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Volume II
Items and Probes

National Assessment of Educational Progress (NAEP) Science Questionnaire Cognitive Interviews 2017

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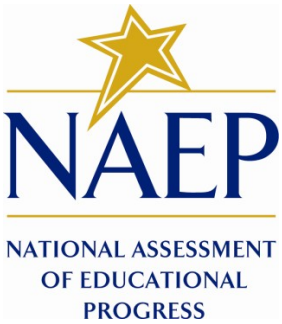

October 2016

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The purpose of the cognitive interviews is to inform the development of the student, teacher, and school administrator questionnaires prior to pilot testing. Below are the probes that students, teachers, and school administrators will be asked during the cognitive interview. Please note that some probes may not be addressed if time does not permit.

Interviewer Welcome Script and Assent/Consent

The following script does not have to be read verbatim. You, as the interviewer, should be familiar enough with the script to introduce the participant to the cognitive interview process in a conversational manner. The text in italics is suggested content for you to become thoroughly familiar with in advance. You should project a warm and reassuring tone toward the participant in order to develop a friendly rapport. You should use conversational language throughout the interview.

After answering questions and giving further explanation, begin the interview with the first item.

Note: Students, teachers, and school administrators will be administered all items and probes. The duration of each cognitive interview will be 90 minutes.

Instructions and Generic Probes

The interviewer should ask the participant to read and answer the questions, one at a time. Each question will be either one discrete question (multiple choice or free response) or one matrix question (i.e., an item stem with two or more multiple choice sub-items). The respondent is <u>not</u> supposed to read the question aloud, but should work on the question in the same fashion he/she would during a NAEP test administration or survey. If a respondent indicates they do not know a word or phrase, the interviewer can provide/read words for the respondent.

For most items, generic probes for discrete and matrix items will include the following:

Generic Probes for Discrete Items (Multiple Choice and Free Response)

No.	Probe	Instructions for Interviewer
1	***Can you tell me, in your own words, what the question is asking?***	Ask this probe AFTER the respondent has answered the question.
2	***Were there any words or parts of this question that were confusing?*** ☐ Yes ☐ No ____	Ask this probe for all discrete questions.
3	***What did you find confusing? What could we do to make the question less confusing?***	Ask both probes only if the respondent answered YES to the previous question.
4	***Would you say it was very easy, easy, difficult, or very difficult to answer this question?*** ☐ Very Easy ☐ Easy ☐ Difficult ☐ Very Difficult	Ask this probe for all discrete questions.
5	***How could we make it easier to answer this question?***	Ask this probe only if the respondent answered

		DIFFICULT or VERY DIFFICULT to the previous question.

Generic Probes for Matrix Items

No.	Probe	Instructions for Interviewer
1	***Look back at the first part of the question, can you tell me in your own words what this question is asking you to do?***	Ask this probe AFTER the respondent has answered the entire matrix question. This probe is specifically for the "stem" of the item, not the entire matrix item or a specific option/sub-item.
2	***Can you tell me, in your own words, what* [option a., b., c., etc.] *means to you?***	Ask this probe for all options/sub-items. Please note probes 2-6 should be asked together for one option/sub-item before moving on to the next option/sub-item.
3	***Did you find any words or part of* [option a., b., c., etc.] *confusing?*** ☐ Yes ☐ No	Ask this probe for all options/sub-items.
4	***What did you find confusing? What could we do to make* [option a., b., c., etc.] *less confusing?***	Ask both probes only if the respondent answered YES to the previous question.
5	***Would you say answering* [option a., b., c., etc.] *was very easy, easy, difficult, or very difficult?*** ☐ Very Easy ☐ Easy ☐ Difficult ☐ Very Difficult	Ask this probe for all options/sub-items.
6	***How could we make it easier to answer* [option a., b., c., etc.]*?***	Ask this probe only if the respondent answered DIFFICULT or VERY DIFFICULT to the previous question.

In some cases, items require less in-depth examination. Existing items subjected to minor revisions, such as updated/clarified response options, require administration in cognitive interviews largely to verify that the minor change has not made the existing item unclear or confusing. Other existing items may only need to be administered in cog labs to ensure specific terminology is still relevant (e.g., "science specialist"). In these cases, using a reduced set of generic probes can reduce participant burden. For these items, generic probes will be used (listed on the next page).

Generic Probes for Discrete Items (Multiple Choice and Free Response) – Reduced Set

No.	Probe	Instructions for Interviewer
1	***Can you tell me, in your own words, what the question is asking?***	Ask this probe AFTER the respondent has answered the question.
2	***Were there any words or parts of this question that were confusing?*** ☐ Yes ☐ No ____	Ask this probe for all discrete questions.
3	***What did you find confusing? What could we do to make the question less confusing?***	Ask both probes only if the respondent answered YES to the previous question.

Generic Probes for Matrix Items – Reduced Set

No.	Probe	Instructions for Interviewer
1	***Look back at the first part of the question, can you tell me in your own words what this question is asking you to do?***	Ask this probe AFTER the respondent has answered the entire matrix question. This probe is specifically for the "stem" of the item, <u>not</u> the entire matrix item or a specific option/sub-item.
2	***Can you tell me, in your own words, what*** **[option a., b., c., etc.]** ***means to you?***	Ask this probe for all options/sub-items. Please note probes 2-6 should be asked together for one option/sub-item before moving on to the next option/sub-item.
3	***Did you find any words or part of*** **[option a., b., c., etc.]** ***confusing?*** ☐ Yes ☐ No	Ask this probe for all options/sub-items.
4	***What did you find confusing? What could we do to make*** **[option a., b., c., etc.]** ***less confusing?***	Ask both probes only if the respondent answered YES to the previous question.

Student Items – Grades 4, 8, 12 (Cross Grades)

[Grades 4, 8, and 12 Science: Student #1]

Accnum	Respondent	Grade	Index/Facet (as applicable)	Proposed Draft Item	Proposed Response Options
InqEff 01_0	Student	4, 8, 12		Thinking about science, do you think that you would be able to do each of the following? Select **one** answer choice on each row.	I definitely can't / I probably can't / Maybe / I probably can / I definitely can
Physical Science					
InqEff 01_1		4, 8, 12		a) Describe the different procedures for heating or cooling a sample of water.	
InqEff 01_2		4, 8, 12		b) Design a model showing how the length of a vibrating string affects the motion of the waves that are produced.	
Life Sciences					
InqEff 01_3		4, 8, 12		c) Design an experiment to show how sunlight affects the growth of a type of plant.	
InqEff 01_4		4, 8, 12		d) Use evidence to show how one organism has helped the other to survive.	
InqEff 01_5		4, 8, 12		e) Use a food chain to show how the removal of one animal affects another.	
InqEff 01_8		12		f) Design an experiment that allows a fair test of the growth of a plant is affected by light, water, and soil quality.	
InqEff 01_9		12		g) Create a diagram that shows how bees and plants both depend on one another for survival through pollination	
InqEff 01_10		12		h) Describe how the combination of parental genes can result in different combinations of traits in their offspring, such as eye or hair color	
Earth and Space Sciences					
InqEff 01_6		4, 8, 12		i) Decide which tool to use if you want to measure wind speed.	
InqEff 01_7		4, 8, 12		j) Predict the season based on a graph that shows the 30-day average temperature.	

