CHAPTER 10

Ecological Schools; Ecological Education

*Just as the twig is bent, the tree's inclin'd.*
— Alexander Pope, *Moral Essays I*

Introduction

**ABOUT LEARNING**

As it is so often said, children are our future. If we want the future to be different from the present, then we need to engage the children early in imagining, and in bringing about, the desired future. This does not mean putting children to work in solving the problems that we adults have created, but rather showing them early on a different way of doing things and a different way of looking at the world. It means helping children experience, from an early age, their place in the natural world, and showing how people can live their lives in harmony with that world, rather than damaging it. It means helping children to see and understand the cycles of nature and to learn ways that we can eat, use material things, and natural things like water or energy in ways that mirror those cycles. It means showing children early that there are better ways to live together, work together, and resolve differences together than in anger and conflict.

This chapter presents some examples of how schools, a non-profit education center, and even a daycare program in the Swedish eco-municipalities are accomplishing these things. These schools have created learning experiences for children that make ecological ways of being seem, as one teacher
says, "nothing special," in other words, just part of the natural way of doing things.

ABOUT SCHOOL BUILDINGS

It is hard to see how children can learn a better way of being in the world when their immediate world, in the form of their school environment, is an unhealthy one. The affliction known as sick building syndrome has become, unfortunately, all too familiar to citizens and public officials around the world. Sick building syndrome has come to describe an interior building environment whose air contains some combination of dust, dirt, lead, asbestos, chemical off-gassing from interior furnishings, bacteria, mold, mildew, or radon. Building occupants have suffered symptoms including flu-like conditions, asthma attacks, and breathing disorders that become ongoing conditions. Public and private buildings across North America have had to be abandoned or overhauled at costs of millions of dollars to make them again habitable for workers and students.

Many school buildings constructed or renovated since the 1970s have been a victim of this syndrome. For example, on Vashon Island near Seattle, Washington, students walked out of their school to protest building conditions after children, teachers, and administrators came down with breathing and lung disorders that forced some permanently out of work. A U.S. government survey of 10,000 public schools throughout the country found that one-half had experienced at least one unsatisfactory environmental building problem and three-fourths had spent considerable sums to remove hazardous substances such as asbestos, lead, or oil in underground tanks.

At the same time, awareness and efforts to prevent sick building syndrome in the first place are growing steadily. Constructing healthy buildings has become an important focus of green design and green building techniques. This chapter describes how some of the Swedish eco-municipalities, large and small, have created healthy schools for their children. It includes examples of how some schools teach their children from an early age about cycles of nature, how one school used a school building process itself as an ecological learning opportunity for its children, and an ecological learning center for both children and businesses.

Eskilstuna: a city builds an ecological school

When visitors approach Tegelviken (Teh-'ghel-veck'-kehn), the city of Eskilstuna's non-toxic elementary school, their first impression is that it resembles most other schools in Western society. A circular driveway for
school buses curves around before the main entrance of attached, solid-looking one-story buildings. Initially, the only noticeable difference is the scores of bicycles parked in bike racks near the front entrance.

Then the visitor enters the building and notices almost immediately the light, airy, spacious atmosphere. But there are few, if any, artificial lights on! Daylight streams into the lobby and halls from seemingly all directions — from large glass windows, overhead skylights. The air seems to smell fresh, too. Brightly colored flags and children’s artwork adorn the hallways.

During the 1990s, the city of Eskilstuna (pop. 90,000) realized it would need to construct a new elementary school. The municipality’s former elementary school building was deteriorating and not able to house projected school enrollment given the region’s growing population. Two other municipalities also send their children to this Eskilstuna school. In 1995, the city began planning actively for a new school facility. City officials involved over 150 school parents in the building and curriculum planning and design. Out of this participatory process, a school plan emerged, led by ecological and user-need-based design objectives. To implement these objectives, the city’s municipal council made the decision to build a completely non-toxic school that would have no harmful substances — or for that matter, any chemicals at all — in any of the materials used in the building construction.

