



Education and the Environment: Partners for Change

by Ruth Flanagan (with updates from Kathy Draper)

Many [schools] are moving away from strictly textbook-driven, teacher-led instruction in favor of hands-on approaches with students more involved in their own learning. Some are replacing traditional, compartmentalized subjects with interdisciplinary curricula that more authentically connect fields of knowledge.

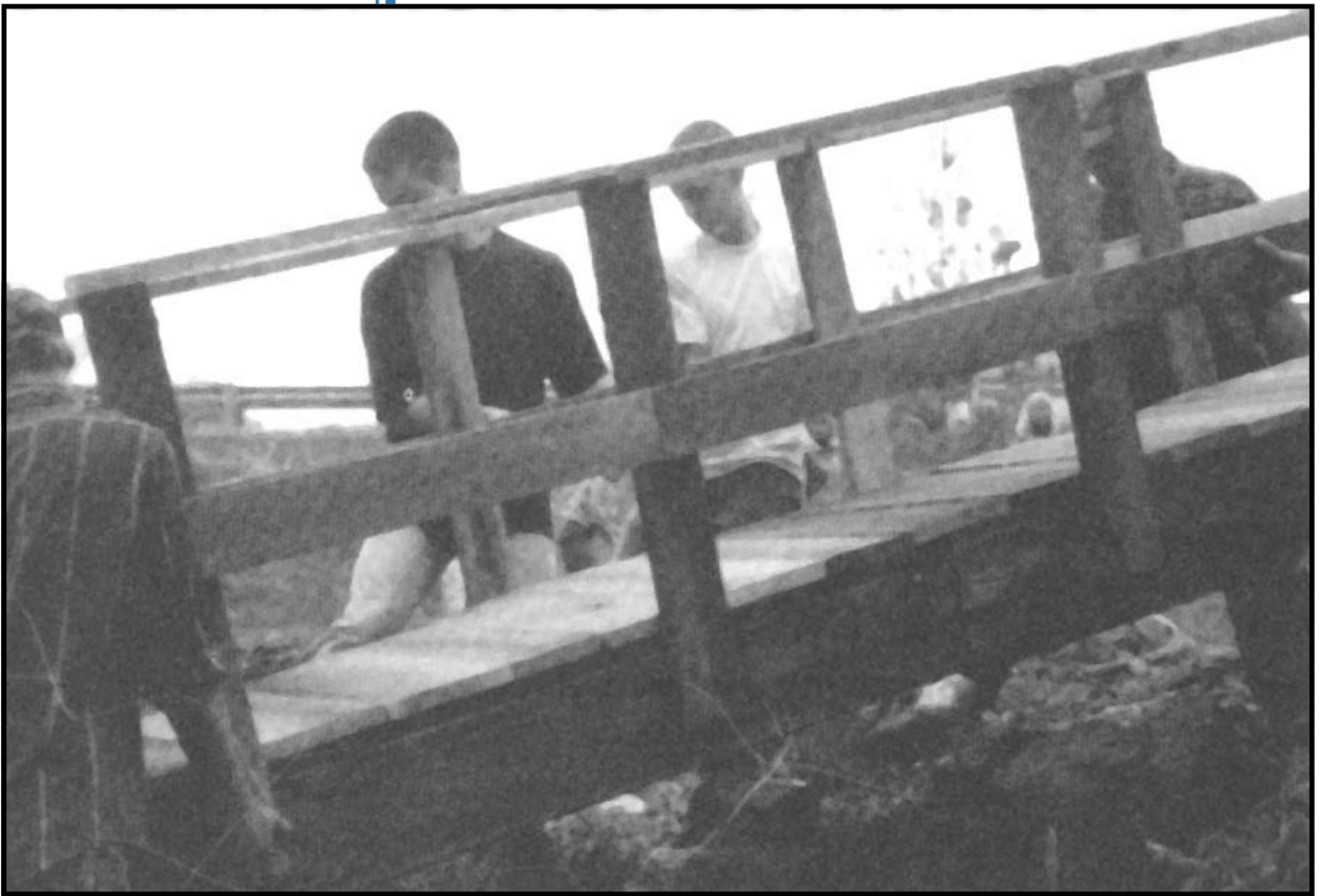
To learn about local plants, biology students from Kentucky's Clay County High School decided to create their own nature trail on the school grounds. Before they could complete the trail, however, they had to build bridges over creeks. But before they could do that, they had to teach themselves how to build a bridge. They also had to test the soil around the creeks to make sure the foundation was safe, and develop a budget and marketing plan to raise the money for lumber. What started as a seemingly straightforward project evolved into a collaborative, long-term endeavor that drew together almost every school subject.

