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The State of Environmental Education in Minnesota

Ann Sigford
Wood Lake Nature Center

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ANN SIGFORD

Minnesota has an excellent reputation for its environmentally aware citizenry. It is also nationally known for its environmental education facilities and school programs. Which one is the result of the other is debatable; but the fact remains that Minnesotans and their legislators value environmental education. Yet environmental education in Minnesota is not without difficult issues and challenges.

This paper seeks to clarify the goals of environmental education in Minnesota and to explain who participates in it, where it is done, and how it has mushroomed in the twenty years since the first Earth Day.

Evaluating Minnesota's environmental education success should be easier in 1994, when surveys on the state's environmental education needs and opportunities will have been completed.

Since several levels of government as well as private groups are involved in environmental education, there is occasional confusion between "grass-root" educators and administrators who have statewide responsibilities. Another issue is competition for limited funding. A third issue is the role of industry and corporation-produced environmental education materials.

Environmental education in the 1990s faces many challenges. Teacher training, for example, needs to be improved so that teachers have the know-how and confidence to integrate environmental lessons with the rest of the curriculum. Another challenge is reaching young adults, and also making sure those who live in rural areas have access to environmental education. A fourth challenge is keeping up with the rapidly changing environmental scene in Minnesota, as well as the public's just as rapidly changing environmental attitudes.

Cooperation and communication between the many agencies and facilities involved is the key to success of environmental education in the future. The current intense public interest in the environment is a great opportunity for meaningful environmental education.

Minnesota's Environmental Education Act of 1990

Minnesota's Environmental Education Act of 1990 is a good place to start in understanding what environmental education is meant to do. Environmental education has been a required part of the elementary school curriculum since 1986. Starting in the fall of 1990, it is required in kindergarten through twelfth grade. The 1990 Act set seven goals for pupils and other citizens of the state:

1. To understand ecological systems.
2. To understand the cause and effect relationship between human attitudes and behavior and the environment.
3. To be able to use problem-solving skills to understand environmental issue decision-making.
4. To be able to evaluate alternative responses to environmental issues before deciding on alternative courses of action.
5. To understand the potential complementary nature of multiple uses of the environment.
6. To provide experiences to assist citizens to increase their sensitivity and stewardship for the environment.
7. To provide the information citizens need to make informed decisions about actions to take on environmental issues.

Notice that these goals reach light years beyond traditional nature study, which people often confuse with environmental education.

Notice that interconnectedness and decision-making is emphasized, and that environmental education is not just for kids.

The question remains: how is environmental education supposed to actually achieve these goals?

Is THAT Environmental Education?

Environmental Education, or EE, has been done many ways and called many things. It has aspects of nature study, experiential education, conservation education, ecology, natural resource management education, and even philosophy and religion. It has grown rather organically, with the first specialized environmental education facilities opening in the late 1960s and early 1970s.

It is generally agreed that programs at these informal facilities must go beyond nature walks to be called EE. Learning to identify the trees and flowers, for example, does not stand alone as EE. But recognizing trees and flowers as part of a complex system that includes people, does work toward EE goals.

Practitioners do not always agree what is or isn't environmental education, partly because it is a new specialty that is continually evolving. Also, the different agencies involved in it tend to have their own philosophy and definitions. Furthermore, there is no governing body that actually controls environmental education; no EE judges to say "That is, but THAT is not, environmental education."

Ann Sigford is Manager of the Wood Lake Nature Center, City of Richfield, MN and President of the Minnesota Naturalists Association.

In general, EE is teaching and learning about the environment, including people, emphasizing connections between phenomena. State of Minnesota guidelines specify that "the environment" includes the natural context (nature and ecology), social context (humans as part of the natural world), valuing context (clarifying what the environment means to you) and action context (that what you do has an impact).

EE in schools usually has a more formal flavor than EE done elsewhere. Some people call non-school EE "interpretation", a word stemming from the fact that naturalists are skilled in helping people interpret what they perceive in nature. In this paper, all forms of teaching and learning about the environment will be called EE.

