Roper Summary
Environmental Literacy in America

Aware? Yes, But Hardly In-the-Know

This report finds that overall awareness of simple environmental topics is reasonably high nationwide. That is certainly good news and we should not lose track of it. The study also finds a very strong nationwide belief in the value of environmental education. This also offers an encouraging point of departure for a closer examination of the somewhat disappointing state of American environmental knowledge and literacy.

While the simplest forms of environmental knowledge are widespread, public comprehension of more complex environmental subjects is very limited. The average American adult, regardless of age, income, or level of education, mostly fails to grasp essential aspects of environmental science, important cause/effect relationships, or even basic concepts such as runoff pollution, power generation and fuel use, or water flow patterns. For example:

- About 80% of Americans are heavily influenced by incorrect or outdated environmental myths.
- Just 12% of Americans can pass a basic quiz on awareness of energy topics.

There is little difference in environmental knowledge levels between the average American and those who sit on governing bodies, town councils, and in corporate board rooms, and whose decisions often have wider ramifications on the environment. There is encouraging evidence that the public *can* learn about the environment and complex ecological relationships. That we are far from succeeding in making this a reality is due to the absence of a comprehensive coordinated approach to environmental education.

We also consider low levels of knowledge about the environment as a signal that members of the public will be unprepared for increasing environmental responsibilities in the coming years. As environmental topics and problems become more complex and pervasive, our decades of reliance on trained experts within the private and public sectors to handle our needs are nearing an end. In the future, many leading environmental problems, ranging from water quality to ecosystem management, will require the efforts of more skilled non-experts acting as individuals, through small business, or as community leaders.

Media Magic, Myths, and Misapprehensions

Professional environmental educators often give short shrift to the media. But children get more environmental information (83%) from the media than from any other source. For most adults, the media is the *only* steady source of environmental information. In this report we conclude that environmental educators face two significant impediments in trying to create more widespread environmental literacy. The first, and most obvious, is how to bring enough sound environmental education programming into the general education realm to make a real difference. After 35 years of effort, the environment has yet to achieve "core subject" status in the schools. The second, and less understood, impediment is how to channel the powerful influence of the media to achieve not just public environmental awareness but environmental literacy. The key problem with the media is one of depth rather than accuracy. The media is well positioned to provide widespread but superficial information on environmental subjects; it is poorly positioned to offer in-depth education. This means it provides a steady, even ubiquitous, flow of awareness-building information but it seldom educates on complex matters or builds skills. Sometimes the misapprehensions it fosters can grow into persistent and incorrect myths. Educators need a better understanding of how to

provide meaningful environmental instruction even when the media is working against them through oversimplification and sometimes uninformed mischaracterizations. Educators also need to better align media coverage with principles of education and to channel it so it does not disrupt environmental literacy.

Environment's Chances in Education's Mainstream

As the environmental education field has pursued educational acceptance and mainstream positioning, it has developed and institutionalized well thought-out educational approaches, and gathered considerable evidence of academic efficacy. Conclusive studies offering ultimate proof are still needed, but the overall weight of the evidence today is impressive. Environmental education (EE) is producing higher-performing students, improved test scores, and quality character education; it even contributes to later career success. In fact, there is so much good news coming out about EE's educational efficacy that environmental educators and researchers can hardly agree on what strategies to adopt first.
The EE field has worked diligently to become a "core" educational subject mostly by infusion of environmental topics into related subjects and disciplines. There is no conclusive study on how far EE has gone in achieving core subject status, but it is fairly clear it has not yet reached the critical mass needed to adequately support nationwide environmental literacy. There is also evidence that, as the nation's education system has increased its focus on statewide education standards and related testing, the amount of environmental education occurring in schools has leveled off and may even be in decline for the first time in three decades. Ironically, a number of newer studies have shown that environment-based learning programs with suitable depth, duration, and rigor can boost standardized test scores. This argues for more EE infusion, not less. Despite the average educator's temptation to stay safely within the syllabus and to "teach to the test," other trends in American education are opening a number of promising new doors to environmental education. Examples include a growing emphasis on community service, after school programming, the school-community resource connection, comprehensive school reform, and schoolyard habitat and garden programs. With only a few exceptions, the larger EE field has yet to adequately organize itself to seize upon these opportunities in any comprehensive way.

Aiming for Environmental Stewardship

Does environmental education "pay off" in terms of encouraging measurable environmental stewardship? This report finds compelling evidence that it does. Here it is important to understand the distinction between how environmental *knowledge* affects behavior and how environmental *literacy* affects behavior.

