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Headline: Mixing education, environment

By Tom Horton, SUN STAFF

REMEMBER THE last math course you took? I do. It's why I write for a living.

But I've always regretted letting math put me off pursuing an interest in science.

There was a better way. I've just finished reading about it in a remarkable report on improving students' learning across the curriculum while revolutionizing environmental education.

Consider, for example, what might be called the "log cabin method" of teaching math, developed by Clay County High School in eastern Kentucky.

The school is one of 40 in 12 states, including Maryland, that are rooting the traditional curriculum, from social studies to physics, in the context of their natural surroundings and heritage.

In Clay County, the heart of Appalachia, this has taken the path of a multi-faceted nature center and Native American village constructed by students on 80 acres. It all grew from an old, donated log cabin that provided an authentic focal point.

Math (and a lot more) is taught by doing the measurements, calculations and design for additions.

Students quickly find that while the consequences of a botched math problem in the classroom may be negligible, on the construction site, it causes them lots of trouble and loss of time.

Lessons go further

Students have been engaged enough by such hands-on learning to further apply math skills to predicting fluctuations in local deer herds, calculating fish growth at their aquaculture facility and analyzing whether Native American diets met today's nutritional and caloric standards.

Other students have used geometry to design access for the handicapped to herb gardens. This is just a slice of all that is going on in Clay County, and just a sliver of what is going on in schools around the country.

It is all contained in "Closing the Achievement Gap:

Using the Environment as an Integrating Context for Learning," the fruit of a four-year, million dollar research project funded by the Pew Charitable Trusts.

The report documents significant benefits from basing education on environment—from increases in standardized testing and SAT scores, to improvements in cooperation and enthusiasm among both students and teachers.

It is the first time such hard evidence has been gathered to prove “EIC” (Environment as an Integrating Context) works, says San Diego-based Gerald A. Lieberman, the report’s chief researcher.

Sometimes parents’ or school boards’ first reaction to EIC is “that it’s just turning out little environmental activists,” says Gary Heath, the Maryland State Department of Education’s environmental education specialist.

So it is worth noting, he says, that the goal is about improving problem solving and learning throughout the traditional curriculum (albeit taught non-traditionally).

Arithmetic and activism

It is more about math and reading and science than about water quality or activism on behalf of the natural world.

The local environment, however, does make a superb basis for enhanced teaching of everything else, Heath and Lieberman say. The reasons are practical and also as deep, perhaps, as our evolution.

Polls routinely show an overwhelming percentage of parents and students have a high interest in environmental education. Lots of jobs are available to those who want to work with natural resources and pollution control.

In addition, money, governmental cooperation and volunteer help from outside experts are readily available to schools doing environmental projects.

Linking all subjects

On a broader level, a good deal of the benefit of EIC-type learning seems to spring from the way it connects and inter-relates the different disciplines.

As a seventh grader at Radnor Middle School in Wayne, Pa., told the researchers:

“They split apart the [traditional] classes when the whole idea is to learn. It’s much better mixed together. Those lines they put between the classes, they don’t mean to be very big, but really they’re big, fat walls.”

And of course, the very essence of nature is that everything is connected to everything; and so, ultimately, will be any learning based on it.

Lieberman also notes that Harvard educator Howard Gardner, famed for his theories of multiple intelligences published in 1983, recently added an eighth—the “naturalist intelligence” (others included musical, spacial, bodily-kinesthetic, linguistic and logical-mathematical).

Darwin an example

A prime possessor of naturalist intelligence may have been Charles Darwin, about whom “absolutely nothing in any record documents the usual characteristics of intellectual brilliance,” writes Stephen Jay Gould.

Yet his extraordinary gift for identifying, observing, classifying and ordering the natural world about him—which is essentially how Gardner defines the naturalist intelligence—led to Darwin’s evolutionary theories, which changed the world and rank among the great intellectual achievements of our age.

On a humbler scale, while living on Smith Island in the Chesapeake, I observed watermen with little aptitude for traditional learning, but who were geniuses at discerning their natural environment and making a living from it.

Assigned reading

Lieberman says he personally would put this eighth (naturalist) intelligence “number one it’s a basic aspect of our nature, based on survival.”

I know I would put his report No. 1 on educators’ reading lists.

While EIC is not technically about environmental education, its use of local environment as the lens through which students view everything else is the finest way I can conceive to raise generations who understand the nature of where they live.

And that understanding is a good first step on the way to loving, caring and preserving.
