



# What Can We Learn from Middle School Science Fairs

## about Teaching the Science and Engineering Practices?

The *Next Generation Science Standards*<sup>1</sup> emphasize the importance of having students do real scientific and engineering work because of the opportunities that “doing” science gives students: direct experience with the core ideas and cross-cutting concepts of science, an understanding of how scientific knowledge is created and accumulates over time, and a chance to be inspired to pursue science and engineering learning and careers.

Science fairs are designed to give students precisely this experience as they investigate their own questions about the world around them, and they have been promoted by education and industry leaders for over a half century. Supporters claim that they accomplish all that the *Next Generation Science Standards* advocate, but little research has been done to determine whether and how much impact they have on students; and no work has been done to understand the real cost of a science fair program. That’s where we come in...

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The National Science Foundation has funded Education Development Center, Inc., to conduct a four-year, national study to answer the following questions:

- 1** What are the basic models and elements of middle school science fairs?
- 2** To what extent does participation in a particular model of middle school science fair enhance students’ mastery of the science and engineering practices, their interest in science, and/or their interest in science careers?
- 3** What student-, teacher-, and school-level factors contribute to or inhibit students’ gains in mastery of the science and engineering practices and/or other outcomes?
- 4** What resources are required—human, financial, and otherwise—to implement an effective middle school science fair?
- 5** What are the most cost-effective aspects of the science fair experience; and how can they be applied by informal educators and/or adapted by classroom teachers in order to strengthen student outcomes?

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The study, *Science Fairs Under the ‘Scope*, led by Abigail Jurist Levy, Jackie DeLisi, and Marian Pasquale, has two phases:

In **Phase 1**, we are conducting a large-scale national survey of science fair coordinators to learn more about the different models (question 1 above) of middle school science fairs occurring across the country.

In **Phase 2**, over the course of two years, we will study 40 middle school science fairs in depth to answer questions 2-5 above.

The study’s findings will be shared nationwide with educators, science fair organizations and their leaders, science fair coordinators, education researchers, afterschool programs, the National Science Foundation, parents, and the public.

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<sup>1</sup> NGSS Lead States, 2013.