A NON-TOXIC SCHOOL BUILDING

The result: Eskilstuna constructed a school building with no materials that contained any chemicals. Only natural materials were used, such as wood, brick, stone, and organic-based paint. No plastic products, which, of course, are made with chemicals, were used anywhere in the building, with the exception of the chemistry lab. The building was insulated with glass fiber or stone.

Initially, parents and teachers were quite concerned about the possibility of fungus growing and circulating throughout the school ventilation system.
This is increasingly associated with sick building syndrome. One of the objectives from the planning process was to create the healthiest possible interior building environment. To accomplish this, designers created a state-of-the-art ventilation system that brings in and circulates fresh air continuously throughout the building. Air travels through a central system installed in an air space under the floors. Three sections of the school have their own air circulation system.

Natural light enters the building through overhead skylights and large well-insulated windows. There are no fans or noise, features of conventional HVAC systems. The building’s heating comes from a wood pellet-fired boiler and solar panels that heat hot water.

The school’s sewage system separates gray water and black water. A constructed wetland on the school property cleans gray water, that is, water from the school’s kitchen and bathroom sinks; the clean water is then reused onsite for irrigation. Black water, used toilet water, is composted, purified, and used by a local farmer as fertilizer. The city received a state subsidy to install this innovative sewer system, which has since become a model for other public buildings in Sweden.

Classrooms for four- and five-year-olds and classrooms for six- and seven-year-olds open onto the same common space. The idea was for children of varying ages to mix in these common areas and to allow teachers to interact as well. All classrooms have a kitchen where pupils eat, clean their own plates, compost leftovers, and recycle. All teachers, administrators, and children eat together.

The total construction cost of the school was about US$11.2 million — between 10 and 20 percent more than the cost of a conventional design. The city made a conscious decision to build the school ecologically, despite the higher initial capital cost. City officials realized that the potential human and remedial costs of an unhealthy building could be much higher and that they would save money down the road through lower maintenance and energy costs. The school already has realized cost savings through reduced heating and building operations costs.

Despite initially higher capital costs, city officials realized that potential human and building remediation costs of an unhealthy building could be much higher.
The Tegelviken School serves 450 pupils between 6 and 16 years old and 50 pupils in daycare between 1 and 5 years old. There are 70 teachers and school staff. The school has been tracking the health of teachers and staff since the building opened during the fall of 1999. As of 2001, there were already fewer health problems and improved health conditions among building occupants.

Tegelviken’s biggest challenge is class sizes that are too big. On average, there are 30 students per classroom. Since this ecological school opened, it has become very popular, says its school principal; everyone wants to go there.

**TEGELVIKEN’S ECOLOGICAL CURRICULUM**

An outdoor nature education program is an essential part of the Tegelviken School’s curriculum. A basic premise of this program is that “positive nature experiences will create a better environmental behavior and understanding for the future,” in the words of the program coordinator. The program helps children realize that natural science cannot be separated from social science. Students develop a personal relationship to global environmental issues and get the opportunity to take responsibility for their own environment. The program’s approach is also based upon the idea that “It is not half as important to know as to feel.” This approach recognizes that it is not just a lack of knowledge about environmental issues that causes problems, but attitudes and values as well. The children’s education balances recognition and openness about feelings with the main objective of conventional education’s approach — acquisition of pure knowledge. In Tegelviken’s nature education, children learn about making fires and getting wet. They learn not just about the scientific aspect of these activities but also about the happiness of experiencing what is happening in nature.

The program coordinator also works with the children simply to get them to slow down. He observes that, because life is run at such a fast pace, slowing down the children for one day alone is a good achievement. He believes that there is more to measuring the value of education than through test results and statistics. For example, he says that one way of measuring value is seeing the children’s eyes light up when they learn and understand something new. While this is not an objective measure, he realizes, it may be a more important one.

