

The coal hard truth

February 4 2011, By Tom Yencho

Coal has long been synonymous with America's industrial heritage and economic expansion. That doesn't have to change: The United States has a 300-year supply of coal waiting to be tapped, a predicament that is at the heart of many policy and environmental debates today.

Despite our historical reliance on coal, though, only 42 percent of surveyed eighth-grade students know that coal is the most abundant fossil fuel found in the U.S. And only 26 percent know that [coal](#) is used to produce the most energy across the country.

It's a lack of awareness that has Alec Bodzin, an associate professor of teaching, learning and technology, concerned. His recent study of 1,043 eighth-grade students from two school districts in the northeast U.S. found that most students simply do not understand energy acquisition, generation, storage, consumption or conservation.

In the study, the students were given a 39-question Energy Resources Knowledge Assessment. The questionnaire was modeled on specific energy literacy goals set forth by the American Association for the Advancement of Science (AAAS) / and other prominent education associations and agencies. The study revealed that, although environmental literacy has gained traction in recent years, students simply have not attained conceptual understanding of energy-related issues.

Among the results were:

- Only 13 percent knew that petroleum (crude oil) and natural gas come from plankton and sea life that are millions of years old
- Only 41 percent knew that the electrical grid is a network of power transmission lines that connect across the U.S. to transport electricity.
- Just 25 percent knew that the heating and cooling of rooms was the most energy consuming use of energy in U.S. household.

Information about energy resources is included prominently in U.S. national science and environmental education curriculum and state standards. Concepts pertaining to energy resources are also listed in the strand maps of the AAAS's Atlas of Science Literacy as important learning goals that should be achieved by students by the completion of eighth grade.

They are standards that, simply, are not being met. "It appears that the implementation of energy resources curriculum in middle schools is lacking in conceptually rich and personally relevant learning experiences," says Bodzin, who is also a leading member of Lehigh's Environmental Initiative.

Bodzin is trying to reverse that trend. To help increase understanding of energy resources, Bodzin and a team of researchers have developed a new teaching unit incorporating geospatial learning technologies as part of the K-8 curriculum. The initial findings of their study, supported by the Toyota USA Foundation, show more significant knowledge gains by [students](#) of the new energy curriculum.

It's a promising start, Bodzin says, but there's still a long way to go.

Provided by Lehigh University

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