The project created new paths for one school. It also highlights new paths in education—trends that are dramatically shifting the way some schools work. Repeatedly spurred by calls for reform at the national, state, and local levels, many schools are adopting more integrated approaches to teaching.

These initial changes were nudged partly by reports such as *A Nation at Risk*, issued in 1983 by the National Commission on Excellence in Education, which cited falling student test scores as a sign that the public schools were faltering. But these changes have also come from a recognition that the world as a whole is changing at a dizzying pace. Given shifting economic, political, and technological realities, businesses are increasingly demanding employees with more flexible skills; people who not only possess knowledge, but who can nimbly apply it to complex problems.

While schools are changing in many different ways, a growing number are moving in the same basic direction as Clay County High: stressing the value of real-world experiences to boost student learning. Many are moving away from strictly textbook-driven, teacher-led instruction in favor of hands-on approaches with students more involved in their own learning. Some are replacing traditional, compartmentalized subjects with interdisciplinary curricula that more authentically connect fields of knowledge.

At the same time, a large number of schools are embracing the environment as a focus of study. According to Jane Eller, executive director of the Kentucky Environmental Education Council, there's been a renaissance in environmental education since legislators passed the *Kentucky Education Reform Act* (KERA) in 1990. This is probably no accident. As Clay County High School biology teacher Jocelyn Wolfe explains, "Environmental education is the best way to achieve KERA goals."



Clay County High School students installing the bridge they designed and built from scrap lumber.

Though sometimes presented as an ancillary, stand-alone subject or as filler for a Friday afternoon, environmental education was originally conceived to mean something both broader and more profound. It is not a subject but an approach that integrates many subjects—a kind of teaching that instills what Aldo Leopold termed “a consciousness of land,” an understanding of the intricate, dynamic relationship between human beings and the environment, and a search for balance between the two. In its 2005 report to Congress the National Environmental Education Advisory Council, which advises the U.S. Environmental Protection Agency (EPA) on implementing the National Environmental Education Act of 1990, describes environmental education as providing individuals with the knowledge, skills and tools needed to address concerns about our health and the environment while enabling these individuals to use this knowledge to help create a sustainable society.

Of course, it's one thing to argue environmental education is good for ensuring people make informed and responsible decisions affecting the environment. But is it good for education? If the reform initiatives described so far make pedagogical sense, the answer is 'yes.' "The most important reason is probably the simplest, says Dixie Reimer, a science teacher at Komachin Middle School in Olympia, Washington. "Children care deeply about the environment."

As a result, she says, important and engaging environmental themes can breathe life into academics, providing the relevance that motivates students to learn. Environmental topics lend themselves to hands-on instruction, so they appeal to students' diverse learning styles. Many educators believe that environmental studies hold particular promise for improving student achievement in reading and math, goals specifically mentioned in the *No Child Left Behind Act 2001*, the most sweeping reform of the *Elementary and Secondary Education Act* since it was enacted in 1965. It redefines the federal role in K-12 education to help improve the academic achievement of all American students, regardless of disadvantages or diverse learning styles.

Since environmental issues are by nature multifaceted and interdisciplinary, they provide rich opportunities for teaching across the curriculum to varied learning styles. "You can't understand environmental problems unless you have a good sense of numbers, like parts per million and billions of people," says Gary Heath, Assistant Superintendent for the Maryland State Department of Education. "Nor can you understand them unless you understand the government, economics, and geography. How can you address an environmental problem unless you know about the people involved?" This encompassing quality can encourage a shift to interdisciplinary teaching, he argues, helping teachers to restructure their curricula and link disparate subjects in meaningful ways.