Using this broad definition, EE is done in family settings, in schools, at nature centers, environmental learning centers, wildlife refuges, and at facilities like zoos, historical sites, museums, and other interpretive centers. It may also be done by traveling programs, by research organizations, youth organizations, institutions of higher learning, and other agencies like the Department of Natural Resources and Pollution Control Agency.

An example of informal EE in a family setting is when parents model environmentally sensitive behavior, like picking up roadside pop cans and putting them in a recycling bin. The importance of the family in instilling environmental decision-making and the action context cannot be emphasized too much.

To be effective, EE must be real, hands-on and involving the individual if it will have any impact. It cannot be done by reading books, or being told what to think. It must include being out in the environment; in the schoolyard, in the community, and in nature, as well as in the classroom.

Schools

Schools of all sorts may include environmental education in the course of normal teaching. In 1986 the Minnesota State Board of Education began requiring elementary schools to integrate EE into all required curriculum offerings. The rule was expanded to include junior high and high school students starting in the fall of 1990. The school rule specifically states that "environmental education shall be taught in the context of the other required curriculum offerings."

EE in schools is often thought of as a spin-off of the science curriculum. It could just as well begin when a discussion develops in a newspaper reading lesson where different points of view about an environmental issue are aired. Or in an elementary measurement lesson where a Sunday paper is weighed, and a math lesson when this weight is multiplied by the numbers of kids in the class who get the paper, times the weeks in a year. Pretty soon you get a BIG number. "Where does it all go?" becomes the question. Extending this thought with a trip to a waste-to-energy plant ("garbage burner"), or to a landfill, or a recycling center, is where the lesson can connect with reality. The action component occurs when students carry ideas home that change the family's behavior.

The Minnesota Department of Education has developed "model environmental learner outcomes"; that is, defining what students should know and be able to do if EE is correctly integrated, or infused, into the schools.

The recently disbanded Minnesota Environmental Education Board (MEEB) had at different times operated under the Department of Education, the State Planning Agency, and the Department of Natural Resources. It worked, especially in the outstate areas, to facilitate EE in schools, for example by distributing materials such as Project WILD and The Conserving Classroom, along with teacher workshops. MEEB was dissolved by the State Legislature in 1990, but its responsibilities are to be taken over by the new Office of Environmental Education in the State Planning Agency.

It is difficult to generalize about the success of environmental education in schools. It has been required for a relatively short time, is pursued with varying amounts of energy in different school systems across the state, and has not yet been systematically evaluated by testing.

EE, NCs, ELCs, MNA: Minnesota's Alphabet Soup of Environmental Education Providers

Minnesota has developed an array of facilities that supplement the EE of families and schools. The demand for these facilities is so high that new ones are created every year. About thirty specialized EE facilities have opened in Minnesota in the twenty years since the first Earth Day. There are several reasons schools use these facilities:

- the natural areas are made accessible and safe for groups,
- the staffs have special expertise in ecology as well as outdoor teaching techniques, and
- programs at these facilities tend to be hands-on and engaging to the students.

NC = nature center. These are day-use EE facilities associated with natural areas. Most also encourage quiet recreation such as bird-watching and cross country skiing at their sites. Day-use centers are by necessity located near population centers where people can get to them within the school day. Most, therefore, are in the Minneapolis/St. Paul metro area, but they are also in State Parks and other types of natural areas around the state. Outside of the metro area, several communities such as Faribault, Austin, Byron, and Moorhead have nature centers nearby.

Nature centers vary greatly in size and services. The parks and reserves associated with them vary from tens of acres to thousands of acres. The buildings vary from modest shelters to large buildings with classrooms, auditoriums, and offices. Teaching staff are usually called naturalists. Most work with school children, families, community groups, and adults, although some work only with school children. Many are open and staffed seven days a week, and are open sunrise to sunset for hiking.

The specialty of most nature centers is the natural context of the environment. The complexity, sensitivity, and interconnectedness of a cattail marsh, for example, is emphasized in activities where students dip in marsh water and find the variety of organisms that are connected in a food web. Many NCs also interpret current environmental issues; distributing information and also "how to" classes on topics like composting.

