

Perceptions of Cultural Differences and Collaboration



Among Scientists and Educators

COSEE Great Lakes Baseline Study
School of Environment and Natural Resources
The Ohio State University

As an educator in the Great Lakes region, your perceptions can help us understand how scientists and educators may collaborate to develop science literacy. Please respond to the following questions with your expert opinions and **return your survey to the Sea Grant workshop coordinator by end of this workshop**. When we analyze the results, we will not identify any specifics about your individual responses. We are only interested in understanding the views of the participants as members of groups. No one besides the researchers will have access to the survey data. Your participation in this study is completely voluntary. If you have questions about this study, please contact:

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♠ Please indicate the extent to which you agree or disagree with each of the following statements about science: Use the scale described and circle the appropriate number.

1 = strongly disagree, 2 = somewhat disagree, 3 = somewhat agree, 4 = strongly agree

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| 1. Science provides objective knowledge about the world. | 1 | 2 | 3 | 4 |
| 2. Unbiased science has never been achieved. | 1 | 2 | 3 | 4 |
| 3. Science is performed by a specific community of qualified scientists. | 1 | 2 | 3 | 4 |
| 4. The process of scientific discovery often involves a high degree of creativity. | 1 | 2 | 3 | 4 |
| 5. Science is based on experiments which other scientists should be able to replicate. | 1 | 2 | 3 | 4 |
| 6. Some scientific studies that do not involve experimentation are valid. | 1 | 2 | 3 | 4 |
| 7. The acquisition of new scientific knowledge moves from observation to formation of hypotheses, then testing, and finally generalizing to theory. | 1 | 2 | 3 | 4 |
| 8. Intuition plays an important role in scientific discovery. | 1 | 2 | 3 | 4 |
| 9. Cultural groups differ in their processes of gaining valid knowledge about natural phenomena. | 1 | 2 | 3 | 4 |

♠ Teaching and learning science: Use the scale described and circle the appropriate number.

1 = strongly disagree, 2 = somewhat disagree, 3 = somewhat agree, 4 = strongly agree

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| 10. Students often learn science best through hands-on activities. | 1 | 2 | 3 | 4 |
| 11. Student-led discussion is a good way for students to learn science. | 1 | 2 | 3 | 4 |
| 12. When students are presented with a clear explanation of a concept, most are able to learn the concept. | 1 | 2 | 3 | 4 |
| 13. It is important for students to be involved in group projects. | 1 | 2 | 3 | 4 |
| 14. Students learn best during laboratory experiments when they work individually. | 1 | 2 | 3 | 4 |
| 15. Listening to lectures is a good way for students to learn scientific concepts. | 1 | 2 | 3 | 4 |
| 16. If there must be a choice between learning concepts thoroughly and learning the processes of discovery, the teacher should emphasize the processes of discovery. | 1 | 2 | 3 | 4 |
| 17. When students ask questions, teachers should provide the answers. | 1 | 2 | 3 | 4 |

♣ **Familiarity with concepts: Use the scale described and circle the appropriate number.**

1 = I am NOT familiar with the concept at all.
 2 = I've heard of the term, but I'm not sure what it means.
 3 = I know what this is, but I've never used it in practice.
 4 = I know what this is and I've used it in practice.

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| 18. Classroom management | 1 2 3 4 |
| 19. Experimental design | 1 2 3 4 |
| 20. “Hands-on” activities | 1 2 3 4 |
| 21. Statistical analysis | 1 2 3 4 |
| 22. National Science Education Standards | 1 2 3 4 |
| 23. Empirical studies | 1 2 3 4 |
| 24. Constructivist learning theory | 1 2 3 4 |
| 25. Problem-solving approaches | 1 2 3 4 |
| 26. Inquiry-based learning | 1 2 3 4 |
| 27. Hypothesis testing | 1 2 3 4 |

♣ **Role of scientists in education and outreach: Use the scale described and circle the appropriate number. “Educational outreach” or “outreach” is defined as scientists’ efforts to make scientific information available to the public and schools.**

1 = strongly disagree, 2 = somewhat disagree, 3 = somewhat agree, 4 = strongly agree

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| 28. It is important for research scientists to get involved in educational outreach projects. | 1 2 3 4 |
| 29. Scientists' involvement in educational outreach increases public understanding of scientific research. | 1 2 3 4 |
| 30. It is important for research scientists to work directly with K-12 teachers. | 1 2 3 4 |
| 31. Scientists' involvement in educational outreach projects motivates students to be interested in scientific careers. | 1 2 3 4 |
| 32. Research scientists should include educational outreach plans in their funding proposals. | 1 2 3 4 |
| 33. By getting involved in educational outreach, scientists can develop the educational foundations for informed decision-making in public policy. | 1 2 3 4 |

♠ **Professional preparation and experiences: Use the scale described and circle the appropriate number.**

1 = strongly disagree, 2 = somewhat disagree, 3 = somewhat agree, 4 = strongly agree

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| 34. My professional training as an educator has equipped me with enough knowledge in science. | 1 2 3 4 |
| 35. I took more than one course in science during my professional training. | 1 2 3 4 |
| 36. During my professional training I often worked often in collaborative groups. | 1 2 3 4 |
| 37. At least one college I attended encouraged the use of cooperative learning. | 1 2 3 4 |
| 38. The teacher-student relationships in at least one college I attended were warm and supportive. | 1 2 3 4 |
| 39. I have made numerous presentations to non-school groups. | 1 2 3 4 |
| 40. I have experience in bringing a scientist to my education setting/classroom. | 1 2 3 4 |
| 41. I have taken my students to field trips or lab visits hosted by a scientist. | 1 2 3 4 |
| 42. I have conducted collaborative research with a scientist. | 1 2 3 4 |
| 43. I have consulted with scientists on curriculum development. | 1 2 3 4 |
| 44. I have experience in referring to scientists for their knowledge of scientific research. | 1 2 3 4 |