Environmental issues also provide ample opportunities for students to solve problems. This point touches on one of the more controversial, and often misunderstood, facets of environmental education. While some environmental education programs have been criticized as politically biased, programs that comply with the guidelines identified in the North American Association for Environmental Education's National Project for Excellence in Environmental Education never advocate a particular viewpoint. Rather, they encourage students to investigate issues from all sides, and then—and only then—make their own informed decisions and, when appropriate, take responsible and constructive action. The process of investigation helps students develop the critical thinking skills that more and more schools are trying to cultivate.

No Child Left Behind (NCLB) Act 2001 Provides Opportunities for Environmental Education

On January 23, 2001, President George W. Bush sent his No Child Left Behind (NCLB) plan for comprehensive education reform to Congress. At that time, he asked members of Congress to engage in an active bipartisan debate on how we can use the federal role in education to close the achievement gap between disadvantaged and minority students and their peers. The result, the *No Child Left Behind Act 2001*, embodies four principles: stronger accountability for results, expanded flexibility and local control, extended options for parents, and an emphasis on teaching methods that have been proven to work.

Each of these principles from NCLB provides opportunities for EE to support student achievement through environmental literacy. For example, states are required to develop comprehensive educational plans for student success, which provides environmental educators with the chance to assist their state departments of education in adopting the EE guidelines set forth by the North American Association for Environmental Education (www.naaee.org/npee/learner_guidelines.html). Additionally, supporters can successfully demonstrate how these EE guidelines correlate to already adopted state standards.

In its publication *No Subject Left Behind*, the National Environmental Education Training Foundation (NEETF) offers specifics for helping to facilitate this process by providing links to states that have developed successful standards correlations. No Subject also showcases federal programs that demonstrate particular promise for environmental education at the state and local levels including:

- Advanced Placement Program Grants - www.ed.gov/programs/apincent/contacts.html
- Comprehensive School Reform Program - www.ed.gov/programs/compreform/index.html
- Public Charter Schools - www.ed.gov/programs/charter/index.html
- Service Learning programs such as:
 - The School Dropout Prevention Program - www.ed.gov/programs/dropout/index.html
 - Improving Language Instruction - www.ed.gov/about/offices/list/oela/index.html?src=mr
 - Safe and Drug Free Schools and Communities - www.ed.gov/offices/OESE/SDFS/index.html
 - Office of Indian Education - www.ed.gov/about/offices/list/oese/oie/index.html
 - Innovative Programs - www.ed.gov/programs/innovative/index.html
- 21st Century Community Learning Centers - www.ed.gov/programs/21stcccl/index.html

To learn more go to www.neetf.org/Education/NSLB.doc

This analytical aspect of environmental issues has helped earn them a place on a number of standardized tests. For example, the Maryland State Department of Education began administering comprehensive performance assessments to third, fifth, and eighth graders in the state's schools in the early 1990s. Like most assessments, the Maryland tests aim to measure not only what students know, but also how well they can apply what they know to solve real problems. And since "environmental issues lend themselves naturally to such analysis and synthesis, a number of the tasks and questions are set in an environmental context," Heath says. These tests in turn exert a powerful influence on teaching in the state.

No one can say whether schools around the country have consciously incorporated environmental education into their programs as a result of new tests. However, according to Heath, since the baseline assessment in 1993, Maryland's test scores have risen in most subjects, such as reading, social studies, and science. "Most schools' scores have gone up, and I think that's good for both education and the environment," he says.

Needless to say, schools approach environmental education in strikingly different ways. According to Gerald Lieberman, Director of the State Education and Environment Roundtable (SEER), many exemplary schools initiated their programs as a natural outgrowth of their educational offerings, not as any conscious effort to "do environmental education." On the other hand, a small number of schools developed their programs in close partnership with outside environmental educators. In some instances, environmental educators have offered educational assistance, helping teachers to rework their curricula and instruction to meet reform goals. Still other educational facilities are custom designing classroom instruction to integrate their district and state's standards. Since the publication of *Closing the Achievement Gap* in the late 1990s, SEER has led educational reform institutes around the country teaching the specifics of how to use the environment as an integrated context for learning (EIC). Participants use their own state standards; correlating these benchmarks to units they develop at the EIC Model School Institute. Currently, 12 states have joined the SEER initiative.