This study finds that a higher level of environmental *knowledge* correlates significantly with a higher degree of pro-environment behavior. But increased knowledge, by itself, has real limitations. Increased environmental knowledge works best for simple, easy information and behaviors such as consumer decisions or saving water and electricity. These are vitally important and can be measured. In Chapter 5, we describe a new environmental literacy index that values even minimal pro-environment efforts at over $75 billion annually. We note that such actions are a response to environmental knowledge but only because they require a minimal disruption of one's life and do not require in-depth understanding or skills. This knowledge/behavior correlation, though significant, is not fully compelling and probably does not offer lasting environmental stewardship. Still, we find environmentally knowledgeable people are:

- 10% more likely to save energy in the home
- 50% more likely to recycle

- 10% more likely to purchase environmentally safe products
- 50% more likely to avoid using chemicals in yard care.

Other quantified examples of knowledge correlations come from a Minnesota study modeled after the NEETF/Roper report. It found that the high-knowledge group was:

- 31% more likely to conserve water
- twice as likely to donate funds to conservation.

Real change usually emerges from educational strategies that give the learner a sense of involvement and ownership. Hallmarks of effective EE programs include hands-on activities, investigational approaches, out-of-the-classroom experiences, and student-directed learning. Too few of our schools make use of these approaches, relegating EE to a traditional lecturestyle, "information only" format. Teachers need to be trained in these more sophisticated forms of student-directed instruction.

Good EE programs produce remarkable results on a variety of dimensions. An evaluation of the Investigating Environmental Education Issues and Actions Program (see Chapter 6) found that 38% of the IEEIA students achieved a score of 80% or higher on actual environmental knowledge, and 76% scored 60% or higher. Just 25% of the non-IEEIA students scored 60% or higher. Some 75% of the IEEIA student reported they had taken a recent environmental action, as compared to 43% of non-IEEIA students.

The environmental education field clearly could benefit by focusing concerted attention on bringing EE up to critical mass in our schools. It needs to insist that students receive an adequate base of environmental knowledge, and it needs to more comprehensively deploy its well-developed strategies, curricula, and texts, large numbers of learning facilities, natural acres, field experts, and non-formal institutions in this effort. Some of this will involve supporting the formal educational establishment and some of it will require optimizing the vast array of outdoor and indoor environmental education resources. In the interface between the formal school-based education systems and the environmental system of informal, hands-on learning centers lies EE's best hope for the future.

Understanding Environmental Literacy – Three Levels of Learning

In examining the various ways that environmental experts and educators think about and position public environmental education and information activities, a framework emerges with three basic levels of learning: 1) environmental awareness, 2) personal conduct knowledge, and 3) true environmental literacy.

The first level is **environmental awareness**. NEETF/Roper research finds that about 50% to 70% of adults have "heard of" most major environmental subjects such as water and air pollution, energy efficiency, solid waste, habitat loss, and climate change. Awareness is best characterized by simple familiarity with an environmental subject with little real understanding of its deeper causes and implications. The research demonstrates that environmental awareness by itself has limited lasting effect on environmental stewardship attitudes (although it can reinforce existing sentiments) and by itself has little effect on "environmentally-friendly" behavior. The main advantage of widespread environmental awareness is its contribution to public support for government action in environmental policy and management. The main tool for creating such awareness is, by far, the public media.

A second, slightly deeper, level of environmental knowledge involves a limited combination of awareness and action that encourages people to engage in immediate personal conduct that

contributes to environmental improvements such as saving electricity, gasoline, and water, buying "green" products (including seafood choices), reducing solid waste, and reducing individually-caused run-off pollution. **Personal conduct knowledge** does not require detailed knowledge of causal sequences because most of the connections are fairly simple and usually require just one step. We refer to this level as "personal conduct" knowledge because, unlike general environmental awareness, people willingly go a step farther to take personal action and make the connection between an environmental issue and their own individual conduct.

The research finds that a person who is well-versed in this level of environmental knowledge is anywhere from 5% to 50% more likely to engage in personal environmental actions. Even when using the lower end of this range, the impact of bringing a sizable majority of Americans up-to-speed on personal conduct knowledge would mean an immediate $75 billion improvement in saved energy, water, and reduced healthcare costs.

The third and final level is "**environmental literacy**" and it is distinct from simple awareness or immediate personal conduct instruction because of its depth of information and the actual skills (thinking and doing) that are imparted. True environmental literacy takes time. It can't be placed in an educational "microwave." It starts out with framed information but also involves imparting the subject's underlying principles, the skills needed to investigate the subject, and an understanding of how to apply that information. Most real environmental education involves actual hands-on experience with a subject either in a lab or the field. The research indicates that very few people have sufficient environmental knowledge and skill to be considered environmentally literate. While there are no "hard" numbers on the subject, an estimate of 1% to 2% of adults in America seems supportable.

- Building a foundation in youth – Recent examinations of the state of environmental literacy find that a small percentage of the public is prepared for the complex environmental issues and decisions of the future. At least part of this shortfall is due to the status of environmental education in school. Although EE is a popular elective and supplemental effort in more than half of our schools, too little of it actually gets delivered and then it is poorly sequenced so that environmental learning does not effectively accumulate. We need to offer students a sufficient amount of sequenced environmental education to let them absorb and retain the basic definitions and principles of environmental science and systems, and to learn how to actually apply those principles. It would be a major breakthrough if a majority of students could reach this level by the time they complete high school. It also appears we will need to counteract a newer phenomenon best described by family expert and author Richard Louv (2005) as widespread "nature deficit disorder." Louv is among a growing number of analysts who see unprecedented pattern changes in how young people relate to nature and the outdoors. Not only are children more electronically "wired" than ever before, but the long-standing practice of children spending hours roaming about and playing outside is becoming close to extinct. The implications for environmental literacy are not yet known.

