

Children as Change Agents: The Influence of Integrating Environmental Education into Home Learning Projects on Families and Community Members

Peggy Mandel
Florida International University, USA

Abstract: Environmental education focusing on sustainability should be integrated into the elementary curriculum. Learning experiences should include home learning projects that are relevant to the students, involve active participation, and stimulate discussions with their families. Students can use their knowledge and skills to influence the attitudes and behavior of their parents and other community members.

Environmental history shows us that environmental education is a relatively new field that is becoming increasingly more critical as our natural resources are deteriorating at a rapid rate. Environmental education should raise children's awareness of the environment and provide learning experiences through which they obtain knowledge, values, and skills to solve environmental problems now and in the future. Ideally, environmental education should be a continuous learning process that is integrated into the curriculum and begins when children are very young. Why begin environmental education so young if it takes years before the children grow up and become policy makers?

When they are young, children can be more easily taught to have respect for the environment as a way of life. As they become involved in environmental issues that relate to their immediate environment and the world beyond through school projects, they will not only learn and retain the information, they will also internalize the values associated with caring for the environment and conserving our resources. Another benefit is that children have tremendous influence over their parents and can use the knowledge and skills learned through their participation in learning experiences to influence the attitudes and behaviors of their parents and other community members.

Children today need to learn different information than their parents or grandparents did, as each generation differs in the kind of education children need to acquire at school. Many factors determine curriculum including history, social policy, research, and current situations. Environmental history has become increasingly relevant today because as the curriculum reflects society's trends, the need to practice activities that promote sustainability are evident. Information is growing so rapidly now that sometimes children's knowledge is more up to date than their parents'. Children learn information about environmental issues in school and in the media; however, environmental education was not such an issue when their parents were in school. It is unlikely that all adults will receive the education that is needed to make serious changes in environmental behavior and policy. However, by involving children in school projects which require parent participation and home learning, children have the potential to be change agents by effectively influencing their parents' attitudes and behavior concerning environmental issues.

Need for Integrating Environmental Education

Environmental education is a long term solution to environmental problems. The goal of sustainable development is to increase human well-being while reducing negative human impact

on the environment (Santone, 2003/2004). All citizens should be involved in caring for the environment. Home learning projects based on environmental issues can serve as a means to reach more than one generation. This inquiry combines the need for environmental education for all ages, the theory that children learn best when involved in active learning strategies and the idea that children have tremendous influence over parental attitudes and behaviors. This study investigates the use of home learning projects in environmental education to determine what effect the projects have in changing student attitudes and behaviors and to what extent does student learning affect parent attitudes and behaviors concerning environmental issues?

Many trends in education today reflect the need to focus on the environment, impressing upon children the need for clean air and water, the conservation of natural resources and energy sources. Often, children and adults alike take our resources for granted. Compared with other countries, Americans are less self-conscious of how unsustainable a high energy society is (Nye, 1999). Children may not even be aware of energy unless there is a storm or power outage. Environmental education needs to be integrated into the curriculum so that it is evident in daily activities and children internalize values and engage in pro-environmental behavior as a way of life.

Active Participation in Relevant Activities Key to Success

The Roundtable is a cooperative endeavor of educational agencies from 12 states working to improve student learning by integrating environment into the K-12 curriculum and school reform efforts. The Roundtable completed a study on a specific area of environmental education, using the environment as an integrated context for learning (EIC), to identify the most innovative and successful programs in over 40 schools. Evidence gathered showed that students learn more effectively in an environment-based context than in a traditionally based framework (Lieberman & Hoody, 1998) and that the primary effect of EIC was increased knowledge and understanding of scientific concepts, process, and principles and the ability to apply concepts to real life situations.

According to constructivist philosophy (Varelas, Pappas, Barry, & O'Neil 2001), children do not pick up scientific distinctions and understandings just by being explicitly told or by reading information books. Children need the opportunities to discuss science when emergent understandings are being developed. As they are trying to express scientific concepts, their explanations are helpful in assessing their developing thoughts, misconceptions, and conceptual understandings. Parents and teachers need to assist children in learning new words and associated concepts when reading (Owens, 2003). This is especially important when there are students and families of many different cultures. We have a responsibility to translate new concepts into everyday language.