Hollywood Elementary students participating during the "wade-in" on the Patuxent River.

Following is a glimpse of a few U.S. schools whose innovative programs demonstrate the possibilities. Contact information for each school is listed in the resources section at the end of the article.

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- Jennifer Gilman,
Hollywood Elementary principal,
Maryland

Project-Based Environmental Education

[Hollywood Elementary School, Hollywood, Maryland](#)



The blacktop at Hollywood Elementary says a great deal about the school. Atop the playground is an enduring painting of the entire Chesapeake Bay watershed. The painting reflects Hollywood’s commitment to the Bay. It also reflects a focus of education at Hollywood—helping students to recognize their connections to a larger community.

The push for more relevant teaching has bolstered the school’s longstanding philosophy: to nurture children’s curiosity by helping them engage directly with the world. “I want fifth graders to leave our school deeply interested in life, asking good questions and having a good way of approaching their questions,” says Jennifer Gilman, principal. To hone that sense of inquiry, teachers use projects as an integral part of instruction, with students working in small, multi-age groups to tackle both short- and long-term problems.

Perhaps not surprisingly, many of the projects at Hollywood involve the local environment. The students have long been involved in recycling and have worked to reclaim meadow on unused school lawns. And since 1988, students have participated in an annual “wade-in” on the Patuxent River, which flows into the Chesapeake Bay. Former Senator Bernie Fowler started the wade-in—participants literally waded into the river until they can’t see their feet—as a way of checking water clarity and raising awareness of the importance of the Bay.

By virtually any measure, Hollywood’s programs represent high quality environmental education. They also “simply represent high quality education,” says Heath. The Maryland State Department of Education has even showcased some of the teaching methods being explored at Hollywood as models for other schools.

A project led by science teacher Julie Tracy shows how such teaching can work. In one sense, the aim of the project was to attract more wildlife to a storm-water management pond on school grounds. At the same time, it offered rigorous and rewarding learning opportunities across the curriculum.

At the start of the project, for instance, teams of third and fifth graders studied as artists, gathering at the pond and carefully drawing what they observed. Later, they became field biologists, systematically surveying the pond and discussing how to make it more amenable to wildlife. After deciding to plant wetland species, the students chose appropriate plants in an ecology lesson and calculated how many they would need using charts and algebra, advanced skills for these age groups. They also came up with a budget, justified their choices in writing, and wrote to a

wetland expert for suggestions. Ultimately they wrote their own grant proposal for plants and materials. And now, the students are proudly monitoring the pond, which, as a result of their labors, has become home to muskrats, snakes, frogs, dragonflies, and many other species.

For this and other environmental projects at Hollywood, the staff calls on outside environmental educators for resources, training, support, and inspiration. “I don’t think we could have done anywhere near as meaningful a job without environmental educators working with our teachers.” Gilman says.

Partnerships and New Perspectives Meet Needs of Diverse Student Populations

[Gove Elementary School, Belle Glade, Florida](#)

[Pine Jog Environmental Education Center, Florida Atlantic University, West Palm Beach, Florida](#)

During the mid-1990s, in a county where 67 languages were spoken, Gove Elementary seemed, in some respects, a different world. About 70 percent of the children spoke limited English, with Spanish the most common native language. A large number came from migrant farm-worker families. Fourteen percent of the students received services from the Exceptional Student Education Program, which helped students with challenges ranging from specific learning disabilities to profound mental disabilities.

At Gove, both state-mandated reforms and environmental education had transforming effects. In 1995, Florida’s Commissioner of Education placed Gove as one of 13 “critical schools” in the state whose performance on standardized tests fell far below the national average in reading and math. The school was put on notice to bring up its scores as part of a comprehensive school improvement plan.

Gove’s former principal, Margarita Pinkos, swiftly made dramatic changes in the way teachers approached their work. At a two-week, voluntary summer retreat, she encouraged teachers to collaborate much more, both within and across grade groups. These new perspectives led to a major shift to an integrated curriculum organized around four nine-week themes, and tied to county benchmarks for education.

