (1.7)	52 (1.6)
Differentiate science instruction to meet the needs of diverse learners	3 (0.7)	22 (1.4)	40 (1.7)	35 (1.5)
Incorporate students' cultural backgrounds into science instruction	14 (1.3)	34 (1.6)	34 (1.8)	18 (1.4)
Encourage students' interest in science and/or engineering	1 (0.4)	13 (1.3)	42 (1.7)	44 (1.6)
Encourage participation of all students in science and/or engineering	1 (0.3)	16 (1.3)	40 (1.6)	43 (1.6)

Table STQ 38.1
Elementary School Science
Teachers' Opinions About Teaching and Learning

	PERCENT OF TEACHERS				
	STRONGLY DISAGREE	DISAGREE	NO OPINION	AGREE	STRONGLY AGREE
Students learn science best in classes with students of similar abilities.	5 (0.9)	51 (2.4)	19 (1.8)	24 (1.8)	2 (0.4)
It is better for science instruction to focus on ideas in depth, even if that means covering fewer topics.	1 (0.4)	12 (1.3)	13 (1.6)	60 (2.4)	15 (1.8)
At the beginning of instruction on a science idea, students should be provided with definitions for new scientific vocabulary that will be used.	2 (0.6)	10 (1.4)	10 (1.4)	46 (2.0)	31 (2.0)
Teachers should explain an idea to students before having them consider evidence that relates to the idea.	4 (0.8)	45 (2.5)	18 (1.8)	25 (1.9)	8 (1.2)
Most class periods should provide opportunities for students to share their thinking and reasoning.	0 (0.2)	1 (0.3)	3 (0.7)	40 (2.4)	56 (2.4)
Hands-on/laboratory activities should be used primarily to reinforce a science idea that the students have already learned.	5 (0.8)	30 (2.4)	9 (1.1)	32 (1.9)	24 (1.8)
Teachers should ask students to support their conclusions about a science concept with evidence.	0 (0.2)	1 (0.3)	4 (1.0)	51 (2.5)	44 (2.4)
Students learn best when instruction is connected to their everyday lives.	0 (0.2)	1 (0.5)	3 (0.7)	40 (2.3)	55 (2.5)
Most class periods should provide opportunities for students to apply scientific ideas to real-world contexts.	0 (0.2)	1 (0.4)	6 (1.1)	51 (2.5)	43 (2.5)
Students should learn science by doing science (e.g., developing scientific questions; designing and conducting investigations; analyzing data; developing models, explanations, and scientific arguments).	0 (0.2)	0 (0.3)	4 (0.9)	36 (2.2)	60 (2.3)

Table STQ 38.2
Middle School Science
Teachers' Opinions About Teaching and Learning

	PERCENT OF TEACHERS				
	STRONGLY DISAGREE	DISAGREE	NO OPINION	AGREE	STRONGLY AGREE
Students learn science best in classes with students of similar abilities.	3 (0.8)	38 (3.5)	11 (1.6)	40 (3.5)	8 (1.5)
It is better for science instruction to focus on ideas in depth, even if that means covering fewer topics.	1 (0.7)	14 (2.4)	10 (1.7)	53 (2.7)	21 (2.4)
At the beginning of instruction on a science idea, students should be provided with definitions for new scientific vocabulary that will be used.	3 (0.8)	14 (1.3)	10 (1.4)	48 (2.7)	24 (2.6)
Teachers should explain an idea to students before having them consider evidence that relates to the idea.	6 (1.1)	43 (3.2)	21 (2.4)	24 (2.5)	6 (1.3)
Most class periods should provide opportunities for students to share their thinking and reasoning.	0 (0.1)	1 (0.7)	7 (1.9)	47 (2.9)	45 (2.9)
Hands-on/laboratory activities should be used primarily to reinforce a science idea that the students have already learned.	4 (0.8)	30 (2.1)	9 (1.8)	31 (2.8)	26 (2.4)
Teachers should ask students to support their conclusions about a science concept with evidence.	0 (0.3)	1 (0.4)	2 (0.7)	33 (2.7)	64 (2.5)
Students learn best when instruction is connected to their everyday lives.	0 (0.2)	1 (0.4)	2 (0.6)	38 (2.6)	59 (2.7)
Most class periods should provide opportunities for students to apply scientific ideas to real-world contexts.	0 ---†	2 (0.6)	8 (1.9)	46 (2.7)	44 (2.9)
Students should learn science by doing science (e.g., developing scientific questions; designing and conducting investigations; analyzing data; developing models, explanations, and scientific arguments).	0 (0.3)	0 (0.2)	6 (1.7)	36 (2.7)	57 (3.1)

† No middle school science teachers in the sample selected this response option. Thus, it is not possible to calculate the standard error of this estimate.

Table STQ 38.3
High School Science
Teachers' Opinions About Teaching and Learning

	PERCENT OF TEACHERS				
	STRONGLY DISAGREE	DISAGREE	NO OPINION	AGREE	STRONGLY AGREE
Students learn science best in classes with students of similar abilities.	1 (0.4)	27 (1.6)	11 (1.3)	45 (2.0)	15 (1.3)
It is better for science instruction to focus on ideas in depth, even if that means covering fewer topics.	2 (1.4)	12 (1.6)	10 (1.2)	55 (2.0)	22 (1.6)
At the beginning of instruction on a science idea, students should be provided with definitions for new scientific vocabulary that will be used.	1 (0.4)	16 (1.4)	16 (2.0)	43 (2.1)	23 (2.0)
Teachers should explain an idea to students before having them consider evidence that relates to the idea.	5 (0.8)	38 (2.2)	20 (1.7)	30 (2.3)	7 (0.8)
Most class periods should provide opportunities for students to share their thinking and reasoning.	0 (0.2)	3 (1.0)	7 (1.0)	53 (2.5)	36 (2.1)
Hands-on/laboratory activities should be used primarily to reinforce a science idea that the students have already learned.	5 (0.9)	31 (2.1)	12 (1.3)	32 (2.0)	20 (1.8)
Teachers should ask students to support their conclusions about a science concept with evidence.	0 (0.1)	0 (0.0)	1 (0.3)	36 (2.0)	63 (2.1)
Students learn best when instruction is connected to their everyday lives.	0 (0.1)	1 (0.3)	3 (0.7)	40 (2.5)	56 (2.4)
Most class periods should provide opportunities for students to apply scientific ideas to real-world contexts.	0 (0.0)	2 (0.4)	8 (1.4)	54 (2.1)	37 (2.1)
Students should learn science by doing science (e.g., developing scientific questions; designing and conducting investigations; analyzing data; developing models, explanations, and scientific arguments).	0 (0.2)	2 (0.9)	4 (0.8)	40 (2.0)	53 (2.0)

Table STQ 39
Science Teachers Having Various Leadership Responsibilities Within the Last Three Years, by Grade Range

	PERCENT OF TEACHERS		
	ELEMENTARY	MIDDLE	HIGH
Served as a lead teacher or department chair in science	14 (1.6)	37 (2.7)	33 (2.0)
Served as a formal mentor or coach for a science teacher	4 (0.7)	21 (2.1)	27 (1.8)
Supervised a student teacher in your classroom	30 (2.2)	22 (2.2)	22 (2.3)
Served on a school or district/diocese-wide science committee (e.g., developing curriculum, developing pacing guides, selecting instructional materials)	22 (1.9)	44 (3.1)	51 (2.0)
Led or co-led a workshop or professional learning community (e.g., teacher study group, lesson study) for other teachers focused on science or science teaching	8 (1.4)	22 (2.3)	28 (1.7)
Taught a science lesson for other teachers in your school to observe	8 (1.1)	37 (2.9)	38 (2.1)
Observed another teacher's science lesson for the purpose of giving him/her feedback	11 (1.6)	44 (3.1)	50 (2.3)

Table STQ 40
Average Minutes Per Week Science Classes Meet

	AVERAGE NUMBER OF MINUTES†
Elementary	208 (15.4)
Middle	246 (4.5)
High	253 (2.7)

† Includes only non-self-contained classes.

Table STQ 41
Average Number of Students in Science Classes

	AVERAGE NUMBER OF STUDENTS
Elementary	22 (0.2)
Middle	23 (0.3)
High	21 (0.3)

Table STQ 42
Race/Ethnicity of Students in Science Classes, by Grade Range

	PERCENT OF STUDENTS		
	ELEMENTARY	MIDDLE	HIGH
American Indian or Alaskan Native	3 (0.8)	1 (0.3)	1 (0.5)
Asian	4 (0.8)	4 (0.5)	6 (0.6)
Black or African American	18 (1.4)	16 (1.3)	13 (1.0)
Hispanic or Latino	20 (1.6)	24 (1.7)	18 (1.3)
Native Hawaiian or Other Pacific Islander	1 (0.2)	0 (0.1)	1 (0.5)
White	50 (1.8)	52 (1.6)	59 (1.4)
Two or more races	5 (0.4)	4 (0.4)	4 (0.6)

Table STQ 43
Prior Science Achievement Level of Students in Science Classes, by Grade Range

	PERCENT OF CLASSES		
	ELEMENTARY	MIDDLE	HIGH
Mostly low achievers	11 (1.3)	17 (1.8)	13 (1.3)
Mostly average achievers	43 (1.8)	26 (1.8)	28 (1.5)
Mostly high achievers	6 (0.9)	15 (1.6)	31 (1.6)
A mixture of levels	41 (1.9)	43 (2.3)	28 (1.5)

Table STQ 44.1
Elementary School Science Classes in Which Teachers Report Having Control Over Various Curricular and Instructional Decisions

	PERCENT OF CLASSES				
	NO CONTROL		MODERATE CONTROL		STRONG CONTROL
	1	2	3	4	5
Determining course goals and objectives	27 (2.2)	14 (1.7)	28 (2.2)	13 (1.7)	17 (2.7)
Selecting curriculum materials (e.g., textbooks/modules)	29 (2.3)	16 (1.6)	27 (2.0)	12 (1.3)	15 (2.5)
Selecting content, topics, and skills to be taught	34 (2.6)	19 (1.7)	23 (2.3)	12 (1.3)	13 (2.6)
Selecting the sequence in which topics are covered	18 (2.1)	11 (1.3)	23 (1.9)	18 (1.6)	30 (2.6)
Determining the amount of instructional time to spend on each topic	15 (2.1)	16 (1.6)	28 (2.2)	20 (1.8)	21 (2.7)
Selecting teaching techniques	2 (0.5)	2 (0.7)	19 (2.1)	30 (1.7)	48 (2.3)
Determining the amount of homework to be assigned	4 (0.9)	2 (0.5)	13 (1.7)	22 (1.7)	59 (2.5)
Choosing criteria for grading student performance	5 (0.9)	5 (0.9)	21 (2.1)	28 (1.8)	41 (2.5)

Table STQ 44.2
Middle School Science Classes in Which Teachers Report Having Control Over Various Curricular and Instructional Decisions

