AN ASSESSMENT OF THE USE AND EFFECTIVENESS OF PROJECT WILD (WILDLIFE IN LEARNING DESIGN) BY TEACHERS AND YOUTH LEADERS IN OKLAHOMA

By

CYNTHIA LEANN SMITH

Bachelor of Science
East Central Oklahoma State University
Ada, Oklahoma
1978

Master of Science
Oklahoma State University
Stillwater, Oklahoma
1984

Submitted to the Faculty of the
Graduate College of the
Oklahoma State University
in partial fulfillment of
the requirements for
the Degree of
DOCTOR OF PHILOSOPHY
July, 1988

AN ASSESSMENT OF THE USE AND EFFECTIVENESS OF PROJECT WILD (WILDLIFE IN LEARNING DESIGN) BY TEACHERS AND YOUTH LEADERS IN OKLAHOMA

Thesis Approved:

Thesis Adviser

Dean of the Graduate College

ACKNOWLEDGEMENTS

This study is concerned with the evaluation of a supplemental environmental education curriculum, Project WILD, and how it is being used by teachers and youth leaders in Oklahoma. It is hoped this research will assist in establishing the validity of the program in informing and creating and environmentally concerned public in the state.

Grateful acknowledgement and heartfelt thanks are extended to my advisor Dr. Wiggins for his patient encouragement and guidance. Special thanks is also due to Dr. Vitek and Dr. Troxel whose encouragement and constructive criticisms have improved the quality of this study. Likewise, I am grateful to my committee members Dr. Bruneau and Dr. Mills for their interest, patience and valuable suggestions.

Many thanks are due to the group who first started me on my quest to understand the environment and share that understanding, Dr. Don Kellogg, Dr. Dan Sebert and the CELTP summer class of 1979, and again I must thank Ted Mills for his "helping hand" in my discovering I LIKE teaching at all levels to all ages.

Gratitude is expressed to all the WILD people across the world; the developers, facilitators, coordinators, and

users, particularly those in Oklahoma. A deep appreciation is expressed to Sara LaBorde, WILD facilitator of the highest order and role model from whom I learned much. This same appreciation is extended to all the Oklahoma Project WILD workshop leaders who have made my job as state coordinator not only enjoyable but successful.

My husband David (and Chez, Rambo, and Mr. Jones) deserve my warmest thanks and love for their encouragement and perseverance.

Deepest appreciation, love, and respect is extended to my parents Claudus and Dottie Smith for their warm support (financial, spiritual, and emotional) and that of the SMITH SISTERS of whom I am proud to be a part. To them this study is dedicated.

TABLE OF CONTENTS

LIST OF TABLES

CHAPTER I

INTRODUCTION

In developing and implementing education programs in natural resources conservation, current environmental problems and methods of handling them should be addressed. How can we best give students skills and abilities to make responsible decisions concerning the environment? An effective educational program aimed at providing information and development of strong thinking and decision making skills in young people is needed. Central to establishing a successful education program is the understanding of teacher/youth leader needs and how these needs vary from one area to another, whether it be county opposed to city or from state to state. The needs of and uses by aforementioned instructors vary and recognition of this fact is paramount to the implementation of a sound education effort. Education prepares us for action and Project WILD (Wildlife In Learning Design) may be a program that enables us to take action by educating youth to meet the growing demands placed on the environment. This investigation will establish baseline data concerning Project WILD as it applies to Oklahoma instructors and students.

Trends in industry, commerce, and business indicate that as the use of natural resources rapidly escalates environmental quality declines (Brown, 1987). As a result of an increasing population, a growing technology, and a greater demand for energy and resources of the earth, humans manipulate their environment to a degree never before possible. Agriculture is an excellent example. Today we can increase production of crop species by the use of fertilizers, pesticides, herbicides and even by genetic engineering. This manipulation has had beneficial short-range effects, but it has also been detrimental to many of our natural resources (Brown, 1987).

Wildlife species have suffered habitat loss. With more land being used in industrial and residential developments and more acres being brought into cultivation (Brown, 1987) to feed the growing population, humans leave less for wild species which translates into a decline in numbers (McDonnell, 1976).

Air quality is a major concern. Scientists are particularly troubled about the effect of sulfates, minute particles produced when sulfur dioxide emissions from manufacturing and power plants react with the air. Because they are so easily inhaled, such fine particles are proving more hazardous to human health than many other pollutants. These same sulfates, swept along with the clouds by prevailing winds high above the earth, are coming down in the form of unwanted acid rain (Overrain, 1981). Concern has

recently surfaced in regard to the possibly serious depletion of ozone in ambient air worldwide (Rosenbaum, 1985). This depletion is a result of increasing international use of chlorofluorocarbons (CFC's) in aerosol containers, air conditioning equipment and industrial processes. Atmospheric ozone is believed to protect humans from dangerous exposure to ultraviolet light which is naturally screened by upper atmospheric ozone. CFC's are believed to deplete free atmospheric ozone by chemical alteration.

Another environmental worry is water quality. Sewage treatment plants, once effective in handling of wastes, have become incapable of treating the increasing volume of materials being discharged from urban and industrial areas. They are also inefficient in handling 'modern' chemical waste in the amounts being produced (Boraiko, 1985).

Environmental laws passed in the 1970's attacked the most visible and seemingly acute forms of environmental degradation (Schoenfeld, 1980), but other severe forms have been recognized since that time. These additional problems include energy production (oil, gas, coal, nuclear) and safety in development of these technologies as well as safe disposal of their wastes. Increasing population and its effect on our limited space and water supplies, and the decreasing amount of America's forested lands because of conversion to cropland, urban development, and damage by acid rain threaten the quality of life (Randall, 1981).

In the United States we depend primarily upon our government to assume leadership for environmental management and responsibility in future environmental planning. The manner in which our government translates public policies--including political implementation, enforcement, and revision--however, is determined by the public. This same public is asked to face these environmental issues with little or no knowledge. A knowledge of environment and environmental risk assessment is vital to policy and decision making by all citizenry (Ramsey and Rickson, 1976).

How are environmental information and decision making skills imparted to the public? One major method is the implementation of environmental conservation education within formal school settings and informal youth groups (4-H, scouts, FFA, etc.). It is with this question in mind that the present study is conducted. This investigation focuses on one program developed by wildlife specialists and educators for use with students in grades K-12 and how these materials are being incorporated into Oklahoma schools and youth organizations.

Purpose of the Study

This study assessed the use of Project WILD as an interdisciplinary, supplementary environmental and conservation education program for educators of kindergarten through high school age young people in Oklahoma. The

study identified how the activity guides are being used and the effectiveness of the program as seen by instructor evaluation, and compared the similarities and differences in use by the sample that has received training in the use of WILD. Moreover, the project assessed if these similarities and/or differences effect the use of WILD within the sample.

Justification for the Study

No one can challenge or debate the existence of environmental problems (Brennan, 1974). As we have grown less responsible for securing our own food and supplying other basic needs, we have grown away from understanding the world and our place within it. An effective educational thrust aimed at providing information dissemination and decision making skills to young people is of paramount importance in order to insure a quality environment on a long term basis (Charles, 1986). If we value conserving and protecting our environment for generations to come, we must actively prepare our citizens for this responsibility. A real and growing need exists to assess current environmental education programs on a national, statewide and local basis.

Project WILD, an interdisciplinary environmental education program allows educators to use their subject specialty to teach environmental concern, awareness, and concepts to students (Project WILD, 1986). This researcher

will examine how educators are using the WILD materials, instructor expectations/goals for use the materials, and student results. WILD implementation by elementary and secondary instructors will be studied and a comparison of use made. Likewise, rural, suburban, and urban educators will be observed and their use compared. Certain aspects of use, i.e., how much of the background material that is provided is read by instructors prior to activities, the number of people with whom trained educators share their guides, and why some instructors do not use WILD after training will be assessed. This evaluation can assist in establishing the validity of the program in informing and creating an environmentally concerned and informed public in our state. The study will examine survey results from over 35% of the instructors who have received Project WILD training in Oklahoma and who responded to the survey.

Research Objectives

The investigation established the following research objectives:

1. To determine how Project WILD materials are currently being used by instructors in Oklahoma, specifically:

   a.) To determine of the respondents who have experienced training, how many have used the WILD materials.

b.) To determine if the WILD materials are being used as the basis for a course of study or if they are incorporated into existing curricula.

c.) To assess how many WILD activities instructors typically perform with students in the course of a year.

d.) To determine the approximate amount of time spent with students on each WILD activity.

e.) To delineate why instructors use WILD.

f.) To rank the reasons for WILD use by instructors by priority.

2. To identify the results (achievement) experienced by students following WILD use.

3. To determine if the results of WILD use with students is consistent with instructor goals for use of the materials.

4. To determine the similarities and/or differences existing between elementary and secondary users of Project WILD.

5. To determine similarities and/or differences existing between urban, rural and suburban users of Project WILD.

6. To determine if the amount of WILD use by instructors is dependent on the length of time participants have had the materials in their possession.

7. To identify how teachers as a group use Project WILD.

8. To determine how much of the background information provided in the Project WILD activity guide is read by instructors prior to conducting a WILD activity.

9. To determine the average number of people with whom WILD instructors share their activity guide.

10. Of the instructors who do not use WILD, determine their reasons for nonuse. How these research objectives are answered can determine the viability of Project WILD as a valid curriculum to be used with various grade and ability level students within Oklahoma.

Rationale is developed for these objectives and the methods by which they will be assessed. The design of instructional materials for youth leaders and teachers in the state must incorporate the fundamental ways instructors implement them. Materials can be developed to be easily incorporated into a preset curricula or simply adopted as a course of study or basis for a unit of study. Research Objective 1 will aid that determination and Survey Questions 1, 2, 3, 4, and 8 used (See Appendix A). Simple percentages will be checked on Questions 2, 3, and 4 and Question 8 will be assessed by the frequency of occurrence of answers and respondents.

In order to supplement findings of the national WILD survey and to reassure national and state sponsors that WILD is meeting their intentions for development, instructors were asked to determine results of WILD instruction with students. The method of assessing signif-

icance of Research Objective 2 will be assessed by examining simple percentages and frequency of occurrence of respondent answers to Survey Question 6. In addition, instructors were asked to reveal their goals in using WILD with students. Results of this educator assessment of student achievement and educator goals for use could then be correlated to determine if students are achieving at the level instructors intend. The null Hypothesis for Research Objective 3 is stated in Appendix A.

It is also necessary to examine educator groups in the state in regard to age/grade level taught and location (rural, urban, suburban) of their teaching. Information resulting from these examinations will reveal similarities and/or differences between the instructor groups in regard to WILD utilization (Null Hypothesis H_O2, H_O3, H_O4, H_O5), preparation for activities (Null Hypotheses H_O2c, H_O3c, H_O4c, H_O5c), sharing of WILD activity guides (Null Hypotheses H_O2d, H_O3d, H_O4d, H_O5d), plans for continued use (Null Hypotheses H_O2e, H_O3e, H_O4e, H_O5e), and reasons for use (Null Hypotheses H_O2f1-H_O2f13, H_O3f1-H_O2f13, H_O4f1-H_O4f13, H_O5f1-H_O5f13). Scrutiny of these items will allow WILD sponsors to determine characteristics common to educator samples and to capitalize on these characteristics as training workshops are held across the state and nation, thereby insuring quality workshops pertinent to educator needs whatever grade/age level taught or what location they

teach. The Null hypotheses for these research objectives are stated in Appendix A.

It will be helpful to WILD sponsors to determine if WILD use increases, decreases, or remains constant with time. Information such as this can be used to assess whether follow-up, refresher or even deeper content oriented workshops be implemented by the agencies to augment use of and enhance educator knowledge about natural resource related curricula. Research Objective 6 will be assessed using Survey Question 6.

When WILD was first brought to Oklahoma, authorization was difficult to obtain from the State Department of Education to offer the training workshop for in-service or staff development points. The accumulation of a required number of these points is necessary by classroom teachers in Oklahoma in order to keep their certification valid. Because of this initial difficulty it was agreed by this researcher and sponsoring state agencies that information be collected on strictly classroom teachers who have been trained in the use of Project WILD. Hence, Research Objective 7 was included as part off this investigation. Objective 7 deals with teacher assessment of student learning after WILD activities, future plans for material use, instructional aids which would prove most useful, and reasons teachers have attended Project WILD training workshops. Assessment of student learning will be done by examining Survey Question 10 by simple percentage and fre-

quency of occurrence. Future plans for WILD use will be assessed by simple percentages and frequency of occurrence of items in Survey Question 11. Instructional aids preferred will be determined by simple percentage and frequency of occurrence of items in Survey Question 14. Reasons for attending workshops will be assessed by simple percentage and frequency of occurrence in Survey Question 19.

In producing supplemental materials for WILD guides and activities it is necessary to appraise how instructors are currently using available resources. The one resource which can be identified as readily accessible to all instructors who have attended WILD training is the background information provided with each activity in the WILD teaching guide. Therefore, Research Objective 8 was developed. Using Survey Question 11 and examining simple percentages conclusions can be drawn which will aid sponsors in developing and evaluating new materials and supplements.

It would be beneficial to gain insight into what past workshop participants think about the program. Perhaps this appraisal can be accomplished by assessing if WILD instructors share activity guides with other educators. Because the major method of scheduling workshops is notification of public schools and sending press releases to local papers to inform youth leaders of workshop availabilities, Survey Question 12 was worded to address the teacher segment of the sample. The method used for

assessing Research Objective 9 is to check simple percentages and frequency of occurrence of answers to Question 12.

Finally, in any education program one must ascertain why materials are not used by those who have access to or were trained to implement them. Research Objective 10 attempts to identify these reasons and eliminate them, if possible. The method of assessing significance of the data is by examining simple percentages and frequency of occurrence of answers to Survey Question 1.

Definition of Terms

Conservation/Environmental Education - Education focusing on the conservation and preservation of natural resources, which may occur in schools, youth groups, camps, nature centers, and a variety of other settings.

Curricula - Courses of study in an educational setting.

Elementary Instructor - Those who categorized themselves as teaching primarily grades K-6 or 6-8.

Instructor - Educator in either a formal (school) or non formal (outside of school) setting.

Knowledge - Familiarity, awareness, or understanding of the environment through experience or study.

PROJECT WILD Survey of Use - The questions found within the scope of this study to determine respondents use and implementation of Project WILD with their students.

Rural Instructor - One who works in a community with a population of 25,000 residents or less.

Secondary Instructor - Those who categorized themselves as teaching primarily grades 7-9 or 9-12.

Student Results - Student actions, perceptions, skills, attitudes, and knowledge resulting from interaction with WILD activities and instruction.

Suburban Instructor - One who works in a community with a population of 25,000 to 100,000 residents.

Teacher - One who works in a formal (public or private) school setting.

Expectations and Goals - Results of WILD instruction that instructors anticipate will come to students following WILD interaction and instruction.

Urban Instructor - One who works in a community with a population of 100,000 or greater.

Youth Leader - One who works with students in a non formal educational setting (i.e. youth camp, nature center, 4-H, Scouts, etc.).

Major Assumptions

For the purposes of this study, the following assumptions were made:

1. Classroom teachers and youth leaders use Project WILD with students.

2. Instructors will respond to the survey willingly without feelings of pressure or personal threat.

3. The population of potential respondents consisted of approximately 2,300 Oklahoma teachers and youth leaders who have attended a minimum of one six-hour Project WILD training workshop.

4. Respondents to the self-administered survey instrument followed proper procedures.

5. Environmental conservation education could solve some of the problems humans face in decision making and manipulation of the environment.

6. Missing survey responses occur at random.

Limitations

Although participants of Project WILD training workshops complete an evaluation form requiring name, address and place of employment at the time of training these forms are not always accurate or complete. Administering the same questionnaire to all participants, whether a classroom teacher or youth leader, could provide inaccurate data. Some respondents may have received the impression the survey was written for a segment of the population which did not include them.

Inaccurate addresses of past participants, a change in job or residence, undeliverability of the mail, and simple refusal to complete and return the survey are all possible reasons for non-response. Those who did not respond were eliminated from this study.

Through the SAS statistical package procedures were employed to make as few changes as possible to incomplete questionnaires and attempts were made to retain the pattern of marginal and joint frequency distributions shown by usable responses.

Format for Succeeding Chapters

Chapter I an introduction of this study, includes justification for the study, the purpose of the investigation, enumeration of the research objectives and associated hypotheses, and major assumptions and limitations. In Chapter II the literature related to this study is reviewed. Chapter III is a discussion on the methods and procedures used in conducting the study. Chapter IV presents the data gathered through the use of a questionnaire which was administered by mail to previous WILD workshop participants in Oklahoma. Chapter V provides a summary of the findings of the study as well as conclusions and recommendations.

CHAPTER II

REVIEW OF LITERATURE

Introduction

The review of literature in this chapter is closely related to the problem under study and is divided into six categories. These include an understanding of our existing knowledge concerning the evolution of environmental conservation education curricula; the development of a national environmental education program (Project Learning Tree); the history of Project WILD as a national program; negative reviews of Project WILD; Project WILD in Oklahoma; and a final summary. Environmental education has not been officially recognized as a traditional course taught in our schools, has no authorization as a separate course of study from youth organizations, and has only had a formal definition since the late 1960's. Therefore, the aforementioned areas were searched back through 1960.

History of Environmental/ Conservation Education

Environmental education (EE) is a broadly based term encompassing many aspects of the biotic and abiotic environment. Before being defined in the late 1960's and early

70's, EE was listed under a multitude of titles ranging from nature study, to outdoor education, and to conservation education (Nash, summary, 1976).

Until that time each of these separate entities had its own definition, philosophical base and supporters. Environmental education as a science is an effort to bring these factions together under an umbrella of interdisciplinary thinking. According to McInnis this integration is vital:

> The planet's program is one of synthesizing parts into wholes. . . if we continue our almost exclusive preoccupation with reducing wholes into parts . . . we may become one of the parts not saved. (McInnis, 1972, p. 10).

In 1968 environmental education was given its name by A. Clay Schoenfeld. He in turn credits the first use of the term to Brennan by citing a 1964 address to the American Association for the Advancement of Science (Disinger, 1985). Different educators, including Arthur Lucus (1972), George Donaldson (1963) and Julian Smith (1960) refer to environmental education as IN, ABOUT and FOR the environment. Lucus explains that education IN the environment refers to a teaching method, education ABOUT the environment concentrates on environmental knowledge while education FOR the environment emphasizes environmental quality (Lucus, 1981).

The United States Congress gave credence to environmental education in 1970 when it approved Public Law 95-516, the Environmental Education Act (91st Congress, 1970). In this legislation environmental education was defined as:

> The education process dealing with mans relationship to his natural and man-made surroundings, and includes the relation of population, pollution, resource allocation and depletion, conservation, transportation, technology, and urban and rural planning, to the total human environment (pp.3).

With formal recognition of EE by Congress came a flurry of "new" programs that incorporated aspects of conservation education, resource-use education and even resident outdoor education. A great deal of literature was produced and resident teacher workshops that provided university credit were established to educate teachers about resource issues, conservation practices, available materials, and teaching activities appropriate for various grade levels. Oklahoma, for example, established several programs like the Conservation Education Leadership Training Program as long-term summer resident experiences (Kellogg, 1975).

The "Progressive" education movement furthermore influenced environmental education. John Dewey (1938), following Comenius (1967), Rosseau, Pestalozzi, (Heywood 1979), and Froebel (Bowen 1893), encouraged the development of curricular strategies that were responsive to the needs of children and produced unparalleled reform in the educational process. This reform has extensive overtones toward

interdisciplinary, real-world approaches and this "hands-on" or "learn-by-doing" philosophy fit into the environmental education doctrine quite nicely (Albrecht, 1976; Campbell, 1980).

Science education in particular was able to take advantage of the new educational and philosophical dictates. Modern curriculum development projects like Biological Science Curriculum Study, Elementary Science Study, and Science Curriculum Improvement Study, have components related to land laboratories, school forests, and/or resident outdoor education settings as part of the experiences suggested for scientific investigation of the natural and human-made world (Stapp, 1969; Carlson and Baumgartner, 1974; Faich and Gale, 1971).