ELC = environmental learning center. These are most often residential facilities where students come to live for a few days or a week while they participate in EE. Because of the overnight aspect, they generally serve older students than nature centers do. They tend to be in rural areas, especially in north-central and northeastern Minnesota. They are located farther from population areas, and so have larger, more pristine areas for study.

Like NCs, ELCs also tend to emphasize the natural context of the environment. Since students are there for several days

at a time, ELCs also teach skills like canoeing and rock climbing. Outdoor education and outdoor recreation lessons usually include awareness of the impact the outdoor activity can have on sensitive environments, and so can be an aspect of environmental education.

Because people stay at these sites for several days, the staffs can model environmentally sensitive living habits. An EE lesson may be worked into mealtimes for example, where food waste is weighed and analyzed, and students see the impact that their own food choices can make on the waste stream.

EEC = environmental education center. This term came into use in 1990 as an umbrella covering nature centers, ELCs, and other facilities that hold EE as the major part of their mission.

Other interpretive centers, museums, and zoos may be involved in EE by using their collections to illustrate environmental principles, and their facilities for classes for adults and children. Most EE facilities require that clients come to them. But there are several facilities and organizations that have outreach programs. The Science Museum of Minnesota and Trash Busters of Duluth are examples.

An important issue is the role that field trips and programs have in satisfying the EE rule. If trips are perceived as occasional add-ons, they would not satisfy the criteria that EE be integrated into the other required curriculum offerings. This integration is the responsibility of the school.

Many nature centers and ELCs work closely with school districts to ensure that the field experience is a normal, systematic part of the school year. Dodge Nature Center, for example, began working with local school districts to develop a graduated curriculum in the mid-1970s. In this system, all students visit the nature center at regular intervals for lessons of increasing sophistication.

MNA = Minnesota Naturalists Association. EE providers from any part of Minnesota's alphabet soup can meet to network and share information through MNA. Primarily it is made up of naturalists from nature centers and ELCs. A subgroup of MNA is MEEA; Minnesota Environmental Education Administrators.

Nearly Everybody Does EE - But Who Does What?

Minnesota is renowned for its environmental education efforts: the clustering of about 15 nature centers in the Mpls./St. Paul area is unequalled anywhere. Although the distribution of NCs and ELCs is uneven across the state, the services they offer schools and the public is impressive. This accomplishment has been possible because so many different private groups, agencies, and governmental levels have seen EE as part of their mission.

The problem is that the array of service providers makes it difficult to grasp the extent of EE in Minnesota. Most importantly, it is difficult for consumers of EE programs to know what is available. The following is only a sampling of EE service providers, and a few examples of sites:

In Minnesota, the **Federal government** conducts EE at such places as Voyageurs National Park, the Superior and Chippewa National Forests, and the Minnesota Valley National Wildlife Refuge.

The **State of Minnesota** conducts EE at the state parks, and also state-funded institutions. The University of Minnesota's Bell Museum of Natural History in the Twin Cities and the Outdoor Program at U of M Duluth are examples. Moorhead State has the Barlage Center for Science. The state Environmental Quality Board and Pollution Control Agency have also been involved in EE.

Counties may run EE facilities and programs. Olmstead County, for example, runs Oxbow NC. The Suburban Hennepin Regional Park District grew from the Hennepin County Park Reserve District. They provide EE programs at almost all of their 14 parks.

Many **municipalities** run nature centers. For example, Fridley has Springbrook NC, Richfield has Wood Lake NC, St. Louis Park has Westwood NC, Maplewood has Maplewood NC, and Austin has Hormel NC.

Some NCs are closely affiliated with **school districts.** Quarry Hill NC, for example, is largely funded by the Rochester School District, and Belwin Outdoor Education Lab is supported by the St. Paul Schools.

Lastly, some EE facilities are **privately run,** such as Dodge NC in West St. Paul, Carpenter NC in Hastings, Wolf Ridge ELC in Isabella, and the Audubon Center of the Northwoods in Sandstone. Many are funded by a combination of sources, combining public and private funds to support the needed programs.