Item-Specific Probes:

No.	Probe	Type of Probe	Required/Conditional
1	***For generic probes for matrix items, see page 5.***	General	Required
2	***a) Can you describe, in your own words, what "sample of water" means to you?***	Specific	Required
3	***b) What type of "waves" did you think about when you were answering this question?***	Specific	Required
3	***e) Can you describe, in your own words, what "food chain" means to you?***	Specific	Required
4	***f) Can you describe, in your own words, what "soil quality" means to you?***	Specific	Required
5	***h) Can you describe, in your own words, what "parental genes" means to you?***	Specific	Required
6	***j) When answering this question, were you thinking about predicting the season where you live? If the item asked you to predict the season somewhere else, such as Alaska, would you give a different answer?***	Specific	Required

[Grades 4, 8, and 12 Science: Student #2]

Accnum	Respondent	Grade	Index/Facet (as applicable)	Proposed Draft Item	Proposed Response Options
OutSchool 01_0	Student	4, 8, 12	Outside of School Learning	How often do you participate in each of the following activities outside of school? Select **one** answer choice on each row.	Never/ About once or twice a year / About once or twice a month / About once or twice a week / Every day or almost every day
OutSchool 01_1				a) Carry out simple science-related projects with friends (for example, growing plants from beans or making sundials).	
OutSchool 01_8				b) Carry out advanced science-related projects with friends (for example, designing a model of a bridge, building simple rockets, or designing bird feeders).	
OutSchool 01_2				c) Volunteer with scientific researchers (for example, recording the types of plants or animals seen in a natural area, testing water samples, helping a scientist in a lab).	
OutSchool 01_3				d) Write or blog about science topics	
OutSchool 01_4				e) Use scientific instruments (for example, telescopes, microscopes, scales).	
OutSchool 01_5				f) Read about science topics in books, magazines, or on digital devices.	
OutSchool 01_6				g) Attend clubs or programs that include science activities.	
OutSchool 01_7				h) Attend clubs or programs that include engineering activities (for example, build a robot, coding programs, etc.)	

Item-Specific Probes:

No.	Probe	Type of Probe	Required/Conditional
1	***For generic probes for matrix items, see page 5.***	General	Required
2	***a) & b) Can you give examples of other science projects that you might create with friends?***	Specific	Required
3	***c) Can you give examples of other types of volunteer work that you might do with scientific researchers?***	Specific	Required
4	***e) Can you give examples of other types of scientific instruments you might use outside of school?***	Specific	Required
5	***g) & h) What types of "clubs or programs" did you think about when answering this sub-item?***	Specific	Required

[Grades 4, 8, and 12 Science: Student #3]

Accnum	Respondent	Grade	Index/Facet (as applicable)	Proposed Draft Item	Proposed Response Options
AchGoals 01_0	Student	4, 8, 12	Achievement motivation	How much does each of the following statements describe a person like you? Select **one** answer choice on each row.	Not at all like me / A little bit like me / Somewhat like me / Quite a bit like me / Exactly like me
AchGoals 01_1			Performance	a) I want other students to think I am good at science.	
AchGoals 01_2			Performance	b) I want to show others that science schoolwork is easy for me.	
AchGoals 01_3			Performance	c) I want to look smart in comparison to the other students in my science class.	
AchGoals 01_4			Mastery	d) I want to learn as much as possible in my science class.	
AchGoals 01_5			Mastery	e) I want to become better in science this year.	
AchGoals 01_6			Mastery	f) I want to understand as much as I can in my science class.	

Item-Specific Probes:

No.	Probe	Type of Probe	Required/Conditional
1	***For generic probes for matrix items, see page 5.***	General	Required
2	***Would your answers to these items change if you were taking an easier or harder science course?***	Specific	Required

[Grades 4, 8, and 12 Science: Student #4]

Accnum	Respondent	Grade	Topic/Issue/Module and Index/Facet (as applicable)	Proposed Draft Item	Proposed Response Options
VH178955	Student	4, 8, 12	Student Factors/Self-Efficacy	How often do you understand what the teacher talks about in science class?	Never or hardly ever / Once in a while / Sometimes / Often / Always or almost always
VH178956	Student	4, 8, 12	Student Factors/Self-Efficacy	How often do you do a good job on your science tests?	Never or hardly ever / Once in a while / Sometimes / Often / Always or almost always
VH178959	Student	4, 8, 12	Student Factors/Self-Efficacy	How often do you do a good job on your science assignments?	Never or hardly ever / Once in a while / Sometimes / Often / Always or almost always

Item-Specific Probes:

No.	Probe	Type of Probe	Required/Conditional
1	***For generic probes for discrete items, see page 4.***	General	Required

Student Items – Grades 8 and 12 (Cross Grades)

[Grades 8 and 12 Science: Student #1]

Accnum	Respondent	Grade	Topic/Issue/Module and Index/Facet (as applicable)	Proposed Draft Item	Proposed Response Options
VH179353	Student	8, 12	Organization of Instruction/Instructional Strategies	In your science class this year, how often have you done hands-on activities or projects with any of the following? Select **one** answer choice on each row.	Never or hardly ever / Once in a while / Sometimes / Often / Very Often
VH179354	Student	8, 12	Organization of Instruction/Instructional Strategies	a) Living things (for example, plants, animals, bacteria)	
VH179355	Student	8, 12	Organization of Instruction/Instructional Strategies	b) Chemicals (for example, mixing or dissolving sugar or salt in water)	
VH179360	Student	8, 12	Organization of Instruction/Instructional Strategies	c) Rocks or minerals (for example, identifying types)	
VH179359	Student	8, 12	Organization of Instruction/Instructional Strategies	d) Technology and engineering (for example, pulleys and levers)	
VH179361	Student	8, 12	Organization of Instruction/Instructional Strategies	e) Magnifying glass or microscope (for looking at small things)	
VH179358	Student	8, 12	Organization of Instruction/Instructional Strategies	f) Thermometer or barometer (for making measurements)	
VH179356	Student	8, 12	Organization of Instruction/Instructional Strategies	g) Electricity (for example, circuits, batteries, and light bulbs)	

Item-Specific Probes:

No.	Probe	Type of Probe	Required/Conditional
1	***For generic probes for matrix items, see page 5.***	General	Required
2	***a) Can you give examples of other living things that you learn about in school?***	Specific	Required
3	***c) Can you give examples of other rocks and minerals that you learn about in school?***	Specific	Required
4	***d) Can you describe, in your own words, what "Technology and engineering" means?*** ***When you learn about technology and engineering in school, what topics and things do you learn about?***	Specific	Required
5	***e) Can you give examples of other tools you use at school to look at small things?***	Specific	Required
6	***f) Can you give examples of other tools you use at school to making measurements?***	Specific	Required
7	***g) When you learn about electricity in school, what topics and things do you learn about?***	Specific	Required

[Grades 8 and 12 Science: Student #2]

Accnum	Respondent	Grade	Topic/Issue/Module and Index/Facet (as applicable)	Proposed Draft Item	Proposed Response Options
VH179363	Student	8, 12	Organization of Instruction/Instructional Strategies	In your science class this year, how often do you do each of the following? Select **one** answer choice on each row.	Never or hardly ever / Once in a while / Sometimes / Often / Always or almost always
VH179373	Student	8, 12	Organization of Instruction/Instructional Strategies	a) Read from a science textbook	
VH179371	Student	8, 12	Organization of Instruction/Instructional Strategies	b) Read a book or magazine about science topics	
VH179372	Student	8, 12	Organization of Instruction/Instructional Strategies	c) Use the Internet to learn about science topics	
VH179368	Student	8, 12	Organization of Instruction/Instructional Strategies	d) Watch a short video clip, movie, or video about science topics	

Item-Specific Probes:

No.	Probe	Type of Probe	Required/Conditional
1	***For generic probes for matrix items, see page 5.***	General	Required
2	***b), c), and d) Can you describe, in your own words, what "science topics" means to you?***	Specific	Required
3	***d) Can you describe, in your own words, what "short video clip" means to you?*** ***Do you watch science-related videos in classes other than science?***	Specific	Required

[Grades 8, and 12 Science: Student #3]

Accnum	Respondent	Grade	Topic/Issue/Module and Index/Facet (as applicable)	Proposed Draft Item	Proposed Response Options
VH178948	Student	8, 12	Organization of Instruction/Instructional Strategies	In this school year, how often did you approach your teacher to talk about how you are doing in science?	Never or hardly ever / Once in a while / Sometimes / Often / Always or almost always