A study by El-Hindi, Evans, Gill, and Marchant (1996) on gaps in student science knowledge revealed that many teachers failed to engage students' activity in "doing" science which helps students connect observations with developing theories. His research supports the view that students need to discuss ideas as they learn. When educators assign home learning activities that focus on environmental awareness, the learning involves more than just the child as parents and other family members are involved in discussions concerning the relevant topics.

Patricia Hewitt (1997) conducted a study using instructional games focused on the topics of energy, pollution, endangered species, wetlands, and individual effects on the environment to change student attitudes and behavior. She concluded that knowledge alone does not cause significant influence. By interacting with their environment, children are able to reinforce a variety of internal developmental processes. She states that valuing may be one of the processes

that influence the selection of modes of action. Actively involving children in solving local environmental problems and teaching specific values encourages them to develop ecological morality and become more active at a global level.

A review of literature (Leeming, Porter, Dwyer, Cobern, & Oliver, 1997.) analyzed 34 studies evaluating some form of environmental education on changes in students' knowledge, attitudes, or behaviors. Twenty were students grades K-8, the rest were older children or adults. Younger children were less likely to have well-established environmentally harmful behaviors to unlearn, longer time period to influence environmental quality, and the potential to be effective agents to promote environmentally responsible behaviors in others. Teachers reported that activities that required active participation were most effective, and younger students in grades 1-3 showed a more positive attitude toward the environment than students in grades 4-6.

A research study designed to evaluate the effectiveness of residential environmental education programs in fostering positive attitudes toward wildlife (Dettmann-Easler & Pease, 1999) found that content, knowledge, and skills, are not as effective in influencing attitude changes as when you add action to the program. Findings from a study designed to examine changes in moralistic and ecologicistic attitude categories suggested that film and written media are important influences on environmental attitudes and that the key influences; talking at home, watching films and reading are long term and continuous (Eagles & Demare, 1999).

Intergenerational Influence

Actively involving children in solving local environmental problems encourages them to become active at a more global level. A study by Evans, Gill, & Marchant (1996) investigated the indirect influence of environmental education in schools on parents' attitudes toward the environment. The pre-education questionnaire, which covered transport, household wastes and recycling, energy, and environment, showed that students appeared to be better informed on environmental issues than their parents. After participating in various activities the post questionnaires revealed that children indirectly influenced their parents to recycle as a result of participation in the environmental program. The researchers also concluded that take home projects in which schoolchildren involve their parents and others are beneficial.

A similar study conducted by Leeming et al. (1997) was designed to determine whether environmental attitudes and knowledge of children who participated in pro environmental activities changed relative to non participants and whether children who participated influenced their parents' environmental attitudes and knowledge. The researchers focused on the effects of extending the program for a longer period of time and expanding the age groups of participants. They used pre and post tests to measure attitudes and knowledge in six sub domains; animals, energy, pollution, recycling, water, and general issues. Parents of the participants reported that they had shown greater changes in concern for the environment, in changing behavior, and in talking with their children about environmental issues.

A study designed to see how children learn and retain conservation principles and transfer them to their parents used pre and post tests before and after a one month environmental education course in Costa Rica. Researchers found that parents learned from children and both groups transmitted course information to neighbors resulting in an increase in community learning (Vaughn, Gack, Solorazano, & Ray 2003).

Students and parents were surveyed and interviewed regarding their perceptions about six environmental programs to determine the influence on environmental learning and the extent and nature of discussions that the programs stimulated between students and parents. Findings showed that students can and do share their learning and environmental attitudes with their

parents and bring about positive change in household practices. The findings also reinforced the importance of including an action component and challenged educators to encourage the process of intergenerational communication and influence in their programs.

Practical Applications

Engaging in activities that are relevant to the learner is a key factor in the success of the program. Educators need to look at community concerns. In South Florida, energy issues are critical and relevant to the students. Hurricanes and major storms have provided many students with the personal experience of being without electricity. Using personal observations to initiate discussion, students could learn about energy, how it is created, stored, used, and measured. Home learning projects could include surveys about energy use and recycling, and involve activities using hand generated radios and flashlights, and solar powered accessories. Families can conduct and write about the projects together, which contributes to more conversation and greater understanding.

