

## BACK TO SCHOOL WELCOME

The Lebanon County Conservation District would like to welcome you back to school! We hope you have an exciting year planned for your students that will include many hands-on projects, inquiries, and investigations. If we can assist you in any way, please contact us. Your conservation district has an array of resources—from staff and curriculum, to maps and equipment. Field trips, teacher workshops, consultations, guest speakers, and environmental planning assistance are all available at your local conservation district. Contact us and let us help you plan an exciting program or project for your students.

To learn more about the conservation district, visit us on the web at [www.lccd.org](http://www.lccd.org).

## EARTH SCIENCE EDUCATION LACKING IN SCHOOLS ACROSS THE U.S.

As our country's new recovery package begins to be implemented there will be an even greater call for individuals with an earth science background. As we carry out our pledge to go green, more green jobs will be created and there will be a growing need to fill those positions with people who have degrees in the geosciences.

However, the way our school systems are currently structured in regard to curriculum, they do not lend to getting up-and-coming generations ready to meet the growing demand.

The fields included in the geosciences, according to the American Geological Institute (AGI), include 3 main categories. They are (listed with their subcategories when applicable):

**Geoscientist** - *Subfields:* Environmental science, Hydrology, Oceanography, Atmospheric science, Geology, Geophysics, Climate science, Geochemistry, Paleontology

**Geoengineer** - *Subfields:* Environmental, Exploration, Geotechnical

**Geomanager**

According to **Yahoo hotjobs**, "environmental scientists will be the heroes of the coming era, developing much-needed strategies to redress environmental damage to soil, water, and air. The field is expected to grow 25% in response to new federal regulations and funding, as well as private investment. A bachelor's degree in earth sciences will get you started in this fascinating and important field."

There already exists a shortage of geoscientists in the workplace and the field growth will just add to the shortage. AGI said in their February, 2009, *Status of the Geoscience Workforce* that there are "...approximately 1,500 geoscience graduate students transitioning into the professional workplace each year" and that "...falls short of geoscience workforce demand and replacement needs."

AGI estimates that "by 2030, the unmet demand for geoscientists in the petroleum industry [alone] will be approximately 30,000 workers."

Part of the problem lies in the fact that not many students get the same amount of education in or exposure to the earth sciences as they do other sciences, like life sciences. And as children move up through school grades, after 6th grade, the trend is to teach general science rather than specific sciences.

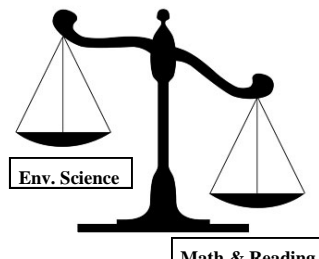
Although earth science classes are recommended as part of the high school curriculum in several states, it is only required in seven of them. Fourteen states leave it up to individual districts to decide whether it will be required or not.

AGI reported that for the past 26 years, the percentage of high school students taking earth science classes has not exceeded 25%. But the problem doesn't stop at the high school level. As time goes by, more and more college-aged students are opting to go to community college before going off to four-year schools. And, unfortunately, only five percent of community colleges offer programs in the geosciences like geology, hydrology, and atmospheric science. There is little possibility of getting an associate's degree in the field.

Often times, it is in the first two years of college that students find their education direction if they didn't figure it out in high school. If these programs aren't being offered at the community college level, students don't have the opportunity to test the waters before moving on to a four-year school.

Although there are geoscience departments in universities in every state across the nation, there has been a steady decrease, since 1999, in faculty size and student size. It was reported by AGI that in 2008, the median faculty size was 8 and the median student size was 45.

AGI has also reported that "...less than 13% of the approximately 6,000 new U.S. geoscience bachelor's majors in the fall of 2008 will ever work in the geoscience field professionally. This number is particularly troubling given that only 28% of all science and engineering majors work in their field."



AGI recognized that "measurement, analysis, and reporting of all aspects of the geoscience workforce system are critical for decision makers to successfully support building the future capacity for geoscience in the United States." It is important that there is understanding to get at the root of the problem to determine how to turn these trends around.

If we are to really go green, we will need people with the expertise to lead us there and as it stands now, we are not prepared.