Of course, actually implementing such a fundamental change posed a serious challenge. Most teachers had little or no experience developing integrated, interdisciplinary units. Five teachers on staff, however, gained this knowledge thanks in large measure to a “Model School” program offered by the Pine Jog Environmental Education Center in

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West Palm Beach, Florida. Among other objectives, Pine Jog's Model School program helps teachers use environmental education to meet their reform goals.

For example, it enabled Gove teachers to attend "Dimensions of Learning" workshops, where they learned general strategies for improving their teaching. The Mid-Continent Regional Educational Laboratory in Aurora, Colorado—one of the nation's ten regional educational laboratories—developed "Dimensions of Learning" to introduce an approach to learning that cultivates critical thinking skills. The Pine Jog staff also worked closely with Gove teachers to design new curricula tailored specifically to their diverse student body and their specific improvement plan.

Custom designing relevant curricula is a hallmark for the twelve environmental education model schools Pine Jog currently serves. These model schools have significant geographic and demographic diversity including western agricultural communities, schools with "at risk" and "gifted" students, and schools with large minority populations. Since 1995, over 200 teachers and 27,000 students



Gove students at Pine Jog Environmental Education Center.

have taken part in Pine Jog's programs. To quote one participating principal: "An important element of making education work is making it interesting and relevant to our students. Becoming an EE Model School has helped us bring the real world into the classroom. We found our students tested better, making significant improvement in their writing and language arts skills because they were choosing to write about... the environment... (which) had meaning to them. Likewise, our teachers are turned on by the new instructional strategies they

are using and the improvements they are seeing in their students. And we all know a turned on teacher is a better teacher."

In the case of Gove Elementary, Pine Jog helped to not only revitalize attitudes but also substantially redirect pedagogical efforts. Afterwards, based on improved test scores, Gove was excised from the Commissioner's list of critical schools.

Dimensions of Learning

Dimensions of Learning is a comprehensive model designed by the Mid-Continent Regional Educational Laboratory in Aurora, Colorado that uses what researchers and theorists know about learning to define five dimensions of thinking.

Dimension 1: Attitudes and Perceptions

If students view the classroom as an unsafe and disorderly place, they will likely learn little there. Similarly, when they have negative attitudes about classroom tasks, they will probably put little effort into those tasks. A key element of effective instruction, then, is helping students to establish positive attitudes and perceptions about the classroom and about learning.

Dimension 2: Acquire and Integrate Knowledge

When students are acquiring new skills, they must learn a set of steps, then shape the skill to make it personally efficient and effective. Finally, they must internalize or practice the skill so they can perform it easily.

Dimension 3: Extend and Refine Knowledge

Learners rigorously analyze what they have learned by applying reasoning processes to help them extend and refine information. These processes include:

- Comparing
- Classifying
- Abstracting
- Reasoning inductively and deductively
- Constructing support
- Analyzing errors and perspectives

Dimension 4: Use Knowledge Meaningfully

Ensuring students have the opportunity to use knowledge in meaningful ways is one of the most important parts of planning a unit of instruction. In the Dimensions of Learning model, tasks can be constructed around six thinking processes to encourage the meaningful use of knowledge:

- Decision making
- Problem solving
- Invention
- Investigation
- Experimental inquiry
- Systems analysis

Dimension 5: Productive Habits of Mind

The most effective learners develop powerful habits of mind that enable them to think critically and creatively to regulate their behavior appropriately and effectively.

Source: Mid-Continent Research for Education and Learning
www.mcrel.org/programs/dimensions/whathow.asp

Starting from Scratch

[Komachin Middle School, Lacey, Washington](#)



For people struggling to reform and improve their schools, Komachin's beginnings may sound like a dream come true. Instead of tinkering with an existing, traditional school, educators built Komachin from scratch in 1990. "We started by envisioning what we wanted," says teacher Dixie Reimer. "We visited schools. We thought. We read. We asked, 'What do kids need? How do they learn best?'" Then we collectively put all that together and designed a school."

