

ENVIRONMENTAL EDUCATION IN THE SCHOOLS

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ABSTRACT

Problems stemming from uncontrolled technological impact on global ecology include: 1) the need for resource management, 2) pollution of the global environment, 3) increasing human population, and 4) inadequacy of knowledge about the nature and interactions of ecological relationships. Environmental problems are perennial; already many have become critical and many others must at least be characterized as pressing. Concern has brought about national as well as local calls for educational programs that will prepare students to cope rationally and effectively with current problems and those that may loom in the future. Environmental education in the schools is thematic; it is both interdisciplinary and multidisciplinary, integrating content from such subject areas as science, social studies, mathematics, and language arts, and incorporating such process skills as problem-solving and decision-making. Rarely does anyone apply skills and knowledge from a single academic discipline in solving environmental problems. Environmental education can be used as a vehicle to equip students with skills for continued lifelong learning, including those associated with the collection of information; the organization, manipulation, and expression of ideas; the evaluation of information and ideas, including competent analysis and critique; and the production of new plans and proposals for action.

INTRODUCTION

An environmentally literate population must be developed and nurtured to promote knowledge and responsible action dealing with wise natural resource management decisions. Education for environmental literacy must begin in early childhood and continue throughout the formal school experiences of students. To do less is to continue to add graduates to an adult population that in large measure has become callous in its considerations and interactions with Hawai'i's environment.

The island state of Hawai'i includes ecosystems that are unique and heavily impacted by humans. Many native organisms have become rare or

endangered, and many ecosystems have been seriously altered. It is important that students learn to value the unique environment of Hawai'i and understand its ecosystems, and learn how to protect and make wise decisions about these valuable resources.

To meet the need for an informed citizenry, the Hawaii Department of Education is making a concerted effort to develop a comprehensive and well-balanced environmental education program for all levels in the school system. Environmental education is a thematic area; it is both interdisciplinary and multidisciplinary, integrating such subject areas as science, mathematics, social studies, and language arts, and incorporating such process skills as problem-solving and decision-making. Schools and districts are currently seeking ways to develop optimum instructional programs to ensure delivery of these necessary educational experiences to all students. Environmental education offers the opportunity for significant contributions to cognitive and affective development and can be used as a vehicle to equip students with skills for continued life-long learning, including those associated with the collection of information; the organization, manipulation, and expression of ideas; the evaluation of information and ideas, including competent analysis and critique; and the production of plans and proposals for action. Rarely does anyone apply skills and knowledge from a single academic discipline in solving environmental problems. Similarly, several areas must usually be integrated and applied holistically to meet life's demands.

Interest in environmental education carries over into the community in which agencies, organizations, and interest groups provide resources and environmental education activities for schools (Stone, this volume). Coordination of activities and development of viable resources that strengthen the academic, decision-making, and problem-solving skills of students necessitates the delivery of a comprehensive program from kindergarten through 12th grade.

OPERATIONAL DEFINITIONS

The term "environment" is variously used in educational, popular, and technical literature. Each use has particular meaning to a specific group, and understanding of such particularities is a function of education. However, some broad common characteristics of "environment" can be identified as common to most uses. These are:

1. An environment is a place. It is a region, setting, or context, real or imagined.
2. An environment is the contents of a place, including biotic or a-biotic matter and energy. Humans and their artifacts may or may not be involved.
3. An environment includes dynamic processes and interactions and is bounded by time.

4. An environment is a totality. It is a holistic, time-bound reality including substance, energy, and processes of interaction, physical, biological, societal, or psychological.

The following principles were developed and adopted by the World Intergovernmental Conference on Environmental Education, Tbilisi, USSR, October 14-26, 1977, to provide guidance for environmental education programs worldwide. Environmental education should:

1. Consider the environment in its totality -- natural and built, technological and social, economic, political, moral, cultural, historical, and aesthetic aspects;
2. Be a continuous lifelong process; it should begin at the preschool level and continue through all formal and non-formal stages;
3. Be interdisciplinary in its approach, drawing on the specific content of each discipline in making possible a holistic and balanced perspective;
4. Emphasize active participation in preventing environmental problems and working toward their solution;
5. Examine major environmental issues from local, national, regional, and international points of view, so that students receive insights into environmental conditions in other geographical areas;
6. Focus on current and potential environmental situations;
7. Emphasize the complexity of environmental problems and thus the need to develop critical thinking and problem-solving skills;
8. Utilize diverse learning environments and a broad array of educational approaches to teaching and learning about and from the environment, with due emphasis on practical activities and first-hand experiences;
9. Focus on the student's own community and relate topics being discussed to state, regional, national, and international issues and perspectives.