In general, EE embraces all disciplines and applies to formal and informal educational settings. The aforementioned school curricula meet the first two prerequisites of our environmental education definition. They are:

1. education IN the environment (teaching method) and
2. education ABOUT the environment (environmental knowledge.)

The third requisite, education FOR the environment, is virtually ignored. Emphasis is given to environmental quality but concern and motivation to spur students on toward responsible actions are missing (Johnson, 1977).

Environmental education blends philosophies of various disciplines, educational theories, and aspects of the envi-

ronmental movement and incorporates activities that deal with environmentally responsible behavior (Hernbrode, 1974; Fleming, 1972). Learning experiences are necessary to develop awareness and knowledge. Environmental education needs also to include specific activities that deal with the critical third element, behavior. In the last ten years new EE programs have been developed that incorporate all three aspects and take students from awareness, to knowledge and finally to action (commitment) (Marcinkowski, 1981; Troy and Schwaab, 1982; Charles, 1981; Project WILD, 1986).

Environmental Education Curricula

The character of environmental education varies. Classes may simply be held outside near the school. Although a metropolitan environment may not permit classroom teachers casually to include outdoor education in lesson plans, an outdoor trip can be used to introduce a new subject and sometimes it can be used to reinforce previous lessons and classwork (Falk, 1977). This same rule holds true for the youth leader in the urban area. A city park may provide the necessary components to reinforce a concept or make a project come alive for the student. The real character of environmental education is that first-hand experiences are sought, as opposed to education or teaching with books, chalkboards, and assignments. As Falk (1977) states:

> A successful experience should have as its main objective the goal of maximizing the concrete aspects of the given subject matter to be taught, in order to provide each child with tangible examples for future discussions in the classroom. In this way, each outdoor trip becomes an integrated part of the total curriculum, not an isolated event in the lives of the children (pp. 24-25).

The opportunities for discovery with such a program are numerous. The discussion by Sale and Lee (1972) of "percepts," as related to direct environmental education, emphasizes that it is through percepts, the impressions of a stimulus obtained through the sender, that a child learns about his or her surroundings. These impressions are combined "with mental images, verbal symbols, and related input to form concepts. For example, a child learns the concept 'dog' by feeling the animal's body, smelling its odor, hearing its bark and seeing its tail wagging and other behavior" (Sale & Lee, 1972, p. 42). Such experiences give children the abundant opportunity to develop percepts, which are important, because as the research of Piaget (1964) indicates, "a child's ability to work with the broad concept of space, time, matter, and causation depends upon a type of learning that evolves from his direct sensory experiences" (Sale & Lee, 1972, p. 42).

Documentation exists of instructors who have found achievement in mathematics (Zjawin, 1978; Patterson, 1973), writing (Hillcocks & Kachur, 1977), and science (Kellogg, et al., 1977) learning taking place in an environmental education setting as well as documentation of students who

have experienced significant gains in knowledge, skills and intelligent environmental decision making (Huckenstein, 1976; Fletcher, 1973) and increases in self-reliance and self-confidence (Fletcher, 1973; Kranzer, 1973).

Project WILD and its model program, Project Learning Tree attempt to incorporate the best of traditional teaching ideology with the best of outdoor education theory. Students experience all three aspects of EE. They are exposed to: education IN the environment either by physically being in the out-of-doors or by manipulating objects for a hands on experience; education ABOUT the environment where knowledge is either passed from instructor to student or where students themselves "discover" knowledge via research, interviews or personal sharing; and, education FOR the environment where students take action to make decisions, take steps to solve environmental problems, or act in responsible manners.

Development of Project Learning Tree

In 1970 a non-profit organization, the Western Regional Environmental Education Council (WREEC) was formed with funding from a $135,000 grant from the United States Department of Education, Office of Environmental Education to the California Department of Education. This group consisted of 26 original members, two from each of the 13 participating states (see Appendix B) and represented an equal number of education and state resource agency professionals

(Charles, 1986). With the grant came the responsibility of organizing a cooperative effort among the member states in order to improve the quality of education available to young people and their instructors. The first few years of the partnership were spent in communication. Educators learned the terminology and finesse necessary to relate to those from state resource agencies while resource professionals were learning the vocabulary of importance to educators. As the stand of WREEC was clarified as an environmental organization, goals and objectives for the group were developed. Young people must acquire awareness, knowledge, attitudes and skills that would make decision making involving natural resources possible. The groundwork on which to build these changes could only come about by the development of a curriculum that could be easily and inexpensively taken to educators who in turn would use the materials and ideas with students. The materials developed must be interdisciplinary, as much of life and living skills are, pervasive, as in a K-12 curricula, and supplementary in nature so educators whether classroom teachers or youth leaders, would be able to use them separately or combined within a unit of study. Lastly the materials must be effective in meeting instructor goals (Bruner, 1967; Trent, 1976; Knapp, 1972; Burts, 1977; McSherry, 1979).

The American Forest Council (now the American Forest Institute, AFI) a non-profit organization supported by the forest products industries and providing information and

services concerning forest resources to the American public, awarded a grant to WREEC (and thus obtained co-sponsorship) to develop such an educational curriculum. Project Learning Tree was initiated (Charles, 1986). The focal point of this program was the interdependence of society and nature with the forest as the primary basis from which instructional ideas and activities were developed (Hamilton, 1982).

With additional support supplied by AFI, WREEC turned for assistance to a group of education consultants, Education Research Systems, Inc. of Seattle, Washington. In conjunction with this firm writing conferences were held where more than 100 educators working with a variety of resource personnel were charged with the responsibility of developing classroom activities that would encourage acquisition of awareness, knowledge, attitudes, and skills related to the environment and based in forest resources. A balanced approach was sought through involvement of individuals from private conservation organizations, including Friends of the Earth and Sierra Club, forest protection associations, industry groups, and resource managers from federal and state public agencies (Charles, 1981).

The results of these writing sessions and the interaction of education and resource professionals were set of interdisciplinary materials and teaching strategies in EE, covering grades K-12 and designed for both classroom and out-of-door use. It was planned that the materials and ac-

tivities would not proscribe, bias, or decide responsible behaviors for students but would invite the decision making of thoughtful young people in concert with their teachers. Of paramount importance and the major factor that separates and lifts PLT as a curriculum above others currently available is that it was the result of a cooperative effort among educators, industry personnel and resource managers (Charles, 1981; McGlauflin, 1986).

Through material development, professionals from all fields came the need for a representative group of persons to give direction to the growing program. A council of individuals was appointed to serve in an advisory capacity. This planning and Advisory Council (Charles, 1981) consists of 10 members representing the following organizations:

Washington State Office of Public Instruction*

United State Forest Service*

Rutgers University*

Georgia Pacific+

Seven Islands Land Company+

Weyerhaeuser Company+

Canadian Education/Conservation Office#

California Department of Education/Environmental Education*

Wisconsin Paper Council+

Society of American Foresters#

+AFI Appointees
*WREEC Appointees
#Associate Sponsors/Canadian Representatives

After development of the materials and the designation of a governing committee, implementation was the next step. Ten of the original states represented by WREEC were selected for a pilot study. AFI, WREEC and the Planning and Advisory Council proposed the materials should be made available to teachers and youth leaders in the service settings. Research had long indicated that in service training was necessary in order to enhance effective and long term use of texts and activities (Hamilton, 1982).

Teacher training workshops were held in each state under the supervision of the national PLT staff and state personnel insuring the implementation strategy was uniquely suited to the particular area where the teachers lived and taught, although certain basic requirements were and are still met in all PLT workshops. These basic requirements are:

1. The materials are made available in a workshop or in service training;

2. The training session is at least 6-8 hours in length;

3. No charge is made for the guides themselves (although charges for college credit or workshop fees may be assessed); and

4. A mechanism in each state is put into motion in order to perpetuate the program as a service and a resource (PLT Agreement).

In 1976 teachers attended these introductory workshops, received the materials and training, and returned to their schools. Moreover, a study was begun to determine effectiveness of the materials with students. This impact study was coordinated by the Bureau of School Service and Research (BSSR), University of Washington. The research compared the results of testing students in grades 4-12 who had experienced PLT activities with a theoretically comparable control group at the same grade levels who had not experienced the activities. In short, the most significant results, within the limitations of the study, were shown by students in the intermediate grades (7-9), where they displayed significant increases in decision making, problem solving and self concept following PLT interaction. Knowledge levels increased also but to a lesser degree. The most positive impact was in the elementary grades (1-6) where students exhibited greatest gains in knowledge and achievement in content areas (Fleming, 1976).

Teachers who participated in the evaluation study conducted through the BSSR were asked to indicate effective activities and activities that seem not to work well with their students. They were also asked to provide any specific and/or anecdotal information that might assist in a revision. In addition to individual teacher input, following methods were used to gather information for revising the materials and making them more useful to the classroom teacher and youth leader:

1. recommendations were requested from the PLT Planning and Advisory Council (many of whom had assisted in the original development of the materials);

2. correspondence initiated by teachers and others actually using the materials with students (addressing areas of perceived potential improvement and commenting on exceptionally useful activities);

3. a review of critiques from pre- and in-service teachers (usually stemming from PLT workshops as part of courses for college and school district credit) was conducted;

4. remarks and suggestions of participants in workshops were scrutinized (at each workshops end, participants fill out an evaluation and comment form);

5. examination of the materials in terms of curriculum analysis systems was completed; and

6. materials from a writer's conference, organized specifically to address areas of potential improvement in the materials, involving classroom teachers, resource personnel, curriculum developers, advisors to the project, staff, and others were analyzed (Fleming, 1976).

Using the information the PLT staff organized a revised version of the elementary and secondary guides. Draft versions were submitted to extensive review of the PLT Planning and Advisory Council, and were critiqued (as were the originals) by teachers, resource specialists, members of private conservation groups, industry personnel and

others representing a variety of perspectives (Charles, 1986).

Additional revision of the guides have been completed. Efforts to improve the materials continue as reviews still are received from many of those in courses for college and in-service credit who describe their uses from experiences in the classroom setting. Teachers using the materials make suggestions and ask for additional activities. Workshop participants offer ideas through their evaluations. Improvement continues with the latest revision having been completed in 1987 (McGlauflin, 1987).

Because of the success of PLT and an emphasis on concepts rather than specific forest types or geography during PLT's first year of use, 15 other states began clamoring for the program to be made available to their teachers and youth leaders. By 1979 PLT use had grown from the original 13 states to over 30 coast to coast. PLT now involves over 80,000 educators and more than 7 million students in 43 states and three foreign countries. It has been honored with a number of awards including a special award from President Ronald Reagan for the Outstanding Volunteer Program in the Nation in 1986, and has served as a springboard for another EE program, Project WILD (McGlauflin, 1987, Charles, 1981).

Development of Project WILD

In 1979, Project Learning Tree held its first national conference at Jackson Hole, Wyoming. WREEC as a co-sponsor, decided to also hold its annual meeting concurrently. As a part of WREEC's meeting methods to further disseminate the goals of the organization were discussed. As an outgrowth of this session WREEC began working with the Western Association of Fish and Wildlife Agencies (WAFWA) to develop, co-sponsor, and implement a new EE curriculum, Project WILD (Project WILD, 1986).

WAFWA is an organization of the directors of the public wildlife agencies in 13 western states as well as 5 Canadian provinces. These wildlife agencies are the ones legally responsible for caring for wildlife on behalf of the public. They are increasingly concerned about the need for an informed public prepared to make decisions to protect and conserve wildlife and its habitat, therefore they were a "natural" choice for co-sponsoring in the WILD program (Hamilton, 1982).

These two organizations, WREEC and WAFWA, recognized that PLT emphasized natural communities and had interaction with them. They were also farsighted enough to see that although PLT was doing an excellent job in meeting the goals set by the developers of the materials, other concepts and goals were in need of addressing. The most pressing of these concepts was the population and habitat of wildlife.

Between the May 1979 PLT conference and July of that year, plans for the development of Project WILD were made and a budget and timeline for implementation were set. States comprising WAFWA each committed $10,500.00 toward the development of this new educational curriculum (Project WILD, 1986). In July of 1980, at the annual meeting of the WAFWA, members voted to authorize a contract between their organization and WREEC for the sole purpose of developing a comprehensive wildlife education program for use throughout the western regions and designed for teachers and youth leaders of kindergarten through high school aged young people. The actual development of the program would be in the hands of WREEC. This contract marked the official beginning of WILD development. The next major step was taken in the fall at the WREEC annual meeting. A rough draft of a conceptual framework (an outline of major ideas to underlie program development) was developed to give a firm foundation to the project (Lackey, 1982). The framework consisted of the following seven important and well-defined concepts:

1. Awareness and appreciation of wildlife;
2. Human values and the wildlife resource;
3. Wildlife and ecological systems;
4. Wildlife conservation;
5. Cultural and social interaction with wildlife;
6. Wildlife issues and trends--alternatives and consequences; and

7. Wildlife, ecological systems and responsible human actions (Project WILD Activity Guide, 1987).

Development of the activities began in 1981. Outstanding teachers were brought together with school administrators, university faculty, wildlife professionals, and representatives of private environmental, animal welfare, youth, community, and conservation groups in a series of writing conferences held throughout the year. The activities written in these meetings were deliberately designed to correspond and fit into the conceptual (now called the curriculum) framework and were critiqued and reviewed by over 500 people. The activities were edited and reviewed for content accuracy, bias, balance, and educational validity. Of the hundreds of activities developed at the writing seminars, only 120 were refined for use in the WILD activity guides (Charles, 1986).

The lessons were pilot tested in classrooms by teachers in rural, urban, and suburban schools. A team of independent researchers designed, supervised, and evaluated the test results, thus insuring that each activity accomplished its stated instructional objectives, was appropriate to the suggested grade levels, involved the stated subject areas, and could be accomplished within the stated time framework (Fleming, 1983).

Following the year of refining and testing, revisions were made by reviewers. At that time a formal field test (1982-1983 school year) was begun. The test was primarily

to measure and interpret Project WILD's effect on students and teachers. Effects included changes in student knowledge and attitudes about wildlife as well as teachers' reactions to the materials. Using pre- and post-test instruments the knowledge of students who received "WILD" instruction was assessed. It was established that students and teachers enjoyed Project WILD activities, and students acquired significant knowledge and a greater appreciation of wildlife when their teachers use Project WILD activities (Fleming, 1983). A summary of the results of this study are found in Appendix C.

In 1983, three years after development, field testing and revisions, the materials were prepared in final form for the first printing of Project WILD activity guides. Because WILD emphasizes concepts (as does PLT) rather than specific kinds of animals or environments, states beyond the original 13 founders recognized the educational opportunities WILD provided and began expressing interest in offering WILD to youth leaders and teachers in their areas. WILD began as an idea in 1980 with 13 states banded together as "backers" and by 1983, before the first edition of guides were available, more than 20 states were involved in implementing the program (Charles, 1986).

Following four years of revision and improvement the guides continue to change to better meet the needs of teachers and youth leaders. Each years' printing can accommodate suggestions for revision. The 1985 printing, for

example, included changes in many instructional activities as well as the framework and glossary. WILD is continually being monitored and evaluated by new workshop participants. After completing an introductory workshop, participants respond to a survey from which results are compiled on a state and national basis. This constant monitoring insures workshop quality and usefulness.

The original activity guides are in their fourth printing, with provisions for changes annually as needed to update and improve the program's resources for educators. Over 100,000 educators have been trained in the use of WILD and an estimated 2,000,000 students have been reached with the WILD materials (Charles, 1987).

A study examining the implementation of WILD was conducted in 1985 for the elementary schools of Lee County, Florida. Its purpose was to determine the effects of Project WILD on kindergarten through fifth grade students attending public school there (Fleming, 1985). Student learning and attitudes toward wildlife were measured. This study was not used in the revision of WILD materials as part of their development, but to determine effectiveness of Project WILD with students in one school district.

In this study 3 schools were designated "Control" (no Project WILD activities were taught), "WILD" (the school implemented Project WILD as part of the district's instructional objectives), and "WILD+" (where both Project WILD and the district's proposed new science program were imple-

mented). Statistically significant differences were found across school and grade levels on both cognitive and effective instruments. The schools that implemented WILD were found to have made significantly greater gains that the control school. Comparing cognitive gains, the WILD group did significantly better than both WILD+ and Control groups. The WILD school also differed significantly - in a positive direction, consistent with goals of WILD - from the Control group in affective, attitudinal measures.

In 1986 the National Project WILD office instituted a survey of use and needs. A questionnaire booklet of 20 questions was developed, pilot tested and mailed to a stratified random sample of participants who have received WILD training from the fall of 1983 to the spring of 1986. The national survey population was 4945 and an average response rate was 49% (state by state it ranged from 29% - 71% with Oklahoma demonstrating a return of 37%). Some findings of this survey were:

1. Of those responding to the questionnaire, 70% indicated they had used the WILD materials since the workshop. Of the 30% who had not yet used the materials, 63% said they planned to do so in the future.

2. When asked their perception of student learning as a result of WILD, 91% of those responding said their students had a greater awareness, knowledge, skills, and/or attitudes related to "what wildlife is and what it needs in order to survive", and 87% related to "the overall importance of wildlife and its habitat".

3. 39% of the teachers responding said that as a result of Project WILD, most of their students have "more responsible attitudes toward wildlife and the environment"; 38% said "many"; and 20% "some". Less than 3% said that very few or none of their students had acquired more re-

sponsible attitudes toward wildlife and the environment as a result of Project WILD.

4. When asked their goals in using Project WILD, 94% of those responding said, "to instill in students an appreciation of the importance of wildlife, its habitat, and a healthy environment for both people and wildlife.

5. 67% of the respondents said, "It would be helpful if I were provided with additional materials from Project WILD to supplement the guides, such as student worksheets and materials for learning centers".

6. Project WILD has either greatly or moderately increased the amount of time the teachers report spending on instruction about wildlife and the environment, with only 17% reporting no change in the amount of time, and less than 1% reporting a decrease in the amount of time spent.

7. It is conservatively estimated that more than seven million students in elementary and secondary classrooms of the United States had received instruction through Project WILD from the period of fall 1983 through spring 1986.

Two states, Ohio and Wisconsin have completed survey studies of Project WILD workshop participants in regard to their use and implementation of WILD. The Ohio study was conducted during approximately the same period of 1986 as the national survey and findings are generally consistent with those derived from the national level survey.

In addition to asking many of the same question that were asked in the national survey, others were posed that the national study did not address. For example, Ohio has data about the number of years teaching experience and levels of education among those who responded to this survey and it was determined, "In general, nonusers had less teaching experience and less education than users." (Cantrell, 1987).

Zozel (1988) conducted a study in Wisconsin which examined the use of Project WILD materials by teachers who participated in Project WILD workshops in that state. As with the Ohio study of use, the Wisconsin findings are generally consistent with those found at the national level in the 1986 survey of use. Some of the same questions were asked; others were not the same. Zozel's study yielded an important new finding concerning the program. The Project WILD Steering Committee recommends that the Project WILD materials be offered to teachers in instructional workshops of six hours or longer. From the national survey we know that the national average for workshop length is seven hours. It is also known that 80% or more of the teachers who participate in workshops of ten hours or longer actually use the Project WILD activities with students. This study done by Zozel indicates clearly that teachers who participated in workshops of seven hours or longer actually used more activities.

Another interesting and new finding from Zozel's study ha to do with a characteristic of the teacher workshop itself. For many years, all Project WILD leadership workshops and many Project WILD teacher workshops have included a peer-teaching component. This is a time in the workshop where participants select a Project WILD activity and, with a short amount of time for preparation, actually teach the activity in an abbreviated fashion to other workshop participants. Zozel's study indicates that, "Teachers who had

this opportunity to practice leading (activities) were more likely to use Project WILD and to use greater numbers of activities." The study also indicates that workshops that included this peer-teaching component had fewer numbers of teachers not using Project WILD at all following the workshop than did workshops where this component was not included.

Negative Views Regarding Project WILD

It should be noted that although all research done concerning Project WILD use and implementation has revealed positive data regarding WILD, the program has been criticized publicly. David Siegenthaler (1986) in his two part article published in the Autumn/Spring edition of Talking Leaves entitled "Project WILD/Project Tame" stated:

> I believe Project WILD's major short comings fall under two main heading: it's lack of a sound learning model and it's anthropocentric bias. Each of the activities could itself be the subject of a lengthy evaluation . . . It is my hope that my comments here will stimulate more in-depth consideration of these issues" (pp. 6).

