



"4-H SET Updates" are sent out once a month to two email lists: one for 4-H Staff and a week later to our General News email list.

## October 2009

The [The 4-H Science, Engineering, and Technology \(SET\) Initiative](#) combines non-formal education with hands-on, inquiry-based learning in a positive youth development context to engage youth in improving their SET knowledge, skills and abilities. 4-H SET combines the strengths of 4-H Youth Development non-formal experiential-based delivery modes and strong youth-adult partnerships to address SET content as defined by the National Science Education Standards (1996).

### FEATURED NEWS

- **4-H SET-Ready projects and activities utilize experiential learning (EL).**

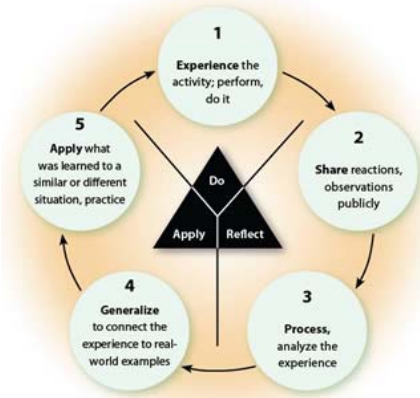
Experiential learning (EL) is based on the idea that experience matters in the learning process. Through a concrete and hands-on learning experience, youth are encouraged to think, explore, question, and make decisions. EL is more than just having the learner be engaged in an experience, however. To ensure that learning does take place, two other components are required – a period of reflection where the learner shares and processes the experience, and the application of new learning in authentic situations.

4-H promotes EL through projects and programs that:

- are direct and hands-on;
- invite discussion through open-ended questioning;
- involve active reflection; and
- make connections between the activity and the real-world.

The 5-step learning cycle – Exploration, Sharing, Processing, Generalizing, and Application – is a recurring process that helps build learner understanding over time.

For more information, read <http://www.ca4h.org/SET/documents/CA4HSET-EL.pdf> or visit <http://www.experientiallearning.ucdavis.edu/>



- The National Academy of Engineering recently released the report "**Engineering in K-12 Education: Understanding the Status and Improving the Prospects**" which suggests that engineering education may improve student learning and achievement in science and mathematics, increase awareness of engineering and the work of engineers, boost youth interest in pursuing engineering as a career, and increase the technological literacy of all students. Specifically, the teaching of STEM subjects in U.S. schools must be improved in order to retain U.S. competitiveness in the global economy and to develop a workforce with the knowledge and skills to address technical and technological issues. For more information, please visit [http://www.nap.edu/catalog.php?record\\_id=12635](http://www.nap.edu/catalog.php?record_id=12635)



- **For 4-H Staff:** National 4-H Headquarters has developed two **online 4-H SET surveys** which they will be using to evaluate the 4-H Science, Engineering, and Technology (SET) initiative for each county on an annual basis. These surveys are critical and we are asking counties participating in 4-H SET to complete these as soon as possible. The first survey, "4-H SET Program Survey" is due October 1; the second, "4-H SET Implementation Survey" is due October 15.

### UPCOMING TRAININGS

- The **California Foundation for Agriculture in the Classroom's** mission is to increase awareness and understanding of agriculture among California's educators and youth. The California Ag in the Classroom conference will be held October 23-24, 2009 in Rohnert Park, CA. Early-bird registration is due October 5. More information is available at <http://www.cfaic.org/conference/>

- Mark your calendars for **Winter 2010 4-H SET Professional Development: February 6, 2010**, with five locations throughout the state to be determined. The day-long trainings will focus on the California 4-H SET Year 2 Plans:
    - **Morning:** Teens-as-Teachers - Learn to utilizing teenage 4-H members as co-educators and facilitators with younger 4-H members.
    - **Afternoon:** Introduction to 4-H SET curricula; 2-3 per each site (which may include water conservation, robotics, rabbits, biosecurity, and others).
- As the locations and curricula are identified, more information (including registration instructions) will be included in future 4-H SET Updates.

