



So You Have to Do a Science Fair Project



So, you have to do a science fair project. Maybe you really want to. Maybe your parents want you to. Maybe your teacher is making you.

And you're probably thinking: this is going to be hard! Science fair projects involve a lot of work.

They're also a lot of fun. And the work isn't so hard when you break it into steps and take it one step at a time.

This book is for kids who want to do their own project but need a little help along the way. It is also for parents who never had to do a science fair project and don't have a clue where to start when their child comes home and says, "I have to do a project."

Why would you *want* to do a science fair project? Because it is fun! You can pick a topic that is interesting to you. You can answer a question you might have wondered about. You can do something different from everyone else in your class.

Begin with a Question

First you need to choose a topic or a question for your project. You'll answer the question in your experiment. The best project is one that interests you.



Doing a science fair project is like taking a long trip some place you've never been before. What would you usually take with you on a trip to a new place? Directions, right?

The **scientific method** will provide your directions for the journey that is your project. Here are the five basic steps in the scientific method:

- Step 1:** Select a topic or a question.
- Step 2:** Gather information about the topic. What do you need to know to answer the question?
- Step 3:** What do you think the answer to your question will be? This guess is known as your hypothesis.
- Step 4:** Test your guess through experimentation.
- Step 5:** Make conclusions based on the results of that testing.

Just for
PARENTS

Random Acts of Attitude

The secret to your child's science fair success begins with your attitude. Attitudes are contagious, and you want yours to be worth catching! When your child brings home his science fair assignment, your reaction may be somewhere between a wildly excited ninth-grade cheerleader and a desperate drowning victim. Try to strike a balance between these two extremes. What your child needs is for you to be encouraging and enthusiastic.

This book will help you get through every step without ever having to put the tip of a marking pen to the poster board of a display. Each chapter contains "Just for Parents": tips and advice for you as the mom or dad of a science fair student.

This book is designed to be a guide for students between first and sixth grades. Your child can do all of the work himself, and along the way he'll learn more about creativity, cause-and-effect relationships, logical reasoning, problem-solving, writing, and speaking skills. Your child's project will be his own, and you can both be proud of his efforts. We don't guarantee he'll win any awards, but he'll be a winner!

Usually, the first or second science fair experience is a teacher-assigned mandatory project, but as your student gets into the middle high and senior high years, science fair participation is often elective. These are the years when he'll gain valuable skills and have the opportunity to compete for awards and scholarships. If your child shows interest and aptitude in the elementary years, encourage him to stick with science fairs. It will be well worth the effort in the coming years!

You probably think of dozens of these kinds of questions every day without realizing it. Questions like:

- Will milk spoil faster if it is left out of the refrigerator?
- Which battery lasts longer?
- How does acid rain affect plants?
- Does the largest popcorn kernel produce the largest piece of popped popcorn?

Sometimes it helps to think about types of projects that might interest you. Most fairs have three main categories: *physical*, *biological*, and *environmental*.

- *Physical* sciences include the study of planets and stars, rocks, weather, math, how things work, and chemistry.
- *Biological* projects have to do with living things, such as plants, bugs, germs, animals, and people.
- *Environmental* projects ask questions about the changes in the world around you. What affects the air you breathe and the water you drink? How are things recycled?

How does pollution affect plants?



Just for practice, write down four or five questions of your own. They can be about anything you happen to think of. Don't worry for now about whether or not they would make good science fair projects.

Many of the projects in this book can be modified to suit your interests or the materials that are available to you. For example, what if you decide to study the question "Which color attracts a bee?" You might choose three different-colored flowers of the same kind and observe which one attracts the most bees. If you don't have access to bees but there are hummingbirds in your backyard, you might study which color of feeding station attracts the most hummingbirds. Or you might try hanging different-colored pieces of wood in an area where there are spider webs to see which one attracts the most spider webs.



The Best Project Is . . .

- *interesting to you.* This is the most important part. Choose something you enjoy! It will be hard work and *no fun* if you don't like your topic or are bored with it.
- *one that you can do in the amount of time you have before the science fair.* Maybe you have three months, maybe you have three weeks. (And we sure hope you're not starting the night before the fair!) You need a project you can do in the time you have. This will involve doing research, performing an experiment, writing a report, and making a poster or display.
- *something you can do by yourself (or with a little help).* This is your project. Your parents and teacher can help you, but they can't do it for you.
- *one that's really possible for you to do.* Sometimes a project looks really interesting, but you can't do it because you're allergic to hamsters, or you can't build a space shuttle in your backyard.
- *one that includes an experiment and is more than just a report.* You must test a question, not just build a model or write a report.
- *safe!* Some projects are too dangerous for you to do. Science fair rules prohibit experiments that use certain chemicals or bacteria. Check with your teacher or local science fair organizer for specific rules. And no project should harm animals or little brothers!

A project on the behavior of mice might also work for gerbils, hamsters, or other similar animals. Think about what you could change to make your project better fit your interests, abilities, or available materials.

Get out Your Logbook

This is a good time to begin a **logbook**. It doesn't have to be anything fancy—a simple spiral-bound notebook or a composition-type notebook will do. Use the logbook to record each step of doing your project. Even if your teacher doesn't require you to keep a logbook, we recommend it. It's a good way to keep track of everything you need to know and do for your project. Don't worry about neatness either. The logbook is not your final report.

After you've decided on an idea, discuss it with your teacher and a parent. Once they have approved it, you can begin the next step—researching. If you've already chosen your project topic, you can skip ahead to Chapter 3. But if you're still stuck for an idea, look through the project topics in Chapter 2.



In your logbook write down a project question you've thought of, or choose one from the list in the next chapter.

Why did you choose this question? Look at your question and compare it to each of the items in "The Best Project Is . . ." list. Can you answer yes to all the points? If not, try another question or project and compare it to the list.

Who Cares?

Your project needs to have a **purpose**. Think about why you want to do this project. Is there a reason this project is important? Will the results help someone have a better life? Will what you learn be helpful to you? Is there a problem that you can solve?

These questions refer to what in later years will be known as a "practical application"—or the "who cares" factor.

Just for
PARENTS

Whose Project Is This Anyway?

The science fair is a wonderful opportunity for learning. A project brings together every skill a student needs to be successful throughout her school career. Your child will learn how to choose a topic, research it, conduct an experiment, record the results, and share those results. She will need to use almost every subject she studies: English, spelling, reading, grammar, math, and science.

This is the time, before any work has even begun, to erase a single phrase from your vocabulary: "We'll do it together." Kids who don't want to be seen with their parents in the mall definitely don't want to go to the library with them.

Instead, agree with your child that this is her project. You can help in several ways, but your child is responsible for the whole thing.

Your child's first step in doing a project involves selecting a topic. This is an important first step. Forget the projects you did in school or the ten ideas you immediately have for perfectly wonderful science fair projects. Let your child choose her own topic. Give guidance in the form of suggesting topics that conform to her interests or natural abilities, but don't get carried away and describe how she should do the project.

Narrow the search first to a category, then present two or three ideas within that category. After your child chooses a topic, be sure to check with the teacher for approval before encouraging your child to take the next step. The teacher may suggest ways to refine the project or different directions in which to take it.

Why is your project important? Anyone can do a little research, conduct an experiment, and get results. But at the heart of the scientific method is *problem-solving*. Ribbons are not awarded because your poster board looks colorful or you had a neat idea. Science fair winners choose a project that solves a problem.



Write down the answers to these questions in your logbook:

- 1.** Why is my project important?
- 2.** What problem might I solve?
- 3.** What will I learn from doing this project?