	PERCENT OF CLASSES				
	NO CONTROL		MODERATE CONTROL		STRONG CONTROL
	1	2	3	4	5
Determining course goals and objectives	20 (2.0)	10 (1.3)	23 (2.1)	15 (1.5)	33 (3.0)
Selecting curriculum materials (e.g., textbooks/modules)	17 (2.3)	15 (1.8)	22 (2.1)	18 (1.8)	28 (2.9)
Selecting content, topics, and skills to be taught	24 (2.9)	19 (1.9)	18 (1.4)	13 (1.5)	27 (3.0)
Selecting the sequence in which topics are covered	13 (2.0)	13 (1.6)	18 (1.7)	15 (1.5)	41 (2.9)
Determining the amount of instructional time to spend on each topic	6 (1.6)	10 (1.7)	19 (1.8)	22 (1.9)	43 (3.2)
Selecting teaching techniques	0 (0.1)	2 (0.5)	10 (1.8)	22 (2.1)	67 (2.4)
Determining the amount of homework to be assigned	0 (0.2)	1 (0.5)	8 (1.9)	17 (1.6)	73 (2.2)
Choosing criteria for grading student performance	3 (1.3)	3 (0.7)	11 (1.3)	24 (1.9)	59 (2.6)

Table STQ 44.3
High School Science Classes in Which Teachers Report Having Control Over Various Curricular and Instructional Decisions

	PERCENT OF CLASSES				
	NO CONTROL		MODERATE CONTROL		STRONG CONTROL
	1	2	3	4	5
Determining course goals and objectives	12 (1.4)	10 (1.5)	17 (1.6)	24 (2.1)	36 (2.5)
Selecting curriculum materials (e.g., textbooks/modules)	12 (1.7)	13 (1.4)	21 (2.4)	18 (1.7)	36 (2.0)
Selecting content, topics, and skills to be taught	11 (1.3)	13 (1.5)	19 (1.7)	22 (2.0)	34 (2.2)
Selecting the sequence in which topics are covered	6 (1.0)	8 (1.5)	15 (1.2)	20 (1.6)	51 (2.1)
Determining the amount of instructional time to spend on each topic	4 (1.5)	5 (0.8)	17 (1.5)	26 (2.1)	48 (2.1)
Selecting teaching techniques	1 (1.3)	3 (0.8)	7 (1.1)	21 (2.1)	68 (2.3)
Determining the amount of homework to be assigned	1 (0.5)	1 (0.4)	6 (0.9)	19 (1.7)	74 (1.8)
Choosing criteria for grading student performance	2 (0.5)	5 (1.6)	13 (1.4)	25 (1.5)	54 (2.2)

Table STQ 45.1
Emphasis Given in Elementary School Science Classes to Various Instructional Objectives

	PERCENT OF CLASSES			
	NONE	MINIMAL EMPHASIS	MODERATE EMPHASIS	HEAVY EMPHASIS
Learning science vocabulary and/or facts	0 (0.3)	15 (1.5)	58 (1.9)	27 (1.9)
Understanding science concepts	0 (0.1)	7 (0.9)	47 (1.6)	47 (1.7)
Learning about different fields of science/engineering	9 (0.9)	49 (1.9)	34 (2.1)	8 (1.9)
Learning how to do science (develop scientific questions; design and conduct investigations; analyze data; develop models, explanations, and scientific arguments)	2 (0.4)	26 (1.7)	46 (1.8)	26 (2.0)
Learning how to do engineering (e.g., identify criteria and constraints, design solutions, optimize solutions)	22 (1.6)	42 (1.8)	28 (1.8)	8 (1.8)
Learning about real-life applications of science/engineering	6 (0.9)	27 (1.7)	47 (2.1)	20 (2.1)
Increasing students' interest in science/engineering	2 (0.5)	20 (1.7)	50 (2.0)	27 (2.2)
Developing students' confidence that they can successfully pursue careers in science/engineering	6 (0.8)	30 (1.8)	42 (2.3)	23 (2.0)
Learning test-taking skills/strategies	10 (1.2)	32 (1.5)	38 (2.1)	20 (1.5)

Table STQ 45.2
Emphasis Given in Middle School Science Classes to Various Instructional Objectives

	PERCENT OF CLASSES			
	NONE	MINIMAL EMPHASIS	MODERATE EMPHASIS	HEAVY EMPHASIS
Learning science vocabulary and/or facts	0 (0.2)	12 (1.7)	51 (2.3)	37 (2.2)
Understanding science concepts	0 ---†	1 (0.4)	23 (1.7)	77 (1.8)
Learning about different fields of science/engineering	6 (0.8)	51 (2.4)	36 (2.4)	7 (1.2)
Learning how to do science (develop scientific questions; design and conduct investigations; analyze data; develop models, explanations, and scientific arguments)	1 (0.5)	9 (1.2)	45 (2.4)	46 (2.1)
Learning how to do engineering (e.g., identify criteria and constraints, design solutions, optimize solutions)	18 (1.9)	45 (2.1)	27 (2.3)	10 (1.2)
Learning about real-life applications of science/engineering	3 (0.6)	25 (2.3)	44 (1.9)	28 (2.0)
Increasing students' interest in science/engineering	2 (0.5)	18 (2.0)	44 (2.0)	35 (2.1)
Developing students' confidence that they can successfully pursue careers in science/engineering	2 (0.6)	22 (1.8)	46 (2.1)	30 (1.9)
Learning test-taking skills/strategies	4 (1.0)	31 (2.3)	43 (2.3)	23 (1.8)

† No middle school science teachers in the sample selected this response option. Thus, it is not possible to calculate the standard error of this estimate.

Table STQ 45.3
Emphasis Given in High School Science Classes to Various Instructional Objectives

	PERCENT OF CLASSES			
	NONE	MINIMAL EMPHASIS	MODERATE EMPHASIS	HEAVY EMPHASIS
Learning science vocabulary and/or facts	0 (0.1)	16 (1.2)	52 (1.8)	32 (1.6)
Understanding science concepts	0 ---†	0 (0.1)	24 (1.7)	76 (1.8)
Learning about different fields of science/engineering	8 (1.0)	52 (1.6)	33 (1.5)	7 (0.8)
Learning how to do science (develop scientific questions; design and conduct investigations; analyze data; develop models, explanations, and scientific arguments)	1 (0.6)	13 (1.1)	45 (1.4)	41 (1.3)
Learning how to do engineering (e.g., identify criteria and constraints, design solutions, optimize solutions)	31 (1.5)	44 (1.7)	20 (1.3)	5 (0.7)
Learning about real-life applications of science/engineering	2 (0.5)	23 (1.6)	47 (1.6)	29 (1.2)
Increasing students' interest in science/engineering	1 (0.3)	17 (1.4)	51 (1.7)	31 (1.5)
Developing students' confidence that they can successfully pursue careers in science/engineering	1 (0.3)	18 (1.3)	45 (1.8)	35 (1.5)
Learning test-taking skills/strategies	4 (0.6)	30 (1.7)	43 (1.8)	23 (1.4)

† No high school science teachers in the sample selected this response option. Thus, it is not possible to calculate the standard error of this estimate.

Table STQ 46.1
Elementary School Science Classes in Which Teachers Report Using Various Activities in Their Classrooms

	PERCENT OF CLASSES				
	NEVER	RARELY (E.G., A FEW TIMES A YEAR)	SOMETIMES (E.G., ONCE OR TWICE A MONTH)	OFTEN (E.G., ONCE OR TWICE A WEEK)	ALL OR ALMOST ALL SCIENCE LESSONS
Explain science ideas to the whole class	0 (0.1)	1 (0.4)	13 (1.8)	37 (2.1)	48 (1.8)
Engage the whole class in discussions	0 (0.1)	1 (0.4)	8 (0.9)	35 (1.5)	55 (1.5)
Have students work in small groups	0 (0.1)	5 (0.8)	20 (1.5)	44 (1.7)	30 (2.0)
Have students do hands-on/laboratory activities	1 (0.4)	11 (1.2)	35 (1.8)	37 (1.9)	16 (1.9)
Use flipped instruction (have students watch lectures/demonstrations outside of class to prepare for in-class activities)	53 (2.1)	22 (1.7)	15 (1.8)	7 (1.0)	3 (0.5)
Have students read from a textbook, module, or other material in class, either aloud or to themselves	15 (1.3)	21 (2.1)	28 (1.7)	26 (1.6)	11 (1.4)
Engage the class in project-based learning (PBL) activities	11 (1.3)	23 (1.5)	37 (2.1)	21 (1.6)	8 (2.0)
Have students write their reflections (e.g., in their journals, on exit tickets) in class or for homework	8 (1.0)	19 (1.5)	29 (1.4)	30 (1.9)	14 (1.3)
Focus on literacy skills (e.g., informational reading or writing strategies)	4 (0.7)	10 (1.0)	26 (1.9)	40 (1.7)	20 (1.5)
Have students practice for standardized tests	37 (2.0)	24 (2.1)	21 (1.7)	13 (1.2)	5 (0.9)

Table STQ 46.2
Middle School Science Classes in Which Teachers Report Using Various Activities in Their Classrooms

	PERCENT OF CLASSES				
	NEVER	RARELY (E.G., A FEW TIMES A YEAR)	SOMETIMES (E.G., ONCE OR TWICE A MONTH)	OFTEN (E.G., ONCE OR TWICE A WEEK)	ALL OR ALMOST ALL SCIENCE LESSONS
Explain science ideas to the whole class	0 (0.1)	1 (0.4)	6 (0.8)	46 (2.0)	46 (2.1)
Engage the whole class in discussions	0 (0.1)	1 (0.4)	10 (1.1)	47 (2.1)	42 (2.1)
Have students work in small groups	0 ---†	2 (0.7)	11 (1.4)	53 (2.2)	33 (2.1)
Have students do hands-on/laboratory activities	0 (0.3)	5 (1.6)	31 (2.0)	52 (2.1)	11 (1.4)
Use flipped instruction (have students watch lectures/demonstrations outside of class to prepare for in-class activities)	43 (2.3)	31 (2.1)	17 (1.7)	7 (1.0)	2 (0.5)
Have students read from a textbook, module, or other material in class, either aloud or to themselves	3 (0.7)	22 (2.1)	36 (2.0)	31 (2.0)	8 (1.7)
Engage the class in project-based learning (PBL) activities	7 (1.6)	22 (1.6)	40 (2.1)	23 (1.8)	8 (1.4)
Have students write their reflections (e.g., in their journals, on exit tickets) in class or for homework	6 (1.3)	16 (1.6)	31 (1.6)	30 (1.6)	17 (1.9)
Focus on literacy skills (e.g., informational reading or writing strategies)	3 (0.8)	13 (1.5)	38 (1.9)	35 (2.1)	11 (1.4)
Have students practice for standardized tests	19 (1.7)	35 (2.5)	26 (1.8)	14 (1.5)	4 (0.8)

† No middle school science teachers in the sample selected this response option. Thus, it is not possible to calculate the standard error of this estimate.

