

nature structural & molecular biology

Gearing up for science

With summer over and another school year well underway, it's time to focus our attention back onto education. As most US scientists/parents will tell you, science and math programs at the primary and secondary (K-12) education levels leave much to be desired, and with the meager local and federal education budgets, things are unlikely to improve anytime soon. Thankfully, there is plenty of online fare for parents to supplement their kids' education in these lean times. Many of you have probably come across the excellent children's educational websites maintained by the AAAS and *Science* (http://www.aaas.org/port_kid.shtml) and the American Chemical Society (<http://www.chemistry.org/kids>) as you visited related sites for your own personal research. We have previously mentioned some science sites for kids (*Nat. Struct. Biol.* **9**, 559 (2002)), but here are several other very good sites to visit if you're looking for additional resources to help bolster your child's science education and foster inquisitive thinking.

In an effort to get kids away from the TV and out into the real world, the Public Broadcasting Service (PBS) has organized web content that parallels their award-winning daily television series "Zoom" (<http://pbskids.org/zoom>). Aimed at kids aged 6–13, the website provides directions for activities from the show, downloadable games and printable activity pages for kids on the go. With content updated almost daily, students can read about other kids' experience with the activities, try it for themselves and then provide their own feedback on what they learned and how much fun they had while doing it. One of the most useful resources on this site is in the Parents and Teachers page. Its Preschool section has a variety of topics and ideas to choose from, whether you're looking for arts and crafts, games or science experiments. One interesting project your preschooler can try with a friend is the Tongue Map, where they can find out where the taste buds for the four basic tastes (sweet, sour, bitter and salty) are found on the tongue. Also on the Parents and Teachers page are links to ideas for science activities for older children organized into informative subtopics, tutorials on how to lead the projects and set up lesson plans as well as resources to extend the learning outside the classroom.

If you're looking to plan a trip to the local science museum or to find a new place to visit, check out Tryscience (<http://www.tryscience.org>). Maintained by the New York Hall of Science and the AAAS, Tryscience has a listing of over 500 science and technology centers in over 40 countries. It features website links to museums and science centers as well as tips for parents and teachers on making the visit a more stimulating experience. They provide an interactive listing of do-it-yourself experiments in several different basic science areas, including the physical and social sciences, along with suggestions on how best to use the site (let the kids drive!). They also have hook-ups to live web-cameras at several science centers across the globe, so you can visit some of the more interesting exhibits while saving on admission fees and plane fare.

The American Museum of Natural History hosts an Ology website (<http://ology.amnh.org>) where, as the name suggests, kids can learn about

the study of a variety of topics including archaeology, paleontology and genetics. With easily navigable web pages and kid-friendly content, they can learn about Einstein's contribution to modern physics or the aquatic life at deep-sea vents. At the end of each section is "Stuff to do," which has activities that directly relate to what they've just learned. Kids can also log into the site and collect Ology cards stored on a homepage that they have personalized. The Ology cards are like baseball cards except that they are filled with interesting scientific facts, not batting averages. If they collect enough cards, they can create projects—stories or brain teasers that incorporate the topics learned from the Ology cards—and share them with other kids online. They can also "Meet the Ologists," scientists who work at the museum and kids who have had interesting science experiences while working in a particular Ology.

For access to an online digital library, visit Kapili.com (<http://kapili.com/>), run by Andrew Rader Studios. This site is intended for kids of all learning levels who want to increase their scientific knowledge. An informative site tour walks you through the site and gives you a sense for what's in store if you decide to subscribe. A modest fee (US \$20 for 120 days, \$10 for 30 days) gives you access to over 300 online tutorials in the earth, life and physical sciences, a searchable library with photographic references and a species database, and activities and downloads, all on various key topics in science, math and technology. The site is chock full of images, a big plus for visual learners. Related free sites, also run by Rader Studios, include <http://chem4kids.com>, <http://biology4kids.com> and <http://geography4kids.com>. These pages offer more limited content than Kapili.com but teach all the basics, in subjects ranging from biochemistry, cell function and the atmosphere to reactions, vertebrates and the scientific method.

The above are just a sample of the many sites out there. More extensive listings can be found at the NIEHS Kids' Page (<http://www.niehs.nih.gov/kids/home.htm>), maintained by the National Institute of Environmental Health Sciences, and at FirstGov for Kids (http://www.kids.gov/k_science.htm), maintained by the Federal Citizen Information Center. If you've already visited some of these sites and your child or student has come up with a project or idea, or results from a project or idea, that they'd like to share with others, several of the sites described here offer weblog space where they can record their experiences. If you've got an Intel Science Fair participant in the making, they can submit their findings to the Sci-Journal (<http://www.sci-journal.org>). This website offers students an opportunity to experience manuscript and grant writing and peer review, with sections to upload a research report, search other reports for project ideas and discuss their findings with other student scientists.

These are just a few fun and accessible places that offer a wealth of resources to boost science and math training or to get kids started on the path of science exploration. Hopefully, they can help pave the way for an exciting and more productive school year and a lifelong fascination with the world around us. ■