By Trina Hoaks, Examiner.com, February 28, 2009

## BATTLING NATURE DEFICIT DISORDER BY 'TAKING A MINUTE TO BE IN IT!'

Today, our technology-based world has left little room for outdoor play, imagination, creativity, and quiet observation. As more of today's youth are tuned into computers, cell phones, and video games, there is less interaction with the outdoor world. Rarely do we take the time to watch the sun set, or look up in the sky for birds or notice how the clouds spontaneously form patterns. In addition, teachers at the elementary level are pushed to teach reading and math, leaving minimal time for science. The result: our children are missing out on the wonders and beauty of our natural world—the world that sustains all of us.

Jane Kirkland, award-winning author and Pennsylvania native, offers a tip to help teachers train our students to be more observant and in tune with the natural world. Kirkland's advice is simple—she asks us to "take a minute to be in it." Kirkland encourages teachers for all grade levels to mount a white board (erase board) or a large laminated piece of paper where students can post their observations about the natural world around them throughout the day. The simple act of observing and recording is a basic science skill, but a very important step in learning basic fundamentals.

Some patience and guidance will be needed, as a few outlandish sightings may get posted at first; but as you train your students to **take a full minute** to observe nature, you'll be pleasantly surprised with what they discover.

If your students become engaged in this simple task, interest and discussion will quickly grow. In fact, what started out as brief white board postings can grow into a large classroom or school project.



These observations can be developed into written assignments or oral reports where students provide fuller descriptions of the plant or animal, its natural habitat, and the features that make it unique. By observing and reporting on these elements of nature, students will not only gain a better appreciation of their natural surroundings, but will also enhance their writing and public speaking skills.

The task of observing and recording can incorporate multiple disciplines, including writing, public speaking, art, social studies, and more. The opportunities to discover nature and bring it into the classroom are endless. In no time at all, the white board 'take a minute to be in it' list can soon become your very own field guide to your school yard or community.

Be creative—engage yourself and your students in nature. Take a minute—or a class period—and BE IN IT! You'll be amazed at the list generated and the values you and the natural world will foster.

## PLANS FOR A SUNNY DAY OR TWO. . .

Build an 8' trough (or longer!) and fill it with water (or get your carpenter friend to do it for you!). Give students an empty plastic bottle or two, a motor, a photovoltaic cell, and a propeller. Get out your "junk" box, add some popsicle sticks, wire, duct tape, and stirring straws, and you've got the makings of a fun investigation on solar boats. Students' creativity starts the boat building - they have fantastic ideas. But when the boat is unbalanced, or the propeller doesn't reach into the water, the problem-solving begins. Does mass affect speed? How about shape? Does the angle of the solar panel affect how much power it produces? How does the motor run to make a propeller spin?



Johnny Soto & Kacey Stewart, Union Canal 5th graders with the solar boat they designed.

After exploring the various sources of renewable and non-renewable energies, it was time for the 5th graders at Union Canal Elementary School to experience some first-hand investigations into solar energy and principles of force and motion. Students were given the basic parts for the boats, thanks to a generous grant from First Energy. They drew what they planned to build, adding any other materials they desired. Our second grade "science buddies" were included in the entire process. The actual building began, testing ensued, followed by revisions. Such enthusiasm! Finally, the boats were put to the scored test, and their speeds were calculated. We all cheered the winners, and I secretly cheered all the creativity, science knowledge, problem-solving abilities, and persistence the students had demonstrated. What fun!

Beryl Stoddard—Union Canal Elementary School, 5th Grade

## ART CONTEST FOR GRADES 3—12

The York County Conservation District is now accepting artwork from any Pennsylvania student in grades 3-12. All artwork must be submitted in color on nothing larger than 8.5 x 11 inches and must depict a Pennsylvania bird or mammal. Multiple entries may be submitted, but each must be of a different bird or mammal. No cash awards or royalties will be awarded, however, winning artwork will be published and credited in York County's "PA Wildlife Journal", a professionally written resource book on Pennsylvania birds and mammals.

For complete rules and more information, log onto York's website at [www.yorkccd.org](http://www.yorkccd.org), click on Education, then Student Wildlife Art Contest.



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