## CURRICULUM

- **4-H SET-Ready curricula are available for free electronic (PDF) download** in the online library! Curriculum includes "It Came From Planted Earth", "Nature's Partners: Pollinator Protection", "Pond Mapping", "Ridges to Rivers", and "Veterinary Science". Visit the library at <http://www.ca4h.org/SET/curriculum.asp>
- The **Junior Master Gardner** program offers a new series of activities, **Building a Vegetable Garden**. These novel, hands-on learning experiences will help youth to evaluate the best garden site, select the right vegetables plants and will learn "Paper Towel Gardening" to establish the space requirements for plants. A new Golden Ray Series certification is offered to those young gardeners completing a set of activities from the JMG Teacher/Leader Guide. More information is available at <http://67.59.137.247/index.cfm?did=15948&sectionID=2017>
- **Lessonopoly** is a free software portal developed by Silicon Valley Education Foundation. While the site is primarily for classroom teachers to organize, create, share and connect with other teachers, there are many **free activities in a searchable database**. For more information, visit <http://www.lessonopoly.org/svef/?q=lessonplansearch>
- The **Global Educational Outreach (GEO)** initiative uses new technology to provide outstanding Science, Engineering and Technology (SET) teaching material. It is a highly flexible medium enabling a wide range of different educational approaches to be explored and it is particularly useful for SET educators who will find valuable downloadable teaching resource material created by the best science and technology experts and educators. Visit the site at <http://www.geoset.info/>

## RESOURCES

- The Energy Information Administration (EIA) this week unveiled **Energy Kids** featuring more than 100 pages of fun educational content for kids, parents and teachers. The site features energy-related stories, hands-on activities and research articles. Making energy fun can excite young people to develop an understanding of energy and its increasingly important role in our daily lives, economy, and environment. For more information, please visit <http://www.eia.doe.gov/kids>
- Uncovering the hidden hazards of hairspray - Is your hairspray or refrigerator contributing to the destruction of the ozone layer? Not anymore, thanks to the work of chemists Mario Molina, F. Sherwood Rowland, and many others. Find out how scientific research revealed the global threat posed by chlorofluorocarbons and influenced policy changes to deal with it. From the **Understanding Science Team** at [http://www.understandingscience.org/article/ozone\\_depletion\\_01](http://www.understandingscience.org/article/ozone_depletion_01)
- According to a study at the University of Washington, **young children learn best through social interaction**. Researchers are studying an emerging field called the "Science of Learning," which re-evaluates how children learn in formal and informal settings. Infants and young children learn from imitation and by following the actions of those around them, adopting mannerisms and speech patterns. The research may suggest that SET education in a positive youth development framework, such as 4-H, may help improve learning. More information on the study is available at <http://uwnews.org/article.asp?articleID=50883>
- The **Encyclopedia of Life (EOL)** is the first comprehensive, authenticated web site established to make information about the world's biodiversity freely available over the Internet. EOL's portal currently includes more than 160,000 authenticated species pages, another 1.4 million base pages, and links to 13 million pages of digitized biodiversity literature. Visit the EOL at <http://www.eol.org/>
- **Science is an exciting and dynamic process of discovery**. The Understanding Science team present a **flowchart** that shows the real process of scientific inquiry. Use it to trace the development of scientific ideas or the research of individual scientists. You'll see that each scientific journey is unique, shaped by specific people and events. The flowchart is available at [http://www.ca4h.org/set/updates/complex\\_flow\\_posterv.pdf](http://www.ca4h.org/set/updates/complex_flow_posterv.pdf)
- Program in Education, Afterschool and Resiliency (PEAR), the Noyce Foundation, and 4-H Youth Development offers a **searchable website of assessment tools for informal science learning**. The goal is to provide information to choose appropriate tools for assessing program quality and outcomes for children and youth. The website is continuously updated in collaboration with the Youth Development Researchers at 4-H. The website is available at <http://atis.pearweb.org/>