Item-Specific Probes:

No.	Probe	Type of Probe	Required/Conditional
1	***For generic probes for discrete items, see page 4.***	General	Required

Student Items – Grade 4 Specific

[Grade 4, Science: Student #1]

Accnum	Respondent	Grade	Index/Facet (as applicable)	Proposed Draft Item	Proposed Response Options
Prac4_St 01_0	Student	4		This school year, how often did you do the following things in your science class? Select **one** answer choice on each row.	Never or hardly ever / Once in a while / Sometimes / Often / Always or almost always
Prac4_St 01_1			Asking questions and defining problems	a) Ask questions based on what you have seen (for example, "Why did that happen?")	
Prac4_St 01_2			Developing and using models	b) Made a drawing that explains why or how something happens	
Prac4_St 01_3			Planning and carrying out investigations	c) Used a set of tests or experiments to answer a question	
Prac4_St 01_4			Analyzing and interpreting data	d) Put information you collected into a table or a graph to look for patterns	
Prac4_St 01_5			Using mathematics and computational thinking	e) Decided whether to use numbers or words to explain a problem	
Prac4_St 01_6			Constructing explanations and designing solutions	f) Used evidence to explain why something happens	
Prac4_St 01_7			Engaging in argument from evidence	g) Using what you learned, picked a side to support in a discussion about a science topic	
Prac4_St 01_8			Obtaining, evaluating, and communicating information	h) Found news articles about science on the Internet	

Item-Specific Probes:

No.	Probe	Type of Probe	Required/Conditional
1	***For generic probes for matrix items, see page 5.***	General	Required
2	***f) Can you describe, in your own words, what "used evidence" means to you?***	Specific	Required
3	***h) What types of "news articles about science" did you think about when answering this sub-item?***	Specific	Required

[Grade 4, Science: Student #2]

Accnum	Respondent	Grade	Topic/Issue/Module and Index/Facet (as applicable)	Proposed Draft Item	Proposed Response Options
VH178924	Student	4	Organization of Instruction/Curriculum Content	In this school year, have you learned about living things (for example, plants, animals, bacteria)?	Never or hardly ever / Once in a while / Sometimes / Often / Very Often
VH178925	Student	4	Organization of Instruction/Curriculum Content	In this school year, have you learned about electricity (for example, circuits, batteries, and light bulbs)?	Never or hardly ever / Once in a while / Sometimes / Often / Very Often
VH178927	Student	4	Organization of Instruction/Curriculum Content	In this school year, have you learned about chemicals (for example, mixing sugar or salt in water)?	Never or hardly ever / Once in a while / Sometimes / Often / Very Often
VH178928	Student	4	Organization of Instruction/Curriculum Content	In this school year, have you learned about rocks or minerals (for example, looking at different rocks)?	Never or hardly ever / Once in a while / Sometimes / Often / Very Often

Item-Specific Probes:

No.	Probe	Type of Probe	Required/Conditional
1	***For generic probes for discrete items, see page 4.***	General	Required
2	***VH178924: Can you give examples of other living things that you learn about in school?***	Specific	Required
3	***VH178925: When you learn about electricity in school, what topics and things do you learn about?***	Specific	Required
4	***VH178927: Can you give examples of other chemicals that you learn about in school?***	Specific	Required
5	***VH1978928: Can you give examples of other rocks and minerals that you learn about in school?***	Specific	Required

[Grade 4, Science: Student #3]

Accnum	Respondent	Grade	Topic/Issue/Module and Index/Facet (as applicable)	Proposed Draft Item	Proposed Response Options
VH178930	Student	4	Organization of Instruction/Instructional Strategies	In this school year, how often have you done science activities using scientific tools (for example, microscopes, thermometers, or weighing scales)?	Never or hardly ever / Once in a while / Sometimes / Often / Always or almost always
VH178931	Student	4	Organization of Instruction/Instructional Strategies	In this school year, how often have you read from a science textbook?	Never or hardly ever / Once in a while / Sometimes / Often / Always or almost always
VH178934	Student	4	Organization of Instruction/Instructional Strategies	In this school year, how often have you learned about science topics on the Internet?	Never or hardly ever / Once in a while / Sometimes / Often / Always or almost always
VH178935	Student	4	Organization of Instruction/Instructional Strategies	In this school year, how often have you watched a short video clip, movie, or video about science topics?	Never or hardly ever / Once in a while / Sometimes / Often / Always or almost always
VH178944	Student	4	Organization of Instruction/Instructional Strategies	In this school year, how often have you been asked to write about science topics?	Never or hardly ever / Once in a while / Sometimes / Often / Always or almost always

Item-Specific Probes:

No.	Probe	Type of Probe	Required/Conditional
1	***For generic probes for discrete items, see page 4.***	General	Required
2	***When you were answering these items, were you thinking about what you did in the classroom, outside the classroom, or both?***	General	Required
3	***VH178930: What sort of scientific tools do you use in your science class at school?***	Specific	Required
4	***VH178935: Can you describe, in your own words, what "short video clip" means to you?*** ***Do you watch science-related videos in classes other than science?***	Specific	Required
5	***VH178944: Can you describe, in your own words, what "science topics" means to you? Can you provide an example?***	Specific	Required

Student Items – Grade 8 Specific

[Grade 8, Science: Student #1]

Accnum	Respondent	Grade	Index/Facet (as applicable)	Proposed Draft Item	Proposed Response Options
Prac8_St 01_0	Student	8		This school year, how often did you do the following things in your science class? Select **one** answer choice on each row.	Never or hardly ever / Once in a while / Sometimes / Often / Always or almost always
Prac8_St 01_1			Asking questions and defining problems	a) Came up with research questions that could help explain how something works	
Prac8_St 01_2			Developing and using models	b) Made labeled drawings or models that explain why or how something happens	
Prac8_St 01_3			Planning and carrying out investigations	c) Evaluated the quality of a set of tests that you use to answer a research question	
Prac8_St 01_4			Analyzing and interpreting data	d) Used tables, graphs, or statistics to identify relationships between variables	
Prac8_St 01_5			Using mathematics and computational thinking	e) Used mathematical representations to explain or support scientific conclusions	
Prac8_St 01_6			Constructing explanations and designing solutions	f) Used evidence from experiments and measurements of variables to explain why something happens	
Prac8_St 01_7			Engaging in argument from evidence	g) Responded to disagreement about a scientific idea by using information you learned in class	
Prac8_St 01_8			Obtaining, evaluating, and communicating information	h) Combined information about science from multiple sources for an assignment	

Item-Specific Probes:

No.	Probe	Type of Probe	Required/Conditional
1	***For generic probes for matrix items, see page 5.***	General	Required
2	***c) Can you describe in your own words, what "evaluated the quality of a set of tests" means to you?***	Specific	Required
3	***e) Can you describe, in your own words, what "mathematical representations" means to you?***	Specific	Required
4	***h) Can you describe, in your own words, what "multiple sources" means to you?*** ***What types of "sources" did you think about when answering this sub-item?***	Specific	Required

Student Items – Grade 12 Specific

[Grade 12, Science: Student #1]

Accnum	Respondent	Grade	Index/Facet (as applicable)	Proposed Draft Item	Proposed Response Options
Prac12_St 01_0	Student	12		This school year, how often did you do the following things in your science class? Select **one** answer choice on each row.	Never or hardly ever / Once in a while / Sometimes / Often / Always or almost always
Prac12_St 01_1			Asking questions and defining problems	a) Came up with testable research questions, based on observation or investigation, that can explain how something works	
Prac12_St 01_2			Developing and using models	b) Made a detailed physical or computer simulated model to show how an outcome is based on several factors	
Prac12_St 01_3			Planning and carrying out investigations	c) Evaluated the accuracy of a set of tests as part of a scientific investigation	
Prac12_St 01_9			Planning and carrying out investigations	d) Evaluated the ethical concerns of a set of tests as part of a scientific investigation	
Prac12_St 01_4			Analyzing and interpreting data	e) Used multiple kinds of tables, graphs, or statistics to identify relationships between variables	
Prac12_St 01_5			Using mathematics and computational thinking	f) Used sets of mathematical rules to explain or support scientific conclusions	
Prac12_St 01_6			Constructing explanations and designing solutions	g) Used evidence from experiments, measurements of variables, and known scientific theories to explain why something happens	
Prac12_St 01_7			Engaging in argument from evidence	h) Responded to disagreement about a scientific idea by pointing out facts and theories that support the idea	
Prac12_St 01_8			Obtaining, evaluating, and communicating information	i) Combined information about science from multiple sources for an assignment, placing more emphasis on the sources that provide more credible information	

