

# **Appendix A**

## **Instruments**

**Teacher Interview Protocol**

**Observation and Analytic Protocol**

**Mathematics Questionnaire**

**Science Questionnaire**

# Inside the Classroom

## Teacher Interview Protocol

I appreciate your letting me observe your class. I have some questions I'd like to ask you related to this lesson. Would you mind if I taped the interview? It will help me stay focused on our conversation and it will ensure I have an accurate record of what we discussed.

### Preliminary

*If applicable, ask:*

What is the name/title of this course?

What class period was this?

*If applicable, ask:*

Can I have a copy of the instructional materials you used for this lesson? [Specify what you would like to have copies of, if necessary.]

### A. Learning Goals

1. I'd like to know a bit more about the students in this class.  
Tell me about the ability levels of students in this class.  
How do they compare to students in the school as a whole?  
  
Are there any students with special needs in this class?  
Are there any students for whom English is not their first language?  
Are there any students with learning disabilities?
2. Is student absenteeism or mobility a problem for you in this class?
3. Please help me understand where this lesson fits in the sequence of the unit you are working on. What have the students experienced prior to today's lesson?
4. What was the specific purpose of today's lesson?
5. How do you feel about how the lesson played out?  
What do you think the students gained from today's lesson?
6. What is the next step for this class in this unit?

## B. Content/Topic

7. What led you to teach the mathematics/science topics/concepts/skills in this lesson?

(Use the following probes, as needed, so you can assess the extent of importance of each of these influences:)

Is it included in the state/district curriculum/course of study?

*If yes, or previously implied:* How important was that in your decision to teach this topic?

Is it included in a state/district mathematics/science assessment? What are the consequences if students don't do well on the test?

*If yes, or previously implied:* How important were these tests in your decision to teach this topic?

Is it included in an assigned textbook or program designated for this class?

*If yes, or previously implied:* How important was that in your decision to teach this topic?

## C. Resources Used to Design the Lesson

8. What resources did you use to plan this lesson?

(Be sure to get details on sources of materials and activities.)

*(If teacher developed materials, SKIP to part D.)*

9. Were these resources/materials/activities designated for this class/course or did you choose to use them yourself?

10. What do you like about these resources/materials/activities?

*(Compared to what the district designated for the class/course, if applicable.)*

What do you not like?

11. a. *If the lesson was based on one resource/material:*

Did you plan this lesson essentially as it was organized in [name of resource/material] or did you modify it in important ways?

organized in any one of these resources/materials?

*If yes:*

Did you modify it in important ways?

11. b. *If the lesson was based on more than one resource/material:*

Did you plan this lesson essentially as it was

12. *If modified:*

Can you describe the modifications you made and your reasons for making them?

#### **D. The Teacher**

13. How do you feel about teaching this topic?

Do you enjoy it?

How well prepared to you feel to guide student learning of this content?

What opportunities have you had to learn about this particular content area?

(Probe for professional development opportunities.)

How did you become involved in these professional development opportunities?

Were they required or encouraged by the district?

How helpful were they?

14. How do you feel about teaching with this pedagogy?

How comfortable do you feel using the instructional strategies involved in teaching this lesson?

What opportunities have you had to learn about using these strategies?

(Probe for professional development opportunities.)

How did you become involved in these professional development opportunities?

Were they required or encouraged by the district?

How helpful were they?

15. How many years have you been teaching prior to this year?

Have you taught this lesson before?

*If yes:* How different was today from how you have taught it previously?

Is there anything about this particular group of students that led you to plan this lesson this way?

16. *If applicable ask:*

I noticed there was another adult in the classroom. Who was that and what was his/her role?

#### **E. Context**

17. Sometimes schools and districts make it easier for teachers to teach science/mathematics well, and sometimes they get in the way.

What about your teaching situation influenced your planning of this lesson?

PROBES:

Did the facilities and available equipment and supplies have any influence on your choice of this lesson or how you taught it?

Were there any problems in getting the materials you needed for this lesson?

18. Sometimes other people in the school and district can influence your planning of a lesson. Did your principal have any influence on your choice of this lesson or how you taught it?

Other teachers in the school?

Parents/community?

School board?

District administration?

Anyone else?

Thank you for your time. If I have any additional questions or need clarification, how and when is it best to contact you?

# Inside the Classroom Observation and Analytic Protocol

Observation Date: \_\_\_\_\_ Time: Start: \_\_\_\_\_ End: \_\_\_\_\_

School: \_\_\_\_\_ District: \_\_\_\_\_

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

## **PART ONE: THE LESSON**

### **Section A. Basic Descriptive Information**

1. Teacher Gender:     Male                     Female

Teacher Ethnicity:  American Indian or Alaskan Native  
 Asian  
 Hispanic or Latino  
 Black or African-American  
 Native Hawaiian or Other Pacific Islander  
 White

2. Subject Observed:  Mathematics     Science

3. Grade Level(s): \_\_\_\_\_

4. Course Title (if applicable) \_\_\_\_\_

Class Period (if applicable) \_\_\_\_\_

5. Students:                    \_\_\_\_\_ Number of Males                    \_\_\_\_\_ Number of Females

6. Did you collect copies of instructional materials to be sent to HRI?

Yes                     No, explain:

**Section B. Purpose of the Lesson:**

In this section, you are asked to indicate how lesson time was spent and to provide the teacher's stated purpose for the lesson.

1. According to the teacher, the purpose of this lesson was:
  
  
  
  
  
  
  
  
  
  
2. Based on time spent, the focus of this lesson is best described as: (Check one.)
  - Almost entirely working on the development of algorithms/facts/vocabulary
  - Mostly working on the development of algorithms/facts/vocabulary, but working on some mathematics/science concepts
  - About equally working on algorithms/facts/vocabulary and working on mathematics/science concepts
  - Mostly working on mathematics/science concepts, but working on some algorithms/facts/vocabulary
  - Almost entirely working on mathematics/science concepts

**Section C. Lesson Ratings**

In this part of the form, you are asked to rate each of a number of key indicators in four different categories, from 1 (not at all) to 5 (to a great extent). You may list any additional indicators you consider important in capturing the essence of this lesson and rate these as well. Use your “Ratings of Key Indicators” to inform your “Synthesis Ratings”. It is important to indicate in “Supporting Evidence for Synthesis Ratings” what factors were most influential in determining your synthesis ratings and to give specific examples and/or quotes to illustrate those factors.

Note that any one lesson is not likely to provide evidence for every single indicator; use 6, “Don’t know” when there is not enough evidence for you to make a judgment. Use 7, “N/A” (Not Applicable) when you consider the indicator inappropriate given the purpose and context of the lesson. This section also includes ratings of the likely impact of instruction and a capsule rating of the quality of the lesson.

# I. Design

## A. Ratings of Key Indicators

	Not at all		To a great extent			Don't know	N/A
	1	2	3	4	5	6	7
1. The design of the lesson incorporated tasks, roles, and interactions consistent with investigative mathematics/science.	1	2	3	4	5	6	7
2. The design of the lesson reflected careful planning and organization.	1	2	3	4	5	6*	7*
3. The instructional strategies and activities used in this lesson reflected attention to students' experience, preparedness, prior knowledge, and/or learning styles.	1	2	3	4	5	6	7
4. The resources available in this lesson contributed to accomplishing the purposes of the instruction.	1	2	3	4	5	6	7
5. The instructional strategies and activities reflected attention to issues of access, equity, and diversity for students (e.g., cooperative learning, language-appropriate strategies/materials).	1	2	3	4	5	6*	7*
6. The design of the lesson encouraged a collaborative approach to learning among the students.	1	2	3	4	5	6	7
7. Adequate time and structure were provided for "sense-making."	1	2	3	4	5	6*	7*
8. Adequate time and structure were provided for wrap-up.	1	2	3	4	5	6	7
9. _____	1	2	3	4	5		

\* We anticipate that these indicators should be rated 1-5 for nearly all lessons. If you rated any of these indicators 6 or 7, please provide an explanation in your supporting evidence below.