Some organizations, like the Freshwater Foundation, or the Office of Waste Management, hold EE to be only part of their larger missions

Several directories have been compiled to help the public and school districts know who is offering what EE services in their area. The Minnesota Naturalists Association produces a free statewide listing of environmental education sites in Minnesota, updated every year. It may be obtained through the MNA secretary at Wolf Ridge ELC. Nodin Press has published two guides to nature and environmental learning areas in the Twin Cities metro area: *Discover Nature in the Twin Cities* by Al Singer (1985) and *Parks and Wildlands* by Kai Hagen (1989).

Everybody Needs EE: A Life-long Statewide EE Campus

The potential exists for a child to visit a nearby nature center for programs as a toddler in a public program, and as a preschooler in group visits to a nature center. Several NCs offer multi-session classes for preschoolers, with or without their parents. Once the child is in school, EE should be a part of the normal school day. They may also be exposed to up to about three nature center visits a year in grade school, culminating in a week long visit to an ELC in fifth or sixth grade.

When students reach the junior high and high school level, most EE is done by classroom teachers from textbooks if it is done at all. A major reason for this is that the logistics of shoehorning in any sort of a field visit within a high school class schedule are almost insurmountable. College students, unless they specialize in an environmental area, receive little EE. The difficulty of reaching young adults as they develop decision-making skills and reach voting age is a problem in Minnesota and nationwide.

Young families often develop an intense interest in environmental education as they realize that the futures of the children depend on the health of the environment the children will inherit. These families return to the nature centers for evening and weekend classes and public programs. Senior citizens are also enthusiastic users of nature centers, especially for walking.

1990: 20 Years After Earth Day

Minnesota EE is going through important changes in 1990. MEEB was dissolved. The Minnesota Environmental Education Act was passed creating the Office of Environmental Education within the State Planning Agency. The Act also established an advisory board and advisory committees, and charged the Office with holding biannual EE conferences to help with communication and coordination between EE providers. The EE goals listed earlier in this article were set.

The Legislative Commission on Minnesota Resources (LCMR) advises the Legislature on natural resource projects to enhance the environment. The cigarette tax funds they work with were greatly increased in 1988 and 1989 to include the Environment and Natural Resources Trust Fund, and oil overcharge restitution money. They received an unprecedented flood of proposals for EE projects statewide. Out of $32 million for the biennium, the LCMR allocated a little less than 10 percent, or $3,034,500, for education projects.

Several important actions resulted. The Minnesota Department of Natural Resources was charged with conducting a survey to assess EE programming needs, geographic areas to locate facilities, cost estimates, and a phased-in implementation plan of recommendations. This will be presented to the Legislature by January 1, 1992. The Audubon Center of the Northwoods was granted to assess programs and services offered by the various EE facilities and determine how these can fulfill the State EE plan.

A joint proposal, the "Environmental Education Program" with the Minnesota Department of Education, the Office for Environmental Education, and the Minnesota Community Education Association, was funded to work on the "how" part of achieving EE goals. Specifically, the proposal will:

- develop a statewide EE plan,
- complete a long-term plan for the development and coordination of environmental learning centers,
- assess learning center programs and services,
- develop and implement model K-12 EE curriculum integration (teacher training);
- coordinate informal EE with K-12 and post-secondary, and
- incorporate EE into the state's community education program.

The intense activity of the first half of 1990 has had some overall effects. First of all, EE has achieved greater visibility than it had before. Some of the visibility was negative, however, such as the dissolution of MEEB. Also, some legislators new to the subject did not have organized resources available to them to learn about Minnesota EE, and so had to learn quickly on the job. EE now has firmer legislative support than it did before. With this support comes some unknowns such as how EE will fare with legislative accountability.

Issues in EE

1. Funding

The LCMR recommended that more than three million dollars be directed toward environmental education projects in the next biennium, including the Environmental Education Program. The net increase in funding for EE has not been as great as this, however, because these funds became available just as other sources, such as corporate and foundation grants, and Local Government Aid were becoming more difficult to get.

In effect, funding possibilities have shifted from one set of sources to another. Facilities and programs that had peacefully coexisted for years are suddenly finding themselves in competition for survival. LCMR projects must be large scale and have a statewide impact, which many local nature centers do not have. In effect, a few new projects received large boosts, while many local nature centers with a decade of work behind them actually lost ground. Several ELCs formed the Coalition of Environmental Learning Centers to explore cooperative options.