Item-Specific Probes:

No.	Probe	Type of Probe	Required/Conditional
1	***For generic probes for matrix items, see page 5.***	General	Required
2	***a) Can you describe, in your own words, what "testable research questions" means to you?***	Specific	Required
3	***d) Can you describe, in your own words, what "ethical concerns" means to you?***	Specific	Required
4	***f) What types of "mathematical rules" did you think about when answering this sub-item?***	Specific	Required
5	***i) Can you describe, in your own words, what "credible information" means to you?***	Specific	Required

[Grade 12, Science: Student #2]

Accnum	Respondent	Grade	Index/Facet (as applicable)	Proposed Draft Item	Proposed Response Options
CareerInt_St_01_0	Student	12	Science Career Interest	How likely are you to pursue a career in science?	Not at all likely / Not likely / Somewhat likely / Quite likely / Extremely likely

Item-Specific Probes:

No.	Probe	Type of Probe	Required/Conditional
1	***For generic probes for discrete items, see page 4.***	General	Required
2	***What sorts of "careers in science" did you think about when you were answering this item?***	Specific	Required

NOTE: STUDENTS WHO SAID THEY WERE AT LEAST SOMEWHAT LIKELY TO PURSUE A CAREER IN SCIENCE WILL RECEIVE THE FOLLOWING ITEM (LISTED ON THE NEXT PAGE).

[Grade 12, Science: Student #3]

Accnum	Responde	Grad	Index/Facet (as applicable)	Proposed Draft Item	Proposed Response Options
CareerInt_St_02_0	Student	12	Science Career Interest	In this school year, have you done any of the following to learn about or prepare for a career in science?	Yes/No
CareerInt_St_02_1				a) Attended a career fair	
CareerInt_St_02_2				b) Answered questions on a career test (for example, the Vocational Interest Inventory, the Career Interest Test, or the Strong Interest Inventory)	
CareerInt_St_02_3				c) Taken a science course in addition to what you need to graduate	
CareerInt_St_02_4				d) Learned about science-related careers on your own	
CareerInt_St_ 02_5				e) Learned about science-related college programs on your own	
CareerInt_St_02_6				f) Spoken with a guidance counselor or teacher about science-related careers	
CareerInt_St_02_7				g) Spoken with a guidance counselor or teacher about science-related college programs	
CareerInt_St_02_8				h) Spoken with a family member or family friend who works in a scientific field about his/her job	
CareerInt_St_02_9				i) Spoken with an adult at school who works in a scientific field about his/her job	
CareerInt_St_02_10				j) Shadowed a person who does science-related work at his/her job	
CareerInt_St_02_11				k) Worked as an intern or employee doing science-related work	
CareerInt_St_02_12				l) Other (Please specify): _____	

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Item-Specific Probes:

No.	Probe	Type of Probe	Required/Conditional
1	***For generic probes for matrix items, see page 5.***	General	Required
2	***c) Can you describe, in your own words, what "need to graduate" means to you?***		
3	***e) and g) What sorts of "science-related college programs" did you think about when you were answering these sub-items?***	Specific	Required
4	***h) What sorts of "scientific fields" did you think about when you were answering this sub-item?***		
5	***j) and k) What sorts of "science-related work" did you think about when you were answering these sub-items?***	Specific	Required

Teacher Items – Grades 4 and 8 (Cross Grades)

[Grades 4 and 8 Science: Teacher #1]

Accnum	Respondent	Grade	Topic/Issue/Module and Index/Facet (as applicable)	Proposed Draft Item	Proposed Response Options
VH142009	Teacher	4, 8	Availability and Use of Instructional Resources/Time	In a typical week, how much time do you spend teaching science to the students in this class? Write in the hours and minutes.	Free Response

Item-Specific Probes:

No.	Probe	Type of Probe	Required/Conditional
1	***For generic reduced probes for discrete items, see page 6.***	Reduced	Required

[Grades 4 and 8 Science: Teacher #2]

Accnum	Respondent	Grade	Topic/Issue/Module and Index/Facet (as applicable)	Proposed Draft Item	Proposed Response Options
VB608618	Teacher	4, 8		In this class, about how much time do you spend on each of the following areas of science? Select **one** circle in each row.	No time / Very little time / Some time / Quite a bit of time / A lot of time
VB608619		4, 8	Availability and Use of Instructional Resources/Time	a) Life science	
VC759072		4, 8	Availability and Use of Instructional Resources/Time	b) Earth and space science	
VB608621		4, 8	Availability and Use of Instructional Resources/Time	c) Physical science	
VC759073		4, 8	Availability and Use of Instructional Resources/Time	d) Engineering and technology	

Item-Specific Probes:

No.	Probe	Type of Probe	Required/Conditional
1	***For generic reduced probes for matrix items, see page 6.***	Reduced	Required

[Grades 4 and 8 Science: Teacher #3]

Accnum	Respondent	Grade	Index/Facet (as applicable)	Proposed Draft Item	Proposed Response Options
TeaPrac 01_0	Teacher	4, 8		In your science class this year, how much time have you devoted to teaching your students each of the following? Select **one** circle in each row.	No or almost no time / Less than half of the time / About half of the time / More than half of the time / All or almost all of the time
TeaPrac 01_1			Identifying Science Principles	a) Make observations of natural phenomena (e.g., making measurements)	
TeaPrac 01_2			Identifying Science Principles	b) Use models to demonstrate relationships among science principles	
TeaPrac 01_3			Using Science Principles	c) Make predictions based on prior experimental observations	
TeaPrac 01_4			Using Science Principles	d) Create models of scientific principles, (e.g., a graphic, manipulative, or demonstration that illustrates the principle)	
TeaPrac 01_5			Using Scientific Inquiry	e) Design experimental procedures to investigate a particular question	
TeaPrac 01_6			Using Scientific Inquiry	f) Read data in tables or charts, to draw conclusions	
TeaPrac 01_7			Using Scientific Inquiry	g) Substantiate a conclusion by using empirical evidence	
TeaPrac 01_8			Using Scientific Inquiry	h) Decide which tools would be most appropriate to gather data	
TeaPrac 01_9			Using Technological Design	i) Evaluate the strengths and weaknesses of a solution to a problem	
TeaPrac 01_10			Using Technological Design	j) Predict possible negative consequences of a proposed solution to a problem	

Item-Specific Probes:

No.	Probe	Type of Probe	Required/Conditional
1	***For generic probes for matrix items, see page 5.***	General	Required
2	***Compare these items against the set you just completed (TeaPrac4_A 01_0 [Grade 4]/TeaPrac8_A 01_0 [Grade 8]). Which of these sets of items best describes what you are doing with your students in science class?***	Specific	Required
3	***a) What type of "natural phenomena" did you think about when you were answering this sub-item?***	Specific	Required

[Grades 4 and 8 Science: Teacher #4]

Accnum	Respondent	Grade	Index/Facet (as applicable)	Proposed Draft Item	Proposed Response Options
TeaAtt 01_0	Teacher	4, 8	Teacher Attributions	Suppose your students did very well on their last science test. How likely do you think each of the following explanations is in this situation? Select **one** circle in each row.	Not at all likely / Not likely / Somewhat likely/ Quite likely / Extremely likely
TeaAtt 01_1				a) My students did well because they studied and were prepared.	
TeaAtt 01_2				b) My students did well because they put in a lot of effort.	
TeaAtt 01_3				c) My students did well because they always do well on tests.	
TeaAtt 01_4				d) My students did well because I taught the concepts well.	
TeaAtt 01_5				e) My students did well because they guessed well on the test.	
TeaAtt 01_6				f) My students did well because they are just good at science.	