## B. Synthesis Rating

1	2	3	4	5
Design of the lesson not at all reflective of best practice in mathematics/science education				Design of the lesson extremely reflective of best practice in mathematics/science education

## C. Supporting Evidence for Synthesis Rating

Provide a brief description of the nature and quality of this component of the lesson, the rationale for your synthesis rating, and the evidence to support that rating.



## II. Implementation

### A. Ratings of Key Indicators

	Not at all					To a great extent					Don't know	N/A
	1	2	3	4	5	1	2	3	4	5	6	7
1. The instructional strategies were consistent with investigative mathematics/science.	1	2	3	4	5						6	7
2. The teacher appeared confident in his/her ability to teach mathematics/science.	1	2	3	4	5						6	7
3. The teacher's classroom management style/strategies enhanced the quality of the lesson.	1	2	3	4	5						6*	7*
4. The pace of the lesson was appropriate for the developmental levels/needs of the students and the purposes of the lesson.	1	2	3	4	5						6*	7*
5. The teacher was able to "read" the students' level of understanding and adjusted instruction accordingly.	1	2	3	4	5						6	7
→ 6. The teacher's questioning strategies were likely to enhance the development of student conceptual understanding/problem solving (e.g., emphasized higher order questions, appropriately used "wait time," identified prior conceptions and misconceptions).	1	2	3	4	5						6	7
7. _____	1	2	3	4	5							

\* We anticipate that these indicators should be rated 1-5 for nearly all lessons. If you rated any of these indicators 6 or 7, please provide an explanation in your supporting evidence below.

### B. Synthesis Rating

1	2	3	4	5
Implementation of the lesson not at all reflective of best practice in mathematics/science education				Implementation of the lesson extremely reflective of best practice in mathematics/science education

### C. Supporting Evidence for Synthesis Rating

Provide a brief description of the nature and quality of this component of the lesson, the rationale for your synthesis rating, and the evidence to support that rating. (If available, be sure to include examples/quotes to illustrate ratings of teacher questioning (A6).)

### III. Mathematics/Science Content

	Not at all					To a great extent	Don't know	N/A
<b>A. Ratings of Key Indicators</b>								
→1. The mathematics/science content was significant and worthwhile.	1	2	3	4	5		6*	7*
→2. The mathematics/science content was appropriate for the developmental levels of the students in this class.	1	2	3	4	5		6*	7*
→3. Teacher-provided content information was accurate.	1	2	3	4	5		6	7
→4. Students were intellectually engaged with important ideas relevant to the focus of the lesson.	1	2	3	4	5		6*	7*
5. The teacher displayed an understanding of mathematics/science concepts (e.g., in his/her dialogue with students).	1	2	3	4	5		6	7
6. Mathematics/science was portrayed as a dynamic body of knowledge continually enriched by conjecture, investigation analysis, and/or proof/justification.	1	2	3	4	5		6	7
7. Elements of mathematical/science abstraction (e.g., symbolic representations, theory building) were included when it was important to do so.	1	2	3	4	5		6	7
8. Appropriate connections were made to other areas of mathematics/science, to other disciplines, and/or to real-world contexts.	1	2	3	4	5		6	7
→9. The degree of “sense-making” of mathematics/science content within this lesson was appropriate for the developmental levels/needs of the students and the purposes of the lesson.	1	2	3	4	5		6*	7*
10. _____	1	2	3	4	5			

\* We anticipate that these indicators should be rated 1-5 for nearly all lessons. If you rated any of these indicators 6 or 7, please provide an explanation in your supporting evidence below.

#### B. Synthesis Rating

1	2	3	4	5
Mathematics/science content of lesson not at all reflective of current standards for mathematics/science education				Mathematics/science content of lesson extremely reflective of current standards for mathematics/science education

#### C. Supporting Evidence for Synthesis Rating

Provide a brief description of the nature and quality of this component of the lesson, the rationale for your synthesis rating, and the evidence to support that rating. (If available, be sure to include examples/quotes to illustrate ratings of quality of content (A1, A2, A3), intellectual engagement (A4), and nature of “sense-making” (A9).)

## IV. Classroom Culture

### A. Ratings of Key Indicators

	Not at all					To a great extent					Don't know	N/A
→1. Active participation of all was encouraged and valued.	1	2	3	4	5						6*	7*
→2. There was a climate of respect for students' ideas, questions, and contributions.	1	2	3	4	5						6*	7*
3. Interactions reflected collegial working relationships among students (e.g., students worked together, talked with each other about the lesson).	1	2	3	4	5						6	7
4. Interactions reflected collaborative working relationships between teacher and students.	1	2	3	4	5						6*	7*
5. The climate of the lesson encouraged students to generate ideas, questions, conjectures, and/or propositions.	1	2	3	4	5						6	7
→6. Intellectual rigor, constructive criticism, and the challenging of ideas were evident.	1	2	3	4	5						6*	7*
7. _____	1	2	3	4	5							

\* We anticipate that these indicators should be rated 1-5 for nearly all lessons. If you rated any of these indicators 6 or 7, please provide an explanation in your supporting evidence below.

### B. Synthesis Rating

1	2	3	4	5
Classroom culture interfered with student learning				Classroom culture facilitated the learning of all students

### C. Supporting Evidence for Synthesis Rating

Provide a brief description of the nature and quality of this component of the lesson, the rationale for your synthesis rating, and the evidence to support that rating. (If available, be sure to include examples/quotes to illustrate ratings of active participation (A1), climate of respect (A2), and intellectual rigor (A6). While direct evidence that reflects particular sensitivity or insensitivity toward student diversity is not often observed, we would like you to document any examples you do see.)

**Section D. Lesson Arrangements and Activities**

In question 1 of this section, please divide the total duration of the lesson into instructional and non-instructional time. In question 2, make your estimates based only on the *instructional time* of the lesson.

1. Approximately how many minutes during the lesson were spent:

a. On instructional activities? \_\_\_\_\_ minutes

b. On housekeeping unrelated to the lesson/interruptions/other non-instructional activities? \_\_\_\_\_ minutes

Describe:
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c. Check here if the lesson included a major interruption (e.g., fire drill, assembly, shortened class period):

2. Considering only the *instructional time* of the lesson (listed in 1a above), approximately what percent of this time was spent in each of the following arrangements?

a. Whole class \_\_\_\_\_ %

b. Pairs/small groups \_\_\_\_\_ %

c. Individuals \_\_\_\_\_ %

\_\_\_\_\_ **100 %**

## Section E. Overall Ratings of the Lesson

### 1. Likely Impact of Instruction on Students' Understanding of Mathematics/Science

While the impact of a single lesson may well be limited in scope, it is important to judge whether the lesson is likely to help move students in the desired direction. For this series of ratings, consider all available information (i.e., your previous ratings of design, implementation, content, and classroom culture, and the interview with the teacher) as you assess the likely impact of this lesson. Elaborate on ratings with comments in the space provided.

