

Lower Merion School District

Full Option Science System (FOSS) FAQ

1. **What is FOSS?**

FOSS is the Full Option Science System, created in the late 1980s by curriculum developers at the Lawrence Hall of Science in partnership with Encyclopedia Britannica Educational Corporation and hundreds of educators around the country, supported by the National Science Foundation. Delta Education now publishes the FOSS materials.

The FOSS program was developed in an atmosphere of urgent need for systemic reform of science education and represents the best interpretation of what a contemporary science program should provide for elementary students. FOSS provides a general exposure to many aspects of the natural world in ways that are cognitively appropriate for children and in an environment that encourages creative and complex thinking in a dynamic social structure. For more information about the FOSS program, link to the **FOSS Introduction** site.

2. **What are the current trends in science education?**

The important issues in science education today are hopefully not trends, but advances. These advances are characterized by students who are active learners, constructing their own understanding from many experiences rather than passive recipients of someone else's knowledge. Contemporary science is a lot of thinking and communicating ideas, discoveries, and solutions to problems. There is a forceful movement toward integrated curriculum so that the three Rs are exercised in the context of science. There is movement toward greater application of electronic technologies in the science curriculum, both stand-alone (computer, VCR, sound tape) and through a wire to the World Wide Web. There is a lot of activity, but little agreement, about new paradigms of assessment and the reporting of learning. It's time to pack up and leave standardized multiple-choice tests as a measure of what students know about science.

3. **How will this program prepare my child for the future (e.g. college)?**

In the best possible way. We have to abandon the nineteenth-century notion of an educated person as one who knows everything. It would be interesting to know what year it was that the storehouse of human knowledge achieved a sufficiently large volume that never again would it be possible for a learned person to know everything. Knowledge is so vast today that we can barely get it all recorded, let alone engage it all. So what do we teach? We teach how to think, and to teach that particular miracle we use the real world as the plaything.

When educators from all levels pull their chairs up to the science education roundtable, they occasionally play the game of "how can I help you?" The high school science teachers ask the college professors, "What should I be teaching my students so they will be prepared when they come to your labs and lecture halls? Krebs's cycle? Recombinant DNA? String theory? Black holes? Big bang, little bang, snap, crackle, pop?" The professor tells the high school teacher to teach whatever they find interesting, but make sure that students engage the subject with the perspective of a system with input and output. Exercise their ability to organize and communicate evidence and conclusions. Teach them how to define, conduct, and interpret an experiment. Send them to me knowing nothing except how to engage in the process of science, and I will be forever in your debt.

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Then the middle school teacher asks the high school teacher the same question. The high school teacher asks for a student who can grapple effectively with inferential subjects to construct important ideas from evidence. Give me a student who knows how to act as an independent learner, able to ask a question and find an answer. Provide me with a student who has an idea of the usefulness of mathematics as a tool for organizing data gathered from the real world. Give me a student who can think logically and creatively, and I will be forever in your debt.

When the elementary educator asks the same question of the middle school teacher, the answer is short and to the point. Deliver to me a student who likes science, and I will be forever in your debt. Traditionally book-bred students opt out of science as soon as the opportunity to escape presents itself. They indict science as hard, boring, uninteresting. But with FOSS, students love science and often report that science is fun and identify it as their best subject. So how does this program prepare your child for the future? In the best possible way—by giving him or her the option for continuing in a course of study that includes advanced study of science. And even when your child ultimately follows a trail into retail sales, clothing design, or food production, his or her engagement in study of the natural world will enhance his or her ability to excel at the job.

4. How can I help my child with science if there is no textbook?

Visit the teacher to preview the teacher guide. Get copies of the reading list and the extension projects. Search the World Wide Web. Go on weekend field trips related to the science curriculum.

5. Why do my kids like this so much?

Because the subject is the natural world, they are challenged to think about it in ways that are age appropriate, and they get to do it with their friends.

6. How can I get involved with FOSS in my child's classroom?

Volunteer in your child's classroom. Support the program through your parent/teacher organization. Help raise money for reading resources. At home and with your family, take trips into the natural world; raise a garden; raise fish, insects, mammals, birds and other animals at home; cook; watch science videos; go boating; go rockhounding; read, read, read . . .

7. How are safety issues addressed?

The FOSS developers make every effort to provide investigations that employ materials that are safe for young students. Each FOSS materials kit includes a safety poster describing how to conduct a safe science investigation. Changes in materials may occur to provide a safer experience. These changes are documented in the FOSS Newsletter. You can read more about safety issues by checking out the FOSS Newsletter Archive.