Item-Specific Probes:

No.	Probe	Type of Probe	Required/Conditional
1	***For generic probes for matrix items, see page 5.***	General	Required
2	***There may be teachers who feel they taught the subject poorly, or that their students did not adequately prepare for the test but did well anyway. What can be done to ensure that these teachers feel comfortable responding to this item honestly?***	Specific	Required

[Grades 4 and 8 Science: Teacher #5]

Accnum	Respondent	Grade	Index/Facet (as applicable)	Proposed Draft Item	Proposed Response Options
ResTechTea 01_0	Teacher	4, 8		To what extent do you use each of the following technological resources **for science instruction**? Select **one** circle in each row.	Not at all / Small extent / Moderate extent / Large extent
ResTechTea 01_1				a) Desktop or laptop computer(s) (including Chromebooks)	
ResTechTea 01_2				b) Tablet(s) (e.g., Surface Pro, iPad, Kindle Fire)	
ResTechTea 01_3				c) Online content (e.g., online software, podcasts, or streaming videos)	
ResTechTea 01_4				d) Interactive web spaces (e.g., forums where students can interact and share materials)	
ResTechTea 01_5				e) Smart board(s)	

Item-Specific Probes:

No.	Probe	Type of Probe	Required/Conditional
1	***For generic probes for matrix items, see page 5.***	General	Required
2	***Are there other technological resources you would add to this list?***	General	Required

[Grades 4 and 8 Science: Teacher #6]

Accnum	Respondent	Grade	Index/Facet (as applicable)	Proposed Draft Item	Proposed Response Options
OutSchoolTea01_0	Students	4, 8	Outside-of-School Learning	In this school year, did your school offer any of the following supplemental activities? Select **one** answer choice in each row	Yes/No
OutSchoolTea01_1				a) Opportunities for students to participate in scientific research	
OutSchoolTea01_2				b) Science clubs	
OutSchoolTea01_3				c) Opportunities for students to engage in collective science activities (e.g., adopt an endangered species, or nurture the growth of a live animal in the classroom)	
OutSchoolTea01_4				d) Opportunities for students to use scientific instruments	
OutSchoolTea01_5				e) Opportunities for students to participate in science outreach programs (e.g., partnerships with colleges, museums, or foundations)	

Item-Specific Probes:

No.	Probe	Type of Probe	Required/Conditional
1	***For generic probes for matrix items, see page 5.***	General	Required
2	***a) What type of "scientific research" did you think about when you were answering this sub-item?***	Specific	Required
3	***b) What type of "science clubs" did you think about when you were answering this question?***	Specific	Required
4	***c) What type of "scientific instruments" did you think about when you were answering this question?***	Specific	Required

[Grades 4 and 8 Science: Teacher #7]

Accnum	Respondent	Grade	Topic/Issue/Module and Index/Facet (as applicable)	Proposed Draft Item	Proposed Response Options
VF017603	Teacher	4, 8	Availability and Use of Instructional Resources/Facilities	How many students are in this class? Enter the number of students.	Free response

Item-Specific Probes:

No.	Probe	Type of Probe	Required/Conditional
1	***For generic probes for discrete items, see page 4.***	General	Required

[Grades 4 and 8 Science: Teacher #8]

Accnum	Respondent	Grade	Topic/Issue/Module and Index/Facet (as applicable)	Proposed Draft Item	Proposed Response Options
VF633196	Teacher	4, 8	Availability and Use of Instructional Resources/Products	To what extent are the following resources available to you in your school system (including your school and school district)? Select **one** circle in each row.	Not at all / Small extent / Moderate extent / Large extent
VF633197		4, 8		a) Science textbooks (including digital forms, such as online textbooks)	
VF633198		4, 8		b) Science magazines and books (including digital forms, such as online magazines and books)	
VF633199		4, 8		c) Supplies or equipment for science demonstrations	
VF633200		4, 8		d) Supplies or equipment for science labs	
VF633201		4, 8		e) Space to conduct science labs	
VF633208		4, 8		f) Computers for students' use in class	
VF633203		4, 8		g) Computer labs	
VF633204		4, 8		h) Computers for teachers' use	
VF633205		4, 8		i) Computerized science labs for classroom use	
VF633206		4, 8		j) Audiovisual material	
VF633207		4, 8		k) Science kits	
VF633202		4, 8		l) Scientific measurement instruments (e.g., telescopes, microscopes, thermometers, or weighing scales)	

Item-Specific Probes:

No.	Probe	Type of Probe	Required/Conditional
1	***For generic probes for matrix items, see page 5.***	General	Required

[Grades 4 and 8 Science: Teacher #9]

Accnum	Respondent	Grade	Topic/Issue/Module and Index/Facet (as applicable)	Proposed Draft Item	Proposed Response Options
VC767810	Teacher	4, 8	Organization of Science Instruction/Instructional Strategies	How often do you meet with students one-on-one to give feedback on their work and evaluate their progress in science?	Never or hardly ever / A few times a year / Once or twice a month / Once or twice a week / Every day or almost every day

Item-Specific Probes:

No.	Probe	Type of Probe	Required/Conditional
1	***For generic probes for discrete items, see page 4.***	General	Required

[Grades 4 and 8 Science: Teacher #10]

Accnum	Respondent	Grade	Topic/Issue/Module and Index/Facet (as applicable)	Proposed Draft Item	Proposed Response Options
VC767829	Teacher	4, 8	Organization of Science Instruction/Instructional Strategies	How often do you do each of the following with individual students to evaluate their progress in science? Select **one** circle in each row.	Never / About once or twice a year / About once or twice a month / About once or twice a week / Every day or almost every day
VC767830		4, 8		a) Regularly discuss the student's current level of performance with them	
VC767831		4, 8		b) Set goals for specific progress the student would like to make	
VC767832		4, 8		c) Discuss progress the student has made toward goals previously set	
VC767834		4, 8		d) Determine how to adjust your teaching strategies to meet the student's current learning needs and to reflect the student's future goals	

Item-Specific Probes:

No.	Probe	Type of Probe	Required/Conditional
1	***For generic probes for matrix items, see page 5.***	General	Required

[Grades 4 and 8 Science: Teacher #11]

Accnum	Respondent	Grade	Topic/Issue/Module and Index/Facet (as applicable)	Proposed Draft Item	Proposed Response Options
VC767836	Teacher	4, 8		About how often do your science students do each of the following? Select **one** circle in each row.	Never or hardly ever / Once or twice a month / Once or twice a week / Every day or almost every day
VC767839		4, 8	Organization of Science Instruction/Instructional Strategies	a) Work with other students on a science activity or project	
VC767841		4, 8	Organization of Science Instruction/Instructional Strategies	b) Write about science (e.g., papers, reports, science journals)	
VC767846		4, 8	Organization of Science Instruction/Instructional Strategies	c) Do hands-on investigations in science class	
VC767849		4, 8	Organization of Science Instruction/Instructional Strategies	d) Talk about the measurements and results from students' hands-on activities	
VC767856		4, 8	Organization of Science Instruction/Instructional Strategies	e) Discuss the kind of problems that engineers solve	
VC767856		4, 8	Organization of Science Instruction/Instructional Strategies	f) Present what they have learned about science	

Item-Specific Probes:

No.	Probe	Type of Probe	Required/Conditional
1	***For generic probes for matrix items, see page 5.***	General	Required
2	***b) What types of writing assignments did you think about when you were answering this sub-item?***	Specific	Required

