



## SCIENCE INTEGRATION WORKSHOP

### Integrating Science Across the Curriculum

#### Act 48 Credit Hours Available

In a perfect school environment, students receive instruction in all areas of the curriculum, and all subjects receive equal amounts of time; however, due to the increased emphasis on PSSA, this no longer occurs. Education is now focused primarily on Reading, Math, and Writing. What has happened to Science and Social Studies? Science and Social Studies can easily be taught—and should be taught—through integration.

Is it only important to our society that children know their math facts and are able to read and write? Do we, as a society, feel that children do not need to connect to events happening in our world and to see how their education connects to these events and the world? As educators, it is very important that the students we teach see these connections. They need to see that the experiences they have in the classroom connect to the outside world.

How do we, as educators, make sure that we “cover” all our students’ needs without removing Science and Social Studies? One answer to this question is to integrate the curriculum; to teach one theme or unit throughout all academic areas.

By integrating Science and Social Studies into Math, Reading, and Writing, students not only benefit from the knowledge that they learn and master, but they also are able to see a connection between school and their community.

By teaching through integration, students make connections beyond their texts, connect their learning to their daily lives, and carry these skills with them as they grow and learn.

Every student has a learning style, and every student learns differently. Students, like adults, need to see and understand what they are learning is valuable to them, and it can be applied to everyday life. We do a disservice to our students by only teaching Reading, Writing, and Math. Our students deserve a broader, more diverse, educational experience.

**ALL** subjects are important to the education of our students. With the time pressures educators are under and the requirements of State Testing, we need to integrate as much as possible. If you are interested in learning more about how to “**Integrate in the Classroom,**” plan to attend

a workshop on Saturday, March 15, 2008, at the Lebanon Valley Ag Center from 8:30-3:30. The workshop will focus on the Environment & Ecology State Standards and Anchors to help you prepare your students for the spring tests. Target audience is 2<sup>nd</sup> through 6<sup>th</sup> grade teachers. Act 48 credit hours are available. To register: Contact Marcie Palko at 368-0991 or Leigh Beamesderfer at 717-272-3908, ext. 112. The cost of the workshop is \$25 plus all materials.

By Marcie W. Palko, QEWP Committee Member, EASD

## THE LOWDOWN ON TOPSOIL: IT'S DISAPPEARING

By [TOM PAULSON](#)—P-I REPORTER

**“Disappearing dirt rivals global warming as an environmental threat:** The planet is getting skinned. While many worry about the potential consequences of atmospheric warming, a few experts are trying to call attention to another global crisis quietly taking place under our feet.”

“Call it the thin brown line. Dirt. On average, the planet is covered with little more than 3 feet of topsoil -- the shallow skin of nutrient-rich matter that sustains most of our food and appears to play a critical role in supporting life on Earth. “We’re losing more and more of it every day,” said David Montgomery, a geologist at the University of Washington. “The estimate is that we are now losing about 1 percent of our topsoil every year to erosion, most of this caused by agriculture.”



“It’s just crazy,” fumed John Aeschliman, a fifth-generation farmer who grows wheat and other grains on the Palouse near the tiny town of Almoda, just west of Pullman. “We’re tearing up the soil and watching tons of it wash away every year.” He’s one of a growing number of farmers trying to persuade others to adopt “no-till” methods, which involve not tilling the land between plantings, leaving crop stubble to reduce erosion and planting new seeds between the stubble rows.

“Montgomery has written a popular book, “Dirt,” to call public attention to what he believes is a neglected environmental catastrophe. A geomorphologist who studies how landscapes form, Montgomery describes modern agricultural practices as “soil mining” to emphasize that we are

rapidly outstripping the Earth's natural rate of restoring topsoil. "Globally, it's clear we are eroding soils at a rate much faster than they can form," said John Reganold, a soils scientist at Washington State University. "It's hard to get people to pay much attention to this because, frankly, most of us take soil for granted."

"The National Academy of Sciences has determined that cropland in the U.S. is being eroded at least 10 times faster than the time it takes for lost soil to be replaced. The United Nations has warned of worldwide soil degradation -- especially in sub-Saharan Africa, where soil loss has contributed to the rapidly increasing number of malnourished people."