Table STQ 46.3
High School Science Classes in Which Teachers Report Using Various Activities in Their Classrooms

	PERCENT OF CLASSES				
	NEVER	RARELY (E.G., A FEW TIMES A YEAR)	SOMETIMES (E.G., ONCE OR TWICE A MONTH)	OFTEN (E.G., ONCE OR TWICE A WEEK)	ALL OR ALMOST ALL SCIENCE LESSONS
Explain science ideas to the whole class	0 (0.0)	2 (0.4)	7 (0.9)	49 (1.7)	42 (1.7)
Engage the whole class in discussions	0 (0.1)	3 (0.4)	19 (1.3)	47 (1.6)	31 (1.6)
Have students work in small groups	0 (0.1)	2 (0.5)	13 (1.4)	54 (1.6)	30 (1.5)
Have students do hands-on/laboratory activities	1 (0.3)	4 (0.7)	27 (1.4)	57 (1.8)	12 (1.0)
Use flipped instruction (have students watch lectures/demonstrations outside of class to prepare for in-class activities)	31 (1.5)	33 (1.7)	21 (1.4)	11 (1.2)	4 (0.7)
Have students read from a textbook, module, or other material in class, either aloud or to themselves	13 (1.2)	29 (1.4)	32 (1.6)	22 (1.7)	4 (0.7)
Engage the class in project-based learning (PBL) activities	9 (0.8)	25 (1.4)	38 (1.7)	22 (1.6)	6 (0.7)
Have students write their reflections (e.g., in their journals, on exit tickets) in class or for homework	17 (1.5)	26 (1.5)	29 (1.6)	20 (1.5)	8 (0.9)
Focus on literacy skills (e.g., informational reading or writing strategies)	9 (1.2)	23 (1.4)	36 (1.8)	26 (1.6)	6 (0.9)
Have students practice for standardized tests	25 (1.5)	29 (1.7)	26 (1.4)	16 (1.1)	5 (0.8)

Table STQ 47.1
Elementary School Science Classes in Which Teachers Report Students Engaging in Various Aspects of Science Practices

	PERCENT OF CLASSES				
	NEVER	RARELY (E.G., A FEW TIMES A YEAR)	SOMETIMES (E.G., ONCE OR TWICE A MONTH)	OFTEN (E.G., ONCE OR TWICE A WEEK)	ALL OR ALMOST ALL SCIENCE LESSONS
Determine whether or not a question is "scientific" (meaning it requires an answer supported by evidence gathered through systematic investigation)	20 (1.4)	31 (2.1)	31 (2.2)	15 (1.4)	4 (0.7)
Generate scientific questions based on their curiosity, prior knowledge, careful observation of real-world phenomena, scientific models, or preliminary data from an investigation	6 (0.8)	21 (1.5)	36 (1.8)	29 (1.7)	9 (1.9)
Determine what data would need to be collected in order to answer a scientific question (regardless of who generated the question)	8 (0.9)	25 (1.8)	37 (2.1)	24 (2.0)	5 (0.7)
Develop procedures for a scientific investigation to answer a scientific question (regardless of who generated the question)	9 (1.0)	26 (1.8)	35 (2.0)	25 (1.9)	4 (0.7)
Conduct a scientific investigation (regardless of who developed the procedures)	4 (0.6)	20 (1.7)	40 (1.7)	29 (2.0)	7 (1.3)
Organize and/or represent data using tables, charts, or graphs in order to facilitate analysis of the data	6 (0.7)	21 (1.5)	40 (1.9)	27 (1.9)	7 (1.2)
Compare data from multiple trials or across student groups for consistency in order to identify potential sources of error or inconsistencies in the data	22 (1.4)	33 (2.0)	27 (1.7)	15 (2.0)	4 (0.9)
Analyze data using grade-appropriate methods in order to identify patterns, trends, or relationships	12 (1.1)	27 (1.8)	34 (1.7)	21 (1.9)	6 (1.0)
Consider how missing data or measurement error can affect the interpretation of data	24 (1.5)	32 (1.8)	30 (2.1)	11 (1.4)	3 (0.6)
Make and support claims (proposed answers to scientific questions) with evidence	10 (1.1)	21 (1.5)	37 (1.9)	23 (1.4)	9 (1.8)
Use multiple sources of evidence (e.g., different investigations, scientific literature) to develop an explanation	15 (1.2)	27 (1.8)	31 (1.7)	20 (2.1)	6 (0.9)
Revise their explanations (claims supported by evidence and reasoning) for real-world phenomena based on additional evidence	17 (1.2)	27 (1.5)	34 (1.8)	17 (1.8)	5 (0.8)
Develop scientific models—physical, graphical, or mathematical representations of real-world phenomena—based on data and reasoning	19 (1.1)	33 (1.6)	29 (1.6)	16 (1.7)	3 (0.7)
Identify the strengths and limitations of a scientific model—in terms of accuracy, clarity, generalizability, accessibility to others, strength of evidence supporting it—regardless of who created the model	31 (1.4)	34 (1.7)	24 (1.6)	10 (1.9)	2 (0.5)

Select and use grade-appropriate mathematical and/or statistical techniques to analyze data (e.g., determining the best measure of central tendency, examining variation in data, or developing a fit line)	27 (1.5)	29 (2.1)	29 (2.2)	12 (1.2)	3 (0.7)
Use mathematical and/or computational models to generate data to support a scientific claim	28 (1.6)	33 (1.9)	28 (2.1)	9 (1.1)	2 (0.6)
Determine what details about an investigation (e.g., its design, implementation, and results) might persuade a targeted audience about a scientific claim (regardless of who made the claim)	33 (1.7)	32 (2.2)	24 (1.8)	8 (1.1)	2 (0.6)
Use data and reasoning to defend, verbally or in writing, a claim or refute alternative scientific claims about a real-world phenomenon (regardless of who made the claims)	27 (1.5)	31 (1.7)	25 (2.1)	14 (1.6)	2 (0.6)
Evaluate the strengths and weaknesses of competing scientific explanations (claims supported by evidence) for a real-world phenomenon	33 (1.4)	29 (1.9)	26 (1.9)	9 (1.3)	2 (0.5)
Construct a persuasive case, verbally or in writing, for the best scientific model or explanation for a real-world phenomenon	35 (1.6)	33 (1.7)	23 (1.8)	8 (1.1)	1 (0.4)
Pose questions that elicit relevant details about the important aspects of a scientific argument (e.g., the claims/models/explanations, research design, implementation, data analysis)	31 (1.4)	29 (1.8)	27 (1.8)	11 (1.3)	3 (0.7)
Evaluate the credibility of scientific information—e.g., its reliability, validity, consistency, logical coherence, lack of bias, or methodological strengths and weaknesses (regardless of whether it is from their own or others' work)	38 (1.6)	30 (2.0)	23 (2.3)	7 (1.0)	2 (0.5)
Summarize patterns, similarities, and differences in scientific information obtained from multiple sources (regardless of whether it is from their own or others' work)	24 (1.2)	32 (1.6)	26 (1.5)	15 (2.0)	3 (0.6)

Table STQ 47.2
Middle School Science Classes in Which Teachers Report Students Engaging in Various Aspects of Science Practices

	PERCENT OF CLASSES				
	NEVER	RARELY (E.G., A FEW TIMES A YEAR)	SOMETIMES (E.G., ONCE OR TWICE A MONTH)	OFTEN (E.G., ONCE OR TWICE A WEEK)	ALL OR ALMOST ALL SCIENCE LESSONS
Determine whether or not a question is "scientific" (meaning it requires an answer supported by evidence gathered through systematic investigation)	5 (0.8)	24 (2.1)	40 (2.0)	24 (1.8)	7 (1.1)
Generate scientific questions based on their curiosity, prior knowledge, careful observation of real-world phenomena, scientific models, or preliminary data from an investigation	2 (0.4)	16 (1.8)	39 (2.1)	33 (2.3)	10 (1.3)
Determine what data would need to be collected in order to answer a scientific question (regardless of who generated the question)	2 (0.5)	18 (2.0)	42 (1.9)	31 (2.0)	8 (1.2)
Develop procedures for a scientific investigation to answer a scientific question (regardless of who generated the question)	3 (0.6)	21 (1.5)	41 (1.8)	27 (1.9)	7 (1.2)
Conduct a scientific investigation (regardless of who developed the procedures)	2 (0.6)	11 (1.5)	40 (1.9)	40 (1.9)	8 (1.3)
Organize and/or represent data using tables, charts, or graphs in order to facilitate analysis of the data	1 (0.3)	8 (1.5)	42 (2.3)	39 (2.1)	10 (1.3)
Compare data from multiple trials or across student groups for consistency in order to identify potential sources of error or inconsistencies in the data	4 (0.8)	22 (2.1)	43 (2.2)	27 (2.1)	5 (0.9)
Analyze data using grade-appropriate methods in order to identify patterns, trends, or relationships	3 (1.0)	16 (2.0)	37 (2.2)	34 (2.2)	10 (1.4)
Consider how missing data or measurement error can affect the interpretation of data	4 (1.0)	28 (2.1)	46 (2.0)	19 (2.0)	2 (0.5)
Make and support claims (proposed answers to scientific questions) with evidence	1 (0.3)	10 (1.3)	39 (2.0)	41 (1.9)	9 (1.3)
Use multiple sources of evidence (e.g., different investigations, scientific literature) to develop an explanation	3 (0.6)	18 (1.7)	41 (2.2)	30 (1.9)	7 (1.3)
Revise their explanations (claims supported by evidence and reasoning) for real-world phenomena based on additional evidence	4 (0.7)	22 (2.3)	44 (2.3)	24 (1.9)	5 (0.8)
Develop scientific models—physical, graphical, or mathematical representations of real-world phenomena—based on data and reasoning	3 (0.6)	23 (2.5)	41 (2.1)	29 (2.3)	5 (0.7)
Identify the strengths and limitations of a scientific model—in terms of accuracy, clarity, generalizability, accessibility to others, strength of evidence supporting it—regardless of who created the model	8 (1.3)	30 (1.9)	41 (2.3)	18 (1.9)	4 (0.6)