- Adult leadership literacy – All people impact the environment in their homes, workplaces, and communities. Research shows, however, that leaders in business, government, and civic affairs lack basic environmental literacy and often either ignore environmental impacts and opportunities or address them solely through intuition. Community leaders, in particular, need to be environmentally literate. They number in the tens of millions
and are constantly making decisions on every aspect of community life, from land development policy to education to waste removal. It is vitally important for adults in

key positions and professions such as business, health, and education to make sound decisions about the environmental impacts of their decisions. We need mature and well developed environmental literacy for a majority of those 30 million adults who comprise America's community and professional leaders – what our research partner Roper Public Affairs refers to as community "Influentials."

Influencing Influential Americans

In addition to seeking measurable impacts on a *majority* of the adult public, certain segments of the adult population offer the brightest hope of all. This report examines the stewardship potential of aiming environmental education programs more effectively at sizable and highly influential groups of U.S. community leaders. The largest of these groups (20% of American adults) are called "Environmental Information Seekers" by Roper Public Affairs. Some 35% of this group are likely to perform pro-environment behaviors, compared to 23% of the general public. Another, smaller group (10%), called "True Blue Greens" by Roper, is a committed group that "walks" the environmental "talk." As would be expected, this group shows the highest levels of pro-environment behaviors. Importantly, this group has a nearly one-half overlap with the Influential Americans group (also 10%). But it may have even more in common when it comes to environmental education and stewardship.

The 2002 Green Gauge, for example, indicates that while 52% of Americans report that they have "heard of" ozone action days or code orange/code red air quality days, 73% of Influentials say they have heard of them and 71% of True Blue Greens say likewise. According to the 2003 Green Gauge report, 26% of Americans purchased an environmentally safe product within the past two months; True Blue Greens were at 53%. A similar percentage of Environmental Information Seekers (51%) and Influentials (46%) recently purchased such products.

With regard to environmental attitudes, Influentials have many of the same characteristics of the True Blue Greens. Roper finds that the environment matters to the Influentials. Some 78% of them, for example, think that businesses should also consider what is good for society and not just what is good for profit. Influentials have in fact been pushing government and business hardest to improve the environment. An impressive 92% of Influentials are moderately or very interested in the environment. A majority (52%) believes that laws to protect the environment have not gone far enough and many of them seem ready to do more than recycle their trash. They say they would pay more for green products such as autos, gasoline and electricity.

Roper feels these Influentials have enormous potential as change agents on many public issues including the environment. They are early-adopters of many environmentally considerate products and practices, and exhibit a true openness to learning about the environment. They are curious and deliberate seekers of information and, with a stronger base of environmental literacy, could have an exponential effect on the stewardship of our communities, ecosystems, air, and water. If environmental literacy must target segments of the population, the groups identified by Roper are surely among the top priorities.

Recommendations and Conclusion

Specific strategies for bringing the field of environmental education to new levels of public acceptance and its fullest potential are detailed in the report. Recommendations touch on:

· Achieving a wider and stronger base of environmental knowledge, by: assembling anddistributing EE models, research, and outcomes; stronger EE quality assurance for teachers; better alignment of EE with state standards of learning; wider use of EE to integrate disparate subject matter; application of EE to after-school and home school

programs; and capturing high public interest in the environment.

· Organized delivery of EE content so that there is a logical progression of student knowledge from one year to the next.

· Extending EE to professionals, including expanded training on the environment for K-12 teachers, doctors and nurses, community leaders, business managers, and weathercasters.

· More effective deployment of off-site centers, people, and places, including zoos, aquariums, museums, arboreta, and botanical gardens; nature centers and natural parks and refuges and field study areas; school yard habitats and gardens; green campuses; and more.

· Maximized use of information technology for EE delivery, including a central EE presence on the Internet; better deployment of forecast meteorology; and more effective use of media tools.

In conclusion, the pursuit of environmental literacy in America is widespread and popular, but it still has much room for improvement. True environmental literacy arises from a deft weaving of an intricate education fabric. Knowledge must be deep, skill developing and experiences real for EE to work best. But the tools are all there for those who need them. Environmental education is much more practical than most people think. The many handson learning experiences that EE offers ultimately translate into job, career, and people skills. On a broader scale, environmentally literate community leaders have a deep understanding of environmental issues – with often complex causes and effects – enabling them to make sound decisions in stewarding our air, land, and water. Effective environmental education is not a panacea for all of society's problems, but it is a responsibility that we owe both ourselves and future generations.