*Figure 10.3: When children have birthdays, they sit in this throne, while the entire school sings “Happy Birthday” to them and presents them with cakes that have just the right number of candles.*
Swedish research has found that children who spend a higher percentage of time outdoors get sick less frequently, says Tegelviken’s nature education teacher. Their physical abilities, mental abilities, and concentration are higher than those of children who are outdoors less often. Tegelviken’s program includes lots of opportunities for children to get exercise. A Swedish study found that in 1980 one-third of Swedish adults were overweight. In 1990, this proportion of overweight adults had risen to 50 percent.

In 1969, the primary focus of Swedish educational curricula was acquisition of knowledge. By 1980, curricula reflected an understanding that natural science and social science cannot be isolated from each other and that students should be prepared for taking an active part in society. By 1990, a primary curricula objective was for students to “get an opportunity to take responsibility for, and have an active role in, their own environment, as well as a personal relationship to global environmental issues.” For more about Eskilstuna and its sustainable development work, see Chapter 5.

Övertorneå: A small town builds an ecological school

Far in the rural north of Sweden, a small town was concerned about its children’s health and their need to understand nature and their place in it. This town and its 5,500 inhabitants had emerged from a depression in both their local economy and their community spirit to redirect the seemingly hopeless course of its future to a positive one. The town was Övertorneå, whose community eco-revitalization has been described at the beginning of this book.

When its Svanstein village school burnt down, Övertorneå was faced with the prospect of rebuilding the school. During the community’s eco-municipality journey, Övertorneå’s citizens and town officials came to understand better how their own actions and choices affected the systems of nature, their individual and community well-being, and the well-being of future generations. Out of this understanding emerged a rebuilding of the village school that became an ecological model throughout the region. Perhaps more impressive, the town’s ecological building approach grew not from a mental framework of sustainability objectives but rather from a good sense approach to design and construction, illustrating how deep the ecological awareness has grown in the community.

Övertorneå’s new ecological school, whose construction was completed toward the end of 2001, resembles Eskilstuna’s Tegelviken School on a smaller scale. Both schools used natural materials to construct the buildings and school furniture. In neither building are there plastic products or plastic furniture. In Övertorneå’s school, the floor cover is natural linoleum.
Wood fiber ceiling panels provide heat and sound insulation. Interior paints are organic-based. No hazardous glue was used in laminating, cabinetry, or any other woodwork. As in Tegelviken, the building ventilation system continuously brings in fresh air to the classrooms and common areas. An air-to-air heat exchanger captures and reuses heat extracted from stale air before it is vented out of the building.

The Miljöförska School: Ecological education starts early

At the Miljöförska (Mİll-yuufs-fiskoo'-lah) School in Övertorneå, children at five years old begin to learn about the cycles of nature. They learn that plants grow, die, and become compost, which in turn becomes earth for more plants to grow.

At Miljöförska, four teachers teach 55 children in classes ranging from 6 to 20 pupils per class. The school, as well as the town it serves, has lost population due to townspeople leaving for urban jobs and city life. The school, also a daycare center, serves a rural area of Övertorneå, where some children travel by school bus from 15 miles away. The school uses ecology as a theme to integrate the various subjects children learn, such as the Swedish and English languages, music, art, and painting. Plans are underway for the children to construct a windmill on the school’s property. Before the summer holidays, children plant potatoes that take only six weeks to grow in the land of the midnight sun. When children return to school in the fall, they harvest, cook, and eat the full-grown potatoes, composting the leftovers and returning the compost to the garden.