Select and use grade-appropriate mathematical and/or statistical techniques to analyze data (e.g., determining the best measure of central tendency, examining variation in data, or developing a fit line)	12 (1.6)	30 (2.3)	38 (2.1)	17 (1.8)	4 (0.8)
Use mathematical and/or computational models to generate data to support a scientific claim	10 (1.5)	30 (1.9)	41 (2.2)	16 (1.3)	3 (0.6)
Determine what details about an investigation (e.g., its design, implementation, and results) might persuade a targeted audience about a scientific claim (regardless of who made the claim)	15 (1.8)	34 (1.7)	35 (2.1)	12 (1.3)	3 (0.7)
Use data and reasoning to defend, verbally or in writing, a claim or refute alternative scientific claims about a real-world phenomenon (regardless of who made the claims)	8 (1.6)	21 (1.7)	43 (2.0)	24 (1.6)	5 (0.9)
Evaluate the strengths and weaknesses of competing scientific explanations (claims supported by evidence) for a real-world phenomenon	10 (1.5)	32 (2.0)	39 (1.9)	16 (1.4)	4 (0.9)
Construct a persuasive case, verbally or in writing, for the best scientific model or explanation for a real-world phenomenon	16 (1.7)	36 (1.8)	30 (1.8)	14 (1.5)	3 (0.7)
Pose questions that elicit relevant details about the important aspects of a scientific argument (e.g., the claims/models/explanations, research design, implementation, data analysis)	12 (1.5)	28 (1.8)	35 (2.2)	19 (1.8)	5 (0.8)
Evaluate the credibility of scientific information—e.g., its reliability, validity, consistency, logical coherence, lack of bias, or methodological strengths and weaknesses (regardless of whether it is from their own or others' work)	13 (1.5)	32 (1.8)	37 (2.1)	15 (1.5)	4 (0.7)
Summarize patterns, similarities, and differences in scientific information obtained from multiple sources (regardless of whether it is from their own or others' work)	9 (1.5)	24 (1.8)	41 (2.2)	20 (1.7)	5 (0.8)

Table STQ 47.3
High School Science Classes in Which Teachers Report Students Engaging in Various Aspects of Science Practices

	PERCENT OF CLASSES				
	NEVER	RARELY (E.G., A FEW TIMES A YEAR)	SOMETIMES (E.G., ONCE OR TWICE A MONTH)	OFTEN (E.G., ONCE OR TWICE A WEEK)	ALL OR ALMOST ALL SCIENCE LESSONS
Determine whether or not a question is "scientific" (meaning it requires an answer supported by evidence gathered through systematic investigation)	8 (0.7)	28 (1.5)	36 (1.5)	23 (1.3)	6 (0.7)
Generate scientific questions based on their curiosity, prior knowledge, careful observation of real-world phenomena, scientific models, or preliminary data from an investigation	3 (0.5)	18 (1.3)	41 (2.0)	30 (1.6)	8 (1.0)
Determine what data would need to be collected in order to answer a scientific question (regardless of who generated the question)	3 (0.5)	16 (1.1)	42 (1.6)	32 (1.4)	8 (0.9)
Develop procedures for a scientific investigation to answer a scientific question (regardless of who generated the question)	4 (0.8)	20 (1.2)	44 (1.5)	26 (1.4)	6 (0.8)
Conduct a scientific investigation (regardless of who developed the procedures)	2 (0.4)	12 (1.3)	36 (1.7)	43 (1.4)	8 (0.8)
Organize and/or represent data using tables, charts, or graphs in order to facilitate analysis of the data	1 (0.3)	8 (1.0)	33 (1.6)	48 (1.6)	10 (0.9)
Compare data from multiple trials or across student groups for consistency in order to identify potential sources of error or inconsistencies in the data	4 (0.6)	19 (1.3)	41 (1.6)	31 (1.4)	5 (0.7)
Analyze data using grade-appropriate methods in order to identify patterns, trends, or relationships	3 (0.6)	12 (1.1)	38 (1.7)	40 (1.5)	7 (0.8)
Consider how missing data or measurement error can affect the interpretation of data	4 (0.7)	25 (1.6)	43 (1.9)	24 (1.4)	3 (0.5)
Make and support claims (proposed answers to scientific questions) with evidence	2 (0.5)	9 (0.9)	39 (1.7)	41 (1.8)	9 (0.9)
Use multiple sources of evidence (e.g., different investigations, scientific literature) to develop an explanation	5 (0.6)	22 (1.3)	40 (1.6)	27 (1.5)	6 (0.8)
Revise their explanations (claims supported by evidence and reasoning) for real-world phenomena based on additional evidence	5 (0.8)	22 (1.3)	44 (1.9)	23 (1.2)	5 (0.7)
Develop scientific models—physical, graphical, or mathematical representations of real-world phenomena—based on data and reasoning	5 (0.7)	20 (1.2)	41 (1.8)	28 (1.5)	6 (0.7)
Identify the strengths and limitations of a scientific model—in terms of accuracy, clarity, generalizability, accessibility to others, strength of evidence supporting it—regardless of who created the model	6 (0.9)	30 (1.4)	42 (1.5)	18 (1.1)	3 (0.7)

Select and use grade-appropriate mathematical and/or statistical techniques to analyze data (e.g., determining the best measure of central tendency, examining variation in data, or developing a fit line)	8 (0.9)	26 (1.4)	36 (1.8)	24 (1.5)	6 (0.7)
Use mathematical and/or computational models to generate data to support a scientific claim	9 (1.0)	26 (1.6)	38 (2.0)	21 (1.3)	5 (0.6)
Determine what details about an investigation (e.g., its design, implementation, and results) might persuade a targeted audience about a scientific claim (regardless of who made the claim)	16 (1.3)	33 (1.4)	34 (1.7)	14 (1.2)	2 (0.5)
Use data and reasoning to defend, verbally or in writing, a claim or refute alternative scientific claims about a real-world phenomenon (regardless of who made the claims)	9 (0.8)	25 (1.2)	39 (1.7)	22 (1.7)	5 (0.7)
Evaluate the strengths and weaknesses of competing scientific explanations (claims supported by evidence) for a real-world phenomenon	11 (1.2)	33 (1.5)	35 (1.7)	17 (1.4)	3 (0.6)
Construct a persuasive case, verbally or in writing, for the best scientific model or explanation for a real-world phenomenon	17 (1.4)	36 (1.7)	31 (1.5)	13 (0.9)	2 (0.6)
Pose questions that elicit relevant details about the important aspects of a scientific argument (e.g., the claims/models/explanations, research design, implementation, data analysis)	13 (1.3)	31 (1.5)	34 (1.7)	18 (1.2)	5 (1.0)
Evaluate the credibility of scientific information—e.g., its reliability, validity, consistency, logical coherence, lack of bias, or methodological strengths and weaknesses (regardless of whether it is from their own or others' work)	11 (0.9)	33 (1.5)	33 (1.6)	19 (1.3)	4 (0.8)
Summarize patterns, similarities, and differences in scientific information obtained from multiple sources (regardless of whether it is from their own or others' work)	10 (1.1)	24 (1.5)	38 (1.6)	22 (1.3)	6 (1.0)

Table STQ 48
Science Classes in Which Teachers Report Incorporating Engineering Into Science Instruction, by Grade Range

	PERCENT OF CLASSES		
	ELEMENTARY	MIDDLE	HIGH
Never	16 (1.8)	10 (1.8)	20 (1.8)
Rarely (e.g., a few times per year)	48 (2.5)	51 (2.4)	50 (1.9)
Sometimes (e.g., once or twice a month)	26 (2.2)	32 (2.2)	24 (1.5)
Often (e.g., once or twice a week)	8 (2.7)	5 (1.0)	6 (1.1)
All or almost all science lessons	1 (0.5)	1 (0.6)	1 (0.2)

Table STQ 49
Science Classes in Which Teachers Report Incorporating Coding Into Science Instruction, by Grade Range

	PERCENT OF CLASSES		
	ELEMENTARY	MIDDLE	HIGH
Never	71 (3.4)	81 (1.9)	89 (1.2)
Rarely (e.g., a few times per year)	16 (2.0)	14 (1.8)	6 (0.9)
Sometimes (e.g., once or twice a month)	11 (2.8)	3 (0.8)	4 (0.8)
Often (e.g., once or twice a week)	3 (0.7)	1 (0.5)	0 (0.1)
All or almost all science lessons	0 ---†	0 (0.3)	0 (0.0)

† No elementary school science teachers in the sample selected this response option. Thus, it is not possible to calculate the standard error of this estimate.

Table STQ 50
Amount of Homework Assigned in Science Classes Per Week, by Grade Range

	PERCENT OF CLASSES		
	ELEMENTARY	MIDDLE	HIGH
None	57 (2.8)	8 (1.8)	3 (0.5)
1–15 minutes per week	21 (2.2)	15 (1.9)	9 (1.3)
16–30 minutes per week	12 (1.4)	33 (2.8)	19 (1.3)
31–60 minutes per week	8 (2.6)	31 (2.7)	33 (1.6)
61–90 minutes per week	2 (1.1)	8 (1.4)	22 (1.9)
91–120 minutes per week	0 (0.1)	3 (1.0)	7 (0.9)
More than 2 hours per week	0 ---†	2 (1.2)	7 (0.9)

† No elementary school science teachers in the sample selected this response option. Thus, it is not possible to calculate the standard error of this estimate.

Table STQ 51
Frequency of Required External Science Testing in Science Classes, by Grade Range

	PERCENT OF CLASSES		
	ELEMENTARY	MIDDLE	HIGH
Never	62 (2.4)	17 (1.8)	31 (2.0)
Once a year	17 (2.6)	33 (2.7)	33 (2.0)
Twice a year	4 (0.8)	11 (1.8)	14 (1.7)
Three or four times a year	11 (1.5)	28 (2.8)	16 (1.5)
Five or more times a year	6 (1.1)	11 (1.9)	6 (0.9)

Table STQ 52.1
Availability of Resources in Elementary School Science Classes

	PERCENT OF CLASSES		
	NOT AVAILABLE	AVAILABLE IN ANOTHER ROOM	LOCATED IN YOUR CLASSROOM
Lab tables	71 (3.1)	19 (2.4)	9 (2.5)
Electric outlets	7 (1.1)	3 (0.8)	90 (1.4)
Faucets and sinks	17 (2.0)	21 (2.6)	61 (3.0)

Table STQ 52.2
Availability of Resources in Middle School Science Classes

	PERCENT OF CLASSES		
	NOT AVAILABLE	AVAILABLE IN ANOTHER ROOM	LOCATED IN YOUR CLASSROOM
Lab tables	19 (2.0)	13 (2.0)	68 (2.6)
Electric outlets	2 (0.7)	5 (1.3)	93 (1.6)
Faucets and sinks	11 (1.5)	14 (2.0)	76 (2.3)

Table STQ 52.3
Availability of Resources in High School Science Classes

	PERCENT OF CLASSES		
	NOT AVAILABLE	AVAILABLE IN ANOTHER ROOM	LOCATED IN YOUR CLASSROOM
Lab tables	6 (1.1)	14 (1.7)	80 (1.7)
Electric outlets	2 (0.6)	3 (0.7)	95 (0.8)
Faucets and sinks	5 (0.9)	14 (1.6)	81 (1.9)
Gas for burners	15 (1.7)	26 (1.8)	60 (2.5)
Fume hoods	18 (1.8)	44 (2.2)	38 (2.2)

Table STQ 53.1
Availability of Instructional Technology in Elementary School Science Classes

	PERCENT OF CLASSES		
	NOT AVAILABLE	AVAILABLE UPON REQUEST	ALWAYS AVAILABLE IN YOUR CLASSROOM
Probes for collecting data (e.g., motion sensors, temperature probes)	61 (2.7)	32 (2.3)	8 (2.7)
Microscopes	44 (2.7)	45 (2.8)	11 (2.0)
Balances (e.g., pan, triple beam, digital scale)	20 (2.0)	44 (2.1)	36 (2.7)
Projection devices (e.g., Smartboard, document camera, LCD projector)	2 (0.7)	3 (0.7)	95 (0.9)