Select the response that best describes your overall assessment of the *likely effect* of this lesson in each of the following areas.

	Negative <u>effect</u>	Mixed or neutral <u>effect</u>	Positive <u>effect</u>	Don't know	N/A
a. Students' understanding of mathematics/science as a dynamic body of knowledge generated and enriched by investigation.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
b. Students' understanding of important mathematics/science concepts.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
c. Students' capacity to carry out their own inquiries.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
d. Students' ability to apply or generalize skills and concepts to other areas of mathematics/science, other disciplines, and/or real-life situations.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
e. Students' self-confidence in doing mathematics/science.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
f. Students' interest in and/or appreciation for the discipline.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**Comments:**

## 2. Capsule Rating of the Quality of the Lesson

In this final rating of the lesson, consider all available information about the lesson, its context and the teacher's purpose, and your own judgment of the relative importance of the ratings you have made. Select the capsule description that best characterizes the lesson you observed. Keep in mind that this rating is *not* intended to be an average of all the previous ratings, but should encapsulate your overall assessment of the quality and likely impact of the lesson.

### **O Level 1: Ineffective Instruction**

There is little or no evidence of student thinking or engagement with important ideas of mathematics/science. Instruction is *highly unlikely* to enhance students' understanding of the discipline or to develop their capacity to successfully "do" mathematics/science. Lesson was characterized by either (select one below):

#### **O Passive "Learning"**

Instruction is pedantic and uninspiring. Students are passive recipients of information from the teacher or textbook; material is presented in a way that is inaccessible to many of the students.

#### **O Activity for Activity's Sake**

Students are involved in hands-on activities or other individual or group work, but it appears to be activity for activity's sake. Lesson lacks a clear sense of purpose and/or a clear link to conceptual development.

### **O Level 2: Elements of Effective Instruction**

Instruction contains some elements of effective practice, but there are *serious problems* in the design, implementation, content, and/or appropriateness for many students in the class. For example, the content may lack importance and/or appropriateness; instruction may not successfully address the difficulties that many students are experiencing, etc. Overall, the lesson is *very limited* in its likelihood to enhance students' understanding of the discipline or to develop their capacity to successfully "do" mathematics/science.

### **O Level 3: Beginning Stages of Effective Instruction. (Select one below.)**

- Low 3       Solid 3       High 3

Instruction is purposeful and characterized by quite a few elements of effective practice. Students are, at times, engaged in meaningful work, but there are *weaknesses*, ranging from substantial to fairly minor, in the design, implementation, or content of instruction. For example, the teacher may short-circuit a planned exploration by telling students what they "should have found"; instruction may not adequately address the needs of a number of students; or the classroom culture may limit the accessibility or effectiveness of the lesson. Overall, the lesson is *somewhat limited* in its likelihood to enhance students' understanding of the discipline or to develop their capacity to successfully "do" mathematics/science.

### **O Level 4: Accomplished, Effective Instruction**

Instruction is purposeful and engaging for most students. Students actively participate in meaningful work (e.g., investigations, teacher presentations, discussions with each other or the teacher, reading). The lesson is well-designed and the teacher implements it well, but adaptation of content or pedagogy in response to student needs and interests is limited. Instruction is *quite likely* to enhance most students' understanding of the discipline and to develop their capacity to successfully "do" mathematics/science.

### **O Level 5: Exemplary Instruction**

Instruction is purposeful and all students are highly engaged most or all of the time in meaningful work (e.g., investigation, teacher presentations, discussions with each other or the teacher, reading). The lesson is well-designed and artfully implemented, with flexibility and responsiveness to students' needs and interests. Instruction is *highly likely* to enhance most students' understanding of the discipline and to develop their capacity to successfully "do" mathematics/science.

## Section F. Descriptive Rationale

### 1. Narrative

In 1–2 pages, describe what happened in this lesson, including enough rich detail that readers have a sense of having been there. Include:

- Where this lesson fit in with the overall unit;
- The focus of this lesson (e.g., the extent to which it was review/practice versus addressing new material; the extent to which it addressed algorithms/vocabulary versus mathematics/science concepts);
- Instructional materials used, if any;
- A synopsis of the structure/flow of the lesson;
- Nature and quality of lesson activities, including lecture, class discussion, problem-solving/investigation, seatwork;
- Roles of the teacher and students in the intellectual work of the lesson (e.g., providing problems or questions, proposing conjectures or hypotheses; developing/applying strategies or procedures; and drawing, challenging, or verifying conclusions);
- Roles of any other adults in the classroom, e.g., teacher's aide; and
- The reasoning behind your capsule rating, highlighting the likely impact on students' understanding of science/mathematics.

This description should stand on its own. Do not be concerned if you repeat information you have already provided elsewhere, e.g., in your supporting evidence for your synthesis ratings (e.g., implementation).

## 2. Lesson Features

Indicate which of the following features were included in this lesson, however briefly. Then, if NOT already described in the descriptive rationale, provide a brief description of the applicable features in this lesson.

	Check all that apply	Describe, if NOT in descriptive rationale
a. High quality “traditional” instruction, e.g., lecture	<input type="radio"/>	
b. High quality “reform” instruction, e.g., investigation	<input type="radio"/>	
c. Teacher/students using manipulatives	<input type="radio"/>	
d. Teacher/students using calculators/computers	<input type="radio"/>	
e. Teacher/students using other scientific equipment	<input type="radio"/>	
f. Teacher/students using other audio-visual resources	<input type="radio"/>	
g. Students playing a game	<input type="radio"/>	
h. Students completing labnotes/journals/worksheets or answering textbook questions/exercises	<input type="radio"/>	
i. Review/practice to prepare students for an externally mandated test	<input type="radio"/>	
j. More than incidental reference/connection to other disciplines	<input type="radio"/>	



## **PART TWO: INFLUENCES ON THE SELECTION OF TOPICS/INSTRUCTIONAL MATERIALS/ PEDAGOGY USED IN PLANNING THIS LESSON**

### **Section A. Areas of Influence**

Lessons are designed and selected for a variety of reasons, some of which are under the control of the teacher and some of which are not. In Part Two of the protocol, researchers should draw upon the teacher interview in considering how each of a number of factors influenced the selection of topics/instructional materials/pedagogy in planning for this lesson.

#### **1. Policy and Support Infrastructure**

##### **a. Curriculum and Assessment Policies**

- i. When talking about why s/he chose the mathematics/science topics/concepts/skills included in this lesson, the teacher spontaneously mentioned (Check all that apply):
- They are included in the curriculum/textbook/test; s/he is expected/required to teach them
  - They have always been taught in this grade/course
  - They are important for kids to learn
  - The students need knowledge of/exposure to these topics/concepts/skills for future units in this class/course
  - The students need knowledge of/exposure to these topics/concepts/skills for future classes/courses

In the interview, the teacher was explicitly asked about state and district curriculum and assessments. Please summarize the information the teacher provided about each of the following, including quotes when appropriate, being sure to note particular influences on the selection of topics, instructional materials, and/or pedagogy for this lesson. Then rate the extent of influence of each.

ii. State and district curriculum standards/frameworks

Describe:
Rate the extent to which this aspect influenced the selection of topics/instructional materials/pedagogy for this lesson. <input type="radio"/> Not at all <input type="radio"/> Somewhat <input type="radio"/> To a great extent <input type="radio"/> Not Applicable

iii. State and district science or mathematics tests/accountability systems/rewards and sanctions