Students can also raise community awareness with service projects designed to help solve community problems. Projects that focus on clean water can range from cleaning the beaches and Everglades concerns to storm drains. The variety of activities included in the environmental education curriculum varies widely according to the age of the students, school curriculum, teacher preparation, and current local environmental concerns. Although this variety makes it difficult to effectively determine the success of projects, the extent of internalizing environmental values is demonstrated over time.

Implications and Conclusions

The United Nations has declared 2005-2015 as the Decade of Education for Sustainability (Santone, 2003/2004). Yet, except for Vermont, the terms sustainability does not yet appear in state standards. The National Council for Science and the Environment (cite) identified it in 2003 as one of the five crucial areas where more research is needed to find ways to involve our students to participate in sustainable lifestyles.

Educators need to find more ways to include active learning projects that involve families in the curriculum. It is essential that we are able to educate the children, engage them in environmentally responsible behavior, and use them to influence the attitudes and behaviors of their parents and other community members.

Activities that require active participation and are focused on something relevant to the learner result in learning which can be internalized and transferred to other situations. When students and families engage in home learning science projects that involve practicing skills, data collecting, analyzing, and decision making, they learn together. When they enjoy learning, they are more apt to act on the knowledge they have gained. Activities which involve different groups are beneficial to expand awareness and responsible behavior. More emphasis should be placed on home and community projects to involve all the different sectors of society, the decision makers and the ones that will be affected. If we can educate our students to care for and conserve our resources, they will share their concern and enthusiasm to influence those around them.

Environmental education focusing on sustainability needs is a process which needs to be integrated into the curriculum so children will internalize the values at a young age. Students are in a position where they can effectively be used as change agents to use their knowledge, skills, and attitudes concerning the environment to influence parents and other community members. By actively involving students in home learning projects, children and families will benefit from the discussion and increased interaction as they learn to be environmentally responsible together.

References

- Dettmann-Easler, D., & Pease, J. (1999). Evaluating the effectiveness of residential environmental programs in fostering positive attitudes toward wildlife. *Journal of Environmental Education*.
- Eagles, T. J., & Demare, T. (1999). Factors influencing children's environmental attitudes. *The Journal of Environmental Education*, 39(4), 33-37.
- El-Hindi, A., Evans, S. M., Gill, M. E., & Marchant, J. (1996). Schoolchildren as educators: The indirect influence of environmental education in schools on parents' attitudes towards the environment. *Journal of Biological Education*, 30(1), 243-248.
- Hewitt, P. (1997). Games in instruction leading to environmentally responsible behavior. *The Journal of Environmental Education*, 28(1), 35-37.
- Integrating literacy and science in the classroom: From ecomysteries to Readers Theater. *The Reading Teacher*, 56(6), 536-538.
- Leeming, F., Porter, B., Dwyer, W., Cobern, M., & Oliver, D. (1997). Effects of participation in class activities on children's environmental attitudes and knowledge. *The Journal of Environmental Education*, 28(1), 33-52.
- Lieberman, G., & Hoody, L. (1998). Closing the achievement gap: Using the environment as an integrating context for learning. *State Education and Environmental Roundtable Report*, Science Wizards, Poway, CA.
- Nye, D. (1999). Path insistence: Comparing European and American attitudes toward energy. *Journal of International Affairs*, 53(1), 129-148.
- Owens, C. (2003). Nonsense, sense, and science: Misconceptions and illustrated trade books. *Journal of Children's Literature*, 29(1), 55-62.
- Santone, S. (2003/2004). Education for sustainability. *Educational Leadership*, 6(4), 60-63.
- Varelas, M., Pappas, A., Barry, A., & O'Neil, A. (2001). Examining language to capture scientific understandings: The case of the water cycle. *Science and Children*, 38(7), 12-21.
- Vaughan, C. Gack, J., Solorazano, H., & Ray, R. (2003). The effect of environmental education on schoolchildren, their parents, and community members: A study of intergenerational and intercommunity learning. *The Journal of Environmental Education*, 34(3), 12-21.