

The Purpose of a Science Project

A Science Project is a way for a student to carry out an investigation in much the same way a real researcher might in a real laboratory. Each step in the scientific method has the potential of teaching a valuable lesson to a student. Below is a list of the steps in the scientific method and what are the potential benefits for students at each step.

QUESTION: Children have a natural ability to ask probing questions. Unfortunately we don't put enough emphasis on student questions. The school curriculum has its own set of questions we must concern ourselves with and little time is left for children's questions. A Science Project is an opportunity to give voice to children's questions and give kids a sense of power when they are able to answer their own questions.

HYPOTHESIS: We often ask students to predict the outcome of some situation in a classroom laboratory. It is not often, however, that we ask them to form a hypothesis about anything very complex. The situation is different, though, when it comes to a Science Project. Here the complexity of their hypothesis is limited only by how imaginative they were when they asked the question.

PROCEDURE: Experimental design is probably one of the most important skills for a scientist to have and one of the most difficult skills for a scientist to learn. In our classrooms students often perform experiments that were designed *for* them. In a Science Project, however, they get the opportunity to develop, with guidance, this important science process skill.

DATA: Data collection is probably the skill we practice most in our classrooms. A Science Project is still another matter, though, when it comes to data collection. A good Science Project will have students taking a great quantity of data measurements over a substantial period of time. This kind of data collection more closely resembles the way actual research is carried out.

CONCLUSION: In most experiments you find in books, and in many experiments carried out in the classroom, the results are known ahead of time. The book or the teacher will tell the student what the expected result is. These experiments are used to demonstrate and/or confirm a scientific principle that is already established. In a good Science Project, however, the students will have to draw their own conclusions. Here again is an opportunity for the student to gain experience with higher level thinking skills.

PRESENTATION: Of all the skills gained in doing a Science Project, the skills involved in the presentation are probably the most important to the greatest number of children. Even students who have no interest in science will need presentation skills no matter what their chosen career path. In so many situations it is not so much what we say as how we say it. The ability to speak to another person or a group of people, the ability to explain something you understand clearly enough so that another person can understand it. The ability to demonstrate your knowledge and skills in a way that impresses others, these are all-important skills.

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A Science Project has the potential to be a wonderful learning experience for students. It also has the potential to be an annoying waste of time. We can make it more the former if we keep some things in mind.

Student Input: From topic choice to experimental design, from the collection of data to constructing a display board. Whenever the student is deciding what happens he or she is learning important decision-making and problem-solving skills.

Time: One of the elements that make a Science Project so dreaded is also what makes it so powerful a learning experience. A good Science Project takes a lot of time, but this can be what makes the experience have a greater impact. Little will be gained from a Science Project done over a single weekend.

Problems: Unlike an experiment taken from a book or designed by a teacher, a student-generated investigation is likely to run into problems along the way. Procedures that you think will work often don't and have to be redesigned. This process, of seeing problems and fixing them, is another element of a Science Project that can make it a useful learning tool.

A Student Science Project can be a unique opportunity for some in-depth learning of real-life skills. Students, parents and teachers all can make sure that the experience is a good one if we focus, not so much on competition, but rather on what can be gained by the student throughout the entire experience. Working together we can make our Science Projects one of the richest and most memorable experiences of the entire school year.