PROBLEM STATEMENT

The problem being addressed in education is that instructional services regarding resource management are not being provided at the desired program level. This deficiency is being aggravated by: 1) the impact humans have on terrestrial and aquatic ecosystems; 2) the need for cooperation and coordination of total community efforts in delivering services to schools and students; 3) the need to provide teachers access to resources that can be systematically supplied; 4) the need to enhance academic and problem-solving skill development in students; and 5) the need to develop and implement a staff development plan to promote improvements in school programs related to developing environmentally literate students.

Formal recognition of the environment, the emerging problems caused by human impacts on it, and the limited carrying capacity of the Earth have occurred rather recently. Suddenly and rather dramatically, humans have become aware that unless attention is given and safeguards are established toward protecting environmental quality and maintaining ecological balance, irreversible damage will result. Not only will choices in lifestyle and quality of life be reduced by lack of attention to environmental needs, but survival of both humans and other life is at stake.

METHODS

Major educational activities focus on providing a systematic instructional support system to include: 1) instructional modules and activities related to conservation efforts and wise-use decisions about environmental resources; 2) an instructional coordination network; 3) an in-service training program for integrating the topic of resource management into existing subject areas; 4) an experiential component of direct classroom-related services to schools; and 5) coordination of services by governmental and other community agencies involved in environmental and resource management education.

Instructional Resources

The development of instructional materials should be designed to integrate environmental education into existing curricula while specifically addressing environmental matters, thereby providing students with a broader, deeper knowledge of environmental concepts, issues, and problems. Materials should be developed in conjunction with various subject area programs as appropriate, with the involvement of local community groups or governmental agencies knowledgeable about relevant environmental matters.

Instructional Coordination

Implementing an effective instructional support system should involve the cooperative efforts of the total educational community, including kindergarten through university levels, and interdisciplinary efforts across content areas.

In-service Training

In-service training for teachers and administrators should concentrate on raising teachers' and administrators' awareness of environmental issues and problems, increasing their knowledge of various environments, and helping them to provide optimum environmental education experiences for students through the use of the viable new teaching strategies and approaches.

Experiential Activities

Direct student services should provide studies with environmental education experiences not normally attainable in the regular classroom situation. These types of services and activities in the state of Hawai'i include: the Blue-Water Marine Laboratory Program, the Student Marine Affairs Symposium, Keakealani Outdoor Education Center in Volcano on the island of Hawaii, Hawaii Nature Center on O'ahu, Moanalua Gardens Foundation on O'ahu, private residential outdoor camps, Scout camps, county zoos, Waikiki Aquarium instructional programs, programs at U.S. Fish and Wildlife Service refuges (*e.g.*, Ki'i Wildlife Refuge on O'ahu and Kilauea Refuge on the island of Kaua'i), visits to national parks such as Hawaii Volcanoes National Park on Hawai'i Island and Haleakala National Park on Maui, teacher-initiated field trips, and camping experiences for students.

Community Services

A critical component in development and implementation of an effective instructional support system is the interaction of pre-college educational agencies with resource expertise at universities and in governmental and community agencies involved with environmental education. A strong need for better coordination and communication efforts exists in this area.

A comprehensive education program that can be integrated with existing curricula, maximizing usage of available resource materials and implemented in a cost-effective manner, is necessary. This need can be met by a program in which the interdisciplinary-multidisciplinary nature is realized and the environmental concepts, issues, and problems are taught within established disciplines. To fully implement such a program necessitates development of supplemental instructional materials in gap areas. The 'Ohi'a Project is meeting some of these needs (Stone, this volume). In addition, in-service training must be supplied for teachers and administrators to raise their awareness of environmental issues and problems, increase their knowledge of various environments, and help them provide optimum environmental experiences for students through the use of viable new teaching strategies and approaches. Department of Education environmental education cadres, in which teachers with a strong interest in environmental education develop skills, help meet these needs, as does networking of environmental educators through organizations such as the Hawaii Environmental Education Association (Stone, this volume). Besides optimizing utilization of community, national, and international resources, coordination ensures that gap areas where materials are now lacking will be identified and materials promoting awareness and concern about Hawai'i's unique environments and resources will be incorporated into the curriculum.

Literature Cited

Stone, C.P. [this volume] *Environmental education in Hawai'i: history and overview.*

