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Local Systemic Change *through* Teacher Enhancement

Science (Grades 6-12)

2006 Teacher Questionnaire

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Instructions: Please use a #2 pencil to complete this questionnaire. Darken ovals completely, but do not stray into adjacent ovals. Be sure to erase completely any stray marks.

A. Teacher Demographic Information

1. Are you:

- ○ Male
- ○ Female

2a. Ethnicity - Are you: (Darken one oval.)

- ○ Hispanic or Latino
- ○ Not Hispanic or Latino

2b. Race - Are you: (Choose one or more.)

- ○ American Indian or Alaska Native
- ○ Asian
- ○ Black or African American
- ○ Native Hawaiian or Other Pacific Islander
- ○ White

3. For each of the following subjects, please indicate (a) the number of semesters of college coursework you have completed, and (b) whether you are certified to teach it at the secondary level. (Darken one oval in each section on each line.)

		Number of semesters college coursework				Certified?	
		0	1-3	4-7	8 or more	Yes	No
a.	Life Science/Biology	○	○	○	○	○	○
b.	Earth/Space Science	○	○	○	○	○	○
c.	Chemistry	○	○	○	○	○	○
d.	Physics/Physical Science	○	○	○	○	○	○
e.	Engineering/Technology	○	○	○	○	○	○
f.	Mathematics	○	○	○	○	○	○

4. How many years have you taught prior to this school year? (Darken one oval.)

0-2 ○ 3-5 ○ 6-10 ○ 11-15 ○ 16-20 ○ 21-25 ○ 26 or more ○

5. When did you last complete a science course for college credit? (Darken one oval.)

○ In the last 5 years ○ 6-10 years ago ○ 11-20 years ago ○ More than 20 years ago

6. Which of the following courses have you taught in the last 3 years? (Darken all ovals that apply.)

- ○ Life Science/Biology
- ○ Advanced Biology
- ○ Earth/Space Science
- ○ Environmental Science
- ○ Physical Science
- ○ Chemistry
- ○ Advanced Chemistry
- ○ Physics
- ○ Advanced Physics
- ○ Integrated Science
- ○ Technology Education

The National Science Foundation's Local Systemic Change (LSC) through Teacher Enhancement Program's Core Evaluation

You have been selected to participate in the nationwide evaluation of the federally-funded Local Systemic Change (LSC) program. LSC is a National Science Foundation Teacher Enhancement program that has funded more than 80 local projects that have offered science and/or mathematics professional development to teachers around the country. **The cover letter accompanying this questionnaire identifies the LSC project in your area, as well as the instructional materials that are the focus of that LSC project.**

Several times over the course of the LSC, each project will administer questionnaires to a sample of teachers who are targeted to participate in the local project's professional development activities. Note that you may be asked to complete this questionnaire even if you have not yet participated in the project's professional development; your response is important, regardless of whether you have already participated. A small number of randomly-selected teachers in each project is asked to provide additional information in interviews, sometimes in conjunction with a classroom visit. In order to continue receiving federal funding, each LSC project must participate in this national evaluation.

Data collection procedures have been developed to ensure high-quality data and protect teacher confidentiality. Your responses will be kept strictly confidential; they will be combined with the responses of the other teachers in your project and used only for the LSC evaluation. The name label and numbering on this questionnaire are used to help local projects deliver questionnaires to the proper teachers and follow up with teachers who have not responded; no information identifying individual teachers will be reported under any circumstances. After you complete the questionnaire, you should remove the name label and return the questionnaire as specified by your local LSC project.

B. Teacher Opinions and Preparedness

7. 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 generally learn science best in classes with students of similar abilities.	①	②	③	④	⑤
b. I feel supported by colleagues to try out new ideas in teaching science.	①	②	③	④	⑤
c. Science teachers in this school have a shared vision of effective science instruction.	①	②	③	④	⑤
d. Science teachers in this school regularly share ideas and materials related to science.	①	②	③	④	⑤
e. Science teachers in this school are well-supplied with materials for investigative science instruction.	①	②	③	④	⑤
f. I have time during the regular school week to work with my peers on science curriculum and instruction.	①	②	③	④	⑤
g. I have adequate access to calculators for teaching science.	①	②	③	④	⑤
h. I have adequate access to computers for teaching science.	①	②	③	④	⑤
i. I enjoy teaching science.	①	②	③	④	⑤
j. I am well-informed about the NRC *National Science Education Standards* for the grades I teach.	①	②	③	④	⑤
k. The science program in this school is strongly supported by local organizations, institutions, and/or businesses.	①	②	③	④	⑤

8. In the left section, please rate each of the following in terms of its **importance** for effective science instruction in the grades you teach. In the right section, please indicate how **prepared** you feel to do each one. (Darken one oval in each section on each line.)