Healthy topsoil is a biological matrix, a housing complex for an incredibly diverse community of organisms -- billions of beneficial microbes per handful, nitrogen-fixing fungi, nutrients and earthworms whose digestive tracts transform the fine grains of sterile rock and plant detritus into fertile excrement known as 'dirt.' As such, true living topsoil cannot be made overnight, Montgomery emphasized. Topsoil grows back at a rate of an inch or two over hundreds of years. Very slowly. "Globally, it's pretty clear we're running out of dirt," Montgomery said."

Ron Myhrum, state soil scientist with the U.S. Department of Agriculture's office in Spokane, agreed that global soil loss is a huge problem. But Myhrum said erosion rates in the Northwest region have improved recently because of better conservation farming practices, including federal payments to farmers to leave some natural ground cover in highly erodible areas. "We don't have the kind of dust storms here we used to have," Myhrum said. "What's more alarming to me than erosion is conversion of farmland to urban use."

"That is indeed another way to lose soil -- paving it over. Judy Herring, manager of King County's farmland preservation program, said the county has lost 60 percent of its farmland since the 1960s. In 1979, Herring said, voters approved a bond program that buys back farmland to protect it from development (and has done this for 13,200 acres so far). But while some land is lost to development, pollution or changing weather patterns, Montgomery, Reganold and others say global soil loss is a crisis mostly rooted in agriculture. "Erosion rates have improved here, but that doesn't mean they're good," Reganold said. Topsoil clearly is still being stripped off faster than it can be regenerated, he said.

"Thirty years ago, Aeschliman was one of the first in the Palouse to grow his grains using no-till farming methods. He's an ardent no-till proselytizer today, but he didn't abandon tilling the fields based on some organic epiphany or desire to save the world. "I just got tired of all the mud," Aeschliman said. The family home, built in the 1880s, sits at the base of a long drainage off the rolling wheat fields. Every spring, with the tilling and the rain, his home would be a foot deep in muddy runoff."

"No-till farming could do a lot to reduce topsoil erosion, Reganold said, but it's not without its downsides. Switching to no-till farming requires heavy upfront investment and learning new techniques, he said, and also tends to depend more on herbicides because the weeds are no longer controllable by plowing them into the soil."

"Organic farming methods also can reduce soil loss, Reganold said. He cited his own research, which has

shown a marked increase in soil health, water retention and regrowth when organic methods are used rather than the traditional methods. "It's both good for the soil and good for your pocketbook," he said.

P-I reporter Tom Paulson can be reached at 206-448-8318 or [tom-paulson@seattlepi.com](mailto:tom-paulson@seattlepi.com).

## **KNOCKING OFF MAILBOX CLUTTER**

"Busy consumers, tired of sifting through overflowing mailboxes, take heart: A new, free, online service gives you the power to decline catalogs you don't want to receive. Developed by the National Wildlife Federation, Natural Resources Defense Council and the Ecology Center, Catalog Choice aims to improve the efficiency of catalog distribution by reducing the number of repeat and unsolicited mailings—benefiting the environment in the process."

"Every day, millions of unwanted catalogs clog consumers' mailboxes and are immediately tossed in the trash. More than just an annoyance, they are overflowing municipal waste systems, using up precious natural resources and contributing to pollution and global warming," says Laura Hickey, NWF's senior director for global warming education. The groups behind Catalog Choice estimate that approximately 53 million trees are harvested annually to produce the 19 billion catalogs currently mailed to Americans. The process of making and shipping the catalogs is estimated to contribute 5.2 million tons of carbon dioxide emissions into the atmosphere.



After only two months of the site's launch, Catalog Choice has signed up more than 280,000 consumers who have declined nearly 3.5 million catalogs. To learn more, visit [www.catalogchoice.org](http://www.catalogchoice.org).

National Wildlife Magazine, Feb/March 2008—Action Report pg 53

## **EARTH DAY ACTIVITIES AT QEWP**

The Quittapahilla Educational Wetland Committee is planning 3 days of watershed and wetland activities during Earth Week—Monday, Wednesday & Friday. Three to four stations will be conducted by QEWP & LCCD staff and we are asking that 1-2 stations be covered by your staff. Stations include soils, critter ID, habitat tour, scavenger hunt, Tracking PA Animals, and more. If you are interested in bringing your students, contact Leigh at 272-3908 ext. 112.



**EDITOR: Leigh Beamesderfer,**  
**Lebanon County Conservation District**  
Website: [www.lccd.org](http://www.lccd.org)