Teacher Items – Grade 4 Specific

[Grade 4, Science: Teacher #1]

Accnum	Respondent	Grade	Index/Facet (as applicable)	Proposed Draft Item	Proposed Response Options & *Notes*
TeaPrac4_A01_0	Teacher	4		Thinking about your fourth grade science class this year, how much emphasis did you place on teaching your students each of the following? Select **one** circle in each row.	No emphasis / Very little emphasis / Some emphasis / Quite a bit of emphasis / A lot of emphasis
TeaPrac4_A01_1			Asking questions and defining problems	a) Develop good research questions	
TeaPrac4_A01_2			Developing and using models	b) Use drawings to explain events or phenomena	
TeaPrac4_A01_3			Planning and carrying out investigations	c) Come up with tests to answer a scientific question	
TeaPrac4_A01_4			Analyzing and interpreting data	d) Organize data to derive meaning or test a solution using reasoning or calculation	
TeaPrac4_A01_5			Using mathematics and computational thinking	e) Choose words or numbers to best explain a scientific problem	
TeaPrac4_A01_6			Constructing explanations and designing solutions	f) Generate explanations based on observations and measurements	
TeaPrac4_A01_7			Engaging in argument from evidence	g) Evaluate evidence to compare arguments	
TeaPrac4_A01_8			Obtaining, evaluating, and communicating information	h) Read about science topics in order to convey the ideas to others	

Item-Specific Probes:

No.	Probe	Type of Probe	Required/Conditional
1	***For generic probes for matrix items, see page 5.***	General	Required

[Grade 4, Science: Teacher #2]

Accnum	Respondent	Grade	Topic/Issue/Module and Index/Facet (as applicable)	Proposed Draft Item	Proposed Response Options
VC970876	Teacher	4	Organization of Instruction/Teacher Practices	To what extent do you emphasize each of the following objectives in teaching science to your eighth-grade class? Select **one** circle in each row.	Not at all / Small extent / Moderate extent / Large extent
VC970917		4	Organization of Instruction/Teacher Practices	a) Increase students' interest in science	
VC970928		4	Organization of Instruction/Teacher Practices	b) Increase awareness of the importance of science in daily life	
VC970930		4	Organization of Instruction/Teacher Practices	c) Learn about applications of science to environmental issues	
VC970919		4	Organization of Instruction/Teacher Practices	d) Teach scientific facts and principles to build foundational knowledge	
VC970920		4	Organization of Instruction/Teacher Practices	e) Teach the iterative process of scientific inquiry and practices	
VF633172		4	Organization of Instruction/Teacher Practices	f) Provide students with the knowledge and skills needed to prepare for upper grade level science courses	
VC970929		4	Organization of Instruction/Teacher Practices	g) Develop skills to ask questions based on observations	
VC970923		4	Organization of Instruction/Teacher Practices	h) Develop inquiry skills	
VC970926		4	Organization of Instruction/Teacher Practices	i) Develop skills in lab techniques	
VF654319		4	Organization of Instruction/Teacher Practices	j) Develop problem-solving skills	
VC970931		4	Organization of Instruction/Teacher Practices	k) Develop scientific writing skills	

Item-Specific Probes:

No.	Probe	Type of Probe	Required/Conditional
1	***For generic probes for matrix items, see page 5.***	General	Required

Teacher Items – Grade 8 Specific

[Grade 8 Science: Teacher #1]

Accnum	Respondent	Grade	Index/Facet (as applicable)	Proposed Draft Item	Proposed Response Options & *Notes*
TeaPrac8_A01_0	Teacher	8		Thinking about your eighth grade science class this year, how much emphasis did you place on teaching your students each of the following? Select **one** circle in each row.	No emphasis / Very little emphasis / Some emphasis / Quite a bit of emphasis / A lot of emphasis
TeaPrac8_A01_1			Asking questions and defining problems	a) Develop good research questions for use as the basis of research	
TeaPrac8_A01_2			Developing and using models	b) Use labeled drawings or models to explain events or phenomena	
TeaPrac8_A01_3			Planning and carrying out investigations	c) Come up with and use tests to answer a scientific question about how one variable influences another	
TeaPrac8_A01_4			Analyzing and interpreting data	d) Organizing data in graphical displays to derive meaning or test a solution using reasoning, basic statistics, and probability	
TeaPrac8_A01_5			Using mathematics and computational thinking	e) Use mathematical representations to explain or support scientific conclusions	
TeaPrac8_A01_6			Constructing explanations and designing solutions	f) Generate explanations based on scientific ideas, models, and measurements	
TeaPrac8_A01_7			Engaging in argument from evidence	g) Use scientific reasoning and evaluating evidence to compare and critique arguments	
TeaPrac8_A01_8			Obtaining, evaluating, and communicating information	h) Collect information science topics from both text and tables or graphs in order to convey the ideas to others	

Notes:
This grade-specific item was developed in response to Standing Committee concerns about the limited scope of the "Teacher Practices – Version B" items as well as the need to develop items that address the content of a variety of educational frameworks (e.g., NGSS).

Item-Specific Probes:

No.	Probe	Type of Probe	Required/Conditional
1	***For generic probes for matrix items, see page 5.***	General	Required

[Grade 8 Science: Teacher #2]

Accnum	Respondent	Grade	Topic/Issue/Module and Index/Facet (as applicable)	Proposed Draft Item	Proposed Response Options
VC976013	Teacher	8	Organization of Instruction/Teacher Practices	To what extent do you emphasize each of the following objectives in teaching science to your eighth-grade class? Select **one** circle in each row.	Not at all / Small extent / Moderate extent / Large extent
VC976015		8	Organization of Instruction/Teacher Practices	a) Increase students' interest in science	
VC976023		8	Organization of Instruction/Teacher Practices	b) Increase awareness of the importance of science in daily life	
VC976026		8	Organization of Instruction/Teacher Practices	c) Learn about applications of science to environmental issues	
VC976017		8	Organization of Instruction/Teacher Practices	d) Teach scientific facts and principles to build foundational knowledge	
VC976018		8	Organization of Instruction/Teacher Practices	e) Teach the iterative process of scientific inquiry and practices	
VF633272		8	Organization of Instruction/Teacher Practices	f) Provide students with the knowledge and skills needed to prepare for upper grade level science courses	
VC976025		8	Organization of Instruction/Teacher Practices	g) Develop skills to ask questions based on observations	
VC976020		8	Organization of Instruction/Teacher Practices	h) Develop inquiry skills	
VC976022		8	Organization of Instruction/Teacher Practices	i) Develop skills in lab techniques	
VF654412		8	Organization of Instruction/Teacher Practices	j) Develop problem-solving skills	
VC976027		8	Organization of Instruction/Teacher Practices	k) Develop scientific writing skills	

Item-Specific Probes:

No.	Probe	Type of Probe	Required/Conditional
1	***For generic probes for matrix items, see page 5.***	General	Required

School Items – Grades 4, 8, and 12 (Cross Grades)

[Grades 4, 8, and 12 Science: School #1]

Accnum	Respondent	Grade	Index/Facet (as applicable)	Proposed Draft Item	Proposed Response Options
TechRes_Sch 01_0	School	4, 8, 12		To what extent does your school provide up-to-date technology resources for science teaching and learning?	Not at all / Small extent / Moderate extent / Large extent

Item-Specific Probes:

No.	Probe	Type of Probe	Required/Conditional
1	***For generic probes for matrix items, see page 5.***	General	Required

[Grades 4, 8, and 12 Science: School #2]