Table STQ 53.2
Availability of Instructional Technology in Middle School Science Classes

	PERCENT OF CLASSES		
	NOT AVAILABLE	AVAILABLE UPON REQUEST	ALWAYS AVAILABLE IN YOUR CLASSROOM
Probes for collecting data (e.g., motion sensors, temperature probes)	32 (2.4)	42 (2.8)	26 (3.0)
Microscopes	7 (1.3)	48 (2.5)	45 (2.7)
Balances (e.g., pan, triple beam, digital scale)	4 (1.0)	39 (2.5)	57 (2.7)
Projection devices (e.g., Smartboard, document camera, LCD projector)	1 (1.1)	5 (1.2)	94 (1.6)

Table STQ 53.3
Availability of Instructional Technology in High School Science Classes

	PERCENT OF CLASSES		
	NOT AVAILABLE	AVAILABLE UPON REQUEST	ALWAYS AVAILABLE IN YOUR CLASSROOM
Probes for collecting data (e.g., motion sensors, temperature probes)	19 (2.3)	48 (2.2)	33 (1.8)
Microscopes	6 (1.0)	51 (2.5)	43 (2.2)
Balances (e.g., pan, triple beam, digital scale)	3 (0.8)	29 (2.0)	68 (2.2)
Projection devices (e.g., Smartboard, document camera, LCD projector)	2 (0.9)	3 (0.8)	95 (1.1)

Table STQ 54.1
Adequacy of Classroom Resources for Science Instruction in Elementary Schools

	PERCENT OF CLASSES				
	NOT ADEQUATE		SOMEWHAT ADEQUATE		ADEQUATE
	1	2	3	4	5
Instructional technology (e.g., calculators, computers, probes/sensors)	12 (1.6)	9 (1.2)	30 (2.3)	17 (1.7)	32 (2.5)
Consumable supplies (e.g., chemicals, living organisms, batteries)	30 (2.3)	16 (1.6)	24 (1.9)	16 (2.0)	14 (2.8)
Equipment (e.g., thermometers, magnifying glasses, microscopes, beakers, photogate timers, Bunsen burners)	19 (2.0)	15 (1.5)	27 (2.0)	16 (1.7)	23 (2.6)
Facilities (e.g., lab tables, electric outlets, faucets and sinks)	20 (1.9)	13 (1.4)	28 (2.5)	18 (2.1)	21 (2.7)

Table STQ 54.2
Adequacy of Classroom Resources for Science Instruction in Middle Schools

	PERCENT OF CLASSES				
	NOT ADEQUATE		SOMEWHAT ADEQUATE		ADEQUATE
	1	2	3	4	5
Instructional technology (e.g., calculators, computers, probes/sensors)	9 (2.1)	8 (1.3)	26 (2.2)	21 (2.0)	37 (2.5)
Consumable supplies (e.g., chemicals, living organisms, batteries)	16 (2.1)	11 (1.7)	28 (2.6)	18 (1.8)	27 (2.1)
Equipment (e.g., thermometers, magnifying glasses, microscopes, beakers, photogate timers, Bunsen burners)	9 (1.6)	9 (1.6)	24 (2.2)	24 (2.3)	34 (2.5)
Facilities (e.g., lab tables, electric outlets, faucets and sinks)	12 (1.6)	7 (1.1)	20 (2.6)	17 (2.0)	45 (2.5)

Table STQ 54.3
Adequacy of Classroom Resources for Science Instruction in High Schools

	PERCENT OF CLASSES				
	NOT ADEQUATE		SOMEWHAT ADEQUATE		ADEQUATE
	1	2	3	4	5
Instructional technology (e.g., calculators, computers, probes/sensors)	7 (1.0)	4 (0.8)	19 (1.9)	22 (2.0)	48 (2.0)
Consumable supplies (e.g., chemicals, living organisms, batteries)	7 (1.1)	7 (1.5)	20 (1.5)	19 (1.5)	48 (2.2)
Equipment (e.g., thermometers, magnifying glasses, microscopes, beakers, photogate timers, Bunsen burners)	5 (1.0)	4 (0.8)	17 (1.7)	24 (1.9)	49 (2.1)
Facilities (e.g., lab tables, electric outlets, faucets and sinks)	7 (1.1)	6 (1.0)	15 (1.5)	14 (1.3)	58 (2.2)

Table STQ 55.1
Frequency of Use of Various Instructional Resources in Elementary School Science Classes

	PERCENT OF CLASSES				
	NEVER	RARELY (E.G., A FEW TIMES A YEAR)	SOMETIMES (E.G., ONCE OR TWICE A MONTH)	OFTEN (E.G., ONCE OR TWICE A WEEK)	ALL OR ALMOST ALL SCIENCE LESSONS
Commercially published textbooks (printed or electronic), including the supplementary materials (e.g., worksheets, laboratory handouts) that accompany the textbooks	26 (2.5)	17 (1.5)	19 (1.6)	21 (1.5)	17 (1.4)
Commercially published kits/modules (printed or electronic)	24 (1.9)	22 (1.5)	25 (2.1)	17 (1.6)	11 (1.4)
State, county, or district/diocese-developed units or lessons	28 (2.0)	20 (1.5)	21 (1.6)	20 (2.2)	12 (1.3)
Online units or courses that students work through at their own pace (e.g., i-Ready, Edgenuity)	67 (1.8)	16 (1.6)	9 (1.1)	5 (0.8)	2 (0.5)
Lessons or resources from websites that have a subscription fee or per lesson cost (e.g., BrainPOP, Discovery Ed, Teachers Pay Teachers)	13 (1.4)	12 (1.4)	26 (2.2)	34 (2.1)	16 (1.6)
Lessons or resources from websites that are free (e.g., Khan Academy, PhET)	32 (2.2)	20 (1.4)	25 (1.5)	18 (2.0)	5 (0.8)
Units or lessons you created (either by yourself or with others)	10 (1.0)	17 (1.6)	26 (1.9)	26 (1.6)	21 (1.9)
Units or lessons you collected from any other source (e.g., conferences, journals, colleagues, university or museum partners)	20 (1.4)	23 (1.5)	28 (1.8)	20 (1.7)	9 (1.7)

Table STQ 55.2
Frequency of Use of Various Instructional Resources in Middle School Science Classes

	PERCENT OF CLASSES				
	NEVER	RARELY (E.G., A FEW TIMES A YEAR)	SOMETIMES (E.G., ONCE OR TWICE A MONTH)	OFTEN (E.G., ONCE OR TWICE A WEEK)	ALL OR ALMOST ALL SCIENCE LESSONS
Commercially published textbooks (printed or electronic), including the supplementary materials (e.g., worksheets, laboratory handouts) that accompany the textbooks	10 (1.2)	20 (2.3)	25 (1.7)	26 (2.0)	19 (2.0)
Commercially published kits/modules (printed or electronic)	21 (1.7)	31 (2.1)	27 (1.6)	17 (1.9)	4 (1.2)
State, county, or district/diocese-developed units or lessons	35 (2.6)	26 (2.4)	18 (1.6)	13 (1.6)	8 (1.2)
Online units or courses that students work through at their own pace (e.g., i-Ready, Edgenuity)	58 (2.0)	19 (1.9)	14 (1.4)	8 (1.0)	1 (0.4)
Lessons or resources from websites that have a subscription fee or per lesson cost (e.g., BrainPOP, Discovery Ed, Teachers Pay Teachers)	17 (1.7)	16 (1.7)	33 (1.9)	27 (1.6)	7 (1.3)
Lessons or resources from websites that are free (e.g., Khan Academy, PhET)	11 (1.6)	21 (1.9)	37 (2.1)	26 (1.8)	5 (0.9)
Units or lessons you created (either by yourself or with others)	3 (1.1)	4 (0.8)	17 (1.9)	33 (1.8)	43 (2.3)
Units or lessons you collected from any other source (e.g., conferences, journals, colleagues, university or museum partners)	7 (0.8)	20 (1.4)	30 (2.0)	31 (2.2)	11 (1.5)

Table STQ 55.3
Frequency of Use of Various Instructional Resources in High School Science Classes

	PERCENT OF CLASSES				
	NEVER	RARELY (E.G., A FEW TIMES A YEAR)	SOMETIMES (E.G., ONCE OR TWICE A MONTH)	OFTEN (E.G., ONCE OR TWICE A WEEK)	ALL OR ALMOST ALL SCIENCE LESSONS
Commercially published textbooks (printed or electronic), including the supplementary materials (e.g., worksheets, laboratory handouts) that accompany the textbooks	9 (1.0)	18 (1.3)	23 (1.4)	31 (1.5)	19 (1.6)
Commercially published kits/modules (printed or electronic)	18 (1.2)	30 (1.4)	31 (1.6)	18 (1.4)	3 (0.5)
State, county, or district/diocese-developed units or lessons	46 (1.7)	23 (1.5)	16 (1.1)	9 (1.0)	5 (0.7)
Online units or courses that students work through at their own pace (e.g., i-Ready, Edgenuity)	59 (1.9)	19 (1.5)	13 (1.2)	7 (0.8)	2 (0.4)
Lessons or resources from websites that have a subscription fee or per lesson cost (e.g., BrainPOP, Discovery Ed, Teachers Pay Teachers)	47 (2.0)	19 (1.3)	19 (1.4)	13 (1.1)	2 (0.4)
Lessons or resources from websites that are free (e.g., Khan Academy, PhET)	10 (1.2)	20 (1.3)	39 (1.7)	25 (1.4)	6 (1.2)
Units or lessons you created (either by yourself or with others)	1 (0.2)	3 (0.6)	10 (0.9)	38 (1.8)	48 (1.8)
Units or lessons you collected from any other source (e.g., conferences, journals, colleagues, university or museum partners)	6 (0.9)	14 (1.0)	31 (1.5)	36 (1.6)	13 (1.4)

Table STQ 56
Science Classes for Which the District Designates Instructional Materials to Be Used

	PERCENT OF CLASSES
Elementary	72 (2.4)
Middle	66 (2.8)
High	58 (2.0)

Table STQ 57
Science Classes for Which Various Types of Instructional Materials Are Designated, by Grade Range

	PERCENT OF CLASSES		
	ELEMENTARY	MIDDLE	HIGH
Commercially published textbooks (printed or electronic), including the supplementary materials (e.g., worksheets, laboratory handouts) that accompany the textbooks	48 (2.7)	57 (2.9)	54 (2.0)
Commercially published kits/modules (printed or online)	37 (2.4)	24 (2.3)	12 (1.2)
State, county, or district/diocese-developed instructional materials	31 (1.8)	21 (1.7)	15 (1.1)
Online units or courses that students work through at their own pace (e.g., i-Ready, Edgenuity)	6 (0.9)	10 (1.3)	6 (1.1)
Lessons or resources from websites that have a subscription fee or per lesson cost (e.g., BrainPOP, Discovery Ed, Teachers Pay Teachers)	28 (2.3)	25 (2.1)	9 (0.9)
Lessons or resources from websites that are free (e.g., Khan Academy, PhET)	15 (1.5)	17 (1.6)	14 (1.2)

There is no table for STQ 58.