About once a week, children explore a nearby forest to see how the woods change in the different seasons of the year and to visit a small house where a fairytale character comes alive in the form of a puppet named Mulle. Mulle talks to the children about the forest, about nature, and about life. The children listen avidly to the puppet. Known and enjoyed by more than two million children in Sweden, Mulle is a fairytale character that was introduced to Swedish children over 45 years ago.
At Miljöförskola School and all the daycare centers of Övertorneå, the ecological way of doing things is seen as nothing special. Awareness of nature, and doing things that are in harmony with nature and its cycles, is simply the ordinary, natural way to be.4

The ecological school of Kangos Village

Tiny Kangos Village, with 330 inhabitants, rallied to save its local school when public officials threatened to close it in 1993. The reader learned about the revitalization of Kangos Village, including the rescue of its school, in Chapter 9. Similar to charter schools in the United States, the Kangos school now runs independently of the regular public school system. In Sweden, local authority permission is needed to start independent schools. Once granted, public funding cannot be denied to the school.

In a manner of speaking, all Kangos village residents now own the school, says a village official. This school has become the center of village life. The school’s five or six teachers all live in the village, and parents make up the majority of the school board.

The school also has become the village cultural center. The entire village attends school plays, musicals, and shows, most of which have ecological themes. In one musical show about the Earth’s place in the solar system, children decorated the entire gymnasium with planets and examples of planetary features such as moons, craters, and frozen lakes. Understanding the connection between humans and nature links all school courses and children’s activities.

The school designed its curriculum involving outdoor learning. In winter, classes go outside to look for animal tracks. A local forest company set aside some forestland for the school. Here, each child has a designated forest area of about ten square feet where they observe and monitor what they see. Children have put up birdhouses and watch to see which birds nest.
School games introduce values such as “Take only from the Earth what you need” or “take only what the Earth can renew.” Everyone in the school uses both sides of paper and then recycles it. Children and teachers compost some food scraps and feed some to the school chef’s pigs. The school uses the Natural Step system conditions to help children understand what sustainability means, particularly in natural science and social science courses.

A Kangos village official thinks that Swedish school testing is geared toward urban children. If the tests were designed here, says the official, the city kids wouldn’t have a chance.\(^6\)

**Tvärr: A community and its children help design an eco-school**

Imagine starting a process for designing or rehabilitating a building by holding a potato-carving event. Far-out, you say? But this is precisely how architects, commissioned by the municipality of Ulricehamn (Ull-ree-seh-hahn-n), near the city of Falkenberg, started a conversation among community residents and parents about what the new, revamped Tvärr (Tvehr'-rehd) elementary school building should be like.

The architects strongly believed that a building’s design should evolve out of the needs and visions of the people who are going to use that building. In the case of a school building, that meant the children, parents, and community residents as well, since the school would also function as a community center. To understand what people felt were important design features and to provide a language for expressing this, the architects held a community “potato day.” Elders, young people, parents, children, all were invited to take part. People found, brought, and carved potatoes at this event, making artistic objects, designing potato paint stamps and pictures, and making potato flour. Then, people talked about what they had done and what it meant to them. Through following this dialogue, listening carefully, and waiting for everyone’s contributions, the architects came to understand what people wanted and enjoyed in a building. What they learned in this event guided them through the rest of the design process.
The result was a school architectural design that incorporated the aspirations of many people, old and young, in the community. For example, the architects designed windows low in the walls so children could easily see out of them. Having clean fresh air with no mechanical ventilation system noise was important to teachers, so the architects designed a passive aeration system. One older man wanted very much to have a concrete part in the school’s design and building, so he visited the construction site and made a sculpture that was then built into a wall. Children felt it was important to bring their own home’s organic material for composting at the school, so the recycling station was placed near the school’s entrance where the children could easily use it and be proud of it. Another idea was a drop-off spot for outgrown shoes that could be sent to children in Albania.

One school project involved the children in finding out whether or not the walls of the existing school building were load-bearing. Children went to the local historical museum to find archived architectural drawings of the original school building construction. Next, children located and stacked bricks to see how they could make structures and come up with different designs.