Their vision of a sound education for the future has a familiar ring. According to Reimer, they felt that students would need, among other things, "problem solving skills, communication skills, and technological skills for the new world." And to nurture their learning, they'd need hands-on, cooperative experiences and the chance to develop close, longstanding relationships with teachers.

Komachin realized these goals, in part, by adopting a block schedule, with most classes at least 90 minutes long to allow more time for projects, such as laboratory work and trips. "We love it!" Reimer exclaims. "It allows us to involve our students in environmental field studies off school grounds. We'd be unable to do all the field work if we were on a traditional six-period day."

The middle school also adopted an integrated, interdisciplinary curriculum organized around broad themes. Each class aims to reinforce the theme from a different perspective, and the semester concludes with a culminating activity to help students synthesize what they've learned.

For example, in science, students visit and investigate the ocean, rivers, and forests. In math, they calculate the waste that their own families produce to get a sense of the challenges involved in sustainable design. In language arts, they write poetry to help them express and promote the values of their community.

The Global Rivers Environmental Education Network (GREEN), supported through the Thurston County Conservation District, helps with biological monitoring of nearby rivers, and service opportunities such as revegetation of eroded riparian slopes. "GREEN has been our long term support for the last 12 years, providing training for our teachers, buses for field work, and chemicals for monitoring kits," Reimer adds.

According to Tom Condon, a science teacher at Komachin, service learning grants he and Sue Koontz have received for the department

since 2002 have helped to build a greenhouse, rain garden, native plant species berms, an informational kiosk, raised beds, and an herb garden. The funds have also supported in-service training and the opportunity to attend the National Conference for Student Service Learning.

“The grant has also given us the opportunity to further develop working relationships with the Thurston County Solid Waste, Washington Conservation Corps, the City of Olympia, the National Nisqually Wildlife Refuge, and the Thurston County Conservation District. Currently, we are also using the grant funds to develop service-learning curriculum in our nine week science enrichment courses,” Condon comments.

“We’re trying really hard to do this program,” says Reimer. “This is one way to prepare our students for the rigors of high school and to keep them in love with and involved with science.”



Komachin students test water quality on the Deschutes River.

A School That's Been in It Together

[Clay County High School, Manchester, Kentucky](#)

The teachers at Clay County High School know well what it means to keep students “in love” academically. For several years, they witnessed their own labors of love take hold in the school. Indeed, one could view their efforts as an object lesson: a demonstration of the power of a dedicated community—and well-timed reform—to turn a flagging school around.

Like Gove Elementary, Clay County High faces some formidable challenges. Set in a coal-mining and farming region of eastern Kentucky, Clay County is one of the poorest counties in the nation. About 80 percent of the students receive subsidized lunches.

The 1990 *Kentucky Education Reform Act* (KERA) was, in some respects, a godsend for the school. KERA provided more equitable funding for schools across Kentucky. Interestingly, the Act also provided an occasion for some of the school’s teachers to try out ideas that had been simmering for years. According to biology teacher Jocelyn Wolfe,

“The Environmental Research Center not only helped students learn,” says Wolfe, “it has given them pride in themselves and their school. Before the outdoor classroom, I used to hear kids refer to school as a prison,” she says. “I didn’t hear that once we had the outdoor classroom. The kids were so proud it was just unreal. The whole school felt like we were in this humongous project together.”

- Jocelyn Wolfe,
Biology Teacher,
Clay County High School

she and her colleagues had long dreamed of creating an outdoor classroom where students could learn by doing. Such a classroom would lend itself to skills-oriented interdisciplinary, collaborative instruction—approaches that KERA requires. “Before KERA we might have met some resistance from our administration,” she explains. “People are so afraid of liability; they’re hesitant to try new things.”

In the mid to late 1990s Clay’s administrators gave the nod of approval and with some staff development from local environmental educators, Clay County’s staff and students created a full-fledged Environmental Research Center. The Center encompasses traditional elements of an outdoor classroom, such as a nature trail and wildlife habitat. A pioneer log cabin and an herb garden greenhouse bring traditional Appalachian culture to life. Restored wetlands and a nature trail focusing on native plant preservation offer many possibilities for research and field study.