Tight funds at the local level have led to the institution of fees at most nature centers. Many centers that were free in the early 1980s are now charging $1.00 - $2.00/student per visit. Some per student fees are as high as $3.50. This is burdensome to some schools. Will only wealthier districts have access to NC and ELC trips and field activities? Tight funds have also led to a decrease in the number of EE specialists in schools, and higher bussing costs limit field experiences. If EE really is a priority in Minnesota, funds need to be made available to the best and most efficient examples of EE service providers in all categories; formal and informal, large and small scale.

2. Grassroots Versus State-Directed EE Development

In the last twenty years, formal and informal EE programs have sprung up, responding to needs throughout the state. Service providers have written their own goals, conducted programs and lessons, and evaluated them according to their own criteria. Many have neither asked for nor received state funding. Many were not aware that legislation was being written that affected them.

Understandably, these people were surprised by wording in the 1990 EE Act that states that the Office of EE may evaluate and coordinate informal EE with school programs. The Act also encourages all formal and informal EE programs to use the goals and environmental learner outcomes developed by the Department of Education.

Independent EE service providers may very well agree with the goals, and be pleased with the legislative support for EE in general.

But they may also feel isolated from the State's decision-making process. Many feel that what they really need is support, not direction.

3. Corporation and Industry-Produced EE materials

The environmental movement is a powerful economic force that has not been ignored by business and industry. One rather little-known aspect of this is the development of free or low cost EE materials provided to schools and nature centers. Target Stores, for example, produces packets on starting "Kids for Saving the Earth" clubs at elementary schools. And several industries produce materials aimed at teachers and youth leaders.

TV and radio stations have also responded to the public's interest in the environment. WCCO TV, for example, produced a very timely series on resources including "Water 4 Ever" that they provided free of cost to schools.

Some of these media and corporately-produced materials are excellent resources. Others seem self-serving. Most are well-packaged and attractive to teachers who may not have the background to evaluate them. Will materials produced by corporations supplant public curricula? Will schools and nature centers become dependent on them? Or left in the lurch when marketing strategies change? The middle ground should be healthy public/private partnerships and cooperation.

Challenges for the Next Decade

It is difficult at this point to evaluate Minnesota's environmental education efforts. I would say we fall far short of our ambitious goals. But the fact that we have ambitious goals is healthy. If Minnesota's school and public EE services are compared to other states, Minnesota shines by comparison.

Nevertheless, it is clear that EE faces many challenges before its goals can be met.

1. Teacher Training

Before EE can be infused into all subject areas, teachers will have to be well-trained in how to do it. Presently, although EE is required, relatively few teachers have had systematic training in it. Wisconsin and a few other states incorporate EE training into required teacher preparation courses, and Minnesota is moving toward the same. Minnesota's Bemidji State College, for example, already requires two credit hours in EE for an elementary teaching degree. Required preservice training of teachers is a missing vital link in the EE process.

Working teachers can also be trained with inservice programs. This is part of the responsibility of the Minnesota Department of Education, and is also independently done by nature centers and colleges. Inservice training is a good supplement to preservice training, but is no substitute because it tends to reach only the most interested teachers.

2. Reaching Young Adults

Present school-based EE is concentrated in elementary schools. For several reasons, reaching the 7th to 12th graders is a challenge.

One difficulty is that the usual high school day is structured into subject areas taught by specialists. EE cuts across subject lines, and so can be lost in the cracks. Also, field experiences taking longer than a class period are difficult to schedule because they affect other subjects. Some teachers have actually found it easier to plan an entire day of environmental lessons than to split up a day. Since EE should be taught in an interdisciplinary manner, it should be relevant to all subject areas.

This age group is critically important because these students are refining their environmental values and decision-making skills. One of the priorities of the new Office of EE is to coordinate the development of an EE plan for students up to 12th grade. In 1991, work will begin for development, testing and inservice of a land stewardship curriculum for these 7th - 12th graders.

College students also receive no formal EE unless they are in an environmental course of study. In 1989, 60 post secondary educators met at an Environmental Quality Board conference on this question. They agreed that interdisciplinary discussion of environmental problems should be part of every college student's training. In 1991, the Office of EE will oversee legislative proposals for a college-level environmental education requirement.