One of the children’s favorite places was the cellar of the old existing school building. The architects asked the children to describe what fascinated them about the cellar, and the learning from this exercise, coupled with the idea of recycling a building, became the basis for the entire redesign of the school. The children were eager to know why certain pipes were wide, others narrow, how they worked, and where they went. It became clear that the toilets were very important to the children, as these were the only places in the entire school where one could be alone. The children insisted that considerable design attention go to the toilets and bathroom, and they helped to remake and refurbish all the doors in the school as a way of allowing more project funds to be directed toward bathroom design.

The project budget was very tight, so, to reduce the built space required, the architects designed flexible classroom spaces that could be used for several different purposes. For example, some older children’s classrooms were designed for alternative use as play spaces for younger children, or for special functions such as woodworking. To cover the cost of certain ecological building features, the designers reduced room areas where possible. A particular objective was to encourage people in different parts of the school, for example, school staff and schoolteachers, to talk to each other. Dining rooms and staff rooms were located near each other and also designed for use by community residents.
Nowhere in the school building, other than in light fixtures, is there any plastic. All natural building materials were used. Teachers and staff wanted window shades, but since the decision was made not to use fabric, the architects designed wooden shades for the windows. Roof gutters channel rainwater into a wooden chute that passes over a waterwheel to an open channel lined with big rocks. In good weather, the children use these rocks as outdoor seats and play areas.

**Designing the Tvärrred Playground**

To engage the children in designing the school playground, the architects located a large room in a former mill, placed various objects around the room, and invited the children to come in, explore the space, and arrange things differently if they wished. When the children first came into the room, they were very quiet, taking everything in. Then, they started moving in and out of nooks and crannies in the room, hiding behind objects, and started to ask questions about the architecture of the room and building and how parts of the room could be moved or changed. Next, the architects asked school officials if the existing schoolyard could be made into a laboratory for designing the playground. They asked children to describe what they liked about their yard and wanted to keep in it. The architects made a big mat for the children to draw what they wanted. One eight-year-old boy identified a big, smooth stone that was his favorite place. He said, on this stone he could sit and listen to the sky, smell the leaves and bark of the nearby birch trees, and, he also scored his first soccer goal there. In this way, all the special places of the existing schoolyard were recorded and kept on the mat.

The playground design process became integrated into school study subjects such as history and woodworking. In the woodworking class, a student built an antique-style water pump, first constructing a wooden model of it, for the playground. One day, another boy put a notice on his classroom door, saying he wanted to build a bridge. Seeing this note, his classroom teacher went straight to the woodworking teacher to organize this project. Almost immediately, there were ten other children who wanted to work on this, too. They built the bridge, then the children themselves reflected on how well the building process had gone and how to improve the bridge. Next, they built an even better bridge, this time using machined timber instead of forest logs. The architect understood the importance of the children's time to reflect upon their first endeavor and having the opportunity to improve upon it.
In the end, the children decided to build towers for the playground instead of a bridge. They built some model towers, then invited the municipality’s staff planner/architect to visit and inspect these towers. This architect spent time with each of the school’s thirteen classes, discussing in different ways with each age group how the towers, and buildings in general, can be built. A particularly interesting discussion about pollution and how buildings contribute to pollution developed between the architect and a group of eight-to-ten-year-old children. Both the school architect and the city architect saw this process as a great way of doing planning and design. The children developed a genuine respect for the city planner/architect and also learned in a concrete way about the challenges surrounding city planning and design. Next, the children were asked to build bigger models of the building towers. If ten parents were able to jump down from a tower without injuring themselves, said the architect, the children could receive a “permit” to build the tower.

