Encouraging kids in science: A personal perspective

Getting young people, in general, and girls, in particular, interested in science is a subject of national debate and intense interest. I was lucky enough to be encouraged in science as a child, and was one of the few girls of my age who became physics majors. I've also been lucky enough to work with lots of youth groups, while working full time in engineering. In the hope that some of the perspective I've gained may be helpful to others, I'd like to offer some personal comments on encouraging children in science.

Answering their questions

The one thing that probably helped develop my interest the most as I was growing up was having parents who were interested and observant and answered my questions. Even little kids can have tough questions and want a real answer. When I was 6, my best friend Keith and I wanted to know why the grass gets wet in the evening. We asked our moms and compared answers the next day. We were excited to get an answer and understand it.

My parents answered many questions, including why the planets move around the sun, and why adding salt to an ice cream freezer makes it colder. It helps, of course, to keep the answers short, and avoid throwing in too many new words at once.

Sometimes it also helps to point out things a kid might not notice. My folks pointed out and explained why you see fireworks before you hear them. Another time, they asked me to figure out why the furthest right lane of the highway has the darkest surface. Once a girl was flapping her wet hands in the air to dry them; when I asked her if she noticed that it made her hands cooler, she was intrigued and wanted to know why that happened. The simplest of examples can illustrate interesting and complex phenomena and enhance a child's normal inquisitive nature.

Activities with kids

Another way to promote youngsters' interest in the world around them is through activities. Even preschoolers enjoy experiments. Once I let a group of four-year olds test the heat conductivity of various materials by letting heat from a candle travel through each of the materials. They were amazed that metal conducted better than wood.

There are lots of great books of experiments for kids, and I have yet to find a child who doesn't enjoy a short experiment of the appropriate level. Kids especially seem to enjoy anything gloppy, fizzy, or surprising. If you know a group of older children, you might even consider a Saturday Workshop to make holograms or do experiments. Both Boy Scout and Girl Scout badge books have many ideas for such workshops.

Another easy and constructive project is letting kids work with tools. My dad taught me to use a hammer when I was little and a lathe when I was older. I let some eight-year old girls take apart radios, and they loved it. Learning experiences can also include cooking. Once a gang of nine-year old boys made cookies under my supervision. A few were uncertain what was meant by a cup of vegetable shortening, so they put in both a cup of shortening and a cup of vegetable oil, just to be sure. The results were certainly very educational!

Other resources

Most adults know that there are lots of science kits and books for kids. I suggest having the child review them to see which subjects are appealing, since everyone is different. Don't forget to consider model cars and carpenter sets.

Classes are another option. A privately run program near my house offers excellent summer courses ranging from rocketry to dissection. When I was in high school, an NSF-sponsored summer program was a strong influence in my decision to go into science.

One last comment. Don't forget to let your girls try buildings things and your boys try cooking (and vice versa). When I taught girls to hammer, most of them thought it was great; several commented that their dads had taught their brothers to use a hammer and they had wished they could learn it too.

And, finally, kids are like us: sometimes they're in the mood to learn, and sometimes they're not. So don't feel discouraged if you don't have success every time—just stay alert for opportunities, and have fun.

JANET SHIELDS is a development engineer working in atmospheric optical systems at Marine Physical Laboratory, Scripps Institution of Oceanography, University of California, San Diego. She is a contributing editor with *Optics & Photonics News*.