Siegenthaler then proceeds to support his stance. The article was a source of much controversy concerning the program and has been the focus of extensive debate among environmental educators.

The Animal Protection Institute (The Ape Vine, 1985) has also expressed criticism regarding Project WILD, in particular it's activity guides. In 1985 their suggestions led to a fairly extensive revision of a number of activi-

ties and a greater referencing throughout the guides. The National Project WILD Steering Committee then made revisions to the 1986 guides. A supplement containing revised passages and activities was also printed and made available to users of pre 1985 versions and API urged the supplement be sent to all users of older versions of the guides in the 33 states which at that time were involved in using Project WILD. Five (Arkansas, California, New Jersey, Ohio, and Texas) indicated all past participants would receive the supplement. In the remaining 20 responding states (Alaska, Arizona, Colorado, Delaware, Florida, Georgia, Hawaii, Idaho, Illinois, Nebraska, New York, North Carolina, Oklahoma, Oregon, Pennsylvania, South Carolina, Tennessee, Utah, Virginia, and Washington) supplements were made available to those using old copies of the guides, but only if requested. Announcements of the supplements' availability was made by special notice or though newsletters established for Project WILD users.

API voiced it's reservations in this excerpt from the APE Vine (Fall 1986).

> While we cannot endorse the guides unequivocably, many of the activities in them are not objectionable and can be used to instill an appreciation of wildlife in the classroom. The guides enjoy great popularity among teachers and students who may be easily "turned off" to the humane movement if it focuses negative attention on Project WILD instead of countering with positive materials about humane through and action (p. 2).

In late 1985 another organization, the National Association for the Advancement of Human Education (HSUS)

voiced disapproval for Project WILD materials. This group in fact developed a 48 page booklet entitled, "A Humane Teaching Guide for Project WILD" and publicized its availability for a small fee to users of WILD materials. Paraphrasing the introduction, it states that in such schools (those using Project WILD materials) it is hoped that this humane guide will encourage teachers to "voluntarily cease using many of the Project WILD activities if not the entire guide". The belief held by the HSUS is that WILD exploits animals and their "use by humans".

In Oklahoma it was announced these guides were available to instructors by way of THE WEB, the newsletter sent to all WILD instructors in the state. In addition it was stated, "Although we do not agree with the criticisms of Project WILD inherent in this guide, we are happy to let you know of the availability of these materials." (The WEB, summer 1986). Instructors were then allowed to use their own judgement in ordering and using the HSUS guide.

The last major group who has objected to WILD use is Friends of Animals (FOA). Since 1984 they have maintained that because WILD is promoted in many states by the state game commissions and the National Wildlife Federation, it is a pro hunting/trapping education curriculum. The curriculum framework on which developers organized and wrote activities includes "commercial and economic benefits of wildlife" and the FOA insists entrenches WILD in pro hunt-

ing and trapping. The most recent article (Russell, 1988) continues this belief.

Project WILD does have critics who oppose its use in teaching conservation and environmental education.

Project WILD in Oklahoma

Project WILD was initially developed to meet the environmental education needs of the 13 sponsoring states (Appendix B). Other states learning of the success of PLT were interested in receiving WILD materials for use by their educators (See Appendix D). From this interest came a group of associate state sponsors that now endorse WILD. For a $7,000 fee these states could "buy-into" the program under specific rules (Project WILD, 1987):

1. workshops must contain certain critical parts (overview of WILD development, hands-on participation in activities, some type of wildlife background or resource information, a time for curriculum planning and some type of list of additional resources and/or materials);

2. the only way an educator (teacher or youth leader) can obtain an activity guide is to attend a Project WILD introductory workshop; and

3. the guides are provided free-of-charge, although charges may be made for college credit or a small workshop fee.

In December 1983 through a cooperative agreement between the Oklahoma Department of Wildlife Conservation

(ODWC) and the Oklahoma Conservation Commission (OCC) brought Project WILD to Oklahoma (Sebert, 1987; Pollard, 1987). Each agency provided $3,500 to become an Associate State Sponsor. With the aid of the Oklahoma Wildlife Federation a $2,000 grant was obtained from Weyerhaeuser to purchase the first shipment of activity guides, to send representatives to the first National Project WILD conference, and to train the first 25 workshop leaders in the state. Additional money for the training session in the amount of $300 was donated by the Oklahoma Association of Conservation Districts (Sebert, 1987; LaBorde, 1987).

The ODWC and the OCC provide education specialists to coordinate Project WILD in the state. The duties of these coordinators with regard to WILD are listed below:

1. recruitment and training of workshop leaders;
2. budgeting and buying guides and other resources;
3. maintaining records, finances, and lists of workshop participants;
4. maintaining mailing lists;
5. scheduling and promoting workshops;
6. conducting presentations and informational mailings; and
7. providing aid to teachers, school districts and youth organizations and universities in the training and use of environmental education materials (namely Project WILD) (LaBorde, 1987; Graham, 1987; Sebert, 1987).

Several introductory workshops were held in the spring and summer of 1984. In November 1984, the first workshop for facilitators was held at Greenleaf State Park near Muskogee. Classroom teachers, wildlife managers, naturalists, college students, university professors, school administrators, and natural resource specialists attended. During the course of the training session, these participants were introduced to WILD (its past and present), experienced hands-on activities, received background information on both wildlife and education, planned for workshops in their regions, and explored workshop strategies.

Since November 1984 three more training workshops have been held. One in September 1985 at Camp Redlands west of Stillwater, one in February 1987 at Fort Sill, north of Lawton and the most recent in September 1987 at Roman Nose State Park near Watonga. At each of these sessions previously trained workshop leaders were invited to meet with new leaders and review basic workshop skills.

Teacher training workshops for Project WILD in Oklahoma are typically conducted by two volunteer facilitators, one with background in some aspect of wildlife or ecology, the other typically an educator. At these workshops the activity guides are not simply "handed out" to teachers and/or youth leaders. Most materials provided in this manner tends to overwhelm the educator and the resources end up gathering dust and not being used with students.

In order to obtain a guide the participants must attend a six-hour long (or longer) workshop. During this time they actively participate in WILD activities, learn the history of WILD and how other states use the program, become familiar with what the activity guides can offer them as well as complete actual planning sheets which will aid them in incorporating WILD into their particular classroom situation. With this general workshop format and the "mix" of wildlife specialists and education experts as workshop leaders, teachers, and youth leaders alike feel comfortable asking questions, making observations, and sharing ideas and experiences.

In the past three years Project WILD in Oklahoma has:

1. formed a cadre of approximately 55 educators, naturalists, and resource professionals who have volunteered their time and energy to become certified workshop facilitators;

2. held over 50 Project WILD workshops throughout Oklahoma, from Bartlesville to Lawton, Oklahoma City to Ardmore, Alva to Muskogee, Tulsa to Guymon, Moore to Billings, and many important places in between;

3. trained over 4500 teachers, naturalists, pre- and in-service teachers and youth leaders at PW workshops;

4. found that in Oklahoma 99% of Project WILD workshop participants report they are interested in using WILD and estimate they will use them with 60,000 to 100,000 students in one year;

5. determined that of all the participants we have trained, 99% state the workshop they attended was "very good" or "one of the best they ever attended";

6. have cross-referenced for use in all subjects, Project WILD grades 1-8 with the Oklahoma State Department of Education Suggested Learner Outcomes, and;

7. have cross-referenced WILD with the Boy Scout Badge requirements (Sewell-Waters, 1988).

The growth of WILD in Oklahoma has exceeded the initial expectations (of reaching 500 educators per year) of the two state agencies that supported the program. In 1985, the first year of operation in Oklahoma, 800 teachers and youth leaders were trained here. In 1986 the number increased to 2000 and projections for the number receiving training in 1987 varied from 1500-2000, tripling the number trained in 1984 (Sebert, 1987; Pollard, 1987; LaBorde, 1987; Sewell-Waters, 1988).

The process of education, by its nature, is difficult to evaluate. Its most important outcomes are long-term and evidenced throughout a lifetime. Adding to the difficulty of measuring the impact of education in preparing students to deal with wildlife and other natural resource questions is the fact that teaching about these topics (wildlife, habitat, conservation) is not a priority within the curricula of the public schools or within the framework of youth organizations. Project WILD is one supplemental program developers hope will aid in educating young people to make

important environmental decision. Studies have been done which support its use in a variety of setting with diverse groups.

Follow-up, incentive, and wildlife information programs are necessary in order to capitalize on the expanding interest in WILD and in environmental education. Providing a simple to implement easy to use set of supplemental activities (i.e., WILD) may enable educators to instruct students in environmental concepts without sacrificing the subject or skill area they are required to teach. This incorporation of EE with traditional skills and subjects will improve chances for developing a thoughtful, informed, responsible, decision making citizenry in the future.

Summary

This chapter includes:

1. the history of formal and informal education as it relates to environmental/conservation education;

2. the history of environmental/conservation education curricula as it has developed from the early 1960's to today;

3. the development of Project Learning Tree, identifying the principal sponsors, materials development, implementation and revisions to the activity guides;

4. the development of Project WILD nationally, focusing on sponsoring organizations, curriculum framework, ac-

tivity development, continuing evaluation, revision, and negative views of WILD by various groups;

5. project WILD and how it came to Oklahoma, was sponsored, funded and implemented.

CHAPTER III

DESIGN AND METHODOLOGY

Introduction

The purpose of this study was to ascertain the pervasiveness of the use of Project WILD materials by teachers and youth leaders within the state of Oklahoma. It differs from the national survey in that it compared WILD use of elementary and secondary instructors and use of WILD by rural, urban, and suburban instructors. The Oklahoma survey also identified how much background information is read by instructors in preparing WILD activities for use with students, and instructors preferences for support materials which may be developed for use with students.

A self-administered survey (Appendix E) was employed to identify how instructors are using the activity guide(s), the effectiveness of the program as seen by teacher evaluation, and establish similarities and/or differences regarding WILD use in the instructor population which has received training in the use of WILD. If differences are observed, I will assess how they affect the use of WILD within the population. The sections which follow describe the methodology of this research.

Description of the Population

The population for this study consisted of all teachers and youth leaders who attended an Oklahoma Project WILD workshop since the introduction of the program in 1983. The names and addresses of each participant were obtained from workshop evaluation forms completed by the participants at the close of the workshop they attended.

Design

The survey was designed as a self-administered, mail back questionnaire to be sent to all former workshop participants. The questionnaire (see Appendix E) was designed using several techniques; those described by Dillman (1978), Oppenheim (1966), and Sudman and Bradburn (1982); from personal discussion with representative of natural resource agencies, educational institutions and youth organizations; and examination of similar studies done by the national WILD office, the Wisconsin Department of Natural Resources and the Ohio Department of Education. The data was collected, coded, analyzed, interpreted, and reported.

A pilot study preceded the actual solicitation of responses from the population. The pilot study consisted of two parts, pretesting and a field test. Pretesting validation began with the personal distribution of the questionnaire to associates, education and wildlife professionals and doctoral committee members. Personal interviews were arranged to discuss each item on the questionnaire.

The discussion focused on such aspects as interpretation, format, wording, and sequential order of the times on the questionnaire. Respondents were very helpful in recommending modifications, changes in choice of words, and items that should be included or deleted. Recommended revisions were incorporated in the questionnaire that became the instrument for this research (see Appendix E).

In the field test portion of the pilot study a revised questionnaire was administered to 50 randomly selected instructors within a 50 mile radius of Stillwater, Oklahoma. School administrators and youth organization employees distributed the questionnaires and made it possible to interview selected participants. The field test sought to identify possible sources of bias resulting from misunderstanding the statements, directions, or difficult wording. Because of an agreement of complete anonymity and respect of privacy, the 28 non-respondents were not pursued.

Responses to the survey were solicited through two mailings, which were sent out approximately three weeks apart. A thank you/reminder postcard was sent three weeks after the second mailing. The initial mailing included a hand-addressed envelope, a cover letter with hand-written message, a questionnaire with a written message thanking the respondent for his/her help, and a stamped, pre-addressed envelope for return of the survey. Each packet was mailed first class and required $.61 postage for round trip mailing. The second mailing contained a cover note, a

questionnaire, and a stamped, pre-addressed envelope for easy return of the survey.

Of the total 2,032 questionnaires were mailed to participants, 108 questionnaires were returned as undeliverable and 780 were returned for a response of 38%. The data on 36 of the questionnaires returned were deemed unusable, and 12 questionnaires were returned after the allotted response deadline had passed. The low number of responses was expected. Generally low responses result from questionnaires sent via mail and return rates of less than 40% are common (Kerlinger, 1973; Bulmer, 1979; Fairclough, 1977).

The mail questionnaire was the survey method selected for this study based on its use related studies (Fleming, 1983; Zozel, 1988; Cantrell, 1987), its adaptability for use by government agencies and for its relative inexpensiveness as compared with alternate survey methods. The lack of sufficiently high response and inability to check given responses are two possible defects in the use of mail questionnaires unless it is used in conjunction with other techniques (Kerlinger, 1973; Bulmer, 1979).

Pretest of questionnaires and a pilot study were used to try to reduce nonsampling error. It was beyond the capabilities of the study to sample nonrespondents on a formal basis. But enhanced confidence in the viability of returns was gained as a result of anecdotal data gathered

from informal interviews with a small number of pilot study nonrespondents.

Instrumentation

The instrument development phase of the research included several identifiable but interrelated processes:

1. selection of an appropriate measurement scale;
2. development of a set of items to measure attitudinal variables;
3. preparation of items to measure teacher goals and expectations of the program;
4. preparation of items to indicate preferences for supplemental teaching materials;
5. preparation of items to measure preferences of teachers in the use of the materials;
6. select and edit of questionnaire statements;
7. format, layout, and design; and
8. consideration of validity and determination of reliability.

Various data-gathering techniques are more appropriate in certain research designs than in others. Likewise, some scales of measurement are more appropriate to certain types of research than others. Oppenheim's 1966 review of the literature concerning the construction of scales of measurement indicates that few major advancements have occurred since the Thurstone and Likert scales were developed. Among the approaches to attitudinal measurement as

found in the literature, and one used most often is still the Likert scale (Bulmer, 1979). The usefulness of the Likert scale in related human dimension of natural resources research has been demonstrated (Warner, 1981; Birdwell, 1982).

The Likert-type scale was selected for use in the research for a number of reasons. The relative ease of construction adhered to basic premise of this project that the methodology and instrument should be adaptable and usable by other researchers. The Likert-type scale requires relatively less time from respondents than other methods. The scale has a wide range of applications and it can be used with a large number of test items (Bulmer, 1979).

In this study, the Likert format was applied to questions dealing with students acquiring skills and reasons for use of WILD by teachers. Five possible responses exist to Question 7 concerning student achievement. The question labeled many, most, some, few, none (Appendix E). The categories were scored by assigning values of 4, 3, 2, 1 and 0 respectively. Recording and weighing scores for this section based on student achievement was done by computer program.

Five responses are possible to Question 8 concerning reasons of teachers for using WILD with students. The responses ranged from a positive 3 to zero with possible responses to the question labeled high, medium, low, non (Appendix D). The categories were scored by assigning val-

ues of 3, 2, 1 and 0 respectively. Recording and weighing scores for this section concerning reasons for instructor use was done by computer program.

Question 8 was the attitude portion of the questionnaire. A large number of opinions were developed and collected concerning why teachers used WILD. From this array of statements 13 were selected and edited according to the following criteria (Edwards, 1957):

1. statement should contain only one clear thought;
2. statement should be simple and clear;
3. statement language should be short, rarely exceeding 20 words;
4. statements should not contain ambiguous words;
5. statement should not be factual; and
6. statement should be interpreted one way

The 13 statements were identified following discussions with peers, professionals, and pre-testing to solicit evaluation data concerning the appropriateness of survey items. Through a very similar procedure items concerning teaching support materials were developed and collected.

The last section of the questionnaire asked for demographic characteristics about the respondent. The respondent was asked to check one of the categories provided with each item, and was also given the option of writing in an appropriate response; this option was rarely used.

When measuring simple attributes or physical characteristics of persons or objects, validity is not a great

problem (Kerlinger, 1978). In behavioral research, where objects are not easily measured, validity often becomes a very important question. A distinction can be made between validity and reliability. Validity is concerned with the question: Does the item measure what we want it to measure?

Kerlinger (1973, p. 457) indicated that ". . . there is no one validity. A test of scale is valid for the scientific or practical purpose of its user." The validation of an attitude measurement scale is very difficult (Shaw, 1967). Three types of validity are commonly accepted: content, criterion-related, and construct. Content validity is concerned with the sampling adequacy of the content of the questionnaire, that is, did the statements measure the desired domain of aspects associated with the referent object? "Content validation consists essentially of judgment" (Kerlinger, 1973, p. 457). Questions at polar ends of the spectrum were designed in some instances to help verify the validity of responses. Criterion-related, or concurrent validity is concerned with predictive ability associated with practical problems, while construct validity is concerned with theoretical constructs.

Reliability addresses the question: If the same subjects of referent objects were repeatedly measured with the same comparable measurement instrument will the same or similar results be obtained? (Kerlinger, 1973). Several measures were taken to improve the reliability in the design and layout of the mail questionnaire used in this re-

search investigation. An effort was made to: (1) write clear and simple directions; (2) maintain consistency in layout; (3) write unambiguous statements and questions; and (4) provide an adequate number and comparable quality of statements.

Data Collection

The mail questionnaire was designed to provide a profile of respondent's teaching characteristics, the level at which they are teaching (urban, suburban, rural), the results of their use of WILD with students, and their goals in using the materials. The review of literature produced relatively few environmental/conservation education studies that were completed or in progress and provided only four instruments of any kind in this subject area. Instruments from other natural resource, education related studies were reviewed and while they influenced this study they were not appropriate for use. The National Project WILD survey of use was perhaps the most useful and provided a starting point for instrument development (Appendix F).

A six-page (three 10" by 8 1/2" sheets folded in half and stapled twice) questionnaire was printed in black ink on white paper. Special art work depicting the national Project WILD logo and nuthatch on a branch was used for the cover after consultation with layout and graphic experts. The letter that accompanied the questionnaire was printed in black on the official letterhead stationary of Oklahoma

Project WILD. The letter was signed by the two Oklahoma Project WILD coordinators, Sara LaBorde of the Oklahoma Department of Wildlife Conservation and Cindi Smith of the Oklahoma Conservation Commission (Appendix E). Imprinted envelopes of Project WILD were also utilized for transmittal to the recipient, but the enclosed, self-addressed stamped envelope was plain bond. in an attempt to increase response, each initial survey contained a hand-written message thanking the respondent for his/her help and signed by one of the program coordinators. Moreover, to help in an increased response, each outside envelope was addressed.

Data Analysis

The data from the questionnaire were encoded for computer analysis at Oklahoma State University by OSU Computer Center technicians. The data were cross checked and hand verified after system entry. No data entry or program errors were found. Following confirmation, all data were analyzed at the computer center with the SAS statistical package (SAS Institute, 1984).

The principal statistical procedure used in analyzing the attitudinal and demographic data was the chi-square statistic. The non-parametric chi-square yields a value which represents the disparity between expected and observed frequencies falling into each data category. As greater disparity occurs, the chi-square value increases until it becomes statistically significant. The Student's

t-test was utilized to compare means between the two groups. The parametric and robust t-test yields an index of the significance of the differences between means of sampled groups. The t value increases as the means are significantly different. The Pearson Product Moment correlation coefficients were used to assess research object number three. Pearson Product Moment Coefficients of Correlation can range from -1 to 1, and the higher the value, the stronger the relationship. Each item from Survey Question 8 was treated independently.

The rejection of null hypotheses was set at an alpha level of .05. The .05 level means that an obtained result that is significant at the .05 level could probably (by chance) occur about 5 times in 100. This level has been quite acceptable in research similar to this investigation. The .05 level was originally chosen (Fisher, 1950) and has persisted with researchers because "it is neither too high or too low for most social scientific research", (Norosis, 1986). Other researchers (Skipper et al., 1967) suggest that rather than "blind adherence" to reporting a relationship between data as significant or not significant, the actual probability level should be stated. Because the writer recognizes a difference between statistical significance and social significance, the p (probability) value was also reported in this study. Using the p value, determination of significance is left to the interpretation of the reader.