Table STQ 59a
Copyright Year of Instructional Materials Used in Science Classes, by Grade Range

	PERCENT OF CLASSES†		
	ELEMENTARY	MIDDLE	HIGH
2018	0 (0.1)	1 (0.7)	1 (0.3)
2017	3 (0.9)	4 (2.0)	4 (1.1)
2016	6 (1.3)	5 (1.4)	4 (0.7)
2015	9 (2.3)	4 (1.2)	7 (1.0)
2014	10 (2.5)	4 (1.4)	7 (1.0)
2013	2 (0.9)	4 (1.0)	7 (1.0)
2012 or earlier	71 (3.9)	78 (3.1)	70 (2.1)

† Includes only science classes for which teachers indicated in Q55 that they use commercially published textbooks/modules.

Table STQ 59b.1
Publishers of Textbooks Used in Elementary School Science Classes

	PERCENT OF CLASSES†
Houghton Mifflin Harcourt	27 (3.5)
McGraw-Hill Education	16 (2.3)
Pearson	16 (2.6)
Delta Education	13 (2.2)
Accelerate Learning	4 (1.3)
Carolina Biological Supply Company	4 (1.3)
Museum of Science	4 (2.9)
Cengage	2 (1.0)
Knowing Science	2 (1.4)
Amplify	1 (0.8)
Battle Creek Area Mathematics and Science Center	1 (0.7)
Learning Design Group	1 (0.5)
Mystery Science	1 (0.6)
NSTA Press	1 (0.4)
PNW Boces	1 (0.5)
Project Lead The Way	1 (0.6)
Studies Weekly	1 (0.3)
TCI	1 (1.2)
Abeka	0 (0.1)
Accelerated Christian Education	0 (0.1)
Activate Learning	0 (0.0)
AIMS Education Foundation	0 (0.4)
Alpha Omega Publications	0 (0.1)
Benchmark Education Company	0 (0.3)
Bob Jones University Press	0 (0.1)
BOCES	0 (0.1)
Carson-Dellosa	0 (0.2)
Core Knowledge Foundation	0 (0.0)
Creative3, LLC	0 (0.1)
DC Thomson	0 (0.3)
Discovery Education	0 (0.2)
ETA hand2mind	0 (0.3)
Evan-Moor	0 (0.2)
Heinemann	0 (0.1)
K'NEX Education	0 (0.3)
Kendall Hunt	0 (0.3)
Kindle Direct Publishing	0 (0.2)
Mentoring Minds	0 (0.1)
New Haven Public Schools	0 (0.3)
Purposeful Design	0 (0.1)
Sadlier	0 (0.1)
Scholastic	0 (0.2)

SciTT Kits	0 (0.1)
Sundance/Newbridge	0 (0.2)
Teacher Created Materials	0 (0.2)
Texas Education Agency	0 (0.1)
The Education Center	0 (0.3)

† Includes only elementary school science classes for which teachers indicated in Q55 that they use commercially published textbooks/ modules.

Table STQ 59b.2
Publishers of Textbooks Used in Middle School Science Classes

	PERCENT OF CLASSES†
Houghton Mifflin Harcourt	27 (2.9)
Pearson	27 (2.2)
McGraw-Hill Education	25 (2.5)
Accelerate Learning	4 (1.1)
Lab-Aids	3 (1.1)
Carolina Biological Supply Company	2 (0.8)
Delta Education	2 (0.9)
Abeka	1 (1.0)
Activate Learning	1 (0.5)
Alpha Omega Publications	1 (0.7)
CK-12	1 (0.4)
Frey Scientific	1 (0.7)
Kindle Direct Publishing	1 (0.7)
Wieser Educational	1 (0.3)
American Modeling Teachers Association	0 (0.1)
AMSCO School Publications	0 (0.2)
Battle Creek Area Mathematics and Science Center	0 (0.3)
Bob Jones University Press	0 (0.2)
Cengage	0 (0.2)
Coordination Group Publications	0 (0.3)
Discovery Education	0 (0.2)
DK	0 (0.1)
Mastery Education	0 (0.1)
Perfection Learning	0 (0.1)
Project Lead The Way	0 (0.2)
Purposeful Design Publications	0 (0.1)
Region 4 Education Service Center	0 (0.2)
Science Curriculum Inc.	0 (0.2)
Stephanie Elkowitz	0 (0.2)
Triumph Learning	0 (0.3)
United Publishing Company	0 (0.1)

† Includes only middle school science classes for which teachers indicated in Q55 that they use commercially published textbooks/ modules.

Table STQ 59b.3
Publishers of Textbooks Used in High School Science Classes

	PERCENT OF CLASSES†
Pearson	43 (2.0)
McGraw-Hill Education	20 (2.1)
Houghton Mifflin Harcourt	19 (1.6)
Cengage	5 (0.7)
Macmillan	2 (0.4)
Alpha Omega Publications	1 (0.5)
Continental Press	1 (0.8)
Frey Scientific	1 (0.4)
Kendall Hunt	1 (0.3)
OpenStax	1 (0.4)
Wiley	1 (0.3)
A.J. Girondi	0 (0.2)
Accelerate Learning	0 (0.1)
Activate Learning	0 (0.1)
Anchor	0 (0.2)
Apologia Educational Ministries	0 (0.0)
Author Solutions LLC	0 (0.5)
Bob Jones University Press	0 (0.2)
Cambridge University Press	0 (0.1)
Campaign for Science and Engineering	0 (0.1)
Centre for Applied Research in Education	0 (0.1)
CK-12	0 (0.0)
CORD Communications	0 (0.0)
Current Publishing Corp	0 (0.1)
Edvantage Science	0 (0.1)
Elsevier	0 (0.2)
F.A. Davis Company	0 (0.1)
Flinn Scientific	0 (0.0)
Goodheart-Willcox	0 (0.2)
High Marks Made Easy	0 (0.4)
Interstate Publishers	0 (0.2)
It's About Time	0 (0.1)
Kindle Direct Publishing	0 (0.0)
Lab-Aids	0 (0.1)
NAF	0 (0.1)
New Jersey Center for Teaching and Learning	0 (0.2)
NSTA Press	0 (0.3)
Oxford University Press	0 (0.1)
PASCO Scientific	0 (0.2)
Perfection Learning	0 (0.1)
Physics Curriculum & Instruction	0 (0.0)
Project Lead The Way	0 (0.1)

The Princeton Review	0 (0.1)
University Press of Florida	0 (0.4)
Usbourne	0 (0.0)
W. H. Freeman	0 (0.1)
Wolters Kluwer	0 (0.0)

† Includes only high school science classes for which teachers indicated in Q55 that they use commercially published textbooks/ modules.

Table STQ 60.1
Elementary School Science Classes in Which Teachers Report the Effect Various Factors Have on Science Instruction

	PERCENT OF CLASSES					
	INHIBITS EFFECTIVE INSTRUCTION		NEUTRAL OR MIXED		PROMOTES EFFECTIVE INSTRUCTION	N/A
	1	2	3	4	5	
Current state standards	3 (0.7)	2 (0.7)	30 (2.1)	21 (1.8)	41 (2.4)	4 (1.2)
District/Diocese and/or school pacing guides	6 (1.0)	5 (1.0)	31 (2.3)	20 (1.9)	29 (2.4)	9 (1.3)
State/district/diocese testing/accountability policies†	8 (1.1)	8 (1.5)	38 (2.2)	16 (1.9)	15 (1.5)	14 (1.8)
Textbook/module selection policies	11 (1.9)	11 (1.6)	35 (2.6)	13 (1.6)	14 (1.8)	17 (1.6)
Teacher evaluation policies	4 (0.8)	8 (1.4)	42 (2.5)	14 (1.7)	19 (2.4)	13 (1.8)
Students' prior knowledge and skills	7 (1.4)	8 (1.3)	24 (2.0)	25 (2.0)	34 (2.6)	2 (0.6)
Students' motivation, interest, and effort in science	4 (0.9)	5 (1.2)	15 (1.7)	24 (1.9)	50 (2.7)	2 (0.6)
Parent/guardian expectations and involvement	7 (1.3)	10 (1.1)	41 (1.9)	15 (1.6)	19 (1.8)	8 (1.4)
Principal support	3 (0.8)	3 (0.9)	28 (2.2)	20 (1.8)	42 (2.4)	5 (1.2)
Amount of time for you to plan, individually and with colleagues	10 (1.3)	10 (1.2)	21 (2.2)	19 (1.7)	37 (2.7)	2 (0.8)
Amount of time available for your professional development	12 (1.4)	13 (1.5)	28 (2.1)	18 (2.3)	25 (2.3)	5 (1.0)
Amount of instructional time devoted to science	14 (1.9)	14 (1.6)	22 (2.3)	17 (1.8)	32 (2.6)	2 (0.7)

† This item was presented only to public and Catholic school teachers.

Table STQ 60.2
Middle School Science Classes in Which Teachers Report the Effect Various Factors Have on Science Instruction

	PERCENT OF CLASSES					
	INHIBITS EFFECTIVE INSTRUCTION		NEUTRAL OR MIXED		PROMOTES EFFECTIVE INSTRUCTION	N/A OR DON'T KNOW
	1	2	3	4	5	
Current state standards	4 (1.3)	4 (1.0)	24 (2.2)	24 (2.6)	42 (3.2)	2 (0.6)
District/Diocese and/or school pacing guides	3 (0.7)	7 (1.3)	29 (2.7)	19 (2.0)	27 (2.3)	16 (2.7)
State/district/diocese testing/accountability policies†	8 (1.3)	16 (2.1)	34 (2.6)	16 (2.2)	15 (1.5)	11 (2.2)
Textbook/module selection policies	6 (1.3)	11 (1.9)	36 (2.3)	18 (1.8)	14 (2.3)	17 (2.1)
Teacher evaluation policies	5 (1.1)	9 (1.3)	42 (2.6)	20 (2.2)	18 (1.9)	6 (1.5)
Students' prior knowledge and skills	11 (2.0)	15 (2.0)	19 (1.5)	28 (2.4)	27 (2.4)	0 (0.3)
Students' motivation, interest, and effort in science	12 (1.8)	12 (1.6)	18 (1.8)	22 (2.0)	36 (2.4)	0 (0.3)
Parent/guardian expectations and involvement	11 (1.9)	15 (2.2)	32 (2.3)	18 (1.7)	21 (2.2)	3 (1.3)
Principal support	4 (1.1)	6 (1.8)	19 (1.9)	22 (2.6)	47 (3.0)	2 (1.0)
Amount of time for you to plan, individually and with colleagues	8 (2.1)	11 (1.7)	14 (1.5)	23 (2.2)	43 (2.9)	1 (0.4)
Amount of time available for your professional development	8 (1.9)	11 (1.6)	29 (2.5)	23 (1.8)	28 (2.4)	2 (0.6)

† This item was presented only to public and Catholic school teachers.