It will be progress toward the challenge of reaching young adults to pass these legislative proposals during the next legislative session.

3. Uneven Distribution of EE Services

All students have access to schools. And all students need environmental education; living in the country, for example, does not necessarily confer environmental values or decision-making skills. But since most nature centers are clustered near metro areas, and most ELCs are in northeast and north central Minnesota, many students do not have easy access to them.

There is a good reason why nature centers are not evenly distributed across the state: smaller communities and dispersed populations cannot as a rule support them.

The 1990 EE Act recognizes this, and calls for the development of "environmental education resource centers throughout the state as needed." The form these may take has not been established, nor whether these will be new facilities or existing ones. Studies commissioned by the LCMR should clarify what facilities are already in place that could serve this function.

A group of individuals in the Heron Lake area have proposed a cooperative community effort to use a modified bus for transportation, shelter, and as an EE lab, to deliver EE services economically in a rural setting. The idea was based on the Swedish Ecology Bus model. This project has not been funded at this point.

Ideas and dreams exist to bring EE to people throughout the state. Jack Pichotta, of Wolf Ridge ELC, has proposed a goal of a nature center for every 150,000 people, and an ELC for every 500,000 people, located in all the major Minnesota biomes.

All the solutions, however, take money that has not been available to this point.

4. Adult/Community Education

Although Minnesota's adults are considered to be fairly environmentally aware and sensitive, there is still much that could be done to increase their information base, understanding of the complexity of environmental issues, and decision-making skills.

Nature centers could play a larger role in this than they do. A primary reason that they do not, is that most are open only during the day, when most adults are working. If nature center hours could be expanded, this service could be relatively easily provided.

The Minnesota Community Education Association feels that the community education system could be a broad-based delivery mechanism for informal EE. They were funded as part of the Environmental Education Program and will begin conducting seminars and workshops with Community Education administrators and staff to work on this. Since the community education system is not generally known for providing EE services, it will have to be well-marketed and staffed with high quality instructors.

5. Environmentalism

In the past few years, the public has become intensely interested in the environment. Environmental issues blossom so quickly that it is difficult to keep up with them. Nature centers, ELCs, and schools should be major sources of up-to-date information, but this is not always the case. The challenge is to continue with the basic education of school children and also be responsive to "hot issues."

Marketing environmental programs is a challenge. If people suspect that they will be made to feel guilty for their lifestyles, or will be preached to, they will not support the programs. Marketing is one of the services the Office of EE may provide.

One program sequence that has been successful is Hennepin Parks "Living Lightly" series. This is a series of one-night classes on topics such as non-hazardous housekeeping and the ecological consumer. The key seems to be finding the right balance of "why" philosophy and "how to" information.

Conclusion

According to Kenneth Boulding, what education has to do "is to produce people who are fit to be inhabitants of the planet .... Other wise young people are going to grow up and discover that we have taught them how to live in a world long gone."

Minnesotans have tough decisions ahead of us as individuals, as families, as voters, educators, policymakers. Today's decisions will determine whether we will leave environmental beauty and richness to our grandchildren. How much are we willing to cut back on our energy usage? What do we do with our garbage? What risks are we willing to take as a price for convenience?

Environmental education means facing up to these really large questions. It has few answers, but holds the promise of thoughtful decisions in the future. The current legislative support for EE is a good sign that the wider community cares about the environment and about education.

It is the nitty-gritty problems of coordination between schools, state government, and the many different types of EE providers that are holding us back from the success we could have. Considering the extent of the issues and challenges facing EE, only a cooperative effort has any hope of succeeding.

The current wave of environmentalism is a powerful force. People want a healthy place to live. The public enthusiasm for recycling has demonstrated that people will change their behavior if they feel their action is important. This should give us all hope for the future. What we need to do is to help people have access to good information, have good decision-making skills, and such faith in the future that they will act on what they believe.

The Six Nations Iroquois Confederacy's Great Law states "In our every deliberation, we must consider the impact of our decisions on the next seven generations." This is what we strive for with environmental education.