The Tvärred school renovation merged design, community participation, and eco-education in a process that came alive for its participants — children, parents, and community residents. The democratic, eco-centered process dissolved the separation that has occurred over time among building designers, building users, and nature. The school and playground design emerged organically through the engagement of children and citizens and through the creation of a common language for building designers and building users.\(^6\)

The Tvärred school renovation tapped into what Christopher Alexander has called “the timeless way of building”:

> It is a process through which the inner order of a building or a town grows out directly from the inner nature of the people, and the animals, and the plants, and matter which is in it. It is a process which allows the life inside a person, or a family, or a town, to flourish, openly, in freedom, so vividly that it gives birth, of its own accord, to the natural order which is needed to sustain this life.\(^7\)

**Ekocentrum: Eco-education for businesses and school children**

Just outside the city of Göteborg (Yeu-teh-boryh') is an unprepossessing building that looks like it could have been an elementary school. Inside, however, is an independent, non-profit educational center that teaches thousands of business employees and school children about the converging funnel of global environmental trends and practical steps individuals can take to move in a more sustainable direction.
Ekocentrum is the largest environmental education center in Scandinavia. It offers environmental education courses, presentations, and also environmental exhibits for visitors and classes alike. Groups of company employees and school classes attend half-day sessions to better understand issues such as global warming and links between the use of chemicals with species extinction and risks to human health. They also see and learn practical ways to change personal, household, and business practices to help reduce these damaging trends. Of the 15,000 visitors each year, one-quarter are schoolchildren and three-quarters are businesspeople and civil servants. Ekocentrum instructors also travel to give presentations to schools and organizations.

Some small companies cannot afford the cost of comprehensive training in standardized environmental management systems such as ISO 14001. Ekocentrum offers such companies a shorter version, called ISO-lite training. Hundreds of small companies have sent their employees to take the ISO-lite training program. A private foundation owns and operates this education center that is also supported by contributions from businesses and exhibitors. The center receives grants and government support for the school education portion of its program.

It was originally created by four non-profit organizations.

Ekocentrum uses the Natural Step framework as the basis for its education in basic science and for guiding sustainable practices. Its aim is not only to educate but to inspire people, especially given the small amount of time that participants spend in the center’s programs. Ekocentrum’s teaching method? Find something used in everyday life and make a story around it.

Ekocentrum has designed each of its exhibit areas around a particular theme — for example, energy and heat, water, sewage, and chemicals. Each exhibit has examples of state-of-the-art technology, donated by companies that demonstrate alternative practices that are less harmful and less polluting. For example, one exhibit contains an outboard motor that is more energy efficient and less polluting than conventional outboard motors. The exhibit tells
about new gasoline available for two-stroke and four-stroke outboard engines that is presently twice as expensive as conventional gas, but releases 80 percent fewer benzene compounds into the water. A solar panel charges the motor’s battery that stores up to ten hours of power.

A demonstration home heating furnace, fired by wood pellets, shows how an automatic pellet feed can remove the need to continually shovel pellets into a furnace by hand. If the homeowner is away, a backup battery can run the automatic pellet feed if the power goes off. New models of washers and dryers demonstrate reduced use of energy for washing and drying clothes.

Some Ekocentrum lectures and exhibits point out the sources and harmful effects of chemicals and heavy metals that are accumulating in the environment. For example, an instructor describes how small doses of hormone-mimicking chemicals can affect small children at critical times in their growth. Other examples: 200 to 300 tons per year of acetone in Swedish wastewater comes from nail polish remover; red lipstick often contains a substance called cinnabar that contains mercury, cadmium, and lead; and 30 percent of the cadmium in Stockholm’s water supply comes from artists washing paint off their brushes. A study of the city of Uppsala’s compost found high concentrations of pesticides, including persistent, accumulating organic chemicals. An Ekocentrum instructor points out how pesticides are applied at much higher doses in the household than on farms. For example, if an insecticide soap to remove aphids doesn’t work, the homeowner often moves on, as a next step, to more poisonous types of pesticides. Exhibit materials describe how anti-bacterial cleaning agents used to wash hands and countertops kill the microbes that help clean the sewage effluent in sewage treatment plants. Antibacterials in toothpaste can help bleeding gums but also can help breed resistant strains of bacteria.