Table STQ 60.3
High School Science Classes in Which Teachers Report the Effect Various Factors Have on Science Instruction

	PERCENT OF CLASSES					
	INHIBITS EFFECTIVE INSTRUCTION		NEUTRAL OR MIXED		PROMOTES EFFECTIVE INSTRUCTION	N/A OR DON'T KNOW
	1	2	3	4	5	
Current state standards	2 (0.4)	5 (0.8)	34 (1.7)	20 (1.6)	29 (2.0)	10 (1.2)
District/Diocese and/or school pacing guides	3 (0.9)	5 (0.8)	31 (2.2)	15 (1.2)	20 (1.4)	25 (2.1)
State/district/diocese testing/accountability policies†	8 (1.1)	12 (1.5)	37 (1.9)	12 (1.1)	11 (1.0)	20 (1.5)
Textbook/module selection policies	4 (0.7)	8 (1.1)	38 (1.9)	15 (1.4)	15 (1.8)	21 (1.7)
Teacher evaluation policies	5 (0.8)	7 (0.9)	39 (1.8)	18 (1.6)	20 (1.5)	11 (1.4)
College entrance requirements	1 (0.3)	3 (0.7)	38 (1.9)	24 (1.7)	22 (1.8)	12 (1.4)
Students' prior knowledge and skills	6 (0.9)	13 (1.2)	21 (2.3)	27 (1.6)	31 (2.0)	1 (0.5)
Students' motivation, interest, and effort in science	7 (0.8)	13 (1.4)	19 (1.8)	23 (1.6)	36 (1.9)	1 (0.5)
Parent/guardian expectations and involvement	5 (0.8)	12 (1.1)	37 (2.4)	19 (2.1)	23 (1.8)	5 (0.9)
Principal support	3 (0.9)	4 (0.6)	26 (1.7)	20 (1.5)	43 (1.9)	4 (0.8)
Amount of time for you to plan, individually and with colleagues	5 (1.1)	9 (1.0)	16 (1.6)	23 (1.7)	43 (2.3)	4 (0.7)
Amount of time available for your professional development	6 (1.1)	13 (1.2)	27 (1.6)	23 (1.7)	28 (1.9)	4 (0.8)

† This item was presented only to public and Catholic school teachers.

Table STQ 61
Focus of the Most Recently Completed Science Unit, by Grade Range

	PERCENT OF CLASSES		
	ELEMENTARY	MIDDLE	HIGH
Earth/space science	34 (2.0)	30 (2.0)	7 (1.1)
Life science/biology	36 (1.9)	35 (2.2)	41 (1.7)
Environmental science/ecology	13 (1.3)	9 (1.6)	8 (1.1)
Chemistry	2 (0.5)	8 (1.0)	26 (1.3)
Physics	11 (1.8)	17 (1.5)	17 (1.1)
Engineering	5 (0.9)	1 (0.5)	1 (0.3)

Table STQ 62
Most Recent Science Unit Based Primarily on Any Commercially Published Textbook/Module or State/County/District-Developed Materials

	PERCENT OF CLASSES†
Elementary	65 (2.1)
Middle	54 (2.3)
High	54 (1.9)

† Includes only science classes for which teachers indicated in Q57 that they use commercially published textbooks/modules or state/county/district/diocese-developed units or lessons more than once a month.

Table STQ 63.1
Ways Instructional Materials Were Used in the Most Recently Completed Unit in Elementary School Science Classes

	PERCENT OF CLASSES†				
	NOT AT ALL 1	2	SOMEWHAT 3	4	TO A GREAT EXTENT 5
I used these materials to guide the structure and content emphasis of the unit.	1 (0.5)	1 (0.5)	21 (3.3)	33 (2.7)	44 (2.4)
I picked what is important from these materials and skipped the rest.	11 (1.7)	12 (1.6)	26 (2.2)	36 (3.1)	15 (1.7)
I incorporated activities (e.g., problems, investigations, readings) from other sources to supplement what these materials were lacking.	6 (1.3)	7 (1.4)	21 (1.9)	38 (3.3)	27 (2.7)
I modified activities from these materials.	5 (1.4)	9 (1.5)	27 (2.1)	36 (2.6)	23 (3.2)

† Includes only elementary school science classes for which teachers responded yes in Q62.

Table STQ 63.2
Ways Instructional Materials Were Used in the Most Recently Completed Unit in Middle School Science Classes

	PERCENT OF CLASSES†				
	NOT AT ALL 1	2	SOMEWHAT 3	4	TO A GREAT EXTENT 5
I used these materials to guide the structure and content emphasis of the unit.	0 (0.3)	3 (0.9)	24 (2.6)	32 (2.4)	41 (2.7)
I picked what is important from these materials and skipped the rest.	9 (2.3)	10 (1.7)	26 (3.4)	30 (3.2)	24 (2.4)
I incorporated activities (e.g., problems, investigations, readings) from other sources to supplement what these materials were lacking.	2 (1.1)	6 (1.6)	15 (2.0)	37 (3.1)	41 (3.4)
I modified activities from these materials.	1 (0.6)	6 (1.4)	24 (2.6)	38 (3.5)	31 (3.0)

† Includes only middle school science classes for which teachers responded yes in Q62.

Table STQ 63.3
Ways Instructional Materials Were Used in the Most Recently Completed Unit in High School Science Classes

	PERCENT OF CLASSES†				
	NOT AT ALL		SOMEWHAT		TO A GREAT EXTENT
	1	2	3	4	5
I used these materials to guide the structure and content emphasis of the unit.	1 (0.3)	2 (0.6)	21 (1.9)	36 (2.9)	40 (2.7)
I picked what is important from these materials and skipped the rest.	8 (1.5)	11 (1.7)	28 (2.3)	30 (2.3)	23 (2.3)
I incorporated activities (e.g., problems, investigations, readings) from other sources to supplement what these materials were lacking.	2 (0.7)	4 (1.3)	16 (1.8)	36 (2.6)	42 (2.6)
I modified activities from these materials.	2 (0.5)	5 (1.4)	21 (2.2)	41 (3.1)	30 (2.3)

† Includes only high school science classes for which teachers responded yes in Q62.

Table STQ 64.1
Reasons Parts of the Instructional Materials Were Skipped in Elementary School Science Classes

	PERCENT OF CLASSES†		
	NOT A FACTOR	A MINOR FACTOR	A MAJOR FACTOR
The science ideas addressed in the activities I skipped are not included in my pacing guide/standards.	37 (3.9)	38 (4.1)	25 (3.0)
I did not have the materials needed to implement the activities I skipped.	38 (4.5)	36 (4.4)	25 (2.9)
I did not have the knowledge needed to implement the activities I skipped.	76 (3.3)	21 (3.2)	3 (1.0)
The activities I skipped were too difficult for my students.	62 (3.7)	26 (3.0)	11 (2.0)
My students already knew the science ideas or were able to learn them without the activities I skipped.	51 (3.5)	37 (4.3)	13 (2.5)
I have different activities for those science ideas that work better than the ones I skipped.	31 (3.9)	33 (3.4)	36 (4.4)
I did not have enough instructional time for the activities I skipped.	26 (4.5)	35 (3.4)	39 (3.3)

† Includes only elementary school science classes for which teachers responded yes in Q62 and indicated in Q63 that they "picked what was important from these materials and skipped the rest" to any extent.

Table STQ 64.2
Reasons Parts of the Instructional Materials Were Skipped in Middle School Science Classes

	PERCENT OF CLASSES†		
	NOT A FACTOR	A MINOR FACTOR	A MAJOR FACTOR
The science ideas addressed in the activities I skipped are not included in my pacing guide/standards.	24 (3.4)	38 (4.4)	38 (4.6)
I did not have the materials needed to implement the activities I skipped.	44 (4.1)	34 (4.0)	22 (3.5)
I did not have the knowledge needed to implement the activities I skipped.	75 (4.4)	21 (4.2)	4 (1.6)
The activities I skipped were too difficult for my students.	57 (3.9)	29 (3.4)	14 (3.3)
My students already knew the science ideas or were able to learn them without the activities I skipped.	48 (4.4)	37 (3.8)	15 (3.2)
I have different activities for those science ideas that work better than the ones I skipped.	17 (3.4)	38 (3.4)	44 (3.8)
I did not have enough instructional time for the activities I skipped.	27 (3.6)	47 (4.1)	25 (3.6)

† Includes only middle school science classes for which teachers responded yes in Q62 and indicated in Q63 that they "picked what was important from these materials and skipped the rest" to any extent.

Table STQ 64.3
Reasons Parts of the Instructional Materials Were Skipped in High School Science Classes

	PERCENT OF CLASSES†		
	NOT A FACTOR	A MINOR FACTOR	A MAJOR FACTOR
The science ideas addressed in the activities I skipped are not included in my pacing guide/standards.	27 (3.2)	40 (3.1)	32 (3.7)
I did not have the materials needed to implement the activities I skipped.	46 (3.7)	38 (3.4)	17 (2.6)
I did not have the knowledge needed to implement the activities I skipped.	80 (2.6)	14 (2.1)	6 (1.8)
The activities I skipped were too difficult for my students.	41 (3.4)	43 (3.7)	16 (2.7)
My students already knew the science ideas or were able to learn them without the activities I skipped.	48 (3.5)	35 (3.5)	17 (2.6)
I have different activities for those science ideas that work better than the ones I skipped.	23 (4.0)	31 (3.2)	46 (3.8)
I did not have enough instructional time for the activities I skipped.	26 (3.5)	38 (3.0)	37 (3.7)

† Includes only high school science classes for which teachers responded yes in Q62 and indicated in Q63 that they "picked what was important from these materials and skipped the rest" to any extent.

Table STQ 65.1
Reasons Why the Instructional Materials Were Supplemented in Elementary School Science Classes

	PERCENT OF CLASSES†		
	NOT A FACTOR	A MINOR FACTOR	A MAJOR FACTOR
My pacing guide indicated that I should use supplemental activities.	58 (3.6)	28 (3.0)	14 (2.9)
Supplemental activities were needed to prepare students for standardized tests.	53 (3.7)	31 (3.0)	16 (3.0)
Supplemental activities were needed to provide students with additional practice.	23 (2.8)	42 (4.1)	35 (3.0)
Supplemental activities were needed so students at different levels of achievement could increase their understanding of the ideas targeted in each activity.	16 (2.4)	37 (3.5)	47 (4.5)
I had additional activities that I liked.	18 (3.2)	36 (3.3)	46 (4.6)

† Includes only elementary school science classes for which teachers responded yes in Q62 and indicated in Q63 that they "incorporated activities (e.g., problems, investigations, readings) from other sources to supplement what these materials were lacking" to any extent.

