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**MOBILE ENVIRONMENTAL EDUCATION LABORATORY PROJECT:  
DEVELOPMENT, IMPLEMENTATION, AND EVALUATION**

RONALD B. CHILDRESS  
Kingsport City Schools  
Kingsport, Tennessee 37664

**ABSTRACT**

The Kingsport City School System and the Tennessee Valley Authority cooperated in conducting an innovative demonstration project in environmental education during

the 1972-73 school year. Directed toward the planning, development, implementation and evaluation of a mobile unit approach to conducting environmental studies, the project included the development of instructional materials for students, pre-service and in-service training

of teachers, and a focus on the utilization of community resources and environmental study areas on school sites as major components in a total environmental education program.

#### INTRODUCTION

The Kingsport City School System has been developing an environmental education program (kindergarten through grade 12 for the past three years. Beginning in 1970 with a nature study program for fourth, fifth, and sixth grade students, and the employment of a full-time coordinator, the program has since grown into a total environmental education program, spanning all grade levels. Centered around environmental problems and the wise use of resources, the program is interdisciplinary, activity focused, involvement oriented and directed toward making education more relevant to the real life experiences of students.

#### IDENTIFICATION OF NEEDS

Although already involved in the day-use of community resources, the development and utilization of environmental study areas on school sites, and a resident environmental education program, a needs assessment of the total program was conducted during the 1971-72 school year. Teachers, administrators, representatives from cooperating resource agencies, and the program coordinator analyzed and discussed the existing program. Resulting from this assessment was the identification of the following needs:

1. In-service training sessions relating to environmental studies.
2. Instructional materials designed for use with community resources.
3. Specialized equipment and materials for conducting environmental investigations.



FIG. 1: Project Director, Ronald B. Childress, and Kingsport elementary students use specialized equipment from the mobile unit as they investigate the quality of several water samples.

4. An alternative for the loss of time and expense involved in transporting students to selected areas for environmental studies.

#### PROJECT ORIGIN

Following this assessment of program needs, studies were made to determine the best method of meeting them. Results of these studies indicated the mobile unit approach to environmental education would fulfill all four needs.

With the feasibility of the mobile unit approach established, a formal proposal requesting funding in the amount of \$19,500 was submitted to the Tennessee Valley Authority. As a result, in May, 1972, the Kingsport City School System contracted with the Tennessee Valley Authority to plan, develop and implement, as a demonstration project in environmental education, the utilization of a mobile unit for conducting studies.

The primary project objective was to demonstrate and verify the mobile unit approach to environmental education by:

1. providing in-service training to elementary (including preschool), secondary, and postsecondary education personnel to enable them to participate effectively in environmental education programs;
2. developing materials designed to assist the introduction of environmental studies in existing programs and/or strengthen the content of existing environmental programs at all educational levels;
3. developing curricula which will provide useful learning experiences leading to an understanding of environmental principles, problems and their causes, and possible solutions to those problems.

#### PROJECT DEVELOPMENT

Actual project development including design and construction of the mobile unit, development of the instructional materials, and the selection of equipment began immediately after funding.

Primary resource for the entire project was a one-half ton, 1972 Ford Econoline van especially designed and equipped for conducting environmental studies. The interior of the unit was equipped with compartments and shelves for the storage of environmentally related equipment. Top side of the unit was fitted with a large metal storage compartment covered with three lift-up, metal, water-tight doors. Additionally, a roll-out canvas canopy was attached to the unit curbside for the protection of equipment and students during periods of inclement weather. Total cost of the mobile unit, including construction of the equipment storage area was \$5,200.

A major component of the total project was the development of instructional materials for use with students and in-service training for teachers. Integrating all curriculum areas and utilizing the mobile unit as a primary resource facility, these materials focus on man's relationship to the natural and man-made environment,



FIG. 2: The mobile unit provides experiences with problem solving methods through the study of both the natural and man made environments.

including the relationship of population pressures, pollution, resource allocation and depletion, conservation, technology, and urban and rural planning to the total human environment. Economic, social, and political aspects of environmental quality were included where relevant.

This material was developed in a Summer Workshop held June-August, 1972. Participants were the Project Director (the systemwide program coordinator), five teachers, and a clerk. Teachers included one from the senior high level, two from the junior high level, and two from the elementary level. Consultant expertise, including representatives from the Soil Conservation Service and the Tennessee Valley Authority, was utilized throughout the workshop. Resulting from the workshop was a series of 44 student activities and three teacher in-service activities. All activities were combined into a 225 page publication entitled *Investigations For A Mobile Environmental Education Laboratory*.

Equipment included in the mobile unit can be divided into five major categories: (1) Tools and related equipment; (2) Special equipment (tables, camera, etc.); (3) General laboratory apparatus; (4) Environmentally and ecologically related equipment; and (5) Laboratory reagents. Additionally, a resource library containing more than 260 volumes to provide immediate on-the-spot reference materials was included. Total cost of the equipment and reference materials was \$6,000.

#### PROJECT IMPLEMENTATION

Project implementation was realized primarily through five phases:

1. Student utilization of the mobile unit, included equipment and instructional materials.
2. In-service programs conducted for teachers and administrators of the Kingsport City School System.

3. In-service programs for teachers and administrators in other school systems.
4. Presentations to cooperating resource agencies and community groups.
5. Presentations to pre-service science education classes at higher education institutions.

The total number of groups or classes directly involved in the mobile unit program during the eight month period of implementation was 128. During the same time span, 3,555 students were involved in the program.

#### PROJECT EVALUATION AND CONCLUSIONS

Total project evaluation included both formal and informal evaluation procedures. Informal evaluation, primarily a product of the day-to-day process of implementation, was instrumental in providing the information necessary to make minor adjustments throughout the project period. Formal project evaluation was centered on the use of an opinionnaire and questionnaire with project participants.

Aspects of the evaluation procedure included:

1. The overall effectiveness of the mobile unit, instructional materials, and in-service training.
2. Community, faculty, and student acceptance of the project.
3. The impact of the project on teachers and students.

Results of the total process of evaluation yielded the following conclusions:

1. The mobile unit approach to environmental education is a valid and practical approach in the development of a total environmental education program.
2. The mobile unit, instructional materials, and in-service training more than met the stated objectives of the project, and in the process, were extremely effective in providing new environmental experiences for students and teachers.
3. The total project was well accepted and supported by the community, faculty, and students.
4. The mobile unit project has had and will continue to have a definite beneficial impact on the students and teachers of the developing school system.

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