Describe:
Rate the extent to which this aspect influenced the selection of topics/instructional materials/pedagogy for this lesson. <input type="radio"/> Not at all <input type="radio"/> Somewhat <input type="radio"/> To a great extent <input type="radio"/> Not Applicable

iv. Textbook/program designated for this class

Describe:
Rate the extent to which this aspect influenced the selection of topics/instructional materials/pedagogy for this lesson. <input type="radio"/> Not at all <input type="radio"/> Somewhat <input type="radio"/> To a great extent <input type="radio"/> Not Applicable

b. Support Infrastructure

In the interview, the teacher was asked about the professional development opportunities provided or encouraged by the district, as well as the influences of the principal, parents/community, school board, and other teachers in the school. Please summarize the information the teacher provided about each of the following, including quotes when appropriate, being sure to note particular influences on the selection of topics, instructional materials, and/or pedagogy for this lesson. Then rate the extent of influence of each.

i. Teacher professional development that is provided or encouraged by the district

Describe:
Rate the extent to which this aspect influenced the selection of topics/instructional materials/pedagogy for this lesson. <input type="radio"/> Not at all <input type="radio"/> Somewhat <input type="radio"/> To a great extent <input type="radio"/> Not Applicable

ii. Principal

Describe:
Rate the extent to which this aspect influenced the selection of topics/instructional materials/pedagogy for this lesson. <input type="radio"/> Not at all <input type="radio"/> Somewhat <input type="radio"/> To a great extent

iii. Parents/community

Describe:
Rate the extent to which this aspect influenced the selection of topics/instructional materials/pedagogy for this lesson. <input type="radio"/> Not at all <input type="radio"/> Somewhat <input type="radio"/> To a great extent

iv. School board/district administration

Describe:
Rate the extent to which this aspect influenced the selection of topics/instructional materials/pedagogy for this lesson. <input type="radio"/> Not at all <input type="radio"/> Somewhat <input type="radio"/> To a great extent

v. Teacher collegiality (within the school/district)

Describe:
Rate the extent to which this aspect influenced the selection of topics/instructional materials/pedagogy for this lesson. <input type="radio"/> Not at all <input type="radio"/> Somewhat <input type="radio"/> To a great extent

c. Other Elements of the Policy and Support Infrastructure

In the interview, the teacher may have mentioned other aspects of the policy environment and support infrastructure. For each of the following that were mentioned, please summarize the information the teacher provided, including quotes when appropriate, being sure to note particular influences on the selection of topics, instructional materials, and pedagogy for this lesson. Then, rate the extent of the influence of each.

i. National standards documents  Not mentioned

Describe:
Rate the extent to which this aspect influenced the selection of topics/instructional materials/pedagogy for this lesson. <input type="radio"/> Not at all <input type="radio"/> Somewhat <input type="radio"/> To a great extent

ii. School/district tracking/course assignment policies, including multi-age grouping and/or students remaining with the same teacher for multiple years  Not mentioned

Describe:
Rate the extent to which this aspect influenced the selection of topics/instructional materials/pedagogy for this lesson. <input type="radio"/> Not at all <input type="radio"/> Somewhat <input type="radio"/> To a great extent

iii. State and/or district tests of subjects other than the one observed  Not mentioned

Describe:
Rate the extent to which this aspect influenced the selection of topics/instructional materials/pedagogy for this lesson. <input type="radio"/> Not at all <input type="radio"/> Somewhat <input type="radio"/> To a great extent

iv. School/district scheduling policies, including class length/block scheduling  Not mentioned

Describe:

Rate the extent to which this aspect influenced the selection of topics/instructional materials/pedagogy for this lesson.  Not at all  Somewhat  To a great extent

v. Teacher evaluation system  Not mentioned

Describe:

Rate the extent to which this aspect influenced the selection of topics/instructional materials/pedagogy for this lesson.  Not at all  Somewhat  To a great extent

## 2. The Physical Environment

We are defining the physical environment as including:

- Size and “feel” of the room, including what’s on the walls;
- State of repair of classroom facilities;
- Appropriateness and flexibility of furniture;
- Availability of running water, electrical outlets, storage space; and
- Availability of equipment and supplies (including calculators and computers).

a. Describe the physical environment of this classroom.

b. Did the physical environment constrain the design and/or implementation of this lesson?  
(Circle one.)

Yes                      No                      Don’t know  
*If yes, explain:*

### 3. Instructional Materials

- a. Which best describes the source of the **instructional materials** upon which this lesson was based? (Check one.)
- Materials designated for this class/course, from a commercially published textbook/program
  - Materials designated for this class/course, developed by district, school, or other non-commercial source
  - Materials selected or adapted by the teacher, from a commercially published textbook/program
  - Materials selected or adapted by the teacher, from a non-commercial source
  - Materials developed by the teacher
- b. Describe the textbook/program/instructional materials, including publisher, title, date, and pages if applicable. If the teacher made modifications to the instructional materials for this lesson, describe the modifications, why the teacher made these modifications, and the impact of the modifications on the quality of the lesson design.

#### 4. Student Characteristics

- a. Number of students:
- i. Total in class: \_\_\_\_\_
  - ii. For whom English is not their first language: \_\_\_\_\_
  - iii. With learning disabilities: \_\_\_\_\_
  - iv. With other special needs: \_\_\_\_\_
- b. Describe the ability level of students in this class compared to the student population in the school. (Check one.)
- Represent the lower range of ability levels
  - Represent the middle range of ability levels
  - Represent the higher range of ability levels
  - Represent a broad range of ability levels
- c. Teachers may consciously or unconsciously base their decisions on their perceptions of the characteristics of a particular group of students. Describe how the characteristics of the students in this class may have influenced the selection of topics/instructional materials/pedagogy for this lesson.

In this category, we include such factors as:

- Cognitive abilities
- Learning styles
- Prior knowledge
- Prior school experience
- Fluency with English
- Student attitudes towards science and mathematics
- Perceptions of utility of content
- Goals and aspirations
- Facility with class routines
- Student absenteeism/mobility
- Influence of parents
- Influence of peer culture



## 5. The Teacher

- a. Number of years teacher has taught prior to this school year: \_\_\_\_\_
- b. In most situations, teachers have considerable latitude in making instructional decisions, and their decisions are often influenced by such factors as the teacher's:
- Knowledge of/attitudes toward/beliefs about the subject matter;
  - Knowledge of/attitudes toward/beliefs about students as learners in general;
  - Knowledge of/attitudes toward/beliefs about pedagogy;
  - Pedagogical content knowledge/expertise; and
  - Choices about professional development, conferences, networks.

Describe how the teacher's background knowledge, skills, and attitudes may have affected the selection of topics/instructional materials/pedagogy for this lesson.

- c. If you think this lesson was very different from what is typical of this teacher's instruction in the class, check here  and explain the likely differences and the evidence you have for them.

**Section B. Why This Lesson?**

In the previous section you considered separately how each of a number of factors (curriculum and assessment policies, supportive infrastructure, physical environment, instructional materials, student characteristics, teacher) may have influenced the selection of topics/instructional materials/pedagogy for this lesson. In this section, we would like you to consider how these various influences interacted, and highlight those which were most salient in determining why this lesson was taught and how it was designed. (Do not consider how well the design actually matched the students' needs, how well it was implemented, or your own judgement of the teacher's knowledge and skills. Rather, try to put yourself in the teacher's head—what s/he was thinking when planning this lesson. It would be appropriate to say "The teacher perceived himself as highly knowledgeable about..." or "The teacher indicated that the students already understood..." even if you have reason to believe that the teacher's perceptions are inaccurate.)

