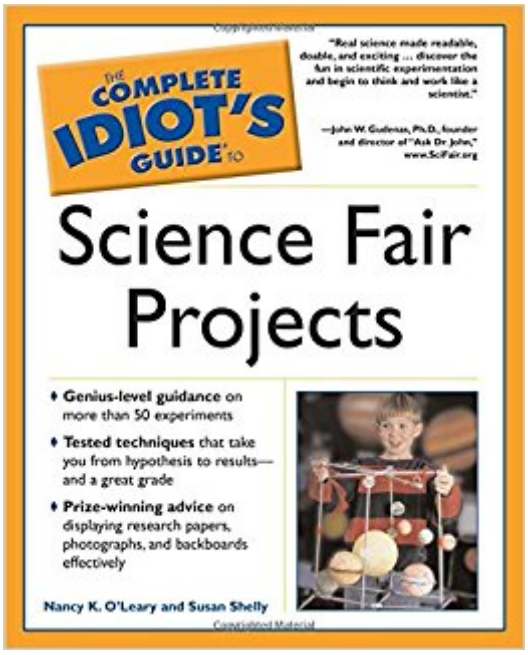
The Complete Idiot's Guide To Science Fair Projects



Synopsis

Includes 50 project ideas! Offering one-stop shopping for all readers' science fair needs, including 50 projects covering all science disciplines and rated from beginner through advanced, this book takes students and parents through the entire scientific method. Includes: € Choosing the right project € Fun projects, like how much air is in a basketball € How to wow the judges € Make the display board stand out, and more

Book Information

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Customer Reviews

Nancy K. OÃ¢â ¬â„¢Leary, who is completing Ph.D.-level study in chemistry and biology, is a teacher at both the college and junior/senior high level. Susan Shelly has more than 20 yearsÃ¢â ¬â„¢ experience in journalism, research, public relations, and freelance writing.

I struggled to help students who had never done a science fair project before as these projects were not my strong point either. So after buying this book, I made a list of the projects this book discusses and had my students choose something from that list. Then when a student had a question on what to do next I just referenced the book. This book is great for teachers and students who need more ideas for their projects.

This was an invaluable resource!! Can't recommend enough!

I’m reluctant to issue such a negative review, but I’m especially concerned for the intended audience: people who do not have a science background, thus would not be expected to be able to identify inaccuracies.It is difficult to understand why there are such fundamental errors in this text.Educational publications have a special responsibility to ensure accurate information. Verifying facts in basic science is generally a matter of library research. Reliable resources are free and universally accessible: public libraries; credible websites including those of NASA and various universities.In the following example, there are several inaccuracies and misleading statements, and the suggested experiment would be at best very difficult to perform. These are elementary errors which reflect a lack of fundamental understanding.Some concerns and comments are as follows:-- The authors state, "[Galileo] found that when an object is dropped and falls to the ground it has a falling rate of 9.8 meters per second, squared." Actually, gravity is not a "falling rate" but rather an acceleration.The authors have failed to distinguish between acceleration and velocity, a basic concept. Their use of "seconds squared" is awkward, and a new student would need an explanation, which would be easily included in a description of acceleration and velocity. Also, Galileo did not use the metric system, a misstatement which may create future confusion.-- The authors have inaccurately described gravity as a property of planetary and other bodies: "The moon, on the other hand, is much smaller than the earth, and has only about one-sixth of the gravity of the earth." In fact, gravity is not a property of bodies; it is a force which acts upon them. In Newtonian terms, gravity is an attraction _between_ bodies; in relativistic terms, gravity is a property of spacetime. Both models are useful.-- "The air is actually an upward force of friction...." Actually, while it is true that the particles in the air provide frictional resistance, nevertheless it is incorrect to say that air "is" a force of friction. Furthermore, this statement is misleading because it implies that air resistance occurs in a particular direction, upward; however, both the direction of the frictional force and the reference "upward" will vary with context. The proper term to introduce here would be "drag," which in this case is the force of air resistance which acts counter to gravity.-- The authors say, "The brick, on the other hand, can cut right through the air as if it didn’t exist." In fact, no, the brick also experiences air resistance. Except in a perfect vacuum, a condition which doesn’t apply on the surface of the earth, all objects have a theoretical terminal velocity, which is when the force of drag is exactly equal to the force of gravity. At terminal velocity, the object is still moving, but the velocity is no longer increasing.-- "...[If astronauts] were to go to Jupiter, which has much more gravity than the earth, they wouldn’t even be able to lift a foot off the ground." Jupiter is a gas giant: there is no ground. Many students reading this statement will form a mental image of Jupiter which is incorrect and which may eventually cause further confusion.-- "You can test the rate at which

various objects fall, noting both the mass of each object, and how long it takes for it to fall. Be sure to drop all objects from the same height, and be careful to use only objects that can't break."Since the authors refer to Galileo, it is odd that they recommend an experiment which will not work, instead of recommending, for example, Galileo's actual experiment, which is easily repeated using a few simple household items: any length of flat board such as a two-foot length of 1x8 board, or a portable whiteboard (message board); spheres of various smooth materials and sizes such as bouncy balls, ping pong balls, marbles; and, if available, a carpenter's level.The experiment the authors describe will not work because the time elapsed will be very small and difficult to measure, using any height and measuring equipment that the intended audience of students can reasonably be expected to access. Measurement error will overwhelm the observations.Furthermore, the authors instruct students to measure mass, but do not provide the necessary information to do so. Students may easily measure weight, but they would not be expected to be able to measure mass without further explanation and instructions, which have not been provided.Even the premise of the suggested experimentation is dubious, since it is not clear what effects will be observed: variations due to air resistance? Or objects falling at the same rate? What variables are controlled, and how? What is the hypothesis?Unfortunately, this suggested experiment does nothing to illustrate the scientific method or the procedures for a science fair experiment -- and those are, after all, the stated objectives for the book. Worse than neutral, however, is the introduction of false ideas which can only serve to create unhelpful confusion.Not recommended.

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