Accnum	Respondent	Grade	Topic/Issue/Module and Index/Facet (as applicable)	Proposed Draft Item	Proposed Response Options
VC304219	School	4, 8, 12		To what extent is your school's science program structured according to the following resources? Select **one** circle in each row.	Not at all / Small extent / Moderate extent / Large extent
VC304221		4, 8, 12	Organization of Science Instruction/Curriculum Content	a) District curriculum standards or curriculum guides	
VC304220		4, 8, 12	Organization of Science Instruction/Curriculum Content	b) State curriculum standards or frameworks	
VC304223		4, 8, 12	Organization of Science Instruction/Curriculum Content	c) In-school curriculum frameworks and standards for learning	
VC304222		4, 8, 12	Organization of Science Instruction/Curriculum Content	d) Results from district assessments	
ProgRes_Sch 01_0		4, 8, 12	Organization of Science Instruction/Curriculum Content	e) Results from state assessments	
VC304224		4, 8, 12	Organization of Science Instruction/Curriculum Content	f) Results from school assessments	
VC304225		4, 8, 12	Organization of Science Instruction/Curriculum Content	g) Recommendations from school science department	
VC304226		4, 8, 12	Organization of Science Instruction/Curriculum Content	h) Discretion of individual teachers	
VC304227		4, 8, 12	Organization of Science Instruction/Curriculum Content	i) Commercially designed programs	
VH142091		4, 8, 12	Organization of Science Instruction/Curriculum Content	j) Resources found on the Internet	

Item-Specific Probes:

No.	Probe	Type of Probe	Required/Conditional
1	***For generic reduced probes for matrix items, see page 6.***	Reduced	Required
2	***g) GRADE 4 only: Do you have a conventional science department for students in grade 4?***	Specific	Required

School Items – Grade 4 Specific

[Grades 4 Science: School #1]

Accnum	Respondent	Grade	Topic/Issue/Module and Index/Facet (as applicable)	Proposed Draft Item	Proposed Response Options
VF640401	School	4		To what extent is each of the following a responsibility of the science coach(es) available to fourth-grade teachers at your school? Select **one** circle in each row.	Not at all / Small extent / Moderate extent / Large extent
VF640402		4	Availability and Use of Instructional Resources/People	a) Provide support/assistance about science content or the teaching of science to individual teachers	
VF640403		4	Availability and Use of Instructional Resources/People	b) Provide technical support/assistance with lab equipment to individual teachers.	
VF640404		4	Availability and Use of Instructional Resources/People	c) Conduct professional development about science or the teaching of science for groups of teachers	

Item-Specific Probes:

No.	Probe	Type of Probe	Required/Conditional
1	***For generic reduced probes for matrix items, see page 6.***	General	Required

[Grades 4 Science: School #2]

Accnum	Respondent	Grade	Topic/Issue/Module and Index/Facet (as applicable)	Proposed Draft Item	Proposed Response Options
VF654582	School	4		In this school year, is there a science club offered to fourth-grade students in your school? Select **one** circle in each row.	Yes/No
SciClub_Sch 01_0	School	4	Availability and Use of Instructional Resources/Products	a) Parent volunteered (initiated and run by individual parents)	
VF654583	School	4	Availability and Use of Instructional Resources/Products	b) Teacher volunteered (initiated and run by individual teachers)	
VF654584	School	4	Availability and Use of Instructional Resources/Products	c) School sponsored (initiated by school and run by school designated personnel)	
VF654585	School	4	Availability and Use of Instructional Resources/Products	d) Partnered with external agencies (such as universities, science museums, or industries)	

Item-Specific Probes:

No.	Probe	Type of Probe	Required/Conditional
1	***For generic probes for matrix items, see page 5.***	General	Required
2	***a) What type of "Parent volunteered" science club did you think about when you were answering this sub-item?***	Specific	Required
3	***d) Can you describe, in your own words, what "industries" means to you? Would "companies" be a better wording choice?***	Specific	Required

[Grades 4 Science: School #3]

Accnum	Respondent	Grade	Topic/Issue/Module and Index/Facet (as applicable)	Proposed Draft Item	Proposed Response Options
VH158008	School	4	Resources for Learning and Instruction/People Resources	In addition to their regular classroom teacher, is there a science specialist available (full- or part-time) to fourth-grade students at your school?	Yes, available full-time to fourth-grade students / Yes, available part-time to fourth-grade students / No

Item-Specific Probes:

No.	Probe	Type of Probe	Required/Conditional
1	***For generic reduced probes for discrete items, see page 6.***	Reduced	Required
2	***Can you describe, in your own words, what "science specialist" means to you? Is there a different term you would use?***	Specific	Required

[Grades 4 Science: School #4]

Accnum	Respondent	Grade	Topic/Issue/Module and Index/Facet (as applicable)	Proposed Draft Item	Proposed Response Options
VF633195	School	4	Resources for Learning and Instruction/People Resources	Is there a science coach available (full- or part-time) to fourth-grade teachers at your school?	Yes, available full-time to fourth-grade teachers / Yes, available part-time to fourth-grade teachers / No

Item-Specific Probes:

No.	Probe	Type of Probe	Required/Conditional
1	***For generic reduced probes for discrete items, see page 6.***	Reduced	Required
2	***Can you describe, in your own words, what "science coach" means to you? Is there a different term you would use?***	Specific	Required

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School Items – Grade 8 Specific

[Grades 8 Science: School #1]

Accnum	Respondent	Grade	Topic/Issue/Module and Index/Facet (as applicable)	Proposed Draft Item	Proposed Response Options
VF654613	School	8		To what extent is each of the following a responsibility of the science coach(es) available to eighth-grade teachers at your school? Select **one** circle in each row.	Not at all / Small extent / Moderate extent / Large extent
VF654614		8	Availability and Use of Instructional Resources/People	a) Provide support/assistance about science content or the teaching of science to individual teachers	
VF654615		8	Availability and Use of Instructional Resources/People	b) Provide technical support/assistance with lab equipment to individual teachers.	
VF654616		8	Availability and Use of Instructional Resources/People	c) Conduct professional development about science or the teaching of science for groups of teachers	

Item-Specific Probes:

No.	Probe	Type of Probe	Required/Conditional
1	***For generic reduced probes for matrix items, see page 6.***	Reduced	Required

[Grades 8 Science: School #2]

Accnum	Respondent	Grade	Topic/Issue/Module and Index/Facet (as applicable)	Proposed Draft Item	Proposed Response Options
VF654617	School	8		In this school year, is there a science club offered to eighth-grade students in your school? Select **one** circle in each row.	Yes/No
SciClub_Sch 02_0	School	8	Availability and Use of Instructional Resources/Products	a) Parent volunteered (initiated and run by individual parents)	
VF654618	School	8	Availability and Use of Instructional Resources/Products	b) Teacher volunteered (initiated and run by individual teachers)	
VF654619	School	8	Availability and Use of Instructional Resources/Products	c) School sponsored (initiated by school and run by school designated personnel)	
VF654620	School	8	Availability and Use of Instructional Resources/Products	d) Partnered with external agencies (such as universities, science museums, or industries)	

Item-Specific Probes:

No.	Probe	Type of Probe	Required/Conditional
1	***For generic probes for matrix items, see page 5.***	Reduced	Required
2	***a) What type of "Parent volunteered" science club did you think about when you were answering this sub-item?***	Specific	Required
3	***d) Can you describe, in your own words, what "industries" means to you? Would "companies" be a better wording choice?***	Specific	Required

[Grades 8 Science: School #3]

Accnum	Respondent	Grade	Topic/Issue/Module and Index/Facet (as applicable)	Proposed Draft Item	Proposed Response Options
VH158024	School	8	Resources for Learning and Instruction/People Resources	In addition to their regular classroom teacher, is there a science specialist available (full- or part-time) to eighth-grade students at your school?	Yes, available full-time to eighth-grade students / Yes, available part-time to eighth-grade students / No

Item-Specific Probes:

No.	Probe	Type of Probe	Required/Conditional
1	***For generic reduced probes for discrete items, see page 6.***	Reduced	Required
2	***Can you describe, in your own words, what "science specialist" means to you? Is there a different term you would use?***	Specific	Required

[Grades 8 Science: School #4]

