Sharing Science Workshop & Practicum

Resources on Learning in "Free-Choice" or "Informal" Settings

Science learning often occurs outside of formal classrooms - in museums, zoos, and arboretums, at national parks; through hobbies, clubs and after-school activities; at science festivals; on the web; and through television, radio and podcasts. "Free-choice" or "informal science learning" as it is often called, relies on attracting and engaging people through their own interest and curiosity, and is often designed to entertain as well as to inform. The following resources provide additional background and context about learning in informal settings and inquiry-based pedagogy.

- **What is Inquiry?** http://www.exploratorium.edu/education/ifi/inquiry
  An introduction to inquiry-based learning. From this page, you can also access *Pathways to Learning*, which delves deeper into teaching and learning through inquiry, and *Inquiry Structure*, which maps an approach to inquiry that can guide your activities. You can also learn how inquiry can be applied successfully in formal settings in *Inquiry: Thoughts, Views, and Strategies for the K-5 Classroom* (http://www.nsf.gov/pubs/2000/nsf99148/htmstart.htm).

- **Science Centers as Learning Environments**
  http://www.astc.org/resource/education/johnson_scicenters.htm
  A 2005 article by Colin Johnson for the Association of Science and Technology Centers (ASTC) that describes what's different about learning in informal "free choice" settings like science centers.

- **Bringing Nano to the Public: A Collaboration Opportunity for Researchers and Museums**
  http://www.nisenet.org/catalog/tools_guides/bringing_nano_public_collaboration_opportunity_researchers_museums
  This guide provides an introduction to informal science education and to science museum practice for nano and materials science researchers. It advises researchers on ways to collaborate with science museums to increase the impact of their education outreach activities, and includes a rich bibliography. Pages 8-9 and 13-15, in particular, provide information on how learning occurs in science museums and tips to make researchers successful in these settings.

- **Sharing Science with Children: A Survival Guide for Scientists and Engineers**
  http://www.noao.edu/education/ncmlssg.html
  This guide from the North Carolina Museum of Life and Science is written for scientists and engineers interested in making effective classroom presentations. Much of the content and many of the tips and recommendations can be applied to the interactions in a museum setting.

- **Learning Science in Informal Environments**
  http://www.nap.edu/catalog/12190/learning-science-in-informal-environments-people-places-and-pursuits
  This 2009 report from the National Research Council draws together contributions from experts in the field to explain how informal settings can boost science learning and provides guidance for improving these experiences.

- **Center for Advancement of Informal Science Education** http://www.informalscience.org
  This is a growing repository for research and evaluation, project reports, and professional resources.

- **NISE Net Resources** –
  Team-Based Inquiry Guide – how to incorporate an element of evaluation (question/investigate/reflection/improve) into the process of designing a new activity.
  Universal Design Guidelines – how to create accessible programming.