Research Objectives, Related Research Questions and Hypotheses Statements

The research objectives of this study were developed following the review of literature, discussion with teachers, and discussion with wildlife professionals, youth leaders and naturalists. The objectives of this study were as follows:

Research Objective 1

To determine how Project WILD materials are currently being used by instructors in Oklahoma.

Source of Data. Survey Questions 1, 2, 3, and 4 were the source of these data and the frequency of occurrence as high, medium or low priority, of items in Survey Question number 8.

Research Questions

1. Of the respondents who have training experience, how many have used the WILD materials?

2. Are the WILD materials being used as the basis of a course of study or are they incorporated into existing curricula?

3. How many WILD activities do instructors typically perform with students in the course of a year?

4. What is the approximate amount of time spent with students on each WILD activity?

5. Why do instructors use WILD?

6. Of the reasons given by instructors for WILD use, what is the priority ranking of the reasons?

Method of Assessing Data:

Question 1 = simple percentage, Survey Question 1.

Question 2 = simple percentage, Survey Question 2.

Question 3 = simple percentage, Survey Question 3.

Question 4 = simple percentage, Survey Question 4.

Question 5 = rank scores question 8, whole group.

Question 6 = determine frequency of occurrence of high priority items in Survey Question 8.

Research Objective 2

To identify the results (achievement) experienced by students following WILD use.

Source of Data: Survey Question 7, whole group, frequency of occurrence, rank scores.

Research Questions

1. What is the result of instruction attributable to WILD use with students?

2. What is the result(s) of Project WILD experiences on students as determined by instructor perception?

Method of Assessing Data

Question 1 = rank order survey question 8

Question 2 = rank mean scores of survey question 7 and frequency of occurrence.

Research Objective 3

To determine if the results of WILD use with students is consistent with instructor goals for use of the materials.

Source of Data: Comparison of Survey Question 7 to Survey Question 9 was used as the source of this data.

Null Hypothesis:

H_o1: No correlation exists between educators perceptions of the response of students to WILD and instructor goals for use of the materials.

Method of Assessing Significance of Data:

H_o1: Pearson Product Moment Coefficient of Correlation

Research Objective 4

To determine similarities and/or differences existing between elementary and secondary users of Project WILD.

Source of Data: Survey Questions 2, 3, 4, 8, 11, 12 and 13 were used as the source of these data.

Null Hypotheses:

H_o2: No significant difference exists between elementary and secondary instructors for the variables identified in Survey Question 2.

H_o2a: No significant difference exists between elementary and secondary instructors for the variables identified in Survey Question 3.

$H_0$2b: No significant difference exists between elementary and secondary instructors for the variables identified in Survey Question 4.

$H_0$2c: No significant difference exists between elementary and secondary instructors for the variables identified in Survey Question 11.

$H_0$2d: No significant difference exists between elementary and secondary instructors for the variables identified in Survey Question 12.

$H_0$2e: No significant difference exists between elementary and secondary instructors for the variables identified in Survey Question 13.

$H_0$2f1: No significant difference exists between elementary and secondary instructors for the variables identified in Survey Question 8 item A.

$H_0$2f2: No significant difference exists between elementary and secondary instructors for the variables identified in Survey Question 8 item B.

$H_0$2f3: No significant difference exists between elementary and secondary instructors for the variables identified in Survey Question 8 item C.

$H_0$2f4: No significant difference exists between elementary and secondary instructors for the variables identified in Survey Question 8 item D.

$H_0$2f5: No significant difference exists between elementary and secondary instructors for the variables identified in Survey Question 8 item E.

$H_0$2f6: No significant difference exists between elementary and secondary instructors for the variables identified in Survey Question 8 item F.

$H_0$2f7: No significant difference exists between elementary and secondary instructors for the variables identified in Survey Question 8 item G.

$H_0$2f8: No significant difference exists between elementary and secondary instructors for the variables identified in Survey Question 8 item H.

$H_0$2f9: No significant difference exists between elementary and secondary instructors for the variables identified in Survey Question 8 item I.

$H_0$2f10: No significant difference exists between elementary and secondary instructors for the variables identified in Survey Question 8 item J.

$H_0$2f11: No significant difference exists between elementary and secondary instructors for the variables identified in Survey Question 8 item K.

$H_0$2f12: No significant difference exists between elementary and secondary instructors for the variables identified in Survey Question 8 item L.

$H_0$2f13: No significant difference exists between elementary and secondary instructors for the variables identified in Survey Question 8 item M.

Method of Assessing Significance of Data:

$H_0$2 = chi square

$H_0$2a = chi square

H_O2b = chi square

H_O2c = chi square

H_O2d = chi square

H_O2e = chi square

H_O2f1 = Student's t-test

H_O2f2 = Student's t-test

H_O2f3 = Student's t-test

H_O2f4 = Student's t-test

H_O2f5 = Student's t-test

H_O2f6 = Student's t-test

H_O2f7 = Student's t-test

H_O2f8 = Student's t-test

H_O2f9 = Student's t-test

H_O2f10 = Student's t-test

H_O2f11 = Student's t-test

H_O2f12 = Student's t-test

H_O2f13 = Student's t-test

Research Objective 5

To determine similarities and/or differences existing between urban, rural and suburban users of Project WILD.

Source of Data. Survey Questions 2, 3, 4, 8, 11, 12, and 13 were used as the source of these data.

Null Hypotheses:

H_O3: No significant difference exists between rural and suburban instructors for the variables identified in Survey Question 2.

$H_0$3a: No significant difference exists between rural and suburban instructors for the variables identified in Survey Question 3.

$H_0$3b: No significant difference exists between rural and suburban instructors for the variables identified in Survey Question 4.

$H_0$3c: No significant difference exists between rural and suburban instructors for the variables identified in Survey Question 11.

$H_0$3d: No significant difference exists between rural and suburban instructors for the variables identified in Survey Question 12.

$H_0$3e: No significant difference exists between rural and suburban instructors for the variables identified in Survey Question 13.

$H_0$4: No significant difference exists between suburban and urban instructors for the variables identified in Survey Question 2.

$H_0$4a: No significant difference exists between suburban and urban instructors for the variables identified in Survey Question 3.

$H_0$4b: No significant difference exists between suburban and urban instructors for the variables identified in Survey Question 4.

$H_0$4c: No significant difference exists between suburban and urban instructors for the variables identified in Survey Question 11.

$H_0$4d: No significant difference exists between suburban and urban instructors for the variables identified in Survey Question 12.

$H_0$4e: No significant difference exists between suburban and urban instructors for the variables identified in Survey Question 13.

$H_0$5: No significant difference exists between urban and rural instructors for the variables identified in Survey Question 2.

$H_0$5a: No significant difference exists between urban and rural instructors for the variables identified in Survey Question 3.

$H_0$5b: No significant difference exists between urban and rural instructors for the variables identified in Survey Question 4.

$H_0$5c: No significant difference exists between urban and rural instructors for the variables identified in Survey Question 11.

$H_0$5d: No significant difference exists between urban and rural instructors for the variables identified in Survey Question 12.

$H_0$5e: No significant difference exists between urban and rural instructors for the variables identified in Survey Question 13.

$H_0$6: No significant difference exists between urban, rural, and suburban instructors for the variables identified in Survey Question 8 by item.

Method of Assessing Significance of Data:

H_o3: Question 2 = chi square

H_o3a: Question 3 = chi square

H_o3b: Question 4 = chi square

H_o3c: Question 11 = chi square

H_o3d: Question 12 = chi square

H_o3e: Question 13 = chi square

H_o4: Question 2 = chi square

H_o4a: Question 3 = chi square

H_o4b: Question 4 = chi square

H_o4c: Question 11 = chi square

H_o4d: Question 12 = chi square

H_o4e: Question 13 = chi square

H_o5: Question 2 = chi square

H_o5a: Question 3 = chi square

H_o5b: Question 4 = chi square

H_o5c: Question 11 = chi square

H_o5d: Question 12 = chi square

H_o5e: Question 13 = chi square

H_o6: Question 8 = analysis of variance by item

Research Objective 6

To determine if the amount of use of WILD by instructors is dependent on the length of time participants have had the materials in their possession.

Source of Data: Survey Questions 3 and 16 were used as the source of these data.

Null Hypotheses:

H_O7: No correlation exists between the use of Project WILD and the length of time instructors have had the materials.

Method of Assessing the Significance of the Data:

H_O7: Pearson Product Moment Coefficient of Correlation

Research Objective 7

To identify how teachers as a whole use Project WILD.

Source of Data: Survey Questions 10, 13, 14, 19 and 21 (Items A, B and C) were used as the source of these data.

Research Questions:

1. How do teachers most often assess student learning after use of a WILD activity?

2. What are the future plans for the use of WILD by teachers?

3. What instructional aids are of greatest importance to teachers to help them use WILD?

4. What are the reasons teachers attend WILD workshops in Oklahoma?

Method of Assessing Data:

Question 1 = simple percentages, Survey Question 10 and frequency of occurrence

Question 2 = simple percentages, Survey Question 13 and frequency of occurrence

Question 3 = simple percentages, Survey Question 14 and rank frequency of occurrence

Question 4 = simple percentages, Survey Question 19 and frequency of occurrence

Research Objective 8

To determine how much of the background information provided in the Project WILD guide is read by instructors prior to conducting a wild activity.

Source of Data: Survey Question 11 was the source of this data.

Research Question:

1. Of the background information provided in the WILD guide, how much is read by an instructor prior to conducting an activity with students?

Method of Assessing Significance of Data:

Question 1 = simple percentage, Survey Question 11.

Research Objective 9

To determine the average number of people with whom WILD instructors share their activity guide.

Source of Data: Survey Question 12 was used as the source of this data.

Research Questions:

1. Do instructors share their Project WILD guide with others?

2. Approximately how many people do instructors share their guides with?

Method of Assessing the Significance of the Data:

Question 1 = simple percentages, Survey Question 12.

Question 2 = frequency of occurrence, Survey Question 12.

Research Objective 10

Of the instructors who do not use WILD, determine their reasons for non-use.

Source of Data. Survey Question 1 was the source of this data.

Research Question:

1. What are the reasons instructors do not use the WILD materials?

Method of Assessing the Significance of Data:

Question 1 = simple percentages, Survey Question 1 and frequency of occurrence.

CHAPTER IV

RESULTS OF THE STUDY

Introduction

The findings are organized around the Individual Research Objectives. For Objectives 1, 2, 3, 6, and 8 the findings represent descriptive information from the sample. For Objective 4 the findings provide inferential information about differences between the instructors of elementary age students and the instructors of secondary age students. Objective 5 was concerned with differences among the urban, suburban and rural groups of instructors. Objective 7 was designed to yield descriptive information concerning only the classroom teachers' responses to five items on the questionnaire.

The data provided a basis for comparisons of use by instructors of elementary to secondary students and by suburban, urban and rural instructors and the use of WILD by classroom teachers. Responses to statements concerning grade/ability levels of students, preferential use of WILD, and demographic characteristics were obtained. The grade/ability level responses focused on the level at which the respondent teaches the majority of their classes/

student groups. The preferential responses focused on the respondent's preferences for goals of the materials and use of WILD guides. The demographic characteristics on which the groups were compared included county and school district in which the respondent instructs, the grade level with which they work, the approximate time of year and the year in which they attended the initial WILD workshop, the reason for their attendance and the current job title or position held by the respondent.

Findings and Discussion

How WILD Materials Are Used

Research Objective 1 involved how WILD materials are currently being used by instructors in Oklahoma. The first four research questions were answered by examining the percentages from Survey Questions 1, 2, 3, and 4 which deal with (a) guide use, (b) reasons for use, (c) number of WILD activities used per year by the instructor, and (d) average amount of instructional time spent on any one WILD activity, respectively. These percentages (for each question) were ranked from high to low for the entire population (Tables I-IV).

Through the survey it was determined two-thirds (65.9%) of those who responded have used the Project WILD instructional materials (Table I).

TABLE I

PROJECT WILD GUIDE USE BY RESPONDENTS

	Percent	Number
Have used the guide(s)	65.9	514
Have not used the guide(s)	34.1	266
Total	100.0	780

TABLE II

INSTRUCTOR USE OF PROJECT WILD

	Percent	Number
Used as a course of study	11.6	60
Incorporated into existing curriculum	88.4	454
Total	100.0	514

TABLE III

THE NUMBER OF WILD ACTIVITIES USED BY INSTRUCTORS IN ONE YEAR

Number of Activities	Percent of Instructors	Number
1 - 6	55.1	284
7 - 10	27.2	140
11 - 15	11.0	56
16 - 25	3.6	19
25	3.0	15
Total	100.0	514

TABLE IV

THE APPROXIMATE AMOUNT OF TIME SPENT BY INSTRUCTORS ON EACH WILD ACTIVITY

Amount of time	Percent of Instructors	Number
10 - 30 minutes	44.5	229
31 - 60 minutes	43.5	224
61 - 90 minutes	6.9	35
91 - 179 minutes	2.3	12
3 - 6 hours	1.8	9
more than 6 hours	1.0	5
Total	100.0	514

The major use of Project WILD by instructors (Table II) was as a supplement to existing lessons rather than as a course of study. This was one of the bases for development of the program. "All instructors regardless of subject or grade level specialization can use the materials via their field of expertise" (Hamilton, 1980).

Over 55% of educators responding (Table III) report they use from 1 to 6 WILD activities per year. Twenty-seven percent use between 7 and 10, 11% use 11 to 15 activities and 3.6% use 16 to 25. Surprisingly, 3% report they use 25 or more activities per year with their groups. Please remember the instructor sample consisted of both school teacher and youth leader groups. The majority of whom use between one and six activities per year may be influenced by the number of youth leaders responding to our survey. These people (total 86) would be hard pressed especially if they work with only one major group of students, to use more than that number of activities a year and still cover basic requirements for membership in their particular organization (i.e. boy scout badge requirements, girl scout badge requisites, etc.).

When examining approximate time spent on each activity conducted with student groups (Table IV), 44.5% report a time span of 10-30 minutes. Another 43.5% report a duration of 31-60 minutes spent. Restated, 88% of instructors using Project WILD activities spend an average of one hour or less on each activity they conduct. This would be rea-

sonable because schools often divide class sessions into 45 minute to one hour segments. Youth leaders likewise meet with their groups for a period of 1 to 1.5 hours each meeting. Activity durations falling near or within the one hour time span would be expected.

The remaining research questions were answered by ranking mean scores for items in Survey Question 8 and determining the frequency of occurrence of "high priority" items in Question 8 (Table V). Survey Question 8 offered respondents the opportunity to indicate their high (2.01-3.00, medium (1.01-2.00), low (.01-1.00) or no priority ranking regarding their reasons for WILD use. "Providing students with opportunities to learn that are interesting, useful and instructionally sound"; "being able to include concepts about wildlife and the environment in my curriculum"; and wanting "to support, enrich and add variety to my teaching of basic subjects, skills and concepts" were the three highest ranking reasons for use of WILD. These findings are supported by those of other studies (Cantrell, 1987; Fleming, 1983; Zozel, 1988). Other "high" ranking reasons include, "to enhance my overall teaching based on the quality of instructional strategies and content in the WILD materials", and "to provide a way for students to master and retain difficult, often abstract concepts, by providing opportunities to experience those concepts in concrete ways." The rank of these reasons values ranging from 2.67 to 2.16, relate to instructors continually striving to

TABLE V

REASONS FOR WILD USE BY INSTRUCTORS
RANKED BY MEANS

Rank	Item	Mean	Percent High Priority	Number
1	B	2.67	19.83	102
2	A	2.57	17.90	92
3	D	2.49	16.50	85
4	C	2.30	12.24	63
5	E	2.16	11.43	59
6	L	1.90	9.21	47
7	H	1.27	4.72	24
8	F	0.91	2.16	11
9	I	0.88	1.52	8
10	M	0.83	1.22	6
11	J	0.82	1.28	7
12	G	0.81	1.46	8
13	K	0.68	0.52	2
		Total	100.00	514

Key to Items:

A. To be able to include concepts about wildlife and the environment in my curriculum.

B. To provide students with opportunities for learning that are interesting, useful, and instructionally sound.

C. To enhance my overall teaching, based on the quality of the instructional strategies and content in the WILD materials.

TABLE V (Continued)

Key:

D. To support, enrich and add variety to my teaching of basic subjects, skills and concepts.

E. To provide a way for students to master and retain difficult, often abstract concepts, by providing opportunities to experience those concepts in concrete ways.

F. To fulfill one or more requirements of my graded course of study.

G. To meet district/school goals for incorporating environmental topics into our curriculum.

H. To help meet science requirements.

I. To help meet social studies requirements.

J. To help meet language arts and/or English requirements.

K. To help meet mathematics requirements.

L. To provide a break from regular studies.

M. To help meet state department of education SLO requirements.

improve their teaching methods and/or student retention of information.

Two reasons given medium priority were "providing a break from regular studies" and " meeting science requirements." The first ranked at the high end of the mean priority (values 1.01-2.00) with a value of 1.90. The supplemental thrust of WILD is a possible cause. It was developed to "add to" the regular curriculum and instructors seem to take full advantage of this. Meeting science requirements was given low mean priority (value 1.27) and this too is understandable. Science and environment are the most logical topic/concepts that can be associated with the program although they are certainly not the only considerations of the materials.

The remainder of reasons listed all ranked low in priority (values 0.00-1.00) with values ranging from 0.68 to 0.91. The reasons which occur in the "low" priority ranking are:

"to fulfill one or more of the requirements for my graded course of study"

"to help meet social studies requirements"

"to help meet state department of education Suggested Learner Outcomes"

"to help meet language arts/English requirements"

"to help meet district/school goals for inclusion of environmental topics into the curriculum," and

"to help meet math requirements"

Though these reasons are important, they do not affect the major portion of instructors who have experience WILD training. It has been determined from workshop evaluations completed immediately following training relatively few (less than 7%) teach only social studies, math, English, environmental goals or a graded course of study (as in the case of youth leaders) and a small percentage is actually affected by State Department of Education Suggested Learner Outcomes because requirements do no exist for all subject areas (Sewell-Waters, 1987, Graham, 1987).

In examining the percentage of times "high priority" was marked for each reasons (Table V), the results were similar to rank by frequency of occurrence except for the last six reasons listed. Although in a different order, they are still considered last in priority ranking by instructors.

The positive attitude expressed by instructors in this study concerning WILD use presents a clear message. Curriculum materials, no matter what their focus, are usable if they teach concepts, ideas and skills which can be integrated into the subject or age level with which instructors work and if the principles and skills they teach can be easily transferred into everyday living.

Results of WILD Use

Research Objective 2 was to identify the results (student achievement) experienced by students following

WILD use. The first question was answered by examining the simple percentages from items (a) through (h) from survey Question 6, which dealt with the result of instruction attributed to WILD use. These percentages were ranked from high to low for the sample (Table VI).

In Table VI, instructor perceptions of the results of WILD instruction with students are ranked by frequency of occurrence. Over one-fifth of the instructors (22.81%) believe WILD imparts "the idea of wildlife and what it needs in order to survive to students." Another one-fifth (22.07%) believe WILD use "brings students to the realization of the overall importance of wildlife and its habitat." Over 15 percent say WILD communicates "the necessary components of a healthy environment and how ecological systems function." More than 14% and 12% respectively state that WILD imparts "how, why and whether to manage, conserve and preserve wildlife" and "the roles of political, social, economic and other cultural influences on decision making involving wildlife and the environment." The last three perceptions have ratings of less than 10% each, with 2.42% of the instructors reporting students "have not increased their awareness, knowledge, skills and/or attitudes toward wildlife and/or the environment following WILD interaction." These findings are consistent with those of the national, Ohio, and Wisconsin surveys (Charles, 1986; Cantrell, 1987; Zozel, 1988).