Figure 10.9: This home heating furnace is one of many Ekocentrum exhibits that demonstrate sustainable alternatives to conventional home appliances and supplies.

Another exhibit shows how indoor plants can help purify the air. Spider plants and rubber tree plants are especially good at this job and are used in space stations for this purpose. One example in the global warming exhibit points out that a big source of greenhouse gas emissions comes from underinflated car tires that reduce gas mileage. Some tire manufacturers also fill tires with sulfur hexafluoride, a greenhouse gas, because it escapes from tires less rapidly than air. The alternative energy exhibit presents examples of less polluting gasoline for gas mowers and weed whackers, as well as outboard engines. There is also race car fuel that contains less benzene.

Figure 10.10: These wooden pellets fire the home furnace instead of oil or gas.
Showcasing innovative products such as these can help reduce the conflict between these activities, which many people still enjoy, and protecting the environment.

Combining theory and practice, talks and demonstrations, are keys to Ekocentrum's success in helping children and adults to better understand the deteriorating global trends and what individuals and businesses can do to help. Since 1993, almost 100,000 people have learned about sustainable practices and why they are important at Ekocentrum.14

North American examples

School green building programs

Responding to concerns about unhealthy school buildings, some state and local governments in the U.S. are trying to help. In Massachusetts, for example, the state education department has teamed up with a state renewable energy collaborative to help and to fund local school districts design or redesign school buildings to be more energy efficient, provide healthier building environments, and hence cost less to operate.15 In North Carolina, the regional Triangle J Council of Governments has developed guidelines for building new schools and public facilities that encourage energy efficiency, selection of building materials through life cycle analysis, heating through renewable energy sources, and recycling construction waste.16

Green education

In Canada, over 5,000 K-12 schools are taking part in a country-wide green schools program where school children have accomplished over half-a-million environmental projects. This program, designed and administered by a private foundation, provides instructions and materials to schools who wish to participate. Schools whose pupils achieve 100 environmental projects win a Green School banner, awarded in a special assembly, that is displayed outside the building to show that this school is a special place. Over 200 K-12 schools have completed 1,000 environmental projects, entitling them to become Earth Schools, an even higher recognition. Environmental projects can be in any field, as long as they are actions that either “enhance the environment, communicate to others about the environment, or demonstrate wise and sustainable use of resources that make up the environment.”17

As one example, a school class in Vegreville, Alberta, wrote their town’s mayor and council to suggest ways to reduce garbage and to request a
recycling center. Students in a Clayton, British Columbia, music class were
given three days to write a rap song about saving the tropical rainforests or
about the importance of trees. In the Seniac School in Saskatchewan, stu-
dents recorded which classroom had the highest temperature setting dur-
ing the recess and noon hours. Energy wasters then had to wear pig nose
masks for the rest of the day.18

In the United States, twelve of the 50 states require that K-12 public
schools include environmental education in the curriculum. Fifteen states
have coordinated teacher training programs in environmental education, and
ten states have developed an environmental education curriculum guide.
Over one-half the states (27) have grants available for local environmental
education programs.19 Pennsylvania’s teacher environmental education cer-
tification program requires teachers to be knowledgeable about ecological
principles, such as influence of humans upon the environment, interdepend-
ence of organisms in ecosystems, energy flow and materials cycled within
ecosystems, and response of organisms to environmental stress caused by
humans.20 California’s environmental education curriculum for elementary
schools, “A Child’s Place in the Environment,” is taught to thousands of
California school children and has won a national award for excellence in
both writing and implementation.21

Unfortunately, despite these efforts, two out of three people in the U.S.
are not able to pass a 12-question environmental quiz. However, in the U.S.,
95 percent of people and 96 percent of parents strongly support environ-
mental education in schools. The researchers who discovered this also
learned something else. People who understand environmental issues are
more likely to see that economic development and environmental protection
are not mutually exclusive, and such people are more apt to believe that it is
possible for us to change our behavior to better protect the environment.22