## EVENTS & ACTIVITIES

- **Year of Science 2009: October** - Whether it is shaking, erupting, or eroding, ours is truly a dynamic planet! Through 4.6 billion years of history, plate tectonics has been at work to shape the earth that we inhabit. And the more we know about Earth's geologic resources and processes, the better we can appreciate its grandeur and beauty and respect its occasional disruptions. Celebrate with us **GEOSCIENCES AND PLANET EARTH** at [http://www.yearofscience2009.org/themes\\_geosciences/celebrate/](http://www.yearofscience2009.org/themes_geosciences/celebrate/)
- **4-H National Youth Science Day on October 7, 2009!** The 2009 4-H national Youth Science Experiment - "Biofuel Blast" - will engage youth in important environmental issues our global community faces together and the opportunity available for a greener tomorrow. As our nation grapples with important environmental issues such as global warming, sustainability and energy independence, "biofuels" -sources of energy obtained from recently harvested plant materials- are at the forefront of the discussion of alternative energy sources. For more information and to find an event near you, visit <http://www.ca4h.org/SET/NYSD2009/>
- The Walt Disney Company announces the nationwide launch of **Disney's Planet Challenge**, a project-based environmental competition for fourth through sixth grade youth. The program empowers youth to make a difference in their homes, schools, and communities and prompts youth to think and act responsibly toward the environment while fostering teamwork, problem solving skills, and lifetime love for learning. Registration for the competition closes **December 18, 2009**. Registered teams then have until February 26, 2010 to complete their project portfolios. After-school science clubs, like 4-H Clubs, are eligible as long as they are comprised of 4-6th grade youth. For more information about Disney's Planet Challenge or to register for the competition, visit [www.Disney.com/planetchallenge](http://www.Disney.com/planetchallenge).
- The Woodstock of Science: **Inaugural USA Science Festival** will be held in Washington D.C. in the Fall of 2010. The Inaugural USA Science Festival will be the country's first national science festival and promises to be the ultimate multi-cultural, multi-generational and multi-disciplinary celebration of science in the United States. The culmination of the Festival will be an Expo in the heart of Washington, D.C. that will give over 500 science organizations from all over the country the opportunity to present themselves with a hands-on, fun science activity to inspire the next generation of scientists and engineers. For more information, please visit <http://www.usasciencefestival.org/>
- With a shared interest in the protection of the environment, the Toyota USA Foundation and The Coca-Cola Foundation will fund the expansion of 4-H's youth water quality and conservation programming, called 4-H2O. **4-H2Online** is a community for youth to learn about water quality, water conservation and watershed issues. For more information, visit <http://4-h.org/b/Pages/Layouts/4h2online.html>
- The **Coalition for Science After School (CSAS)** is entering into a national partnership with TimeWarnerCable (TWC) in order to promote STEM learning beyond the classroom. TWC's five year initiative will shine a light on the many wonderful opportunities that exist for youth and families to engage in science and technology. CSAS is developing a **national database of STEM programs and events**. To view the growing directory, visit <http://www.scienceafterschool.org/resourcedb/index.php> To add a 4-H SET entry, become a CSAS member!
- The **2010 State 4-H Field Day will be held on May 29, 2010** at UC Davis. The State 4-H Field Day is the largest California statewide 4-H event, open to 4-H members, siblings, parents, 4-H volunteers and staff. In 2010, 4-H SET will be featured with many hands-on science, engineering and technology activities and challenges! Your 4-H Club or project can help! Stay tuned for more information on how your 4-H project, club or committee can provide exciting 4-H SET activities, challenges or exhibits. More information will be posted at <http://www.ca4h.org/projresource/fieldday/>



## INCENTIVES AND RECOGNITION

- **Freshbrain** invites youth, ages 13-18, to design a **graphic image for it's robotics technology area**. Freshbrain is seeking two images which capture graphically what will be possible for young people to create in Robotics. First place will be awarded \$500. Entries are due **October 15, 2009**. For more information, please visit <https://freshbrain.org/activity/design-robotics-artwork-contest>
- **FreshBrain** invites youth, ages 13-18, to create a learning path of 5-9 activities from any of the technology areas on their website. Learning Paths are a series of activities that will help a FreshBrain user to gain significant knowledge in an area of technology. They are typically structured in such a way that each activity can be completed alone or as part of the learning path. Three scholarships will be granted: the winner \$3,500, second place \$1,000, and third \$500. Entries are due **November 15, 2009**. More information is available at <https://freshbrain.org/scholarship/freshbrain-design-your-own-content-scholarship>
- The **Spirit of Innovation Awards** program guides high school students through an interdisciplinary product development pipeline and connects teams with leading scientists, engineers and entrepreneurs. Teams put into practice the curriculum they are being taught, apply that knowledge to designing an innovative product, and gain access to the resources and opportunities to help them bring those products to market. Teams compete for more than \$100,000 in prizes. Categories include aerospace exploration, green schools, renewable energy and space nutrition. For more information, please visit <http://www.conradawards.org/>