TABLE VI

INSTRUCTOR PERCEPTIONS OF RESULT OF WILD INSTRUCTION RANKED BY FREQUENCY OF OCCURRENCE

Rank	Item	Percent	Number
1	A	22.81	118
2	B	22.07	114
3	C	15.24	78
4	G	14.03	72
5	D	12.24	63
6	F	6.25	32
7	E	4.94	25
8	H	2.42	12
Total		100.0	514

Key:

A. What wildlife is and what it needs in order to survive.

B. The overall importance of wildlife and its habitat.

C. The necessary components of healthy environments and how ecological systems function.

D. How, why and whether to manage, conserve, and preserve wildlife.

E. The roles of political, social, economic, and other cultural influences on decision making involving wildlife and the environment.

F. The varying perspectives from which people view issues involving wildlife.

G. The importance of responsible decision making concerning wildlife and the environment.

H. My students have not increased their awareness, knowledge, skills, and/or attitudes toward wildlife and/or the environment.

The second research question was assessed by examining the mean scores from item (a) through (e) of Survey Question 7, which deals with instructor perceptions of the results of student experiences with WILD. Means were ranked from high to low for the sample in Table VII, far left column. To the right is student acquisition of attitudes, skills and knowledge as estimated by instructors. In examination of student achievement the percent of respondents who chose each are listed to the left of each item. Instructors indicate MOST students "develop greater awareness of wildlife and the environment" (mean 3.22, high percentage 41.99). Educators indicate MANY students "acquire knowledge" (mean 3.10, high percentage 39.42) and "show more responsible attitudes toward wildlife and their environment" (mean 2.83, high percentage 42.25). Instructors indicate FEW students "acquired increased academic" (mean 2.45, high percentage 43.29) and "increased social" (mean 2.44, high percentage 46.44) skills. The categories of SOME and NONE were selected by either a small number or no respondents. From these numbers it can be concluded that virtually all students experience a positive change in their awareness, attitudes, knowledge and ability to reason, following exposure to WILD activities. A small but substantial number increase social and academic skills after experiencing WILD activities. These findings are congruous to those of similar studies (Charles, 1986; Cantrell, 1987; Zozel, 1988).

TABLE VII

INSTRUCTOR ESTIMATION OF STUDENT ACQUISITION OF SKILLS AND ATTITUDES ACHIEVEMENT FOLLOWING WILD INTERACTION

Mean	Item	Percent of Respondents				
		Most	Many	Few	Some	None
3.22	A	41.99	39.35	17.24	1.42	0.00
3.10	B	35.69	39.42	23.86	1.03	0.00
2.83	C	23.47	42.25	29.68	4.56	0.04
2.45	D	12.55	32.91	43.29	9.52	1.73
2.44	E	13.39	29.37	40.44	9.50	1.30

KEY:

A = greater awareness of wildlife and the environment

B = knowledge

C = more responsible attitudes toward wildlife and the environment

D = academic skills

E = social skills

Instructor Expectations and Goals

Research Objective 3 was to determine the correlation of student gains in awareness, knowledge and/or skills with instructor expectations and goals. This objective was met through the testing of hypothesis $H_0 1$ using the list of characteristics ranked by mean in Table VIII. The Pearson Product Moment Coefficient of Correlation was used to determine an index of the magnitude and direction of the relationship between perceived student gains resulting from exposure to Project WILD activities and instructor goals in using the materials. From replies to the survey, it was determined no statistically significant correlation exists ($r = 0.081$). Students may be achieving the goals set by individual instructors for using WILD and may be acquiring skills which the developers of the program desired but no correlation is apparent in this study. Other studies (Charles, 1986; Cantrell, 1987; Zozel, 1988) have assessed goals of teachers using Project WILD and assessed student achievement; none have attempted to correlate these two factors. Instructors report student learning and skill acquisition gains result from Project WILD experience. Unfortunately, these gains do not show a correlation with teacher goals for use of the materials. The null hypothesis $H_0 1$ was accepted.

TABLE VIII

CORRELATION OF THE RESPONSE OF STUDENTS TO WILD USE AND INSTRUCTOR GOALS FOR USE OF THE MATERIALS

Survey Question	N	r	r^2
7	5	0.0812	0.0066
9	5		

$p > .05$

Elementary and Secondary WILD Users

Research Objective 4 sought to determine the relationship between elementary and secondary users of Project WILD for selected variables. This objective was met through the testing of 6 null hypotheses. Hypotheses H_02, H_02_a, H_02_b, H_02_c, H_02_d, H_02_e were tested by applying the chi square statistic to the responses to Survey Questions 2, 3, 4, 11, 12, and 13. Table IX displays the chi square values for the selected variables.

Educators who teach elementary level students do not differ a great deal from those who teach secondary students in regard to WILD use, number of WILD activities done with students each year, the amount of background material read prior to activity use, sharing of WILD guides, and plans

TABLE IX

CHI SQUARE VALUES FOR DIFFERENCES BETWEEN THE GROUP OF ELEMENTARY AND SECONDARY INSTRUCTORS SURVEYED AND THEIR USE OF PROJECT WILD

(Survey Questions 2, 3, 4, 11, 12, 13)

		N	df	X^2	p
H_O2	e	399	1	0.045	0.832
	s	91			
H_O2_a	e	405	4	2.959	0.565
	s	93			
H_O2_b	e	398	5	15.157	0.010*
	s	92			
H_O2_c	e	400	2	2.048	0.359
	s	91			
H_O2_d	e	380	4	3.571	0.467
	s	92			
H_O2_e	e	364	4	2.962	0.564
	s	87			

*Significant at the .05 level of confidence

for continued use. Significant differences are found, however, in the amount of time spent on any one Project WILD activity (Table IX). Elementary teachers report they spend significantly longer amounts of time in the use of WILD lessons. A possible explanation may be that elementary instructors traditionally work in a self-contained classroom situation where they work with essentially the same students in all subject areas for all or most of the day. In contrast, secondary instructors may teach one or more specialized subject groups which rotate through several educators. Youth leaders tend to work under entirely different circumstances and will basically teach the same student groups and "follow" this group from elementary to secondary level teaching as their group ages. In spite of these differences, they seem to express similar preferences and attitudes. Null hypothesis $H_0 2_b$, which states no significant difference exists between elementary and secondary instructors in regard to the amount of instructional time spent on any one WILD activity, was rejected.

Responses to Survey Question 8, by item, were analyzed using the Student's t-test. In comparing reasons for WILD use by elementary and secondary instructors only five were identified as significant at the .05 level of confidence (Table X). Those teaching younger students were more concerned with using WILD to meet specific requirements for various subject areas, such as science, social studies,

TABLE X

SUMMARY t-TEST COMPARISON OF ELEMENTARY AND SECONDARY INSTRUCTOR REASONS FOR USING PROJECT WILD WITH STUDENTS BY ITEM

(Survey Question 8)

	Item		N	$\bar{x}$	df	t	p
H_o2f_1	A	e	393	2.595	116.6	1.516	0.132
		s	90	2.467			
H_o2f_2	B	e	392	2.467	116.5	0.485	0.629
		s	89	2.641			
H_o2f_3	C	e	384	2.310			
		s	89	2.247	471	0.725	0.468
H_o2f_4	D	e	394	2.480	482	-0.894	0.370
		s	90	2.556			
H_o2f_5	E	e	382	2.162	466	-0.005	0.996
		s	86	2.163			
H_o2f_6	F	e	377	0.928	462	0.873	0.383
		s	87	0.827			
H_o2f_7	G	e	372	0.866	455	2.217	0.027
		s	85	0.015			
H_o2f_8	H	e	381	1.362	466	2.162	0.031
		s	87	1.046			
H_o2f_9	I	e	374	0.965	137.2	4.748	0.0001*
		s	81	0.494			
H_o2f_{10}	J	e	374	0.914	156.4	5.714	0.0001*
		s	82	0.415			
H_o2f_{11}	K	e	371	0.731	448	3.094	0.002*
		s	79	0.430			
H_o2f_{12}	L	e	376	1.886	462	-0.764	0.445
		s	88	1.977			
H_o2f_{13}	M	e	361	0.870	438	1.898	0.058
		s	79	0.658			

*Significant at the .05 level of confidence

language arts/English, and mathematics. Secondary instructors did not list these needs as high in priority. Possible reasons include, secondary instructors are more concerned with specializing in a skill or subject area while those who teach elementary generally teach all or most subject and use WILD as an integral part of their curricula. Elementary instructors, therefore, would be more concerned with teaching specifics in order to meet requirements.

Meeting district/school goals for incorporating environmental topics into the curriculum by using WILD was seen as being extremely low in priority by elementary educators and not a priority by secondary ones. This too can be explained by the fact that those with primary students teach a majority of subjects and are more comfortable with an integrated course of study. Secondary educators are specialists in their fields and may not be concerned with requirements other than those in their field of expertise. The Project WILD trainer working with elementary and secondary instructors must realize the basic differences in use by participants at training workshops and encourage them to use WILD as it best fits their individual needs.The following null hypotheses were rejected:

$H_0 2f_7$: No significant difference exists between elementary and secondary instructors for the variables identified in Survey Question 8 item G.

$H_0 2f_8$: No significant difference exists between elementary and secondary instructors for the variables identified in Survey Question 8 item H.

$H_0 2f_9$: No significant difference exists between elementary and secondary instructors for the variables identified in Survey Question 8 item I.

$H_0 2f_{10}$: No significant difference exists between elementary and secondary instructors for the variables identified in Survey Question 8 item J.

$H_0 2f_{11}$: No significant difference exists between elementary and secondary instructors for the variables identified in Survey Question 8 item K.

Urban, Suburban and Rural WILD Users

Research Objective 5 sought to determine the relationships between urban, suburban and rural users of Project WILD for selected variables. Research Objective 5 was met through the testing of 19 null hypotheses. To test these hypotheses the chi square statistic was applied to Survey Questions 2, 3, 4, 11, 12, and 13, respectively.

In the 1983 Project WILD field test results, Fleming concluded "student success was not dependent upon residence in rural, suburban, or urban areas". In our study comparing rural, suburban and urban users of WILD, no significant differences were found in their use, preference or attitudes concerning Project WILD (Tables XI, XII, XIII).

Survey Question 8 was analyzed by item using an Analysis of Variance test. This statistic revealed a significant difference in suburban, rural and urban instructors use of WILD on two items (Table XIV). Rural educators were significantly different from urban instructors in that they indicated a very low priority of WILD use for the reason of

TABLE XI

CHI SQUARE VALUES FOR DIFFERENCES BETWEEN THE GROUP OF RURAL AND SUBURBAN INSTRUCTORS SURVEYED AND THEIR USE OF PROJECT WILD

(Survey Questions 2, 3, 4, 11, 12, 13)

		N	df	X^2	p
H_O3	r	284	1	0.040	0.841
	s	129			
H_O3_a	r	288	4	4.387	0.356
	s	131			
H_O3_b	r	280	5	3.744	0.587
	s	132			
H_O3_c	r	286	2	2.761	0.251
	s	127			
H_O3_d	r	274	4	2.337	0.674
	s	121			
H_O3_e	r	264	4	2.572	0.632
	s	117			

*Significant at the .05 level of confidence

TABLE XII

CHI SQUARE VALUES FOR DIFFERENCES BETWEEN THE GROUP OF SUBURBAN AND URBAN INSTRUCTORS SURVEYED AND THEIR USE OF PROJECT WILD

(Survey Questions 2, 3, 4, 11, 12, and 13)

		N	df	X^2	p
H_O4	s u	129 73	1	0.200	0.655
H_O4_a	s u	131 74	4	0.236	0.994
H_O4_b	s u	132 73	5	4.443	0.488
H_O4_c	s u	127 73	2	2.569	0.277
H_O4_d	s u	121 72	4	6.933	0.139
H_O4_e	s u	117 66	4	3.942	0.414

*Significant at the .05 level of confidence

TABLE XIII

CHI SQUARE VALUES FOR DIFFERENCES BETWEEN THE GROUP OF URBAN AND RURAL INSTRUCTORS SURVEYED AND THEIR USE OF PROJECT WILD

(Survey Questions 2, 3, 4, 11, 12, and 13)

		N	df	X^2	p
H_o5	u r	73 284	1	0.418	0.518
H_o5_a	u r	74 288	4	1.560	0.816
H_o5_b	u r	73 280	5	7.954	0.159
H_o5_c	u r	73 286	2	0.836	0.658
H_o5_d	u r	72 274	4	6.687	0.153
H_o5_e	u r	66 264	4	6.458	0.167

*Significant at the .05 level of confidence

"incorporating environmental topics into the curriculum". Rural educators again indicated a lower priority for WILD use to "meet science requirements" than did suburban instructors. Likely reasons may include the expectations of rural instructors for students to already have a grasp of this/these concept(s) while urban and suburban educators believe their students do not have ready access to environmental and science ideas and experiences. Because WILD is supplemental in nature, it requires no special equipment and funds should not play a role in its use by these instructor groups. Otherwise, no significant priority differences were expressed between suburban, rural and urban instructors.

Instructor Use of WILD

Research Objective 6 was assessed to determine if use of WILD materials correlates with the length of time instructors have had the materials in their possession. Research Objective 6 was met through the testing or Hypothesis $H_0 7$ using the Pearson Product Moment Coefficient of Correlation as it applies to the list of characteristics ranked by mean in Table XV. In examining the use rate of WILD and the length of time instructors have had the materials, no statistically significant correlation was observed. It was anticipated that instructors who have had access to WILD activities for a longer period of time would report a greater amount of use than those who have had the

TABLE XIV

SUMMARY ANALYSIS OF VARIANCE COMPARING RURAL, SUBURBAN AND URBAN INSTRUCTOR REASONS FOR USE OF WILD WITH STUDENTS BY ITEM

(Survey Question 8)

			$\bar{x}$	df	F	p
H_o6:		r	2.537			
	A	s	2.667	2	1.57	0.210
		u	2.596			
		r	2.684			
	B	s	2.667	2	0.14	0.872
		u	2.717			
		r	2.412			
	C	s	2.378	2	0.11	0.898
		u	2.378			
		r	2.587			
	D	s	2.600	2	1.58	0.207
		u	2.426			
		r	2.230			
	E	s	2.056	2	1.75	0.175
		u	2.295			
		r	0.906			
	F	s	0.956	2	1.07	0.344
		u	1.133			
		r	0.753+			
	G	s	0.966	2	4.72	0.010*
		u	1.159+			
		r	1.262+			
	H	s	1.560+	2	3.02	0.050*
		u	1.523			
		r	0.906			
	I	s	0.977	2	0.180	0.833
		u	0.952			
		r	0.791			
	J	s	0.933	2	0.810	0.447
		u	0.829			

TABLE XIV (Continued)

		$\bar{x}$	df	F	p
	r	0.682			
K	s	0.698	2	0.130	0.881
	u	0.750			
	r	2.074			
L	s	1.956	2	1.430	0.240
	u	1.833			
	r	0.926			
M	s	0.964	2	0.730	0.485
	u	0.762			

* Significant at the .05 level of confidence

+ Indicates these values are significantly different

TABLE XV

CORRELATION OF THE USE OF WILD BY INSTRUCTORS AND THE LENGTH OF TIME THEY HAVE HAD THE MATERIALS

(Survey Questions 3 and 16)

Survey Question	N	r	r^2
3 16	473	-0.0290	0.0008

P > .05

WILD activity guide for only a short period of time. Similar studies have not addressed this aspect of Project WILD use. H_O7 was accepted.

Project WILD Use by Teachers

Research Objective 7 was to identify how the classroom teacher segment of the sample uses WILD materials. Four research questions were answered by examining simple percentages of answers from Survey Questions 10 (Table XVI), 13 (Table XVII), and 19 (Table XVIII) and the frequency of occurrence of the answers on each item. These questions dealt with variables such as "assessment of learning by students," "plans for continued use," and "reasons of respondents for attending workshops." The remaining

TABLE XVI

ASSESSMENT OF STUDENT LEARNING BY TEACHER SEGMENT OF SAMPLE, RANKED BY FREQUENCY OF OCCURRENCE

Rank	Item	Percent	Number
1	C	30.88	123
2	D	27.95	119
3	A	15.78	68
4	E	11.88	51
5	B	7.41	31
6	F	4.56	20
7	G	1.52	7
Total		100.0	428

Key:

A. using some or all of the suggestions for evaluation at the end of each Project WILD activity

B. tests or quizzes

C. classroom discussion

D. observation

E. a project or product

F. no specific evaluation

G. other:_____

TABLE XVII

FUTURE PLANS OF THE TEACHER SEGMENT
OF THE SAMPLE FOR WILD USE
RANKED BY FREQUENCY
OF OCCURRENCE

Rank	Item	Percent	Number
1	C	44.1	189
2	B	31.1	133
3	A	21.3	91
4	D	2.9	12
5	E	0.6	3
6	F	0.0	0
7	G	0.0	0
Total		100.0	428

Key:

A. to use them as an integral part of my teaching and will encourage others to use them

B. to use quite a few activities from the WILD material in my teaching

C. to use at least some activities from the WILD material in my teaching

D. to use activities from the WILD material if I can, but will not be teaching in a situation where use will be possible

E. I have no plans to use the WILD material in the future

F. I will not be using Project WILD because my administration discourages the use of such materials

G. I do not care for the materials and do not plan to use them

TABLE XVIII

REASONS TEACHERS ATTEND PROJECT WILD WORKSHOPS RANKED BY FREQUENCY OF OCCURRENCE

Reason	Rank	Item	Percent	Number
wanted to attend	1	C	51.8	222
voluntary for staff development	2	B	28.1	120
college credit	3	D	11.1	48
mandatory for staff development	4	A	8.9	38
Total			100.0	428

research question was answered by examining simple percentages of responses on Survey Question 14 regarding support materials needed and ranking each item (a through m) by the frequency of occurrence (Table XIX). Means were ranked from high to low for the teacher portion of the entire population.

Through Survey Question 10 it was established (Table XVI) that the most popular method of assessing student learning is classroom discussion (30.88%) followed closely by teacher observation (27.95%). Used less frequently (15.78%) are suggestions for evaluation of student learning which are written at the end of each Project WILD activity included in the WILD guides. A project or product is used the fourth most frequently to assess learning (11.88%) and fifth are tests or quizzes (7.41%). Almost 5% use no specific evaluation and 1.52% favor the "other" category in the survey. Responses written in for this item include "group work", "reports" etc. as alternative ways to appraise learning by students. The most favored learning assessments (discussion, observation) are not product oriented as are tests, quizzes, projects, etc. and the preference of these evaluation methods over product oriented methods might be explained by the theory behind Project WILD. This theory states that the materials are supplemental in nature, teach thinking and reasoning skills, and that students learn how to discuss and evaluate

TABLE XIX

TEACHER PREFERENCE OF INSTRUCTIONAL AIDS FOR USE WITH PROJECT WILD

Rank	Percent	Item	Support Materials
1	28.2	K	wildlife resource center
2	23.0	A	conservation education units with posters
3	13.3	D	5-10 minute videos on wildlife concepts
4	9.2	E	wildlife fact sheets
5	6.1	C	Oklahoma wildlife slide show
6	5.8	L	pictures of Oklahoma wildlife
7	4.6	F	additional teaching activities
8	2.0	G	student activity sheets for WILD activities
9	2.3	I	newsletter
10	2.1	H	list of books on wildlife topics
11	1.1	J	advanced wildlife content workshops
12	.5	B	ideas for developing learning stations
13	.3	M	other:_____

viewpoints different from their own. These types of skills are themselves not product oriented and difficult to measure with traditional tests and quizzes. This survey verifies the statistic stating teachers use the WILD materials in some cases as a "break from regular studies" and this enables their assessment of students to be more flexible than traditional evaluation methods.

Survey Question 13 was to determine future plans of instructors for Project WILD use (Table XVII). Ranking highest with a 44.1% was item C, "to use at least some activities from the materials in my teaching." Next was item B (31.3%) indicating teachers "would use quite a few activities from the materials." Approximately one-fourth of those responding (21.4%) plan to use WILD activities as "an integral part of my teaching and will encourage others to use them." A small percentage (2.9%) relate they "will use activities if I can but will not be in a teaching situation where use will be possible," and 0.6% state they "have no plans to use WILD in the future." These last two figures might be explained by respondents who were in administration (principals, superintendents, etc.), librarians, curriculum specialists, and others who do no work with students directly but are associated with public/private schools in the state. None of the respondents indicated their administration discouraged use of materials such as WILD and none reported they "do not care for the materials and do not plan to use them." From answers to this

question, it is obvious Project WILD is overwhelmingly accepted by Oklahoma school teachers and will continue to be used with students.