	Importance				**Preparation**			
	Not Important	Some-what Important	Fairly Important	Very Important	Not Adequately Prepared	Some-what Prepared	Fairly Well Prepared	Very Well Prepared
a. Provide concrete experience before abstract concepts.	①	②	③	④	①	②	③	④
b. Develop students' conceptual understanding of science.	①	②	③	④	①	②	③	④
c. Take students' prior understanding into account when planning curriculum and instruction.	①	②	③	④	①	②	③	④
d. Make connections between science and other disciplines.	①	②	③	④	①	②	③	④
e. Have students work in cooperative learning groups.	①	②	③	④	①	②	③	④
f. Have students participate in appropriate hands-on activities.	①	②	③	④	①	②	③	④
g. Engage students in inquiry-oriented activities.	①	②	③	④	①	②	③	④
h. Have students prepare project/laboratory/research reports.	①	②	③	④	①	②	③	④
i. Use calculators.	①	②	③	④	①	②	③	④
j. Use computers.	①	②	③	④	①	②	③	④
k. Engage students in applications of science in a variety of contexts.	①	②	③	④	①	②	③	④
l. Use performance-based assessment.	①	②	③	④	①	②	③	④
m. Use portfolios.	①	②	③	④	①	②	③	④
n. Use informal questioning to assess student understanding.	①	②	③	④	①	②	③	④

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9. My principal: (Darken one oval on each line.)

	Strongly Disagree	Disagree	No Opinion	Agree	Strongly Agree
a. Encourages me to select science content and instructional strategies that address individual students' learning.	1	2	3	4	5
b. Accepts the noise that comes with an active classroom.	1	2	3	4	5
c. Encourages the implementation of current national standards in science education.	1	2	3	4	5
d. Encourages innovative instructional practices.	1	2	3	4	5
e. Enhances the science program by providing me with needed materials and equipment.	1	2	3	4	5
f. Provides time for teachers to meet and share ideas with one another.	1	2	3	4	5
g. Encourages me to observe exemplary science teachers.	1	2	3	4	5
h. Encourages teachers to make connections across disciplines.	1	2	3	4	5
i. Acts as a buffer between teachers and external pressures (e.g., parents).	1	2	3	4	5

10. Are you the science department chair for your school? (Darken one oval.)

- ○ No (continue with Question 11)
- ○ Yes (skip to Question 12)
- ○ Our school does not have a science department chair (skip to Question 12)

11. My department chair: (Darken one oval on each line.)

	Strongly Disagree	Disagree	No Opinion	Agree	Strongly Agree
a. Encourages me to select science content and instructional strategies that address individual students' learning.	1	2	3	4	5
b. Accepts the noise that comes with an active classroom.	1	2	3	4	5
c. Encourages the implementation of current national standards in science education.	1	2	3	4	5
d. Encourages innovative instructional practices.	1	2	3	4	5
e. Enhances the science program by providing me with needed materials and equipment.	1	2	3	4	5
f. Provides time for teachers to meet and share ideas with one another.	1	2	3	4	5
g. Encourages me to observe exemplary science teachers.	1	2	3	4	5
h. Encourages teachers to make connections across disciplines.	1	2	3	4	5

12. Please indicate how well prepared you feel to do each of the following. (Darken one oval on each line.)

	Not Adequately Prepared	Somewhat Prepared	Fairly Well Prepared	Very Well Prepared
a. Lead a class of students using investigative strategies.	1	2	3	4
b. Manage a class of students engaged in hands-on/project-based work.	1	2	3	4
c. Help students take responsibility for their own learning.	1	2	3	4
d. Recognize and respond to student diversity.	1	2	3	4
e. Encourage students' interest in science.	1	2	3	4
f. Use strategies that specifically encourage participation of females and minorities in science.	1	2	3	4
g. Involve parents in the science education of their students.	1	2	3	4

13. Within science, many teachers feel better prepared to teach some topics than others. How well prepared do you feel to teach each of the following topics at the grade levels you teach, whether or not they are currently included in your curriculum? (Darken one oval on each line.)