The Center also provides rich opportunities to achieve KERA goals. For example, until recently, teachers of anthropology, art, history, and economics all used the Cherokee Village to teach collaborative lessons about Native Americans. Approximately 1,800 students visited the outdoor classroom during its many years of operation, giving students ample opportunities for service learning, which is also encouraged by KERA. High school students taught younger children such skills as Indian gardening, cooking, and basket weaving. They wrote brochures, developed lessons, and offered guided tours along the nature trail.

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Why is Environmental Education Ideal for Improving Student Learning?

Teaching about the environment and environmental issues can be used to:

- Develop inquiry, problem-solving, and critical thinking skills
- Develop team-building and group decision-making skills
- Promote hands-on learning
- Tie learning to the community with a real-world application
- Strengthen learning in core subjects (science, math, geography, language arts, civics, etc.)
- Promote interdisciplinary learning
- Promote learning about technology and technological advances

Limited Preparation May Be Keeping Numbers Low



In strikingly different ways, Hollywood and Gove Elementary Schools, Komachin Middle School, and Clay County High School all exemplify how the environment can advance education reform. Yet the total number of schools in the nation that have woven the environment deeply and meaningfully into their teaching remains relatively small. The reasons, of course, are numerous and complex. But one of the most fundamental is easy to pinpoint: limited preservice and in-service teacher training.

Despite society's professed interest in the environment, the vast majority of teachers emerge from schools of education, where they get their preservice training, without any formal instruction in environmental education. There is also room for improvement in how environmental education is presented to future teachers in schools of education. While environmental education is inherently interdisciplinary, it is usually introduced as a discrete "special topic" in science curricula. The opportunity exists for schools of education to introduce a more practical model for integrating the environment throughout the curriculum.

To help address the amount and kind of environmental education training available to preservice educators the North American Association for Environmental Education (NAAEE) joined the National Council for Accreditation of Teacher Education (NCATE). Two-thirds of the nation's new teacher graduates come from NCATE-accredited schools. To learn about what NAAEE is doing see, "Setting High Standards: Environmental Education Builds a Home in Teacher Education Accreditation," on the EETAP web site. http://eetap.org/pages/article.setting_high_standard.2006.03.php



Since environmental education has not yet won a permanent place in the preservice system, those teachers who do receive environmental education training usually do so from nonformal providers such as natural resource agencies, nature centers, botanical gardens, and zoos, as well as national programs like Project WILD, Project Learning Tree, and Project WET. These types of nonformal educational entities operate separately from, but certainly not independent of, the formal school system. They frequently offer critically important in-service training to educators.

For instance, the highly successful Project Learning Tree (PLT), a program of the American Forest Foundation, has trained approximately 500,000 educators. Certainly this large and popular program, with its expansive networks of facilitators and trained educators, is making a dent in bringing environmental education into the school system. Still, with 4.5 million teachers in nearly 100,000 schools across the United States, a great opportunity exists for more in-service training that can

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Director of Education, Pine Jog
Environmental Education Center,
Florida

reach increased numbers of educators. Fortunately, some of the larger in-service programs—Projects WILD, WET, and PLT—are reaching more educators as a result of the Environmental Education and Training Partnership (EETAP). Funded by U.S. EPA’s Office of Environmental Education, EETAP is a multi-million dollar joint venture between EPA’s Office of Environmental Education, the University of Wisconsin-Stevens Point, and eight other universities and organizations to deliver environmental education training and related support services to education professionals.

Gerald Lieberman of SEER cautions that in some cases there are drawbacks to prepackaged curricula—the most common form of in-service training for teachers. Because these programs are ready-made, they tend to assume that all teachers, students and communities can be treated alike. In Lieberman’s words, “Teachers use a very limited number of exercises from packaged training, usually only the ones they were taught. The problem with packaging curriculum is that it is not locally relevant unless the teacher does the work of connecting.” Lieberman also suggests that to meet the pressures of NCLB and other requirements, teachers face the challenge of “what they want to do versus what they have to do.”