Accnum	Respondent	Grade	Topic/Issue/Module and Index/Facet (as applicable)	Proposed Draft Item	Proposed Response Options
VF654612	School	8	Resources for Learning and Instruction/People Resources	Is there a science coach available (full- or part-time) to eighth-grade teachers at your school?	Yes, available full-time to eighth-grade teachers / Yes, available part-time to eighth-grade teachers / No

Item-Specific Probes:

No.	Probe	Type of Probe	Required/Conditional
1	***For generic reduced probes for discrete items, see page 6.***	Reduced	Required
2	***Can you describe, in your own words, what "science coach" means to you? Is there a different term you would use?***	Specific	Required

[Grades 8 Science: School #5]

Accnum	Respondent	Grade	Topic/Issue/Module and Index/Facet (as applicable)	Proposed Draft Item	Proposed Response Options
VE013981	School	8	Resources for Learning and Instruction/Facilities	To what extent do your school's science laboratories that are available for eighth-grade instruction have the following features? Select **one** circle in each row.	Not at all / Small extent / Moderate extent / Large extent
VE013983		8	Resources for Learning and Instruction/Facilities	a) Demonstration stations	
VE013996		8	Resources for Learning and Instruction/Facilities	b) Internet connection	
VE013984		8	Resources for Learning and Instruction/Facilities	c) Student lab stations	
VE013985		8	Resources for Learning and Instruction/Facilities	d) Storage areas for chemicals and other supplies	
VE013986		8	Resources for Learning and Instruction/Facilities	e) Electricity	
VE013990		8	Resources for Learning and Instruction/Facilities	f) Running water	
VE013991		8	Resources for Learning and Instruction/Facilities	g) Gas for burners	
VE013992		8	Resources for Learning and Instruction/Facilities	h) Hoods or air hoses	
VE013993		8	Resources for Learning and Instruction/Facilities	j) Safety equipment	
VE013995		8	Resources for Learning and Instruction/Facilities	j) Computers	

Item-Specific Probes:

No.	Probe	Type of Probe	Required/Conditional
1	***For generic reduced probes for matrix items, see page 6.***	General	Required
2	***i) What safety equipment did you think about when you were answering this sub-item?***	Specific	Required

School Items – Grade 12 Specific

[Grades 12 Science: School #1]

Accnum	Respondent	Grade	Topic/Issue/Module and Index/Facet (as applicable)	Proposed Draft Item	Proposed Response Options
VF654641	School	12		To what extent is each of the following a responsibility of the science coach(es) available to twelfth-grade teachers at your school? Select **one** circle in each row.	Not at all / Small extent / Moderate extent / Large extent
VF654642		12	Availability and Use of Instructional Resources/People	a) Provide support/assistance about science content or the teaching of science to individual teachers	
VF654643		12	Availability and Use of Instructional Resources/People	b) Provide technical support/assistance with lab equipment to individual teachers.	
VF654644		12	Availability and Use of Instructional Resources/People	c) Conduct professional development about science or the teaching of science for groups of teachers	

Item-Specific Probes:

No.	Probe	Type of Probe	Required/Conditional
1	***For generic reduced probes for matrix items, see page 6.***	Reduced	Required

[Grades 12 Science: School #2]

Accnum	Respondent	Grade	Topic/Issue/Module and Index/Facet (as applicable)	Proposed Draft Item	Proposed Response Options
VF654645	School	12		In this school year, is there a science club offered to twelfth-grade students in your school? Select **one** circle in each row.	Yes/No
SciClub_Sch 03_0	School	12	Availability and Use of Instructional Resources/Products	a) Parent volunteered (initiated and run by individual parents)	
VF654646	School	12	Availability and Use of Instructional Resources/Products	b) Teacher volunteered (initiated and run by individual teachers)	
VF654647	School	12	Availability and Use of Instructional Resources/Products	c) School sponsored (initiated by school and run by school designated personnel)	
VF654648	School	12	Availability and Use of Instructional Resources/Products	d) Partnered with external agencies (such as universities, science museums, or industries)	

Item-Specific Probes:

No.	Probe	Type of Probe	Required/Conditional
1	***For generic probes for discrete items, see page 4.***	General	Required
2	***Does your school have clubs that are initiated or run by students?***	General	Required
3	***a) What type of "Parent volunteered" science club did you think about when you were answering this sub-item?***	Specific	Required
4	***d) Can you describe, in your own words, what "industries" means to you? Would "companies" be a better wording choice?***	Specific	Required

[Grades 12 Science: School #3]

Accnum	Respondent	Grade	Topic/Issue/Module and Index/Facet (as applicable)	Proposed Draft Item	Proposed Response Options
VH158063	School	12	Resources for Learning and Instruction/People Resources	In addition to their regular classroom teacher, is there a science specialist available (full- or part-time) to twelfth-grade students at your school?	Yes, available full-time to twelfth-grade students / Yes, available part-time to twelfth-grade students / No

Item-Specific Probes:

No.	Probe	Type of Probe	Required/Conditional
1	***For generic reduced probes for discrete items, see page 6.***	Reduced	Required
2	***Can you describe, in your own words, what "science specialist" means to you? Is there a different term you would use?***	Specific	Required

[Grades 12 Science: School #4]

Accnum	Respondent	Grade	Topic/Issue/Module and Index/Facet (as applicable)	Proposed Draft Item	Proposed Response Options
VF654640	School	12	Resources for Learning and Instruction/People Resources	Is there a science coach available (full- or part-time) to twelfth-grade teachers at your school?	Yes, available full-time to twelfth-grade teachers / Yes, available part-time to twelfth-grade teachers / No

Item-Specific Probes:

No.	Probe	Type of Probe	Required/Conditional
1	***For generic reduced probes for discrete items, see page 6.***	Reduced	Required
2	***Can you describe, in your own words, what "science coach" means to you? Is there a different term you would use?***	Specific	Required

[Grades 12 Science: School #5]

Accnum	Respondent	Grade	Topic/Issue/Module and Index/Facet (as applicable)	Proposed Draft Item	Proposed Response Options
VH142108	School	12	Resources for Learning and Instruction/Facilities	To what extent do your school's science laboratories that are available for twelfth-grade instruction have the following features? Select one circle in each row.	Not at all / Small extent / Moderate extent / Large extent
VH142109		12	Resources for Learning and Instruction/Facilities	a) Demonstration stations	
VH142110		12	Resources for Learning and Instruction/Facilities	b) Student lab stations	
VH142111		12	Resources for Learning and Instruction/Facilities	c) Storage areas for chemicals and other supplies	
VH142112		12	Resources for Learning and Instruction/Facilities	d) Electricity	
VH142118		12	Resources for Learning and Instruction/Facilities	e) Running water	
VH142114		12	Resources for Learning and Instruction/Facilities	f) Gas for burners	
VH142115		12	Resources for Learning and Instruction/Facilities	g) Hoods or air hoses	
VH142116		12	Resources for Learning and Instruction/Facilities	h) Safety equipment	
VH142117		12	Resources for Learning and Instruction/Facilities	j) Computers	
VH142113		12	Resources for Learning and Instruction/Facilities	j) Internet connection	

Item-Specific Probes:

No.	Probe	Type of Probe	Required/Conditional
1	***For generic reduced probes for matrix items, see page 5.***	General	Required
2	***h) What safety equipment did you think about when you were answering this sub-item?***	Specific	Required

Teacher and School Debriefing Probes

Debriefing probe:

No.	Probe	Type of Probe	Required/Conditional
1	Ask the following probe at the <u>end</u> of each teacher and school administrator cognitive interview: *Is there anything else about science that you think we should have asked <teachers/principals> that we did not?*	General	Required

General Debriefing and Thank You (For all student, teacher, and school administrator participants)

Before we finish, I'd like to hear [any/other] thoughts you have about what you've been doing.

Is there anything else you would like to tell me about working on the survey questions?

Is there anything that you think could make [this/these] survey question(s) clearer?

Thank participant for his/her time and provide gift card, as appropriate.