## **PART THREE: PUTTING IT ALL TOGETHER**

We plan to use the data collected in this study to illustrate the status of mathematics and science education in the United States; to talk about the factors that affect the nature, substance, and quality of teaching practice in science and mathematics; and to understand how broadly and deeply “reform” has penetrated into science and mathematics classrooms. We will use narrative accounts (stories and vignettes) as devices to illustrate the nature of, quality of, and factors affecting science and mathematics lessons.

You have now had the opportunity to observe a lesson and also to find out what the teacher was thinking when s/he designed it. In this section, we ask you to “put it all together,” highlighting “the story” of this lesson and providing a tag line that together communicate to us the narrative account that you would write about this lesson. We also ask you to assess the overall quality of the lesson, provide any additional information you would like to share about this lesson, and let us know if you think this lesson would make an interesting vignette.

### **1. The Story of this Lesson**

Summarize why this lesson was taught, why it looked the way it did, and how well it worked.

### **2. Tag Line**

Write a phrase or brief sentence that captures the essence of the story of this lesson.

### **3. Overall assessment of the quality of the lesson in layperson’s terms:**

\_\_\_\_\_ Bad  
\_\_\_\_\_ Fair  
\_\_\_\_\_ Good  
\_\_\_\_\_ Very Good

### **4. Additional Information**

Use this space to write anything else you would like to say about this lesson, e.g., to suggest specific issues that may or may not be central to the story of this lesson, but illustrate a dilemma or issue particularly well.

### **5. Recommendation**

Check here if you would recommend that this lesson be considered for a vignette.

# 2000 National Survey of Science and Mathematics Education

## Mathematics Questionnaire

### A. Teacher Opinions

1. Please provide your opinion about each of the following statements. (Darken one oval on each line.)
- |   | Strongly<br>Disagree  | Disagree              | No<br>Opinion         | Agree                 | Strongly<br>Agree                |
|---|-----------------------|-----------------------|-----------------------|-----------------------|----------------------------------|
| a. Students learn mathematics best in classes with students of similar abilities.   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input checked="" type="radio"/> |
| b. The testing program in my state/district dictates what mathematics content I teach.  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>            |
| c. I enjoy teaching mathematics.  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>            |
| d. I consider myself a "master" mathematics teacher.  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>            |
| e. I have time during the regular school week to work with my colleagues on mathematics curriculum and teaching.                                | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>            |
| f. Mathematics teachers in this school regularly observe each other teaching classes as part of sharing and improving instructional strategies. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>            |
| g. Most mathematics teachers in this school contribute actively to making decisions about the mathematics curriculum.                           | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>            |
2. How familiar are you with the NCTM *Standards*? (Darken one oval.)
- Not at all familiar
  - Somewhat familiar
  - Fairly familiar
  - Very familiar

### B. Teacher Background

3. Please indicate how well prepared you currently feel to do each of the following in your mathematics instruction. (Darken one oval on each line.)
- |   | Not<br>Adequately<br>Prepared | Somewhat<br>Prepared  | Fairly Well<br>Prepared | Very Well<br>Prepared            |
|---|-------------------------------|-----------------------|-------------------------|----------------------------------|
| a. Take students' prior understanding into account when planning curriculum and instruction | <input type="radio"/>         | <input type="radio"/> | <input type="radio"/>   | <input checked="" type="radio"/> |
| b. Have students work in cooperative learning groups  | <input type="radio"/>         | <input type="radio"/> | <input type="radio"/>   | <input type="radio"/>            |
| c. Use the textbook as a resource rather than the primary instructional tool                | <input type="radio"/>         | <input type="radio"/> | <input type="radio"/>   | <input type="radio"/>            |
| d. Teach groups that are heterogeneous in ability   | <input type="radio"/>         | <input type="radio"/> | <input type="radio"/>   | <input type="radio"/>            |
| e. Teach students who have limited English proficiency                                      | <input type="radio"/>         | <input type="radio"/> | <input type="radio"/>   | <input type="radio"/>            |
| f. Encourage participation of females in mathematics  | <input type="radio"/>         | <input type="radio"/> | <input type="radio"/>   | <input type="radio"/>            |
| g. Encourage participation of minorities in mathematics                                     | <input type="radio"/>         | <input type="radio"/> | <input type="radio"/>   | <input type="radio"/>            |

4a. Do you have each of the following degrees?

Bachelors	<input type="radio"/>	Yes	<input type="radio"/>	No
Masters	<input type="radio"/>	Yes	<input type="radio"/>	No
Doctorate	<input type="radio"/>	Yes	<input type="radio"/>	No

4b. Please indicate the subject(s) for each of your degrees. (Darken all that apply.)

	Bachelors	Masters	Doctorate
Mathematics	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Computer Science	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Mathematics Education	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Science/Science Education	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Elementary Education	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other Education (e.g., History Education, Special Education)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other, please specify _____	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

PLEASE DO NOT WRITE IN THIS AREA



[SERIAL]

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5. Which of the following college courses have you completed? Include both semester hour and quarter hour courses, whether graduate or undergraduate level. Include courses for which you received college credit, even if you took the course in high school. (Darken all that apply.)

MATHEMATICS

- Mathematics for elementary school teachers
- Mathematics for middle school teachers
- Geometry for elementary/middle school teachers
- College algebra/trigonometry/elementary functions
- Calculus
- Advanced calculus
- Real analysis
- Differential equations
- Geometry
- Probability and statistics
- Abstract algebra
- Number theory
- Linear algebra
- Applications of mathematics/problem solving
- History of mathematics
- Discrete mathematics
- Other upper division mathematics

SCIENCES/COMPUTER SCIENCES

- Biological sciences
- Chemistry
- Physics
- Physical science
- Earth/space science
- Engineering (any)
- Computer programming
- Other computer science

EDUCATION

- General methods of teaching
- Methods of teaching mathematics
- Instructional uses of computers/other technologies
- Supervised student teaching in mathematics

6. For each of the following subject areas, indicate the number of college semester and quarter courses you have completed. Count each course you have taken, regardless of whether it was a graduate or undergraduate course. If your transcripts are not available, provide your best estimates.

	<u>Semester Courses</u>	<u>Quarter Courses</u>
a. Mathematics education	<input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	<input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>
b. Calculus	<input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	<input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>
c. Statistics	<input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	<input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>
d. Advanced calculus	<input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	<input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>
e. All other mathematics courses	<input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	<input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>
f. Computer science	<input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	<input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>
g. Science	<input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	<input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>

7. In what year did you last take a formal course for college credit in:

- a. Mathematics: \_\_\_\_\_ b. The Teaching of Mathematics: \_\_\_\_\_

If you have never taken a course in the teaching of mathematics, darken this oval.

8. What is the total amount of time you have spent on professional development in mathematics or the teaching of mathematics in the last 12 months? in the last 3 years? (Include attendance at professional meetings, workshops, and conferences, but do not include formal courses for which you received college credit or time you spent providing professional development for other teachers.) (Darken one oval on each line.)