When teachers were questioned concerning their reasons for attending Project WILD training (Table XVIII) their responses were as follows:

51.8%	attended because they wanted to
28.1%	attended voluntarily but were offered in-service or staff development points form their school
11.1%	attended for college credit
8.9%	attended because they had no choice, attendance was mandatory

Before the survey, it was imagined that a much larger percentage of participants attended because of requirements by their school employer. These reasons for attendance should be considered by individual workshop leaders as they plan, conduct and follow-up training workshops. The attitudes and acceptance of teachers can greatly affect workshop success.

The teachers were also asked to respond to a list of education aids which might be developed to assist them in using Project WILD and to rank these aides in order of preference (Table XIX). The most requested and highest in priority was "wildlife resource centers for school districts," contents might include a skull set, slide show, owl pellets, Wildlife Week filmstrips, wildlife board

games, identification books on wildlife, etc. It is believed that dwindling school budgets and stagnant salaries of Oklahoma teachers have had an effect on the kinds and amounts of supplemental resource materials bought by schools and their staff. Teachers see these resource centers as a possible way to increase the amount of material available to them for use with students.

Ranking second were "conservation education units with poster" on topics such as Winter Birds, Oklahoma Fishes, Oklahoma Furbearers, etc. Again, these units may be seen as inexpensive additions to resources available to the classroom teacher. The Oklahoma Department of Wildlife Conservation has experimented by developing an Oklahoma Winter Bird Unit and has also just released a Wildlife Management Unit (Sewell-Waters, 1987). The bird packet was quite successful and has gone into a second printing. The management unit has not been available for a period of time long enough to be viably measured for success.

Ranking third were "5-10 minute videos on wildlife concepts." This may be popular because they would be long enough to make a point to students yet short enough that a teacher would have time to introduce the film, show and discuss it, and wrap-up the concept in a single class meeting. "Wildlife fact sheets" ranked fourth on the list followed closely by an "Oklahoma wildlife slide show." Both of these resources would be fairly easy and inexpensive to develop and distribute although the higher the quality the

greater cost of production. "Pictures of Oklahoma wildlife," ranked sixth and this might be explained by the large percentage of elementary teachers who have experienced WILD training (Sewell-Waters, 1987). Teachers find low cost, quality, visuals at low cost are difficult, if not impossible, to obtain, therefore, these are desirable teaching tools. Following in order of importance are:

additional teaching activities
student activity sheets for WILD activities
newsletter
list of books on wildlife topics
advanced wildlife content workshops
ideas for developing learning stations

This researcher found that teachers have little need for additional activities, student activity sheets, and ideas for learning stations. These results indicate instructors in schools have enough activities and activity sheets. These types of resources would not be particularly helpful to them. Secondary school respondents are not using learning stations, but materials can be developed by individual teachers. Professional educators cannot make their own resource materials, such as the first six listed in Table XIX, because of time, equipment, and money constraints as well as differing levels of expertise. A newsletter may be low in priority because one already exists (THE WEB) or because many teachers do not read/use materials received free of charge through the mail. A listing of wildlife books,

too, may be unpopular because of decreased school/personal spending on education resources for individual teachers. Teachers may think they could not afford or have access to these reference materials even if a listing was provided. Advanced wildlife content workshops were rated extremely low and again the state-wide economic situation of education and personal circumstances may be the basis for this. Teachers find they do not have the time or money to spend in additional resource training. They receive little or no work-related support or incentive to pay for training and when they do, they want experiences which will directly affect their teaching skills and/or student learning levels. Additional wildlife background would be of indirect aid and therefore, not cost-effective for the majority of teachers in our state.

Background Information

Research Objective 8 was to determine if instructors use the background information provided in the WILD guide to lead activities. The research question was answered by examining the simple percentages of items checked on Survey Question 11. Items were ranked from high to low for the entire population (Table XX). It was discovered that 17.5% of teachers and youth leaders read all the background provided with each Project WILD activity they conduct with students. Over half (53.4%) read most of it and 29.1% read some. No respondents indicated that they read none of the

TABLE XX

INSTRUCTOR USE OF BACKGROUND INFORMATION
PROVIDED WITH EACH PROJECT
WILD ACTIVITY

Amount of background information read	Percent	Number
A. all of it	17.5	90
B. most of it	53.4	274
C. some of it	29.1	150
D. none of it	0.0	0
Total	100.0	514

background information before leading a WILD activity. This was an unforeseen finding, but looking back at earlier results reported from this survey, instructors did state that they have difficulty in finding sufficient time to plan activities and this may be a direct result. Developers of new and/or supplementary materials should keep this finding in mind as they write educational materials. Such materials should be easily read, concisely written, and simple to understand in order to provide teachers and youth leaders the maximum amount of understandable information in the shortest possible preparation time.

Sharing WILD Activity Guides

Research Objective 9 was to identify the approximate numbers of people with whom respondents share their guides. The two research questions were answered by examining the item answers from Survey Question 12. Items were ranked by simple percentage from high to low for the entire population (Table XXI). Results concerning the sharing of Project WILD guides were unexpected. Although 37.9% report they have shared their guide with 2-3 other instructors, 23.7% state they have not shared their guide with anyone. Twenty-two percent have shared with at least one other person and over 10% have shared their guide with over four other instructors. Of the respondents, 5.3% marked the "other" category on their survey and wrote in sample comments including "lost my guide, can I get another?",

TABLE XXI

NUMBER OF INDIVIDUALS WITH WHOM PROJECT WILD INSTRUCTORS TYPICALLY SHARE THEIR GUIDE(S)

Rank	Item	Percent	Number
1	B. 2-3 other instructors	37.9	179
2	D. no other instructors	23.7	112
3	A. 1 other instructor	22.3	105
4	C. 4 or more other instructors	10.8	51
5	E. other_____	5.3	25
Total		100.0	472

"loaned my guide and did not get it back", "have placed my guide in the library for others to use," etc. No apparent reason exists for loaning or sharing of guides by instructors. Results from this Survey Question should help the programs coordinators in Oklahoma to better identify how Project WILD is promoted by workshop participants to other instructors. The results, however, do not answer such questions as: "are instructors jealous of their materials and do not want others to use the same activities they themselves use?", "is the educational system for public school and youth leaders so strict that it allows no communication between instructors about programs?", "are

respondents accurately reporting their sharing of guides?" Workshop leaders might want to take these items into consideration when leading a workshop and let participants know that sharing of guides is welcomed. But in accordance with the staff and national Project WILD agreement, for others to receive the materials, they must attend and participate in a certified Project WILD workshop.

Reasons for Non-Use

Research Objective 10 was to determine why respondents are not using the WILD guides following training. This research question was answered by examining the frequency of item answers on Survey Question 1 and rank ordering them (Table XXII).

As indicted in Table XXII, the majority of those who responded have used their Project WILD activity guide(s). Of the 266 who report they have not used the guide(s), 36.2% plan to do so in the future. This was the most frequently chosen response. The second most frequently chosen was item J (16.1%), allowed respondents to complete this item in their own words. Responses received included, "I am a pre-service teacher," "I teach a subject area where WILD activities are inappropriate (i.e., driver's education, physics, college classes, chemistry)." "I am a principal and do not use the materials but do recommend

TABLE XXII

REASONS PROJECT WILD TRAINED INSTRUCTORS HAVE NOT/WILL NOT USE(D) THEIR PROJECT WILD GUIDE

Rank	Item	Percent	Number
1	H	36.2	96
2	J	16.1	43
3	F	13.6	36
4	C	11.0	29
5	D	9.9	26
6	I	6.5	17
7	E	2.5	7
8	B	2.3	6
9	A	1.0	3
10	G	1.0	3
Total			266

Key:

A. I have never received a Project WILD activity guide.

B. The Project WILD materials did not seem to be sufficiently useful.

C. My curriculum is not flexible enough to add any other topics or activities.

D. My job does not permit me an opportunity to use the Project WILD materials.

E. A lack of administrative support and encouragement exists within my school system for me to use Project WILD.

TABLE XXII (Continued)

Key:

F. It is too hard for me to find the time to do the planning necessary to fit Project WILD into my curriculum.

G. I do not feel comfortable or proficient in the subject areas covered.

H. I plan to use it in the future.

I. I am retired or unemployed.

J. Other:_____

them to staff," and "I am not currently teaching". Some (13.6%) related that they have had difficulty finding time to plan WILD use with their classes or youth groups, and 11% report their curriculum was not flexible enough to incorporate Project WILD. Another 9% of the 266 respondents state their job does not permit them the opportunity to use the materials. These respondents may be curriculum specialists, librarians, administrators, or persons who attended initial workshops to become acquainted with the program and materials but not necessarily to use them personally. A few respondents (6.5%) were unemployed or retired since training and 2.5% related a lack of administrative support and encouragement to use the activities. Only 2.3% thought WILD was not sufficiently useful. This attitude may be held by the small group of instructors who teach advanced secondary school classes such as trigonometry, chemistry, foreign languages, etc. One percent said they did not believe themselves comfortable or proficient in the subject areas covered and another 1% related that they had not received a WILD activity guide. This group consists of persons who did complete an evaluation form yet did not attend a full workshop, therefore, did not meet the national requirement of attending a six hour workshop in order to receive a guide.

Additional reasons for non-use can be affected by changes in workshop format or emphasis. For example, instructors have been given more time within the workshop to

plan for use. Since the time of survey distribution, workshop formats have been revised to allow at least 45 minutes of intensive "planning" time. Classroom teachers are encouraged to bring their textbooks and youth leaders asked to bring their manuals so that the planning they do will more closely fit into their curriculum. Before this survey was distributed, planning was limited to a 15 minute discussion and sharing of activities by instructors.

CHAPTER V

CONCLUSIONS AND RECOMMENDATIONS

Introduction and Summary

This study assessed the use of Project WILD as an interdisciplinary supplementary environmental and conservation education program for educators of kindergarten through high school age young people in Oklahoma. It also identified how the activity guides are being used and the effectiveness of the program as seen by instructor evaluation, and comparisons in use by elementary and secondary instructors, and by rural, urban, and suburban instructors. In a similar study (Charles, 1986), Project WILD was evaluated on a national basis and it was concluded that the program was useful to teachers; however, the location of teaching was not addressed. By contrast, the present study sought to determine whether Project WILD was a viable program in the state of Oklahoma and how Oklahoma teachers and youth leaders use the program.

The sample in this investigation consisted of the 780 teachers and youth leaders who responded to the survey that was mailed to 2,032 Oklahoma Project WILD workshop participants. The research problem was approached through

the development of a survey designed to solicit attitudinal and preferential responses. Data were collected on current Project WILD use practices. The questionnaire was disseminated through two mailings. One follow-up thank you/reminder mailing was made. All questions were coded and entered into the Oklahoma State University computer system. The SAS analysis package was used to analyze the data.

Findings and Conclusions

Findings of this study, based upon a review of and response to the 10 research objectives, are:

Research Objective 1

a) Project WILD materials have been used by approximately 2/3 of those who responded to the survey.

b) Of those who have used WILD, 88% include the materials in their teaching when appropriate, only 12% use WILD as a basis for a course of study or as a basis for 1 or more instructional units.

c) 55% of WILD users conduct 1-6 activities per year, 27% conduct 7-10 activities per year.

d) When conducting WILD activities 44% of the instructors report they spend an average of 10-30 minutes per activity, 43% report they spend an average of 30-60 minutes per activity.

e) When instructors ranked their reasons for using WILD with students they were able to do so and ranked these reasons on a priority basis (Table V).

Research Objective 2

Instructor perceptions of the result of instruction stemming from WILD use with students were ranked. More than 20% of the instructors report that after using WILD students "recognize what wildlife is and what it needs to survive; 22.07% report students "recognize the importance of wildlife and habitat" following WILD activities; and 15.24% and 14.03% respectively state that students "recognize the importance of healthy environments and how ecological systems function," and "increased responsible decision making."

In assessing mean scores of these items, instructors report MOST students "develop greater awareness of wildlife and the environment"; MANY students "acquire knowledge" and "show more responsible attitudes toward wildlife and their environment"; and FEW students "acquire increased academic" and "increased social" skills.

Research Objective 3

In this study no correlation was observed between student learning and skill acquisition and instructor goals for use of the materials. Students may indeed be achieving the goals set by individual instructors for using WILD and

may be acquiring skills which the developers of the materials desired but no correlation is observed in this study.

Research Objective 4

Seven variables relating to WILD use by elementary and secondary instructors were considered and of these, the one which dealt with the amount of time spent on WILD activities, was significant. Elementary instructors report they spend significantly longer amounts of time in the use of WILD lessons.

No differences were found in use by elementary and secondary instructors regarding the number of WILD activities done with students each year, the amount of background material read prior to conducting a WILD activity, sharing of WILD guides with others, and plans for continued use.

Thirteen reasons for using WILD with students by elementary and secondary students were considered and of these five were found to be significant. Elementary instructors were more concerned with using WILD to meet requirements in the subject areas of science, social studies, language arts/English, and mathematics. Meeting "district/school goals for incorporating environmental topics into the curriculum" was seen as being low in priority for elementary instructors and not a priority for use by secondary instructors. These findings tend to be similar to those of previous WILD studies.

Research Objective 5

Seven variables relating to WILD use by rural, urban, and suburban instructors were considered and none was found to be significant. Rural, urban, and suburban instructors were similar in their use of Project WILD activities, the amount of time spent on WILD lessons, the amount of background material read in preparation for a WILD activity, the number of activities done per year from WILD, the sharing of WILD activity guides with others and plans for continued use.

Of the 13 reasons for using WILD with students, 2 exhibited significant differences by rural instructors. The first, "incorporating environmental concepts into the curriculum" was found to be significantly more important to urban instructors. The second, "to meet science requirements" was found to be significantly more important to suburban instructors.

Research Objective 6

It was determined that no statistically significant correlation exists concerning instructor use of WILD and length of time instructors have had the materials. Other studies have not addressed this aspect of Project WILD use.

Research Objective 7

a) Teachers assess student learning primarily through classroom discussion and observation.

b) 75% of the teachers who responded and have used Project WILD plan to continue to do so.

c) Over 51% of teachers who have attended WILD training to receive materials did so because they wanted to attend.

d) Possible aids for teachers in using Project WILD were ranked by preference and the most preferred was a "Wildlife Resource Center" and second were "Wildlife Resource Units with Posters."

Research Objective 8

It was found that most of the background information provided for each activity in the Project WILD activity guides is read by instructors in preparing activities for use with student groups.

Research Objective 9

The sharing of Project WILD activity guides was considered and it was established that there is no basis for determining how many WILD instructors will share their guides. There is also no basis for determining with how many others the guides will be shared.

Research Objective 10

Reasons for non-use of Project WILD guides were identified.

It was found that 36% of those who have not used the guides plan to do so in the future.

The problem of providing simple to use and simple to plan curriculum materials and activities that are enjoyable for students while also teaching key skills, attitudes, and concepts has not been solved by the development of Project WILD. The analysis of this data and its interpretation leads to conclusions concerning the appropriateness of WILD use. Instructor needs, goals, attitudes and desires are conditions which are identifiable. Other factors are not so readily apparent.

Attitudes and preferences of instructors have been shaped by training and policies developed long ago. These traditionally have been, "I talk, you listen" oriented (Dewey, 1938). Societal and political changes through time have prevented wide-spread educational methods to be based on the environment or hands-on learning (Dewey, 1938; Bowen, 1983; Brennan, 1974). Educational changes are needed which will increase student responsibility and decision making skills, thereby preparing them to meet challenges presented by environmental and political policies certain to arise in their lifetimes (Charles, 1987; Hamilton, 1980; Hamilton, 1982; Hernbrode, 1974). The positive attitude and use of WILD by instructors in formal and informal settings is heartening and the potential of interdisciplinary environmental education is very promising.

Natural resource use will increase as technology puts greater demands on the environment. Education is necessary to enable humans to cope with the new types of decision-making with which they will be faced. Studies of this type provide some insight into the use of natural resources materials by instructors in Oklahoma and may act as a starting point towards realizing protection and wise use of resources through increased education efforts. The information gathered in this study attempts to provide direction to programs and policies of natural resource education in Oklahoma as related to Project WILD implementation and use.

Recommendations

The following recommendations, based on the data from the study, its analysis, and interpretations and conclusions drawn from that analysis are:

1. Project WILD training should be considered by school systems as a way to meet various state and local curriculum and teaching requirements. It should also be considered by the governing body of youth organizations in the state as a way to help leaders meet various requirements of their program.

2. Project WILD should be used in a variety of teaching situations and locations because it is equally well accepted by teachers and youth leaders, elementary and secondary instructors, and urban, suburban, and rural instructors.

3. Determine if instructional aids developed to supplement WILD activities would be equally used by teachers and youth leaders.

4. Pre- and post-tests should be conducted with randomly chosen youth groups and school classes to determine actual results of WILD instruction in Oklahoma.

5. Teaching aids (i.e., Wildlife Resource Kits, Conservation Education Units with Posters, Videos, etc.) should be developed and teacher demand and use monitored.

6. Determine if instructors use the same activities from year to year or if they change activities.

7. Increase in-workshop planning time because instructors would be prepared to use the materials upon returning to their classroom or youth group.

8. Follow-up research should be done concerning individuals who were pre-service teachers at training and compare their use of WILD to use by teachers who were teaching at the time of training.

9. A follow-up survey should be conducted to determine if instructor use of WILD increases as these instructors have the materials for longer periods of time.

10. A similar study should be conducted to determine if instructor use increases with workshop length.

BIBLIOGRAPHY

Albrecht, S. 1976. Legacy of the environmental movement. Environment and Behavior. 8:147-168.

Birdwell, B. T. 1982. The relationship between the farmers' soil conservation ethics and soil erosion. Ph.D. Dissertation. Oklahoma State University, 102 pp.

Boraiko, A. A. 1985. Storing up trouble, hazardous wastes. National Geographic, 3: 319-351.

Bowen, H. C. 1893. Froebel and Education by Self Activity. New York: C. Scribner's Sons. 235 pp.

Brennan, M. J. 1974. Total education for the total environment. Journal of Environmental Education. 6:16-19.

Brown, L. 1987. State of the World. New York: W. W. Norton and Co. 632 pp.

Bruner, J. S. 1967. Towards a Theory of Instruction. New York: Norton and Sons. 412 pp.

Bulmer, M. 1979. Censuses, Surveys, and Privacy. London: Macmillan Press. 337 pp.

Burts, H. M. 1977. Teaching our teachers. Pages 652-653 in Proceedings of the Southeast Association of Fish and WILDLIFE Agencies. Atlanta, Georgia.

Campbell, M. 1980. An effective education program. Pages 82-85 in Periodic Report Illinois Division of Wildlife Research.

Cantrell, D. 1987. Personal communication.

Carlson, J. E. and D. Baumgartner. 1974. The effects of natural resource camps on youth. Journal of Environmental Education. 5: 1-7.

Charles, C. 1981. From awareness to life-styles: an introduction to project learning tree. In house document, National Project Learning Tree. 40 pp.

Charles, C. 1986. A wild history. Going WILD Newsletter. 2: 2-4.

Charles, C. 1987. National Director Project WILD. Madison, Wisconsin. Personal communication.

Comenius, J. A. 1967. John Amos Comenius on Education. New York: Teachers College Press. 661 pp.

Dewey, J. 1938. Experience and Education. New York: Macmillan Publishing. 110 pp.

Dillman, D. A. 1978. Mail and Telephone Surveys: The Total Design Method. New York: John Wiley and Sons. 325 pp.

Disinger, J. F. 1985. Environmental education's definitional problem. School Science and Mathematics. 85: 59-68.

Donaldson, G. and L. E. Donaldson. 1963. Outdoor education--a definition. Journal of Health, Physical Education and Recreation. 29: 17.

Edwards, A. L. 1957. Techniques of Attitude Scale Construction. New York: Appleton-Centry-Crofts, Inc. 260 pp.