	Not Adequately Prepared	Somewhat Prepared	Fairly Well Prepared	Very Well Prepared
a. Earth science				
1. Earth's features and physical processes	①	②	③	④
2. The solar system and the universe	①	②	③	④
3. Climate and weather	①	②	③	④
b. Biology				
1. Structure and function of human systems	①	②	③	④
2. Plant biology	①	②	③	④
3. Animal behavior	①	②	③	④
4. Interactions of living things/ecology	①	②	③	④
5. Genetics and evolution	①	②	③	④
c. Chemistry				
1. Structure of matter and chemical bonding	①	②	③	④
2. Properties and states of matter	①	②	③	④
3. Chemical reactions	①	②	③	④
4. Energy and chemical change	①	②	③	④
d. Physics				
1. Forces and motion	①	②	③	④
2. Energy	①	②	③	④
3. Light and sound	①	②	③	④
4. Electricity and magnetism	①	②	③	④
5. Modern physics (e.g., special relativity)	①	②	③	④
e. Environmental and resource issues				
1. Pollution, acid rain, global warming	①	②	③	④
2. Population, food supply and production	①	②	③	④
f. Scientific methods and inquiry skills				
1. Formulating hypotheses, drawing conclusions, making generalizations	①	②	③	④
2. Experimental design	①	②	③	④
3. Describing, graphing, and interpreting data	①	②	③	④

14. Please rate the effect of each of the following on your science instruction. (Darken one oval on each line.)

	Inhibits Effective Instruction		Neutral or Mixed		Encourages Effective Instruction	N/A / Don't Know
a. State and/or district curriculum frameworks.	①	②	③	④	⑤	NA
b. State and/or district testing policies and practices.	①	②	③	④	⑤	NA
c. Counseling department policies and practices.	①	②	③	④	⑤	NA
d. College placement tests.	①	②	③	④	⑤	NA
e. Quality of available instructional materials.	①	②	③	④	⑤	NA
f. Access to calculators for science instruction.	①	②	③	④	⑤	NA
g. Access to computers for science instruction.	①	②	③	④	⑤	NA
h. Funds for purchasing equipment and supplies for science.	①	②	③	④	⑤	NA
i. System of managing instructional resources at the district or school level.	①	②	③	④	⑤	NA
j. Time available for teachers to plan and prepare lessons.	①	②	③	④	⑤	NA
k. Time available for teachers to work with other teachers.	①	②	③	④	⑤	NA
l. Time available for teacher professional development.	①	②	③	④	⑤	NA
m. Importance that the school places on science.	①	②	③	④	⑤	NA
n. Consistency of science reform efforts with other school/district reforms.	①	②	③	④	⑤	NA
o. Public attitudes toward reform.	①	②	③	④	⑤	NA

15. How many of your students' parents do each of the following? (Darken one oval on each line.)

	None	A Few		About 1/2		Almost All
a. Volunteer to assist with class activities.	0	1	2	3	4	5
b. Donate money or materials for classroom instruction.	0	1	2	3	4	5
c. Attend parent-teacher conferences.	0	1	2	3	4	5
d. Attend school activities such as PTA meetings and Family Science nights.	0	1	2	3	4	5
e. Voice support for the use of an investigative approach to science instruction.	0	1	2	3	4	5
f. Voice support for traditional approaches to science instruction.	0	1	2	3	4	5

C. Your Science Teaching

16. Which of the following are you currently teaching? (Darken each oval that applies.)
- Middle school science
- High school science

Questions 17-20 ask about your science teaching. Please answer for your first middle/high school science class of the day.

17. What is the subject of this class? (Darken one oval.)
- Life science/Biology
- Earth/Space science
- Environmental science
- Chemistry
- Physics
- Physical science
- Integrated science
- Technology education

18. What grade level is it? (Darken one oval.)
- Middle school science
- High school science

19. About how often do **you** do each of the following in your science instruction in this class? (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. Use the LSC-designated instructional materials (see cover letter) as the basis of science lessons.	1	2	3	4	5
b. Introduce content through formal presentations.	1	2	3	4	5
c. Demonstrate a science-related principle or phenomenon.	1	2	3	4	5
d. Teach science using real-world contexts.	1	2	3	4	5
e. Arrange seating to facilitate student discussion.	1	2	3	4	5
f. Use open-ended questions.	1	2	3	4	5
g. Require students to supply evidence to support their claims.	1	2	3	4	5
h. Encourage students to explain concepts to one another.	1	2	3	4	5
i. Encourage students to consider alternative explanations.	1	2	3	4	5
j. Allow students to work at their own pace.	1	2	3	4	5
k. Help students see connections between science and other disciplines.	1	2	3	4	5
l. Use assessment to find out what students know before or during a unit.	1	2	3	4	5
m. Embed assessment in regular class activities.	1	2	3	4	5
n. Assign science homework.	1	2	3	4	5
o. Read and comment on the reflections students have written in their notebooks or journals.	1	2	3	4	5