	<u>Hours of In-service Education</u>				
	None	Less than 6 hours	6-15 hours	16-35 hours	More than 35 hours
In the last 12 months	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
In the last 3 years	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

9. In the past 12 months, have you: (Darken one oval on each line.)

- a. Taught any in-service workshops in mathematics or mathematics teaching?  Yes  No
- b. Mentored another teacher as part of a formal arrangement that is recognized or supported by the school or district, not including supervision of student teachers?  Yes  No
- c. Received any local, state, or national grants or awards for mathematics teaching?  Yes  No
- d. Served on a school or district mathematics curriculum committee?  Yes  No
- e. Served on a school or district mathematics textbook selection committee?  Yes  No

10a. Do you teach in a **self-contained class**? (i.e., you teach multiple subjects to the same class of students all or most of the day.)

- Yes, CONTINUE WITH QUESTIONS 10b AND 10c
- No, SKIP TO QUESTION 11

10b. **For teachers of self-contained classes:** Many teachers feel better qualified to teach some subject areas than others. How well qualified 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 curriculum? (Darken one oval on each line.)

	Not Well Qualified	Adequately Qualified	Very Well Qualified
a. Life science	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>
b. Earth science	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>
c. Physical science	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>
d. Mathematics	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>
e. Reading/Language Arts	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>
f. Social Studies	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>

10c. **For teachers of self-contained classes:** We are interested in knowing how much time your students spend studying various subjects. In a typical week, how many days do you have lessons on each of the following subjects, and how many minutes long is an average lesson? (Please indicate "0" if you do not teach a particular subject to this class.)

	Days Per Week	Approximate Minutes Per Day		Days Per Week	Approximate Minutes Per Day
<b>Mathematics</b>	_____	_____	<b>Social Studies</b>	_____	_____
<b>Science</b>	_____	_____	<b>Reading/Language Arts</b>	_____	_____

**NOW GO TO SECTION C, ON THE NEXT PAGE .**

11. **For teachers of non-self-contained classes:** For each class period you are currently teaching, regardless of the subject, give *course title*, the *code-number* from the enclosed blue "List of Course Titles" that best describes the content addressed in the class, and the *number of students* in the class. (If you teach more than one section of a course, record each section separately below. If you teach more than 6 classes per day, please provide the requested information for the additional classes on a separate sheet of paper.)

<i>Course Title</i>	<i>Course Code</i>	<i>Number of Students</i>
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
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### C. Your Mathematics Teaching in a Particular Class

The questions in this section are about a particular mathematics class you teach. **If you teach mathematics to more than one class per day, please consult the label on the cover letter to determine which mathematics class to use to answer these questions.**

12. Using the blue "List of Course Titles," indicate the code number that best describes this course. \_\_\_\_\_

(If "other" [Code 299], briefly describe content of course: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_)

13. Please indicate the grades of the students in this class. (Darken all that apply.)

K  1  2  3  4  5  6  7  8  9  10  11  12

14a. What is the total number of students in this class? \_\_\_\_\_

14b. Please indicate the number of students in this class in each of the following categories. Consult the enclosed federal guidelines at the end of the course list (blue sheet) if you have any questions about how to classify particular students.

	Male	Female
American Indian or American Native	_____	_____
Asian	_____	_____
Black or African-American	_____	_____
Hispanic or Latino (any race)	_____	_____
Native Hawaiian or Other Pacific Islander	_____	_____
White	_____	_____

15. **This question applies only to teachers of non-self-contained classes. If you teach a self-contained class, please darken this oval  and skip to question 16.** What is the usual schedule and length (in minutes) of daily class meetings for this class? If the weekly schedule is normally the same, just complete Week 1, as in Example 1. If you are unable to describe this class in the format below, please attach a separate piece of paper with your description.

	Week 1	Week 2
Monday	_____	_____
Tuesday	_____	_____
Wednesday	_____	_____
Thursday	_____	_____
Friday	_____	_____

Examples			
Example 1		Example 2	
Week 1	Week 2	Week 1	Week 2
45	_____	90	_____
45	_____	_____	90
45	_____	90	_____
45	_____	_____	90
45	_____	90	_____

16. Are students assigned to this class by level of ability? (Darken one oval.)  Yes  No

17. Which of the following best describes the ability of the students in this class relative to other students in this school? (Darken one oval.)

- Fairly homogeneous and low in ability
- Fairly homogeneous and average in ability
- Fairly homogeneous and high in ability
- Heterogeneous, with a mixture of two or more ability levels

18. Indicate if any of the students in this mathematics class are **formally** classified as each of the following: (Darken all that apply.)

- Limited English Proficiency
- Learning Disabled
- Mentally Handicapped
- Physically Handicapped, please specify handicap(s): \_\_\_\_\_

19. Think about your plans for this mathematics class for the entire course. How much emphasis will each of the following **student objectives** receive? (Darken one oval on each line.)

	None	Minimal Emphasis	Moderate Emphasis	Heavy Emphasis
a. Increase students' interest in mathematics	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>
b. Learn mathematical concepts	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>
c. Learn mathematical algorithms/procedures	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>
d. Develop students' computational skills	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>
e. Learn how to solve problems	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>
f. Learn to reason mathematically	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>
g. Learn how mathematics ideas connect with one another	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>
h. Prepare for further study in mathematics	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>
i. Understand the logical structure of mathematics	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>
j. Learn about the history and nature of mathematics	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>
k. Learn to explain ideas in mathematics effectively	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>
l. Learn how to apply mathematics in business and industry	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>
m. Learn to perform computations with speed and accuracy	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>
n. Prepare for standardized tests	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>

20. About how often do **you** do each of the following in your mathematics instruction? (Darken one oval on each line.)

	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 mathematics lessons
a. Introduce content through formal presentations	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>
b. Pose open-ended questions	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>
c. Engage the whole class in discussions	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>
d. Require students to explain their reasoning when giving an answer	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>
e. Ask students to explain concepts to one another	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>
f. Ask students to consider alternative methods for solutions	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>
g. Ask students to use multiple representations (e.g., numeric, graphic, geometric, etc.)	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>
h. Allow students to work at their own pace	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>
i. Help students see connections between mathematics and other disciplines	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>
j. Assign mathematics homework	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>
k. Read and comment on the reflections students have written, e.g., in their journals	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>



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21. About how often do students in this **mathematics** class take part in the following types of activities? (Darken one oval on each line.)

	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 mathematics lessons
a. Listen and take notes during presentation by teacher	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
b. Work in groups	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
c. Read from a mathematics textbook in class	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
d. Read other (non-textbook) mathematics-related materials in class	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
e. Engage in mathematical activities using concrete materials	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
f. Practice routine computations/algorithms	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
g. Review homework/worksheet assignments	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
h. Follow specific instructions in an activity or investigation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
i. Design their <i>own</i> activity or investigation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
j. Use mathematical concepts to interpret and solve applied problems	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
k. Answer textbook or worksheet questions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
l. Record, represent, and/or analyze data	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
m. Write reflections (e.g., in a journal)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
n. Make formal presentations to the rest of the class	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
o. Work on extended mathematics investigations or projects (a week or more in duration)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
p. Use calculators or computers for learning or practicing skills	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
q. Use calculators or computers to develop conceptual understanding	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
r. Use calculators or computers as a tool (e.g., spreadsheets, data analysis)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

22. About how often do students in this mathematics class use **calculators/computers** to: (Darken one oval on each line.)