Table STQ 65.2
Reasons Why the Instructional Materials Were Supplemented in Middle School Science Classes

	PERCENT OF CLASSES†		
	NOT A FACTOR	A MINOR FACTOR	A MAJOR FACTOR
My pacing guide indicated that I should use supplemental activities.	51 (3.9)	36 (3.3)	13 (2.6)
Supplemental activities were needed to prepare students for standardized tests.	40 (3.9)	37 (3.5)	23 (3.0)
Supplemental activities were needed to provide students with additional practice.	10 (2.3)	43 (4.5)	47 (4.1)
Supplemental activities were needed so students at different levels of achievement could increase their understanding of the ideas targeted in each activity.	10 (2.6)	34 (4.1)	56 (4.1)
I had additional activities that I liked.	14 (2.6)	38 (4.0)	49 (4.4)

† Includes only middle school science classes for which teachers responded yes in Q62 and indicated in Q63 that they "incorporated activities (e.g., problems, investigations, readings) from other sources to supplement what these materials were lacking" to any extent.

Table STQ 65.3
Reasons Why the Instructional Materials Were Supplemented in High School Science Classes

	PERCENT OF CLASSES†		
	NOT A FACTOR	A MINOR FACTOR	A MAJOR FACTOR
My pacing guide indicated that I should use supplemental activities.	54 (3.3)	33 (3.5)	13 (2.1)
Supplemental activities were needed to prepare students for standardized tests.	47 (3.6)	30 (3.0)	23 (2.7)
Supplemental activities were needed to provide students with additional practice.	14 (3.7)	35 (3.1)	51 (3.5)
Supplemental activities were needed so students at different levels of achievement could increase their understanding of the ideas targeted in each activity.	14 (3.5)	31 (2.6)	55 (3.7)
I had additional activities that I liked.	12 (2.6)	43 (4.1)	44 (3.6)

† Includes only high school science classes for which teachers responded yes in Q62 and indicated in Q63 that they "incorporated activities (e.g., problems, investigations, readings) from other sources to supplement what these materials were lacking" to any extent.

Table STQ 66.1
Reasons Why the Instructional Materials Were Modified in Elementary School Science Classes

	PERCENT OF CLASSES†		
	NOT A FACTOR	A MINOR FACTOR	A MAJOR FACTOR
I did not have the necessary materials/supplies for the original activities.	40 (3.8)	37 (3.0)	23 (3.0)
The original activities were too difficult conceptually for my students.	54 (4.1)	33 (3.8)	13 (2.2)
The original activities were too easy conceptually for my students.	65 (3.5)	31 (3.3)	5 (1.4)
I did not have enough instructional time to implement the activities as designed.	30 (3.9)	30 (3.2)	40 (3.5)
The original activities were too structured for my students.	64 (4.2)	33 (4.2)	3 (1.3)
The original activities were not structured enough for my students.	58 (4.3)	36 (4.5)	7 (1.9)

† Includes only elementary school science classes for which teachers responded yes in Q62 and indicated in Q63 that they "modified activities from these materials" to any extent.

Table STQ 66.2
Reasons Why the Instructional Materials Were Modified in Middle School Science Classes

	PERCENT OF CLASSES†		
	NOT A FACTOR	A MINOR FACTOR	A MAJOR FACTOR
I did not have the necessary materials/supplies for the original activities.	38 (3.6)	42 (4.1)	20 (3.4)
The original activities were too difficult conceptually for my students.	46 (3.9)	39 (4.2)	15 (3.7)
The original activities were too easy conceptually for my students.	54 (4.0)	39 (3.8)	7 (2.2)
I did not have enough instructional time to implement the activities as designed.	30 (3.5)	40 (3.2)	30 (4.0)
The original activities were too structured for my students.	67 (4.0)	31 (4.1)	3 (1.1)
The original activities were not structured enough for my students.	59 (3.8)	33 (3.3)	8 (2.2)

† Includes only middle school science classes for which teachers responded yes in Q62 and indicated in Q63 that they "modified activities from these materials" to any extent.

Table STQ 66.3
Reasons Why the Instructional Materials Were Modified in High School Science Classes

	PERCENT OF CLASSES†		
	NOT A FACTOR	A MINOR FACTOR	A MAJOR FACTOR
I did not have the necessary materials/supplies for the original activities.	47 (3.4)	35 (3.1)	18 (2.9)
The original activities were too difficult conceptually for my students.	42 (3.3)	42 (3.2)	16 (2.7)
The original activities were too easy conceptually for my students.	56 (3.6)	39 (3.7)	5 (1.3)
I did not have enough instructional time to implement the activities as designed.	29 (2.8)	44 (3.1)	26 (3.2)
The original activities were too structured for my students.	62 (3.1)	32 (3.1)	6 (1.9)
The original activities were not structured enough for my students.	60 (3.5)	33 (3.4)	7 (1.7)

† Includes only high school science classes for which teachers responded yes in Q62 and indicated in Q63 that they "modified activities from these materials" to any extent.

Table STQ 67.1
Elementary School Science Classes Taught by Teachers
Feeling Prepared for Each of a Number of Tasks in the Most Recent Unit

	PERCENT OF CLASSES			
	NOT ADEQUATELY PREPARED	SOMEWHAT PREPARED	FAIRLY WELL PREPARED	VERY WELL PREPARED
Anticipate difficulties that students may have with particular science ideas and procedures in this unit	3 (0.6)	24 (1.7)	50 (2.2)	22 (1.9)
Find out what students thought or already knew about the key science ideas	3 (0.9)	17 (1.4)	49 (2.1)	31 (2.2)
Implement the instructional materials (e.g., textbook, module) to be used during this unit	5 (0.8)	16 (1.6)	47 (2.2)	32 (2.0)
Monitor student understanding during this unit	2 (0.5)	14 (1.4)	51 (2.0)	33 (1.9)
Assess student understanding at the conclusion of this unit	3 (0.6)	15 (1.4)	50 (2.1)	32 (1.8)

Table STQ 67.2
Middle School Science Classes Taught by Teachers
Feeling Prepared for Each of a Number of Tasks in the Most Recent Unit

	PERCENT OF CLASSES			
	NOT ADEQUATELY PREPARED	SOMEWHAT PREPARED	FAIRLY WELL PREPARED	VERY WELL PREPARED
Anticipate difficulties that students may have with particular science ideas and procedures in this unit	1 (0.7)	15 (1.8)	47 (2.2)	37 (2.1)
Find out what students thought or already knew about the key science ideas	1 (0.6)	14 (1.4)	46 (1.9)	39 (2.1)
Implement the instructional materials (e.g., textbook, module) to be used during this unit	2 (0.8)	12 (1.3)	41 (2.3)	45 (2.4)
Monitor student understanding during this unit	1 (0.3)	8 (1.2)	40 (1.9)	51 (2.1)
Assess student understanding at the conclusion of this unit	1 (0.2)	6 (1.1)	35 (2.0)	58 (2.0)

Table STQ 67.3
High School Science Classes Taught by Teachers
Feeling Prepared for Each of a Number of Tasks in the Most Recent Unit

	PERCENT OF CLASSES			
	NOT ADEQUATELY PREPARED	SOMEWHAT PREPARED	FAIRLY WELL PREPARED	VERY WELL PREPARED
Anticipate difficulties that students may have with particular science ideas and procedures in this unit	1 (0.3)	10 (1.1)	44 (1.9)	45 (1.6)
Find out what students thought or already knew about the key science ideas	1 (0.2)	12 (1.3)	49 (1.6)	38 (1.6)
Implement the instructional materials (e.g., textbook, module) to be used during this unit	1 (0.3)	8 (0.8)	38 (1.7)	53 (1.6)
Monitor student understanding during this unit	0 (0.1)	5 (0.7)	42 (1.9)	53 (1.8)
Assess student understanding at the conclusion of this unit	0 (0.2)	4 (0.6)	36 (1.9)	59 (1.8)

Table STQ 68
Duration of the Most Recent Science Lesson

	AVERAGE NUMBER OF MINUTES
Elementary	44 (1.0)
Middle	56 (0.7)
High	62 (0.9)

Table STQ 69
Average Percentage of Time Spent on Different Activities in the Most Recent Science Lesson, by Grade Range

	AVERAGE PERCENT OF CLASS TIME		
	ELEMENTARY	MIDDLE	HIGH
Non-instructional activities (e.g., attendance taking, interruptions)	8 (0.4)	12 (0.3)	10 (0.2)
Whole class activities (e.g., lectures, explanations, discussions)	41 (0.9)	32 (0.8)	38 (0.8)
Small group work	33 (1.0)	35 (1.1)	34 (0.8)
Students working individually (e.g., reading textbooks, completing worksheets, taking a test or quiz)	18 (0.8)	22 (0.8)	19 (0.8)

Table STQ 70
Science Classes Participating in Various Activities in the Most Recent Lesson, by Grade Range

	PERCENT OF CLASSES		
	ELEMENTARY	MIDDLE	HIGH
Teacher explaining a science idea to the whole class	83 (1.5)	74 (2.2)	81 (1.3)
Teacher conducting a demonstration while students watched	37 (2.1)	30 (2.1)	31 (1.6)
Whole class discussion	86 (1.2)	67 (2.3)	59 (1.6)
Students working in small groups	78 (1.5)	85 (1.3)	81 (1.4)
Students completing textbook/worksheet problems	35 (1.8)	39 (2.2)	44 (1.6)
Students doing hands-on/laboratory activities	47 (2.1)	46 (2.0)	40 (1.6)
Students reading about science	45 (2.1)	48 (2.6)	29 (1.6)
Students writing about science (does not include students taking notes)	45 (2.3)	46 (2.6)	34 (1.8)
Practicing for standardized tests	2 (0.6)	8 (1.0)	8 (0.9)
Test or quiz	9 (1.1)	14 (1.5)	16 (1.2)
None of the above	1 (0.3)	1 (0.5)	1 (0.4)

Table STQ 71
Sex of Science Teachers, by Grade Range

	PERCENT OF TEACHERS		
	ELEMENTARY	MIDDLE	HIGH
Female	94 (0.7)	71 (1.8)	57 (1.9)
Male	6 (0.7)	28 (1.8)	43 (1.9)
Other	0 (0.1)	0 (0.2)	0 (0.0)

Table STQ 72
Science Teachers of Hispanic or Latino Origin

	PERCENT OF TEACHERS
Elementary	9 (1.6)
Middle	7 (1.2)
High	6 (0.8)

Table STQ 73
Race of Science Teachers, by Grade Range

	PERCENT OF TEACHERS		
	ELEMENTARY	MIDDLE	HIGH
American Indian or Alaskan Native	1 (0.6)	2 (0.6)	2 (0.5)
Asian	2 (0.6)	2 (0.5)	5 (0.9)
Black or African American	8 (1.2)	8 (1.5)	5 (0.9)
Native Hawaiian or Other Pacific Islander	1 (0.4)	0 (0.2)	0 (0.1)
White	88 (1.5)	91 (1.5)	91 (1.2)

Table STQ 74
Age of Science Teachers

	MEAN AGE OF TEACHERS
Elementary	42 (0.4)
Middle	43 (0.5)
High	44 (0.4)