Types of Projects: Investigations and Inventions

One of your first decisions will be which types of projects to have at the fair. You may wish to have only an investigation science fair or only an invention science fair (sometimes called an “Invention Convention”). You can also mix the two kinds of projects, which gives students a choice. In many ways this is the optimal model, as the more interest the student has in the topic as well as the type of hands-on process, the more motivation he or she will have to keep up the momentum throughout the six weeks.

How are inventions different than investigations? It starts with the role of the scientist. Think of investigators as research scientists and inventors as engineers. Investigators find out things for themselves. Inventors are engineers who design and make things that will solve problems.

Investigations

An investigation is a science fair project that uses scientific methodology (which includes experimenting) to carry out an investigation.

During an investigation, the student starts out with a question based on a scientific problem; develops a hypothesis (or educated guess) as to the answer; designs and conducts an experiment to test the hypothesis; measures and collects data; documents and analyzes the results; and draws a conclusion.

Inventions

An invention is an original design that serves a purpose and solves a real problem. It can also be something that improves an object previously invented by someone else or takes it in a completely different direction.

Students who are good problem solvers and especially students who like to think “outside the box” are good candidates to invent something for their science fair project. All students can become better at engineering, but for some, it is the most interesting way to apply their science skills.

Engineering uses a scientific approach and both inventions and investigations depend on good questions, planning, using appropriate materials, collecting data, making sense of the data to verify the results, and presenting the results to others for review.

Just as with an investigation, it is important to recognize that the process of invention is just as important as the final product—which means mistakes and problems should be treated as valuable steps and should be documented along with other notes and sketches in a record-keeping journal. Parents, teachers, and fair organizers should all be on the same page in recognizing the value of students’ learning science process.