

Trends

Science

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Defining Scientific Literacy

Scientific literacy is high on the national agenda. Many of the more than 300 national reports on education issued since 1983 cite the deplorable state of the average American's scientific literacy. Because our high school graduates cannot solve practical problems in the workplace or take intelligent action on science-related civic issues, critics claim they are not scientifically literate. These critics demand action on the part of the schools.

Implicit in the reports are conceptions of scientific literacy, which differ from report to report. Do any of these conceptions correspond with what is being taught or learned in the nation's schools? The Forum for School Science (sponsored by the American Association for the Advancement of Science) believes the answer is no. Furthermore, we believe that without national consensus on what constitutes scientific literacy, schools cannot achieve it, and national expectations

for a scientifically literate populace will not be met.

Consequently, forum staff selected *scientific literacy* for the project's 1989 theme, in order to stimulate the public debate from which consensus must emerge. Our approach is straightforward. We are in the process of surveying various segments of society, including the private sector, the scientific and engineering communities, government, and education. We have asked individuals to rate a list of

Scientific Literacy Survey

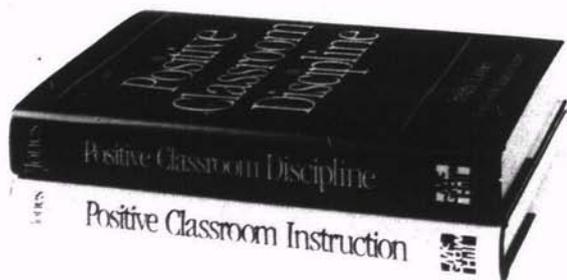
What level of scientific literacy is necessary for responsible participation in civic affairs and for leading a rewarding professional and personal life? Rate the importance of each of the following capabilities to the scientifically literate high school graduate.

	Not Necessary				Essential		
A. Pose a question that can be addressed by the scientific method, e.g., state a hypothesis.	1	2	3	4	5	6	7
B. Provide a scientific explanation for a natural process, e.g., photosynthesis, digestion, combustion.	1	2	3	4	5	6	7
C. Assess the appropriateness of the methodology of an experiment.	1	2	3	4	5	6	7
D. Read and understand articles on science in the newspaper.	1	2	3	4	5	6	7
E. Read and interpret graphs displaying scientific information.	1	2	3	4	5	6	7
F. Believe that scientific knowledge is worth pursuing even if it never yields practical benefits.	1	2	3	4	5	6	7
G. Define basic scientific terms, e.g., DNA, molecule, electricity.	1	2	3	4	5	6	7
H. Design an experiment that is a valid test of a hypothesis.	1	2	3	4	5	6	7
I. Engage in a scientifically informed discussion of a contemporary issue, e.g., should a child with AIDS be allowed to attend public school?	1	2	3	4	5	6	7
J. Assess the accuracy of scientific statements, e.g., the seasons change with the distance of the earth from the sun.	1	2	3	4	5	6	7
K. Give an instance of how a scientific discovery or idea has affected society, e.g., the germ theory of disease.	1	2	3	4	5	6	7
L. Be inclined to challenge authority on evidence that supports scientific statements.	1	2	3	4	5	6	7
M. Describe natural phenomena, e.g., the phases of the moon.	1	2	3	4	5	6	7
N. Apply scientific information in personal decision making, e.g., ozone depletion and the use of aerosols.	1	2	3	4	5	6	7
O. Locate valid scientific information when needed.	1	2	3	4	5	6	7

From the list of questions above, which five do you think are the most important characteristics of a scientifically literate person?



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Without national consensus on what constitutes scientific literacy, schools cannot achieve it.

skills according to the importance of their contribution to scientific literacy. The results of this survey will be available this fall and will enable school personnel to compare their conceptions of scientific literacy with the conceptions of groups calling for reform.

The forum staff has found the survey a great way to stimulate conversation about the goals of school science, so it is printed here for your use. You don't have to wait for our results to find out what others think; you can use the survey to firm up your own ideas about scientific literacy and to inspire conversation among your colleagues and with your community leaders. Questions to consider:

- How well does your district's conception of scientific literacy correspond with your community leaders'?

- Do elementary teachers' and high school science teachers' ideas about scientific literacy correspond?

- How well do the conceptions of science teachers and teachers from other disciplines correspond?

- Are components of scientific literacy missing from the list? Do you take issue with the statements in the list?

If you find out now where the different segments of your community and school district stand, you'll be ready to compare your local profiles with those from the AAAS national sample. Results of the survey will be available after October 30, 1989, from the AAAS Forum for School Science at the address below. □

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