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20. About how often do **students** in this class take part in each of the following types of activities as part of their 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. Participate in student-led discussions.	①	②	③	④	⑤
b. Participate in discussions with the teacher to further science understanding.	①	②	③	④	⑤
c. Work in cooperative learning groups.	①	②	③	④	⑤
d. Make formal presentations to the class.	①	②	③	④	⑤
e. Read from a science textbook in class.	①	②	③	④	⑤
f. Read other (non-textbook) science-related materials in class.	①	②	③	④	⑤
g. Answer textbook/worksheet questions.	①	②	③	④	⑤
h. Review homework/worksheet assignments.	①	②	③	④	⑤
i. Work on solving a real-world problem.	①	②	③	④	⑤
j. Share ideas or solve problems with each other in small groups.	①	②	③	④	⑤
k. Engage in hands-on science activities.	①	②	③	④	⑤
l. Follow specific instructions in an activity or investigation.	①	②	③	④	⑤
m. Design or implement their *own* investigation.	①	②	③	④	⑤
n. Design objects within constraints (e.g., egg drop, toothpick bridge, aluminum boats).	①	②	③	④	⑤
o. Work on models or simulations.	①	②	③	④	⑤
p. Work on extended science investigations or projects (a week or more in duration).	①	②	③	④	⑤
q. Participate in field work.	①	②	③	④	⑤
r. Record, represent, and/or analyze data.	①	②	③	④	⑤
s. Write reflections in a notebook or journal.	①	②	③	④	⑤
t. Prepare written science reports.	①	②	③	④	⑤
u. Use mathematics as a tool in problem-solving.	①	②	③	④	⑤
v. Use calculators.	①	②	③	④	⑤
w. Use computers.	①	②	③	④	⑤
x. Work on portfolios.	①	②	③	④	⑤
y. Take short-answer tests (e.g., multiple choice, true/false, fill-in-the-blank).	①	②	③	④	⑤
z. Take tests requiring open-ended responses (e.g., descriptions, explanations).	①	②	③	④	⑤
aa. Engage in performance tasks for assessment purposes.	①	②	③	④	⑤

D. LSC Professional Development

Questions 21-27 refer to the NSF-supported Local Systemic Change (LSC) program. Please refer to the cover letter accompanying this questionnaire for information about the LSC project activities and designated materials in your district.
If you have not yet participated in LSC professional development, darken this ov⬭ and skip to Question 26.

21. To what extent is each of the following true of LSC science-related professional development in your district? (Darken one oval on each line.)

	Not at all				To a great extent
a. I am involved in planning my science-related professional development.	①	②	③	④	⑤
b. I am encouraged to develop an individual professional development plan to address my needs and interests related to science education.	①	②	③	④	⑤
c. I am given time to work with other teachers as part of my professional development.	①	②	③	④	⑤
d. I am given time to reflect on what I've learned and how to apply it to the classroom.	①	②	③	④	⑤
e. I receive support as I try to implement what I've learned.	①	②	③	④	⑤

22. Approximately how many ***total hours*** have you spent on formal, LSC-provided professional development in science/science education ***since the LSC project began***? (Darken one oval.)

⬭ 0	⬭ 10-19	⬭ 40-59	⬭ 80-99	⬭ 130-159	⬭ 200 or greater
⬭ 1-9	⬭ 20-39	⬭ 60-79	⬭ 100-129	⬭ 160-199	

23. Please indicate the number of times you have participated in each of the following activities **during this school year**. (Darken one oval on each line.)

	0	1-2	3-4	5-6	7 or more
a. Participated in an LSC academic year "kit club"/study group/discussion group.	①	②	③	④	⑤
b. Was "coached" on my teaching by an LSC teacher leader/staff person based on a classroom observation.	①	②	③	④	⑤
c. Received assistance from an LSC "teacher leader" in my school.	①	②	③	④	⑤
d. Received assistance from an LSC staff person in my district.	①	②	③	④	⑤
e. Received assistance from an LSC-designated scientist/science educator from a college/university/museum/industry.	①	②	③	④	⑤
f. Read messages in a Listserv discussion sponsored by the LSC.	①	②	③	④	⑤
g. Posted messages to a Listserv discussion sponsored by the LSC.	①	②	③	④	⑤

24. How would you rate the overall quality of the LSC professional development? (Darken one oval.)

Very Poor	Poor	Fair	Good	Very Good	Excellent
⬭	⬭	⬭	⬭	⬭	⬭

25. To what extent has participation in LSC science-related professional development increased your: (Darken one oval on

	Not at all				To a great extent
a. Science content knowledge.	①	②	③	④	⑤
b. Understanding of how children think about/learn science.	①	②	③	④	⑤
c. Ability to implement high-quality science instructional materials.	①	②	③	④	⑤

26. How many science classes are you currently teaching that use the materials designated by your LSC (see cover letter) as the primary instructional materials? (Darken one oval.)

None	One	Two	Three	Four	Five	Six or more
⬭	⬭	⬭	⬭	⬭	⬭	⬭

27. Have you been identified as a teacher leader for your district's NSF-supported LSC project? ⬭ Yes ⬭ No

Thank you very much for participating in this survey!