	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 mathematics lessons
a. Do drill and practice	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
b. Demonstrate mathematics principles	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
c. Play mathematics learning games	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
d. Do simulations	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
e. Collect data using sensors or probes	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
f. Retrieve or exchange data	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
g. Solve problems using simulations	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
h. Take a test or quiz	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

23. How much of your own money do you estimate you will spend for supplies for this mathematics class this school year (or semester or quarter if not a full-year course)? \_\_\_\_\_

If none, darken this oval:

24. How much of your own money do you estimate you will spend for your own professional development activities during the period Sept. 1, 2000 - Aug. 31, 2001? \_\_\_\_\_

If none, darken this oval:

25. How much mathematics homework do you assign to this mathematics class in a typical **week**? (Darken one oval.)

0-30 min    31-60 min    61-90 min    91-120 min    2-3 hours    More than 3 hours

PLEASE DO NOT WRITE IN THIS AREA



[SERIAL]

26a. Are you using one or more commercially published textbooks or programs for teaching mathematics to this class? (Darken one oval.)  No, SKIP TO SECTION D  Yes, CONTINUE WITH 26b

26b. Which best describes your use of textbooks/programs in this class? (Darken one oval.)

- Use one textbook or program all or most of the time  
 Use multiple textbooks/programs

27a. Please indicate the title, author, publisher, and publication year of the **one** textbook/program used **most often** by students in this class.

Title: \_\_\_\_\_

First Author: \_\_\_\_\_

Publisher: \_\_\_\_\_

Publication Year: \_\_\_\_\_ Edition: \_\_\_\_\_

27b. Approximately what percentage of this textbook/program will you "cover" in this course? (Darken one oval.)

- < 25%     25-49%     50-74%     75-90%     >90%

27c. How would you rate the overall quality of this textbook/program? (Darken one oval.)

- Very Poor     Poor     Fair     Good     Very Good     Excellent

## D. Your Most Recent Mathematics Lesson in This Class

Questions 28-30 refer to the last time you taught mathematics to this class. Do not be concerned if this lesson was not typical of instruction in this class.

28a. How many minutes were allocated to the most recent mathematics lesson? \_\_\_\_\_

Note: Teachers in departmentalized and other non-self-contained settings should answer for the entire length of the class period, even if there were interruptions.

28b. Of these, how many minutes were spent on the following:  
(The sum of the numbers in 1.-6. below should equal your response in 28a.)

- \_\_\_\_\_ 1. Daily routines, interruptions, and other non-instructional activities  
\_\_\_\_\_ 2. Whole class lecture/discussions  
\_\_\_\_\_ 3. Individual students reading textbooks, completing worksheets, etc.  
\_\_\_\_\_ 4. Working with hands-on or manipulative materials  
\_\_\_\_\_ 5. Non-manipulative small group work  
\_\_\_\_\_ 6. Other



# 2000 National Survey of Science and Mathematics Education Science Questionnaire

## A. Teacher Opinions

1. Please provide your opinion about each of the following statements. (Darken one oval on each line.)

	Strongly Disagree	Disagree	No Opinion	Agree	Strongly Agree
a. Students learn science best in classes with students of similar abilities.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
b. The testing program in my state/district dictates what science content I teach.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
c. I enjoy teaching science.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
d. I consider myself a "master" science teacher.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
e. I have time during the regular school week to work with my colleagues on science curriculum and teaching.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
f. Science teachers in this school regularly observe each other teaching classes as part of sharing and improving instructional strategies.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
g. Most science teachers in this school contribute actively to making decisions about the science curriculum.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>

2. How familiar are you with the *National Science Education Standards*, published by the National Research Council? (Darken one oval.)

- Not at all familiar
- Somewhat familiar
- Fairly familiar
- Very familiar

## B. Teacher Background

3. Please indicate how well prepared you currently feel to do each of the following in your science instruction. (Darken one oval on each line.)

	Not Adequately Prepared	Somewhat Prepared	Fairly Well Prepared	Very Well Prepared
a. Take students' prior understanding into account when planning curriculum and instruction	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
b. Have students work in cooperative learning groups	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
c. Use the textbook as a resource rather than the primary instructional tool	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
d. Teach groups that are heterogeneous in ability	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
e. Teach students who have limited English proficiency	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
f. Encourage participation of females in science	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
g. Encourage participation of minorities in science	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>

4a. Do you have each of the following degrees?

Bachelors	<input checked="" type="radio"/> Yes	<input type="radio"/> No
Masters	<input checked="" type="radio"/> Yes	<input type="radio"/> No
Doctorate	<input checked="" type="radio"/> Yes	<input type="radio"/> No

4b. Please indicate the subject(s) for each of your degrees. (Darken all that apply.)

	Bachelors	Masters	Doctorate
Biology/Life Science	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Chemistry	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Earth/Space Science	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Physics	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other science, please specify: _____	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Science Education (any science discipline)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Mathematics/Mathematics Education	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Elementary Education	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other Education (e.g., History Education, Special Education)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other, please specify: _____	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



9. In the past **12 months**, have you: (Darken one oval on each line.)

- a. Taught any in-service workshops in science or science teaching?  Yes  No
- b. Mentored another teacher as part of a formal arrangement that is recognized or supported by the school or district, not including supervision of student teachers?  Yes  No
- c. Received any local, state, or national grants or awards for science teaching?  Yes  No
- d. Served on a school or district science curriculum committee?  Yes  No
- e. Served on a school or district science textbook selection committee?  Yes  No

10a. Do you teach in a **self-contained class**? (i.e., you teach multiple subjects to the same class of students all or most of the day.)  Yes, CONTINUE WITH QUESTIONS 10b and 10c  No, SKIP TO QUESTION 11

10b. **For teachers of self-contained classes:** Many teachers feel better qualified to teach some subject areas than others. How well qualified 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 curriculum? (Darken one oval on each line.)

	Not Well Qualified	Adequately Qualified	Very Well Qualified
a. Life science	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>
b. Earth science	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>
c. Physical science	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>
d. Mathematics	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>
e. Reading/Language Arts	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>
f. Social Studies	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>

10c. **For teachers of self-contained classes:** We are interested in knowing how much time your students spend studying various subjects. In a typical week, how many days do you have lessons on each of the following subjects, and how many minutes long is an average lesson? (Please indicate "0" if you do not teach a particular subject to this class.)

	Days Per Week	Approximate Minutes Per Day		Days Per Week	Approximate Minutes Per Day
<b>Mathematics</b>	_____	_____	<b>Social Studies</b>	_____	_____
<b>Science</b>	_____	_____	<b>Reading/Language Arts</b>	_____	_____

**NOW GO TO SECTION C, ON THE NEXT PAGE .**

11. **For teachers of non-self-contained classes:** For each class period you are currently teaching, regardless of the subject, give *course title*, the *code-number* from the enclosed blue "List of Course Titles" that best describes the content addressed in the class, and the *number of students* in the class. (If you teach more than one section of a course, record each section separately below. If you teach more than 6 classes per day, please provide the requested information for the additional classes on a separate sheet of paper.)

<i>Course Title</i>	<i>Course Code</i>	<i>Number of Students</i>
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
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### C. Your Science Teaching in a Particular Class

The questions in this section are about a particular science class you teach. **If you teach science to more than one class per day, please consult the label on the cover letter to determine which science class to use to answer these questions.**

12. Using the blue "List of Course Titles," indicate the code number that best describes this course. \_\_\_\_\_  
 (If "other" [Code 199], briefly describe content of course: \_\_\_\_\_)

13. Please indicate the grades of the students in this class. (Darken all that apply.)

K  1  2  3  4  5  6  7  8  9  10  11  12

14a. What is the total number of students in this class? \_\_\_\_\_

14b. Please indicate the number of students in this class in each of the following categories. Consult the enclosed federal guidelines at the end of the course list (blue sheet) if you have any questions about how to classify particular students.