Faich, R. G. and R. P. Gale. 1971. The environmental movement form recreation to politics. Pacific Sociological Review. 14: 270-287.

Fairclough, E. H. 1977. Personal interviews and postal questionnaires: some observations and experiences. Statistician. 26: 259-268.

Falk, J. A. 1977. A partnership in outdoor science education. Science and Children. 15: 24-25.

Fisher, R. A. 1950. Statistical Methods for Research Workers. New York: Hafner Publishing Company. 152 pp.

Fleming, D. 1972. Roots of the new conservation movement. Perspectives in American History. 6: 7-91.

Fleming, L. 1976. PLT evaluation, final report of field test. Published report to Western Regional Environmental Education Council. Sacramento, California. 32 pp.

Fleming, L. 1983. Project WILD evaluation, final report of field test. Published report to Western Regional Environmental Education Council. Sacramento, California. 30 pp.

Fletcher, S. A. 1973. A comparison of affective changes between economically disadvantaged and advantaged sixth graders at a resident outdoor education program. Ph.D. Dissertation. Indiana University. 97 pp.

Graham, D. 1987. Oklahoma Department of Wildlife Conservation. Oklahoma City, Oklahoma. Personal communication.

Hamilton, C. R. 1980. Project WILD--one answer to the urban challenge. Tran. West. Assoc. Fish and Wildlife Agencies. to: 73-77.

Hamilton, C. R. 1982. Project learning tree and project WILD, resource models for education at the elementary and secondary levels. Trans. North Am. Wildlife and National Resource Conference. 47: 248-251.

Hernbrode, W. 1974. A new way to go--environmental education. Trans. West. Assoc. State Game and Fish Comm. 54: 186-1985.

Heywood, F. H. 1979. The Educational Ideas of Pestalozzi and Froebel. Westport, Conn.: Greenwood Press. 282 pp.

Hillocks, G. and F. Kachur. 1977. Tools for better writing. Junior Learning. 62: 48.

Huckenstein, J. 1976. Knowledge and skills for intelligent environmental decision making and positive attitudes toward self, others, and the environment. Practicum Report for Ed.D., Nova University. 161 pp.

HSUS. 1985. A Humane Teaching Guide for Project WILD. Humane Society of the United States. 35 pp.

Johnson, D. 1977. A quantitive comparison of environmental education, outdoor education, and general education based on goals. Ph.D. Dissertation. Michigan State University. 124 pp.

Jolliffe, F. R. 1986. Survey Design and Analysis. New York: John Wiley and Sons. 178 pp.

Kellogg, D., J. J. Rusch, R. M. Jones, and T. Mills. 1975. Outdoor education: environmental immersion for Oklahoma teachers. Science Teacher. 42: 47-58.

Kellogg, D., T. Mills, T. Johnsten, C. McKinney, and P. Kellogg. 1977. Environmental and conservation instructional activities. Stillwater, Oklahoma. Oklahoma State Department of Education.

Kerlinger, F. N. 1973. Foundations of Behavioral Research, 2nd ed. New York: Holt Rinehart and Winston, Inc. 662 pp.

Knapp, C. E. 1972. Attitudes: values in environmental education. J. of Environmental Education. 4: 26-29.

Kranzer, H. D. 1973. Effect of school camping on selected aspects of pupil behavior--an experimental study. Report for American Association for Health, Physical Education and Recreation. Washington, D. C.

LaBorde, S. 1987. Oklahoma Department of Wildlife Conservation. Oklahoma City, Oklahoma. Personal communication.

Lackey, J. 1982. Project WILD. New Mexico Wildlife. 3: 21-25.

Lucus, A. M. 1972. Environment and environmental education: conceptual issues and curriculum implications. Ph.D. Dissertation. Ohio State University. 121 pp.

Lucus, A. M. 1981. The role of science education in education for the environment. J. of Environmental Education. 2:32-37.

Marcinkowski, T. J. 1981. Establishing criteria for comprehensive planning of environmental education programs. M.S. thesis. Southern Illinois University at Carbondale. 151 pp.

McConnell, C. A. and K. H. Harmon. 1976. Agricultural effects on wildlife in America: A brief history. Pages 35-44 in Proc. 31st Soil Conservation Society of America.

McGlauffin, K. 1986. National Director Project Learning Tree. Washington, D.C. Personal communication.

McGlauffin, K. 1987. National Director Project Learning Tree. Washington, D.C. Personal communication.

McInnis, N. 1972. You Are An Environment. Evanston, Illinois. Center for Curriculum Design. 32 pp.

McSherry, J. M. 1979. Teaching our teachers, a new outlook on outdoor education. ????? Cons. 31: 4-7.

Nash, R. 1976. Logs, universities, and the environmental education compromise. In Current Issues in Environmental Education II. pp. 10-18. Columbus, Ohio.

Ninety-First Congress 1970. Environmental Education Act. Public Law 91-156.

Norusis, M. 1986. The SPSS Guide to Data Analysis. SPSS Inc. 362 pp.

Oppenheim, A. N. 1966. Questionnaire Design and Attitude Measurement. New York: Basic Books, Inc. 366 pp.

Overrain, L. N. 1981. Acid precipitation as an environmental problem in Europe. Paper, California Symposium on Acid Precipitation. San Francisco, California.

Patterson, H. 1973. Through the open door. Soil Conservation Magazine. 8: 3-4.

Piaget, J. 1964. Development and learning. Journal of Research in Science Teaching. 2: 176-185.

Pollard, L. 1986. Information and Education Division, Oklahoma Department of Wildlife Conservation. Personal communication.

Project Learning Tree. 1986. Project Learning Tree Policies and Guidelines. Washington, D.C. 16 pp.

Project WILD. 1986. An Introduction to Project WILD: From Awareness to Responsible Action. Boulder, Colorado. 32 pp.

Project WILD. 1987. Project WILD Policies and Guidelines. Boulder, Colorado. 13 pp.

Project WILD. 1987. Activity Guide, Boulder, Colorado. 288 pp.

Ramsey, C. E. and R. E. Rickson. 1976. Environmental knowledge and attitudes. J. of Environmental Education. 8: 10-18.

Randall, A. 1981. Resource Economics: An Approach to Natural Resources and Environmental Policy. Columbus, Ohio. Grid Publishing Company. pp. 186-191.

Rosenbaum, W. A. 1985. Environmental Politics and Policy. Congressional Quarterly Inc. 328 pp.

Russell, S. 1988. Project WILD--a persistent danger in our schools. Act'ion Line. Feb/March: 26-27.

Sale, L. L. and E. W. Lee. 1972. Environmental Education in the Elementary School. New York: Holt, Rinehart, and Winston, Inc. 226 pp.

SAS Institute. 1984. Changes and enhancements in the base SAS and SAS/GRAPH products under VMS, version 4. SAS, Technical Report. Cary, N.C. SAS Institute Inc. p. 128.

Schoenfeld, A. C. 1968. Environmental education and the university. Environmental Record. 3: 305-310.

Schoenfeld, A. C. 1980. Earthday '70, '80, '90. Current Issues in Environmental Education and Environmental Studies VI. Columbus, Ohio. pp. 17-26.

Sebert, D. A. 1987. Oklahoma Conservation Commission Programs Director. Personal communication.

Sewell-Waters, L. 1988. Oklahoma Department of Wildlife Conservation Education Specialist. Personal communication.

Siegenthaler, D. 1986. Project WILD/project tame. Talking Leaves. 1: 1-6.

Skipper, J. K., A. I. Guenther, and G. Nass. 1967. The sacredness of .05: a note concerning the uses of statistical levels of significance in social science. The American Sociologist. 2: 16-18.

Smith, J. W. 1960. The scope of outdoor education. Bull. of Nat. Association of Secondary School Principals. 4: 56-158.

Stapp, W. B. 1969. The concept of environmental education. J. of Environmental Education. 1: 30-32.

Sudman, S. and N. M. Bradburn. 1982. Asking Questions: A Practical Guide to Questionnaire Design. San Francisco, California. Josey-Bass Publishers. 283 pp.

The Ape Vine. 1985. Project WILD. Animal Protection Education Newsletter of the Animal Protection Institute. 2:2.

The Ape Vine. 1986. Project WILD revisited. Animal Protection Education Newsletter of the Animal Protection Institute. 3: 1-2.

The WEB. 1986. Project WILD Newsletter. 3:2.

Trent, J. H. 1976. Changes and trends in environmental education: 1972-1975. J. of Environmental Education. 7: 61-60.

Troy, T. D. and K. E. Schwarb. 1982. A decade of environmental education. School Science and Mathematics. 32:202-216.

Warner, R. E. 1981. Factors affecting the adoption of wildlife conservation practices by east-central Illinois farmers and their educational implications. Ph.D. Dissertation, University of Illinois, Champaign-Urbana. 167 pp.

Zjawn, D. 1978. Outdoor Math. Instructor, 88: 92-94.

Zozel, D. 1988. Wisconsin Department of Natural Resources. Personal communication.

APPENDIXES

APPENDIX A

RESEARCH HYPOTHESES

Research Objective 3

$H_0$1: No correlation exists between educators' perceptions of the response of students to WILD and instructor goals for use of the materials.

Research Objective 4

Elementary and Secondary Users

$H_0$2: No significant difference exists between elementary and secondary instructors for the variables identified in Survey Question 2.

$H_0$2a: No significant difference exists between elementary and secondary instructors for the variables identified in Survey Question 3.

$H_0$2b: No significant difference exists between elementary and secondary instructors for the variables identified in Survey Question 4.

$H_0$2c: No significant difference exists between elementary and secondary instructors for the variables identified in Survey Question 11.

$H_0$2d: No significant difference exists between elementary and secondary instructors for the variables identified in Survey Question 12.

$H_0$2e: No significant difference exists between elementary and secondary instructors for the variables identified in Survey Question 13.

$H_0$2f1: No significant difference exists between elementary and secondary instructors for the variables identified in Survey Question 8 item A.

$H_0$2f2: No significant difference exists between elementary and secondary instructors for the variables identified in Survey Question 8 item B.

$H_0$2f3: No significant difference exists between elementary and secondary instructors for the variables identified in Survey Question 8 item C.

$H_0$2f4: No significant difference exists between elementary and secondary instructors for the variables identified in Survey Question 8 item D.

$H_0$2f5: No significant difference exists between elementary and secondary instructors for the variables identified in Survey Question 8 item E.

$H_0$2f6: No significant difference exists between elementary and secondary instructors for the variables identified in Survey Question 8 item F.

$H_0$2f7: No significant difference exists between elementary and secondary instructors for the variables identified in Survey Question 8 item G.

$H_0$2f8: No significant difference exists between elementary and secondary instructors for the variables identified in Survey Question 8 item H.

$H_0$2f9: No significant difference exists between elementary and secondary instructors for the variables identified in Survey Question 8 item I.

$H_0$2f10: No significant difference exists between elementary and secondary instructors for the variables identified in Survey Question 8 item J.

$H_0$2f11: No significant difference exists between elementary and secondary instructors for the variables identified in Survey Question 8 item K.

$H_0$2f12: No significant difference exists between elementary and secondary instructors for the variables identified in Survey Question H item L.

$H_0$2f13: No significant difference exists between elementary and secondary instructors for the variables identified in Survey Question H item M.

Research Objective 5

Rural and Suburban Users

$H_0$3: No significant difference exists between rural and suburban instructors for the variables identified in Survey Question 2.

$H_0$3a: No significant difference exists between rural and suburban instructors for the variables identified in Survey Question 3.

$H_0$3b: No significant difference exists between rural and suburban instructors for the variables identified in Survey Question 4.

$H_0$3c: No significant difference exists between rural and suburban instructors for the variables identified in Survey Question 11.

$H_0$3d: No significant difference exists between rural and suburban instructors for the variables identified in Survey Question 12.

$H_0$3e: No significant difference exists between rural and suburban instructors for the variables identified in Survey Question 13.

Suburban and Urban Users

$H_0$4: No significant difference exists between suburban and urban instructors for the variables identified in Survey Question 2.

$H_0$4a: No significant difference exists between suburban and urban instructors for the variables identified in Survey Question 3.

$H_0$4b: No significant difference exists between suburban and urban instructors for the variables identified in Survey Question 4.

$H_0$4c: No significant difference exists between suburban and urban instructors for the variables identified in Survey Question 11.

$H_0$4d: No significant difference exists between suburban and urban instructors for the variables identified in Survey Question 12.

$H_0$4e: No significant difference exists between suburban and urban instructors for the variables identified in Survey Question 13.

Urban and Rural Users

$H_0$5: No significant difference exists between urban and rural instructors for the variables identified in Survey Question 2

$H_0$5a: No significant difference exists between urban and rural instructors for the variables identified in Survey Question 3

$H_0$5b: No significant difference exists between urban and rural instructors for the variables identified in Survey Question 4

$H_0$5c: No significant difference exists between urban and rural instructors for the variables identified in Survey Question 11

$H_0$5d: No significant difference exists between urban and rural instructors for the variables identified in Survey Question 12

$H_0$5e: No significant difference exists between urban and rural instructors for the variables identified in Survey Question 13

$H_0$6: No significant difference exists between urban, rural, and suburban instructors for the variables identified in Survey Question 8 by item

Research Objective 6

$H_0$7: No correlation exists between the use of Project WILD and the length of time instructors have had the materials.

APPENDIX B

LIST OF ORIGINAL PROJECT LEARNING TREE SPONSORS

Original Project Learning Tree Sponsors

American Forest Council (formerly American Forest Institute)

Western Regional Environmental Education Council

- Alaska Department of Education
- Alaska Department of Fish and Game
- Arizona Department of Education
- Arizona Game and Fish Department
- California Department of Education
- California Department of Fish and Game
- Colorado Department of Education
- Colorado Division of Wildlife
- Idaho Department of Education
- Idaho Department of Fish and Game
- Montana Office of Public Instruction
- Montana Department of Fish, Wildlife, and Parks
- Nevada Department of Education
- Nevada Department of Wildlife
- New Mexico Department of Education
- New Mexico Department of Game and Fish
- Oregon Department of Fish and Wildlife
- Oregon Department of Education
- Utah Division of Wildlife Resources
- Utah State Board of Education

Washington State Office of the Superintendent of Public Instruction

Washington Department of Game

Wyoming Department of Education

Wyoming Game and Fish Department

APPENDIX C

SUMMARY OF 1983 PROJECT WILD STUDY BY FLEMING

PROJECT WILD EVALUATION

SUMMARY OF FINDINGS

The primary propose of this evaluation was to discover what effect Project WILD had on students and teachers. These effects included changes in student learning and attitudes about wildlife as well as teachers' reactions to the Project WILD implementation and materials. The project was field tested in three states, in three demographic areas (rural, suburban, and urban), and across all elementary and secondary grade levels. Two hundred and fifty-nine teachers and over six thousand students were involved in the three states. Examining results across these three divisions make it possible to discover how generalizable the findings were. A comparison was also made of the two methods of disseminating Project WILD materials to find out which was best for students and teachers.

Project WILD had a definite impact on students and teachers. Students showed significant gains in learning and developed attitudes toward wildlife that were consistent with Project WILD goals. Teachers found the activities stimulating and worthwhile in their classes, and were able to integrate them into their curricula. The effects of the project, however, were not uniform.

The six issues that were discussed in the evaluation report are summarized here (for more detailed information see the Project WILD Evaluation submitted to the Steering Committee, 7/1/83):

1. Is Project WILD equally effective with elementary and secondary students? Does the project's success depend on grade level?

The Project WILD materials, as written, work with elementary students. Kindergarten through sixth grade teachers were accustomed to doing activities with their students and were able to use the activities to affect students' knowledge and attitudes.

With high school students, the cognitive and effective gains were slight. Teachers did not use the material as often as elementary teachers, and had difficulty with the activity format. They also had trouble seeing the materials as anything but extras. One tenth through twelfth grade science teacher said:

> We all need more direct information linking specific activities with specific curriculum areas. With curriculum guides and course objectives being stressed more and more these days, learning techniques such as used in Project WILD need to demonstrate their relevance to curriculum topics.

For the most part, the substance of the secondary Project WILD guide seems fine, but the presentation might be changed to a format that is more useful for secondary teachers. They need to be able to pick up the guide and see how it will help them teach what they are required to teach.

2. Is Project WILD more successful if teachers get materials through the mail or through a workshop?

The classes of both groups of teachers who had Project WILD guides did significantly better than the classes of teachers who did not (control teachers). Students learning and attitudes about wildlife were positively affected by Project WILD. The method by which a teacher received the activity guide make little difference in the cognitive gain of his students, it did make a difference in the teachers level of confidence in using the materials. Although attending workshops may not have produced greater cognitive gains than simply receiving the material, many teachers found the workshops to be valuable.

Primary teachers seemed to benefit most from the workshop, especially in terms of confidence and enthusiasm.

> It (the workshop) was great! I feel that I am more informed about various aspect of wildlife and I can expose my student to more things about wildlife now (kindergarten teacher).

Teachers who attended the workshop had an easier time integrating the Project WILD materials into their required curricula and more often used Project WILD activities to teach basic skills than did materials teachers. Teachers who were able to include Project WILD as part of their curricula, and also teach basic skills using the materials, did more activities that teachers who did not achieve this integration. The workshop helped bridge the gap between

Project activities and the established curricula, but still may not have had enough emphasis on this important educational concern.

3. Are there differences between teachers and student performance by state?

Differences in how teachers were selected and how the project was coordinated produced variations in outcomes among the three participating states. The state that had teachers who were most interested in environmental education showed the greatest student gains, but reached the fewest students. The state with the largest group of teachers, many of whom had little interest or background in environmental education, showed the smallest gains, yet nearly three times as many students were involved. Is it better to have three hundred students who gain three points each on the cognitive test, or nine hundred students who gain one point?

4. Is student success dependent on residence in rural, suburban, or urban areas?

Project WILD was implemented in three settings within each state: rural, suburban, and urban. Although urban teachers had more background and familiarity with environmental education and their classes showed somewhat greater gains in learning and attitudes, these differences in gain scores were not very different form the gains recorded in rural and suburban settings. In all three areas, Project WILD was effective.

5. Does teacher interest affect students learning or attitudes?

Teachers who were coerced to participate in the Project WILD evaluation, often teachers who had little knowledge of environmental education methods, did not experience much success. Implications are that teachers should not receive the materials when they have not requested them, be talked into going to a workshop that they are not interested in, or be told to do the activities in classes where the teachers don't think they fit. In these situations the materials will not be used. Teachers who are interested in wildlife do more activities and their students learn more than other students. This interest might be increased if more teachers can see how Project WILD will fit into their curricula.

6. Was Project WILD used as an interdisciplinary curriculum? Did high school students in one subject area learn more than those in others?

As might be expected, Project WILD was most often used to teach science. This was true at both elementary and secondary levels. The materials, however, were not useful to teachers of some subject areas, including the physical and earth sciences. Particularly at the secondary level, language arts and social studies teachers did significantly fewer activities with their students. The high school language arts classes, though, showed the greatest cognitive gains of any subject area. If Project WILD is

going to have a broad use in all subject areas, teachers who teach basic skills need to know that the activities can help to reinforce what they are teaching.

The following recommendations are used on the data gathered during the evaluation:

1. The secondary activity format should be revised. Secondary teachers and students experienced only limited success with the project. It would be wise to interview junior and senior high school teachers to determine a format that would be more useful for them before any further dissemination of Project WILD at this level.

2. Some flexibility should be allowed in the proposed workshop requirements. Teachers with experience with Project Learning Tree, environmental education materials and methods, and with doing supplemental activities in their classes should not be required to attend a workshop to get the materials. Many teachers found the workshops valuable as a source of information and inspiration; workshops should be make available for these teachers.

3. Teachers participation in Project WILD should be voluntary. Teachers who felt strong pressure to attend the workshop had almost no success with the project. They did few, if any, activities, and their classes did not benefit. This was also true when teachers were coerced into using the materials.

4. Teachers from all demographic settings should have access to Project WILD materials and workshops. There is no reason to believe that the kind of community a student lives in will affect her response to wildlife education.