♠ **Educator/Scientist roles: Use the scale described and circle the appropriate number.**

1 = strongly disagree, 2 = somewhat disagree, 3 = somewhat agree, 4 = strongly agree

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| 45. It is difficult to present scientific concepts in a manner that is comprehensible by K-12 students. | 1 2 3 4 |
| 46. It is difficult to communicate with scientists about their research. | 1 2 3 4 |
| 47. I need to have a better understanding of the profession of scientists. | 1 2 3 4 |
| 48. I want to increase my understanding of how scientists conduct research. | 1 2 3 4 |
| 49. It is important that research scientists support K-12 education. | 1 2 3 4 |
| 50. I believe that I am equipped with the ability to help students gain a better understanding of science. | 1 2 3 4 |
| 51. I am afraid that I don't understand science well. | 1 2 3 4 |
| 52. I have been involved in interdisciplinary collaboration. | 1 2 3 4 |
| 53. I am comfortable working with scientists. | 1 2 3 4 |
| 54. Partnership with scientists extends the impact of my teaching. | 1 2 3 4 |
| 55. Research scientists can teach K-12 students new discoveries better than teachers can. | 1 2 3 4 |
| 56. In our society, scientists have a higher status than educators. | 1 2 3 4 |

♣ **Barriers to educational collaboration: Use the scale described and circle the appropriate number. Substitute “informal educators” for K-12 teachers if you teach informally.**

1 = strongly disagree, 2 = somewhat disagree, 3 = somewhat agree, 4 = strongly agree

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| 57. K-12 teachers have sufficient time to work with scientists. | 1 | 2 | 3 | 4 |
| 58. K-12 teachers have sufficient funding to work with scientists. | 1 | 2 | 3 | 4 |
| 59. K-12 teachers are interested in educational collaboration with scientists. | 1 | 2 | 3 | 4 |
| 60. Students are interested in learning directly from scientists. | 1 | 2 | 3 | 4 |
| 61. K-12 teachers need scientists’ assistance in creating resources for students. | 1 | 2 | 3 | 4 |
| 62. K-12 teachers receive adequate professional acknowledgement for educational collaboration with scientists. | 1 | 2 | 3 | 4 |
| 63. School systems do not support educational collaboration with scientists | 1 | 2 | 3 | 4 |
| 64. K-12 schools place much importance on continuing involvement with scientists. | 1 | 2 | 3 | 4 |
| 65. It is clear to K-12 teachers how to get involved in educational collaboration with scientists. | 1 | 2 | 3 | 4 |
| 66. Scientists are unaware of what K-12 students need to learn. | 1 | 2 | 3 | 4 |
| 67. K-12 teachers have difficulty in communicating with scientists | 1 | 2 | 3 | 4 |
| 68. K-12 teachers have different perspectives on education from scientists. | 1 | 2 | 3 | 4 |

♣ **How would each of the following facilitate your participation in educational collaboration with scientists? Use the scale described, and circle the appropriate number.**

1 = strongly disagree, 2 = somewhat disagree, 3 = somewhat agree, 4 = strongly agree

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| 69. Help in identifying specific opportunities I could become involved in | 1 | 2 | 3 | 4 |
| 70. Assistance in justifying how collaborative efforts with scientists fulfills “standards” | 1 | 2 | 3 | 4 |
| 71. Assistance in developing budgets for collaboration with research scientists | 1 | 2 | 3 | 4 |
| 72. Assistance in carrying out collaborative efforts with scientists | 1 | 2 | 3 | 4 |
| 73. Institutional appreciation of my involvement in collaboration with scientists | 1 | 2 | 3 | 4 |
| 74. Workshop or course providing cutting-edge science from research scientists | 1 | 2 | 3 | 4 |
| 75. Incentives (e.g., promotion, stipend, course credit, or classroom materials) | 1 | 2 | 3 | 4 |

FINALLY, A LITTLE BIT ABOUT YOURSELF:

♠ **Please provide your name:** Your name in our records is confidential and will be used only for coding purposes.

Last name: _____ First name: _____

♠ **Please indicate the main SUBJECT(s) and GRADE LEVEL(s) you teach.**

Subject(s) taught _____ Grade level(s) _____

Subject(s) taught _____ Grade level(s) _____

Informal education subjects _____ Age of learners _____

♠ **Please fill in following blanks with your GENDER, AGE and RACE.**

Gender: _____ Age: _____ Race: _____

♠ **Please identify your number of YEARS of full-time teaching experience.**

I have taught in K-12 school settings for _____ years.

I have taught in informal settings [museum, aquarium, etc] for _____ years.

♠ **Please check your highest degree earned and fill in the subject area of the highest degree.**

a. Highest Degree: Bachelor's _____ Master's _____ Doctoral _____

b. Subject area of your highest degree: _____

♠ **Please check the best description of the community you serve in your teaching.**

Urban _____ Suburban _____ Rural _____ Tribal _____

♠ **Please estimate the percentage of students you teach who belong to "under-represented" groups [tribal, minority]. _____%**

Thank you for your efforts and for helping us understand the perceptions of collaboration among scientists and educators.

Please return the completed survey to the workshop coordinator by end of this workshop.