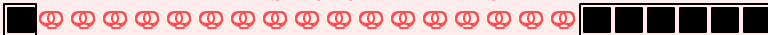
	Male	Female
American Indian or American Native	_____	_____
Asian	_____	_____
Black or African-American	_____	_____
Hispanic or Latino (any race)	_____	_____
Native Hawaiian or Other Pacific Islander	_____	_____
White	_____	_____

15. **This question applies only to teachers of non-self-contained classes. If you teach a self-contained class, please darken this oval  and skip to question 16.** What is the usual schedule and length (in minutes) of daily class meetings for this class? If the weekly schedule is normally the same, just complete Week 1, as in Example 1. If you are unable to describe this class in the format below, please attach a separate piece of paper with your description.

	Week 1	Week 2
Monday	_____	_____
Tuesday	_____	_____
Wednesday	_____	_____
Thursday	_____	_____
Friday	_____	_____

Examples			
Example 1		Example 2	
Week 1	Week 2	Week 1	Week 2
45	_____	90	_____
45	_____	_____	90
45	_____	90	_____
45	_____	_____	90
45	_____	90	_____

PLEASE DO NOT WRITE IN THIS AREA



[SERIAL]

16. Are students assigned to this class by level of ability? (Darken one oval.)  Yes  No

17. Which of the following best describes the ability of the students in this class relative to other students in this school? (Darken one oval.)

- Fairly homogeneous and low in ability
- Fairly homogeneous and average in ability
- Fairly homogeneous and high in ability
- Heterogeneous, with a mixture of two or more ability levels

18. Indicate if any of the students in this science class are **formally** classified as each of the following: (Darken all that apply.)

- Limited English Proficiency
- Learning Disabled
- Mentally Handicapped
- Physically Handicapped, please specify handicap(s): \_\_\_\_\_

19. Think about your plans for this science class for the entire course. How much emphasis will each of the following **student objectives** receive? (Darken one oval on each line.)

	None	Minimal Emphasis	Moderate Emphasis	Heavy Emphasis
a. Increase students' interest in science	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
b. Learn basic science concepts	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
c. Learn important terms and facts of science	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
d. Learn science process/inquiry skills	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
e. Prepare for further study in science	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
f. Learn to evaluate arguments based on scientific evidence	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
g. Learn how to communicate ideas in science effectively	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
h. Learn about the applications of science in business and industry	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
i. Learn about the relationship between science, technology, and society	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
j. Learn about the history and nature of science	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
k. Prepare for standardized tests	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

20. About how often do **you** do each of the following in your science instruction? (Darken one oval on each line.)

	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
a. Introduce content through formal presentations	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
b. Pose open-ended questions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
c. Engage the whole class in discussions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
d. Require students to supply evidence to support their claims	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
e. Ask students to explain concepts to one another	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
f. Ask students to consider alternative explanations	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
g. Allow students to work at their own pace	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
h. Help students see connections between science and other disciplines	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
i. Assign science homework	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
j. Read and comment on the reflections students have written, e.g., in their journals	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



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21. About how often do students in this science class take part in the following types of activities? (Darken one oval on each line.)

	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
a. Listen and take notes during presentation by teacher	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
b. Watch a science demonstration	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
c. Work in groups	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
d. Read from a science textbook in class	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
e. Read other (non-textbook) science-related materials in class	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
f. Do hands-on/laboratory science activities or investigations	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
g. Follow specific instructions in an activity or investigation	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
h. Design or implement their <i>own</i> investigation	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
i. Participate in field work	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
j. Answer textbook or worksheet questions	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
k. Record, represent, and/or analyze data	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
l. Write reflections (e.g., in a journal)	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
m. Prepare written science reports	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
n. Make formal presentations to the rest of the class	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
o. Work on extended science investigations or projects (a week or more in duration)	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
p. Use computers as a tool (e.g., spreadsheets, data analysis)	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
q. Use mathematics as a tool in problem-solving	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
r. Take field trips	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
s. Watch audiovisual presentations (e.g., videotapes, CD-ROMs, videodiscs, television programs, films, or filmstrips)	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

22. About how often do students in this science class use **computers** to: (Darken one oval on each line.)

	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
a. Do drill and practice	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
b. Demonstrate scientific principles	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
c. Play science learning games	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
d. Do laboratory simulations	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
e. Collect data using sensors or probes	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
f. Retrieve or exchange data	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
g. Solve problems using simulations	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
h. Take a test or quiz	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

23. How much of your own money do you estimate you will spend for supplies for this science class this school year (or semester or quarter if not a full-year course)? \_\_\_\_\_ If none, darken this oval:

24. How much of your own money do you estimate you will spend for your own professional development activities during the period Sept. 1, 2000 - Aug. 31, 2001? \_\_\_\_\_ If none, darken this oval:

25. How much science homework do you assign to this science class in a typical **week**? (Darken one oval.)  
 0-30 min     31-60 min     61-90 min     91-120 min     2-3 hours     More than 3 hours

26a. Are you using one or more commercially published textbooks or programs for teaching science to this class? (Darken one oval.)  
 No, SKIP TO SECTION D, ON THE NEXT PAGE  
 Yes, CONTINUE WITH 26b

26b. Which best describes your use of textbooks/programs in this class? (Darken one oval.)

- Use one textbook or program all or most of the time
- Use multiple textbooks/programs

27a. Please indicate the title, author, publisher, and publication year of the **one** textbook/program used **most often** by students in this class.

Title: \_\_\_\_\_

First Author: \_\_\_\_\_

Publisher: \_\_\_\_\_

Publication Year: \_\_\_\_\_ Edition: \_\_\_\_\_

27b. Approximately what percentage of this textbook/program will you "cover" in this course? (Darken one oval.)

- < 25%
- 25-49%
- 50-74%
- 75-90%
- >90%

27c. How would you rate the overall quality of this textbook/program? (Darken one oval.)

- Very Poor
- Poor
- Fair
- Good
- Very Good
- Excellent

### D. Your Most Recent Science Lesson in This Class

Questions 28-30 refer to the last time you taught science to this class. Do not be concerned if this lesson was not typical of instruction in this class.

28a. How many minutes were allocated to the most recent science lesson? \_\_\_\_\_

Note: Teachers in departmentalized and other non-self-contained settings should answer for the entire length of the class period, even if there were interruptions.

28b. Of these, how many minutes were spent on the following: (The sum of the numbers in 1.-6. below should equal your response in 28a.)

- \_\_\_\_\_ 1. Daily routines, interruptions, and other non-instructional activities
- \_\_\_\_\_ 2. Whole class lecture/discussions
- \_\_\_\_\_ 3. Individual students reading textbooks, completing worksheets, etc.
- \_\_\_\_\_ 4. Working with hands-on or manipulative materials
- \_\_\_\_\_ 5. Non-manipulative small group work
- \_\_\_\_\_ 6. Other

29. Which of the following activities took place during that science lesson? (Darken all that apply.)

- Lecture
- Discussion
- Students completing textbook/worksheet problems
- Students doing hands-on/laboratory activities
- Students reading about science
- Students working in small groups
- Students using calculators
- Students using computers
- Students using other technologies
- Test or quiz
- None of these activities took place

PLEASE DO NOT WRITE IN THIS AREA



[SERIAL]