A Changing Role for Nonformal Education Programs

The same political and economic pressures that are squeezing teachers today are also affecting nonformal environmental education programs. In this era of accountability (it’s often “raise test scores or else”), many schools view programs from agencies, zoos, and nature centers as a luxury they can ill afford. “It’s really important to attend to the pressure to perform that our schools are under,” says Heath of the Maryland State Department of Education. “All schools would like to, say, get kids outside on a field trip. But they’ve got to get more out of that field trip than they used to get.”

Fortunately, many nonformal environmental educators are increasingly aware of their changing role, and are finding creative ways to address schools’ needs. Florida’s Pine Jog Environmental Education Center, for example, has evolved from a traditional nature center into a sophisticated catalyst for systemic school change. In that capacity, Pine Jog has learned to listen to teachers, and do its “homework” to meet their true needs. “We’ve heard loud and clear that teachers are overburdened. We can’t expect them to add one more thing to their curriculum plates,” explains Susan Toth, director of education at Pine Jog. “But we can use environmental education to restructure what’s already on their plates and make it more manageable.”

Some environmental educators see such efforts as part of a larger trend: a renewed focus on the “education” in environmental education. But what does this really mean? As Tom Marcinkowski, chair of the Graduate Program in Environmental Education at the Florida Institute of Technology, points out, infusing environmental education more fully into schools demands a better understanding of the disparate forces that influence them, from local school boards to state governments to national education organizations and even textbook publishers.

The North American Association for Environmental Education (NAAEE) with the assistance of EETAP is one of many organizations involved in this broad mission. Among other projects, NAAEE has created voluntary guidelines for excellence in environmental education in the areas of materials, what learners should know and be able to do, environmental educator preparation, and non-formal education programs. The guidelines effort is parallel to the national standards established for math, science, and other subject areas. Critics fear that the guidelines are unnecessary and potentially damaging since creating separate environmental education guidelines might widen the conceptual gap between environmental education and the core disciplines. Proponents feel that guidelines will offer quality control for educators, ensuring that the environmental education students receive is effective, comprehensive, and unbiased.

The United States Environmental Protection Agency is also placing more emphasis on the education component of environmental education. In 1997, EPA’s Office of Environmental Education added a new priority to the list of projects that will be considered for funding

Project-Based Learning

Project-Based Learning (PBL) is a structure that transforms teaching from “teachers telling” to “students doing.” PBL is defined as:

- Engaging learning experiences that involve students in complex, real-world projects through which they develop and apply skills and knowledge
- A strategy that recognizes that significant learning taps students’ inherent drive to learn, their capability to do important work, and their need to be taken seriously
- Learning in which curricular outcomes can be identified up-front, but in which the outcomes of the student learning process are neither predetermined nor fully predictable
- Learning that requires students to draw from many information sources and disciplines in order to solve problems
- Experiences through which students learn to manage and allocate resources such as time and materials

According to PBL sources, students need to and want to know they can solve real-world problems that are open-ended, complex, and interesting. Project-based learning is student driven; with PBL students develop and hone academic, social, and life skills through schoolwork that has a context significant to them. Learning is connected, or reconnected, to the real world so that it is meaningful and memorable.

For more information on project-based learning visit:
<http://pblchecklist.4teachers.org/>
<http://www.bie.org/pbl/index.php>

under its Environmental Education Grant Program. The addition calls for projects that “utilize environmental education as a catalyst to advance state, local, or tribal education reform and improvement goals.” In addition, EPA’s Office of Environmental Education has made tying environmental education to education reform a central theme of the EETAP.

Clearly, this is a dynamic, if tumultuous, time for education and the environment alike. The “right” path to take remains to be seen. But as today’s students move into adulthood, that path may become clearer. After all, it is those students’ knowledge, attitudes, and actions as citizens that will tell us, in the end, whether we have succeeded.

Ruth Flanagan and Kathy Draper are freelance writers.

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Programs Cited

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www.eetap.org

Hollywood Elementary School

44345 Joy Chapel Road
Hollywood, MD 20636
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www.smcps.k12.md.us/schools/elem/hes/index-hes.htm

Komachin Middle School

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www.nthurston.k12.wa.us/komachin

Pine Jog Environmental Education Center

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