

Science Fair Options

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Every year, soon after returning from Christmas vacation, students begin asking me about science fair. It is an event they look forward to with anticipation. “What kind will it be?” is the question they want answered.

I have discovered that some variation promotes student interest. At Sandy Lake Academy, we alternate between “Science Fair” and “Technology Fair”. One year we had a Health Fair in place of the Science Fair.

The science fair is traditional—each student chooses a project, does an experiment, and prepares a triptych display showing their hypothesis, materials, procedure, results, and conclusion. This type of fair is adjudicated by a person outside the school, to reduce bias. I generally choose people from the community with a science background, who can evaluate the process and the validity of the conclusions. Prizes or ribbons for 1st, 2nd and 3rd place within each age group are awarded. We use the following divisions: K-3, 4-6, and 7-12. For adjudication purposes, it is helpful to provide a list of criteria for judging, but keep it short—no more than 5 criteria, or adjudication becomes a painfully long process.

The Health Fair was conducted similarly to a science fair, with the exceptions that the finished projects were in the form of a poster or collage, and we had some health practitioners present for taking blood pressure, measuring body composition (% fat), and giving dietary advice.

The Technology Fair centers around a project that all students complete, and then they are tested against one another. Usually I provide 2-3 projects to choose from. Some projects I have used are spaghetti bridges, toothpick bridges, mousetrap cars, egg drops, paper airplanes, kites (homemade), and hot air balloons (also homemade). The most popular projects have been the egg drop, the spaghetti bridges, and the mousetrap cars. Each project has carefully outlined objectives and for many, limits are set for amounts of material, length of span (for bridges), and so forth. The projects are often given catchy names (such as Lunar Lander for the egg drop) to excite the imagination. In addition to the student projects, generally prepared beforehand, I have sometimes included group engineering problems, and included parents and other guests in the groups. Such projects have included building towers out of marshmallows and drinking straws, building towers from a single sheet of craft paper and 30 cm of clear plastic tape, and building chairs from newspaper and rubber bands.

One Technology Fair began with a fifteen-minute period for elementary students and their parents to design and build a boat from a 15 cm X 15 cm piece of tinfoil (for the Tinfoil Titanic competition). The boats were then tested by floating them in a dishpan full of water and adding quarters until they sank. Each competitor received a certificate stating the “value” of their boat—the amount it held. During this competition, volunteers were judging spaghetti bridges and egg drop entries in another room. Competitors were given certificates and ribbons for 1st

through 3rd place for most creative design and lightest design (in the Lunar Lander competition) and for most interesting architecture for the bridges (London Bridge competition).

Then the testing began. Bridges spanned a 50-cm gap between two tables, and were tested using a 5-gallon pail suspended from a wooden block on the bridge deck. Water was added, one litre (1 kg) at a time until the bridge failed. Suspense was palpable in the crowd as each bridge was tested. Competitors were awarded certificates telling how much mass their bridge supported. Ribbons were awarded for 1st through 3rd place. Next, the egg drop entries were taken up a construction scaffold and dropped from a height of 5 m, at a target consisting of a cast iron frying pan at the bull's eye of a paper target on the floor. Depending on whether the egg landed intact or not, competitors were awarded certificates labelled "My egg survived the drop" or "I *like* my eggs scrambled", and ribbons for 1st through 3rd place were awarded for "survivors" who came closest to the frying pan. (Another option could be awarding Kinder Surprise® eggs to winners or to all competitors.)

Finally, the students were placed in teams and given a bag of marshmallows and a package of drinking straws, and were challenged to build the tallest possible free-standing structure (in the Eiffel Tower competition). No certificates were awarded for this competition, but students on the winning team definitely had bragging rights!

Throughout the various competitions, the names were written on the certificates by a volunteer who enjoys calligraphy, and the certificates were given out immediately following the group competition.

All this took place within a 2-hour period, and was enjoyed by both parents and students.

If you have never done a science fair with your students, I recommend trying it. If you have done traditional science fairs but have run out of ideas, and just can't face another bunch of volcano models and mouldy food displays, try a technology fair. They are a lot of fun.