- The **Kids' Science Challenge (KSC)** is a nationwide competition for 3rd to 6th grade youth to submit experiments and problems for REAL scientists and engineers to solve. For the second year, 4-H is partnering with Kids' Science Challenge to extend this NSF funded opportunity to 4-H groups across the country. This year's topics are BIO-INSPIRED DESIGNS (using nature to give us ideas for new inventions), SPORTS ON MARS (what would, or COULD you play on the red planet?), and DETECTIVE SCIENCE (using the science of detection to solve everyday mysteries). Entries must be submitted by **February 28, 2010**. More information is available at <http://www.kidsciencechallenge.com/>

## FUNDING OPPORTUNITIES

- **NOAA B-WET** provides grants in support of locally relevant experiential learning through meaningful **watershed educational** experiences in the K-12 environment. Funded projects will provide meaningful watershed educational experiences for students and related professional development for teachers in support of regional education and environmental priorities. Competitions for 2010 funding are now open. Applications are due **October 8, 2009** on [grants.gov](http://www.oesd.noaa.gov/BWET/BWET_funding.html). More information is available at [http://www.oesd.noaa.gov/BWET/BWET\\_funding.html](http://www.oesd.noaa.gov/BWET/BWET_funding.html)
- The **Lorrie Otto Seeds for Education Grant Program** gives small monetary grants to schools, nature centers, and other non-profit placers of learning. Project goals should focus on enhancement and development of an appreciation for nature using native plants. Projects must emphasize involvement of students and volunteers in all phases of development, and increase the educational value of the site. Proposals are due **November 15, 2009**. More information is available at <http://www.for-wild.org/seedmony.html>

## AROUND THE STATE

- **Monterey County:** Inviting 4-H volunteers to participate in a *Lesson Study* group on the new California 4-H SET curriculum, "Youth Development through Veterinary Science." The Lesson study approach takes place in increments over extended periods of time and uses real settings (4-H project work) as their basis. The lesson study process will involve teams of volunteers who will formulate goals, collaborate to improve project meetings, and explore issues around teaching and learning. In this project, 4-H volunteers will meet as a group ever 3 weeks for 6 months. For more information, please contact Lynn Schmitt-McQuitty at [lschmittmcquitty@ucdavis.edu](mailto:lschmittmcquitty@ucdavis.edu)
- **San Diego County:** The County 4-H Office has assembled 4-H National Youth Science Day discovery kits for each 4-H Club. The kits contain all the materials for the experiment and copies of the facilitation guides from online as well as lab notebooks where youth can record their observations. During the program year, other experiment kits will be assembled and offered to each 4-H Club. 4-H Club Leaders will have youth record observations in the lab notebook and the notebooks will be submitted at the end of the year for a competition. For more information, please contact Rub Rodriguez at [rerodriguez@ucdavis.edu](mailto:rerodriguez@ucdavis.edu)
- **In Santa Clara County:** The SET Steering Committee has three activities planned at the Tech Museum of Innovation in San Jose. First, a 4-H Day at The Tech will be held on October 11; a free day for 4-H project leaders who will be offered a 1-year free membership. Second, a three-hour adult training will be held at The Tech; date tba. Third, in the Spring 2010, The Tech will be devoting a gallery to 4-H SET displays, demos, and interaction exhibits to showcase to the public. For more information, please contact Joe Walters at [walters\\_joseph@yahoo.com](mailto:walters_joseph@yahoo.com). Visit The Tech's website at <http://www.thetech.org/>
- **Colusa County:** Using funds from the 4-H Service-Learning RFP process, Colusa 4-H began the **Princeton Afterschool Rocketry Project** by providing rocketry supplies to the afterschool program as well as SET training for their staff and curriculum. The junior and senior high students worked in teams and enjoyed making "rocket snacks", film canister rockets, homemade kites and decorating multi-stage rockets. 4-H was new to all of these students and taught them hands-on science can be fun and educational at the same time. They learned that helping each other and cooperation leads to success and a more enjoyable experience. For more information, please visit <http://www.ca4h.org/4HDelivers.asp?ID=66>



## Science, Engineering & Technology

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