5. If Project WILD seeks to be truly interdisciplinary, more work needs to be done to encourage incorporation of the activities into subjects other than the life sciences. Stressing language and mathematics skills when advertising the project seems important. For the teachers of science and social studies, the planned topic index will be useful. The index should include titles common to science and social studies texts. Working with curriculum coordinators to link the activities with objectives and texts will also encourage teachers to make Projects WILD part of their instructional repertoire.

6. Workshops and the final version of the materials should stress how Project WILD can supplement required curricula. An important emphasis of workshops, particularly for high school teachers, should be to use Project WILD to illustrate or strengthen concepts that are already a part of the teacher's curriculum. Many teachers benefited from knowing how to integrate

Project WILD into their unit and from being able to strengthen basic skills while teaching a wildlife activity.

Submitted to the Western Regional Environmental Education Council by Lynette Fleming, Director of the Project WILD Evaluation.

APPENDIX D

PROJECT WILD ASSOCIATE STATE SPONSORS

Associate state sponsors of Project WILD

Arkansas Game and Fish Commission

Delaware Department of Natural Resources, Division of Fish and Wildlife

Florida Game and Freshwater Fish Commission

Georgia Department of Natural Resources, Game and Fish Division

Georgia Chapter, Safari Club International

Hawaii Department of Land and Natural Resources, Division of Aquatic Resources

Environmental Education Association of Illinois

Illinois Department of Conservation

Illinois Department of Education

Northern Illinois University

Indiana Department of Natural Resources, Division of Fish and Wildlife

Iowa Department of Education

Iowa Conservation Education Council

Iowa Association of County Conservation Boards

Kentucky Department of Fish and Wildlife Resources

Massachusetts Division of Fisheries and Wildlife

Minnesota Department of Education

Minnesota Department of Natural Resources

Minnesota Environmental Education Board

Nebraska Game and Parks Commission

New Hampshire Fish and Game Department

New Hampshire Wildlife Trust

New Jersey Division of Fish, Game and Wildlife

New York Department of Environmental Conservation

North Carolina Wildlife Resources Commission

North Dakota Game and Fish Department

Ohio Department of Education

Ohio Division of Wildlife

Oklahoma Conservation Commission

Oklahoma Department of Wildlife Conservation

Pennsylvania Game Commission

South Carolina Wildlife and Marine Resources Department

Tennessee Conservation League

Tennessee Department of Education

Tennessee Wildlife Resources Agency

Texas Parks and Wildlife Department

Dallas Safari Club, Texas

Vermont Fish and Wildlife Department

Virginia Commission of Game and Inland Fisheries

Virginia Division, Izaak Walton League of America

West Virginia Department of Natural Resources

Wisconsin Department of Natural Resources

APPENDIX E

OKLAHOMA PROJECT WILD QUESTIONNAIRE AND COVER LETTER

project WILD

State Coordinators
Oklahoma Department of Wildlife Conservation
Sara LaBorde
1801 North Lincoln
Oklahoma City, OK 73105
(405) 521-3900

Oklahoma Conservation Commission
Dan Sebert
USDA Agricultural Center Bldg.
Stillwater, OK 74074
(405) 624-4372

Dear WILD friends,

We know this survey is arriving at a busy time, but we need your assistance in determining the use and implementation of Project WILD within our state. The information you provide will help us to assess the program and aid in planning the future direction of WILD. Your individual responses will remain anonymous when the results of this survey are reported.

Please complete the enclosed survey. It may look time consuming but should only take about 15 minutes to fill out. Any detailed responses or recommendations you have are welcome. We value your comments and suggestions. When finished, please mail back the form in the postage paid envelope.

Thank you for your time and commitment to improved education for young people and addisting us in planning the future direction of WILD in Oklahoma.

Sincerely,

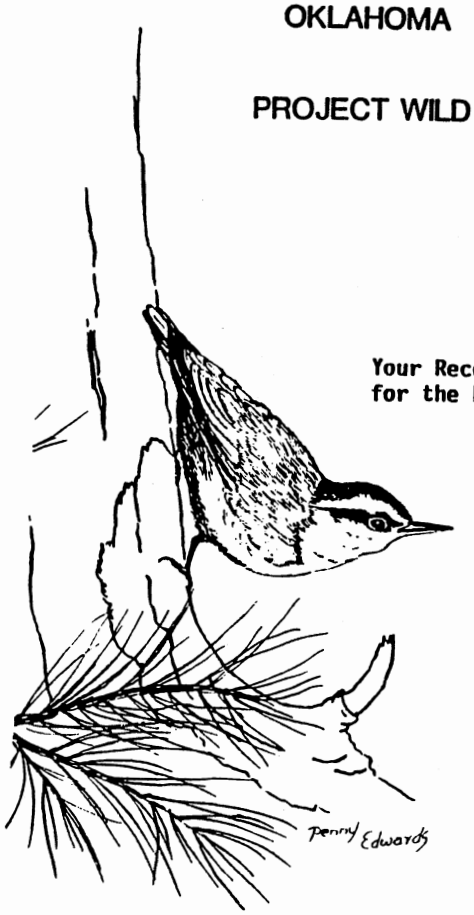
Sara LaBorde
Education Specialist
Oklahoma Department of Wildlife Conservation

Cindi Smith
Education Coordinator
Oklahoma Conservation Commission

Project WILD is an interdisciplinary, supplementary environmental and conservation education program for educators of kindergarten through high school age young people.

OKLAHOMA

PROJECT WILD



Your Recommendations for the Program

With your help we can make Project WILD a better program in Oklahoma. Please read the enclosed survey, answer each question the best of your ability and knowledge and return it to us in the pre-paid enclosed envelope. Thank you for your help.

1. I have used the Project WILD materials

_____YES ----------GO TO QUESTION #2

_____NO

Please check all that apply below

__ __ A. I have never received a Project WILD activity guide.

__ __ B. The Project WILD materials did not seem to be sufficiently useful.

__ __ C. My curriculum is not flexible enough to add any other topics or activities.

__ __ D. My job does not permit me an opportunity to use the Project WILD materials.

__ __ E. There is a lack of administrative support and encouragement within my school system for me to use Project WILD.

__ __ F. It is too hard for me to find the time to do the planning necessary to fit Project WILD into my curriculum.

__ __ G. I do not feel comfortable or proficient in the subject areas covered.

__ __ H. I plan to use it in the future.

__ __ I. I am retired or unemployed.

__ __ J. Other: _____

_____

Because you have not used the Project WILD materials, you need not complete the rest of the questionnaire. Please place the survey in the enclosed postage-paid envelope and return it to us. Many thanks for your help.

2. Which of the following statements best describes your approach to using Project WILD? (check one)

_____ A. I use WILD as the basis for a course of study or as a basis for one or more instructional units I teach.

_____ B. I select WILD activities where appropriate and use them as part of my teaching.

3. The <u>total number</u> of Project WILD activities I typically (would) use with my students in a year is; (check one)

_____ A. 1-6

_____ B. 7-10

_____ C. 11-15

_____ D. 16-25

_____ E. more than 25

4. The average amount of instructional time I spend with my students on any one Project WILD activity is; (check one)

_____ A. 10-30 minutes

_____ B. 31-60 minutes

_____ C. 61-90 minutes

_____ D. 91-179 minutes

_____ E. 3-6 hours

_____ F. more than 6 hours

5. The average number of students I teach in a year using Project WILD is; (check one)

_____ A. 1-30

_____ B. 31-60

_____ C. 61-120

_____ D. 121-250

_____ E. 251-500

_____ F. 501-1000

_____ G. 1000 or more

6. As a result of instruction stemming from Project WILD, my students have increased their awareness, knowledge, skills, and/or attitudes related to the following: (check all that apply)

___ A. What wildlife is and what it needs in order to survive.

___ B. The overall importance of wildlife and its' habitat.

___ C. The necessary components of healthy environments and how ecological systems function.

___ D. How, why and whether to manage, conserve, and preserve wildlife.

___ E. The roles of political, social, economic, and other cultural influences on decision making involving wildlife and the environment.

___ F. The varying perspectives from which people view issues involving wildlife.

___ G. The importance of responsible decision making concerning wildlife and the environment.

___ H. My students have not increased their awareness, knowledge, skills, and/or attitudes toward wildlife and/or the environment.

7. As a result of their experiences with Project WILD approximately the following proportions of my students have acquired; (mark the appropriate box for each item)

	MOST	MANY	SOME	FEW	NONE
greater awareness of wildlife and the environment	MT	MY	S	F	N
knowledge	MT	MY	S	F	N
more responsible attitudes toward wildlife and the environment	MT	MY	S	F	N
academic skills	MT	MY	S	F	N
social skills	MT	MY	S	F	N

8. Teachers have given many reasons for using Project WILD in their teaching. Of the reasons listed below, please rank yours by circling your priority for use on each item.

HIGH	MED	LOW	NONE	
H	M	L	N	A. To be able to include concepts about wildlife and the environment in my curriculum.
H	M	L	N	B. To provide students with opportunities for learning that are interesting, useful, and instructionally sound.
H	M	L	N	C. To enhance my overall teaching, based on the quality of the instructional strategies and content in the WILD materials.
H	M	L	N	D. To support, enrich and add variety to my teaching of basic subjects, skills and concepts.
H	M	L	N	E. To provide a way for students to master and retain difficult, often abstract concepts, by providing opportunities to experience those concepts in concrete ways.
H	M	L	N	F. To fulfill one or more requirements of my graded course of study.
H	M	L	N	G. To meet district/school goals for incorporating environmental topics into our curriculum.
H	M	L	N	H. To help meet science requirements.
H	M	L	N	I. To help meet social studies requirements.
H	M	L	N	J. To help meet language arts and/or English requirements.
H	M	L	N	K. To help meet mathematics requirements.
H	M	L	N	L. To provide a break from regular studies.
H	M	L	N	M. To help meet state department of education SLO requirements.

9. My goals in using Project WILD with my students are: (check all that apply)

_____ A. To equip students with the understanding of the complexities involved in protecting and managing our nation's natural resources and with skills necessary to live a full and productive life.

_____ B. Provide students with knowledge, skills and experiences which will assist them throughout their lives in working and living with others.

_____ C. Promote in students an appreciation of the importance of wildlife, its' habitat, and a healthy environment for both people and wildlife.

_____ D. To prepare students to make responsible decisions affecting wildlife and the environment.

_____ E. To instill in students a greater understanding of the environment, and to provide them with increased knowledge and skills related to ecological systems.

10. I assess what students learn from Project WILD activities by; (check all that apply)

___ A. using some or all of the suggestions for evaluation at the end of each Project WILD activity.

___ B. tests or quizzes

___ C. classroom discussion

___ D. observation

___ E. a project or product

___ F. no specific evaluation

___ G. other: _____

11. When preparing a Project WILD activity for use with students, how much of the background information provided in the guide do you use? (check only one)

___ A. all of it ___ C. some of it

___ B. most of it ___ D. none of it

12. I have shared my Project WILD activity guide with;

___ A. 1 other teacher

___ B. 2-3 other teachers

___ C. 4 or more other teachers

___ D. no other teachers

___ E. other: _____

13. My plans for continued use of the Project WILD materials are; (check only one)

___ A. to use them as an integral part of my teaching and will encourage others to use them.

___ B. to use quite a few activities from the materials in my teaching.

___ C. to use at least some activities from the materials in my teaching.

___ D. to use activities from the materials if I can, but will not be teaching in a situation where use will be possible.

___ E. I have no plans to use the materials in the future.

___ F. I will not be using Project WILD due to the fact that my administration discourages the use of such materials.

___ G. I do not care for the materials and do not plan to use them.

14. We would like to develop support materials to aid you in your teaching. Of course all the materials listed below cannot be made available due to time and money constraints. To help us focus on what is most important, please rank the following 13 items in order of importance to you, with number 1 the MOST IMPORTANT and number 13 the LEAST IMPORTANT.

____ A. conservation education units with posters
i.e. winter bird unit
Okla. fisheries unit
fur-bearers unit

___ B. ideas for developing learning stations

___ C. Okla. wildlife slide show

___ D. 5-10 minute videos on wildlife concepts

___ E. wildlife fact sheets

___ F. additional teaching activities

___ G. student activity sheets which correspond with Project WILD activities

___ H. list of books on wildlife topics

___ I. newsletter

___ J. advanced wildlife content workshops

___ K. wildlife resource center for school districts; contents may include; skull set, slide show, owl pellets, wildlife board games, identification books on wildlife, Wildlife week filmstrips.

___ L. pictures of Oklahoma wildlife

___ M. other; _____

PLEASE COMPLETE THE FOLLOWING INFORMATION ABOUT YOURSELF

15. Please give us the name of the school district and county in which you teach.

_____ school district

_____ county

16. When did you attend the Project WILD training session? (check only one)

___ A. 1984
___ B. spring, 1985
___ C. summer, 1985
___ D. fall 1985
___ E. spring 1986
___ F. summer 1986
___ G. fall, 1986

17. Which guide do you use most often?

___ A. elementary
___ B. secondary

18. Of the following, which best describes the grade level which you teach? (check only one)

___ A. K-6
___ B. K-12
___ C. 6-8
___ D. 7-9
___ E. 9-12

19. What was your main reason for attending the Project WILD training session? (check only one)

___ A. mandatory for staff development
___ B. voluntary for staff development
___ C. wanted to attend
___ D. attended for college credit

20. Please check the item which best describes the subject area(s) you teach. (check only one)

___ A. elementary, self-contained
___ B. science
___ C. social studies
___ D. language arts/English
___ E. math
___ F. art or music
___ G. industrial arts or vocational agriculture
___ H. home economics or business
___ I. physical education
___ J. other: _____

21. Mark the job title or description that best describes your current position.

___ A. classroom teacher
___ B. school administrator
___ C. curriculum specialist/school resource person
___ D. college faculty
___ E. college student (education major)
___ F. college student (non-education major)
___ G. resource agency person
___ H. youth organization representative
___ I. other (specify): _____

22. Of all the Project WILD activities you have used, please list the 5 you think were best.

1. _____
2. _____
3. _____
4. _____
5. _____

23. Of all the Project WILD activities you have used, please list the 5 you think were the worst.

1. _____
2. _____
3. _____
4. _____
5. _____

THIS QUESTION IS OPTIONAL:

Any comments or suggestions?

WE SINCERELY APPRECIATE YOUR ASSISTANCE WITH THIS QUESTIONNAIRE!

THANKS.

APPENDIX F

NATIONAL PROJECT WILD SURVEY

1986 Project WILD Survey of Use and Needs

DIRECTIONS: Please check the **ONE RESPONSE**--except where indicated otherwise--which most accurately represents your feelings and experiences.

project WILD

1. I have used the Project WILD materials.

___ YES → GO TO QUESTION 2.

___ NO

Please check all that apply.

___ I NEVER RECEIVED A PROJECT WILD ACTIVITY GUIDE

___ THE PROJECT WILD MATERIALS DID NOT SEEM TO BE SUFFICIENTLY USEFUL

___ THERE IS NOT ENOUGH ROOM IN MY CURRICULUM TO ADD ANY OTHER TOPICS OR ACTIVITIES

___ MY JOB DOES NOT PROVIDE ME WITH AN OPPORTUNITY TO USE THE PROJECT WILD MATERIALS

___ THERE IS A LACK OF ADMINISTRATIVE SUPPORT AND ENCOURAGEMENT WITHIN MY SCHOOL SYSTEM FOR ME TO USE PROJECT WILD

___ IT IS TOO HARD FOR ME TO FIND THE TIME TO DO THE PLANNING NECESSARY TO FIT PROJECT WILD WITHIN MY CURRICULUM

___ I DO NOT FEEL COMFORTABLE OR PROFICIENT IN THE SUBJECT AREAS COVERED

___ I PLAN TO USE IT IN THE FUTURE

___ I AM RETIRED OR UNEMPLOYED

___ OTHER:_____.

Since you have not used the Project WILD materials, you need not complete the rest of the questionnaire. Please fold, tape, and mail it back to us. The postage is prepaid. Thanks.

2. The total number of Project WILD activities I typically use with my students in a year is:

___ 1 - 6

___ 7 - 10

___ 11 - 15

___ 16 - 25

___ MORE THAN 25

3. The average amount of instructional time I spend with my students on any one Project WILD activity is:

___ 10 TO 30 MINUTES

___ 31 TO 60 MINUTES

___ 61 TO 90 MINUTES

___ 91 TO 179 MINUTES

___ THREE TO SIX HOURS

___ MORE THAN SIX HOURS

4. The average number of students I teach in a year using Project WILD is:

___ 1 - 20

___ 21 - 40

___ 41 - 80

___ 81 - 180

___ 181 - 250

___ 251 - 500

___ 501 - 1000

___ 1001 - 5000

___ MORE THAN 5000

5. As a result of instruction stemming from Project WILD, my students have increased their awareness, knowledge, skills, and/or attitudes related to the following: (Please check all that apply.)

____ WHAT WILDLIFE IS AND WHAT IT NEEDS IN ORDER TO SURVIVE

____ THE OVERALL IMPORTANCE OF WILDLIFE AND ITS HABITAT

____ THE NECESSARY COMPONENTS OF HEALTHY ENVIRONMENTS AND HOW ECOLOGICAL SYSTEMS FUNCTION

____ HOW, WHY, AND WHETHER TO MANAGE, CONSERVE, AND PRESERVE WILDLIFE

____ THE ROLES OF POLITICAL, SOCIAL, ECONOMIC, AND OTHER CULTURAL INFLUENCES ON DECISION MAKING INVOLVING WILDLIFE AND THE ENVIRONMENT

____ THE VARYING PERSPECTIVES FROM WHICH PEOPLE VIEW ISSUES INVOLVING WILDLIFE

____ THE IMPORTANCE OF RESPONSIBLE DECISION MAKING CONCERNING WILDLIFE AND THE ENVIRONMENT

6. As a result of their experiences with Project WILD, approximately the following proportions of my students have acquired: (Please check the appropriate boxes.)

	MOST	MANY	SOME	FEW	NONE
GREATER AWARENESS OF WILDLIFE AND THE ENVIRONMENT					
KNOWLEDGE					
ACADEMIC SKILLS					
SOCIAL SKILLS					
MORE RESPONSIBLE ATTITUDES TOWARD WILDLIFE AND THE ENVIRONMENT					

7. My goals in using Project WILD with my students are: (Please check all that apply.)

____ TO INSTILL IN STUDENTS AN APPRECIATION OF THE IMPORTANCE OF WILDLIFE, ITS HABITAT, AND A HEALTHY ENVIRONMENT FOR BOTH PEOPLE AND WILDLIFE

____ TO PREPARE STUDENTS TO MAKE RESPONSIBLE DECISIONS AFFECTING PEOPLE, WILDLIFE, AND THE ENVIRONMENT

____ TO INSTILL IN STUDENTS A GREATER UNDERSTANDING OF THE ENVIRONMENT, AND TO PROVIDE THEM WITH INCREASED KNOWLEDGE AND SKILLS RELATED TO ECOLOGICAL SYSTEMS

____ TO PROVIDE STUDENTS WITH KNOWLEDGE, SKILLS, AND EXPERIENCES WHICH WILL ASSIST THEM THROUGHOUT THEIR LIVES IN HELPING TO CONSERVE AND PRESERVE A HEALTHY ENVIRONMENT FOR GENERATIONS TO COME

____ TO FOSTER IN STUDENTS AN UNDERSTANDING OF THE COMPLEXITIES INVOLVED IN PROTECTING AND MANAGING, AS WELL AS NOT PROTECTING AND MANAGING, THIS NATION'S WILDLIFE, LANDS, SKIES, AND WATERS.

____ OTHER:_____

8. My reasons for using Project WILD in my teaching include: (Please check all that apply.)

____ TO BE ABLE TO INCLUDE CONCEPTS ABOUT WILDLIFE AND THE ENVIRONMENT IN MY CURRICULUM

____ TO PROVIDE STUDENTS WITH OPPORTUNITIES FOR LEARNING THAT ARE INTERESTING, USEFUL, AND INSTRUCTIONALLY SOUND

____ TO ENHANCE MY OVERALL TEACHING, BASED ON THE QUALITY OF THE INSTRUCTIONAL STRATEGIES AND CONTENT IN THE WILD MATERIALS

____ TO SUPPORT, ENRICH, AND ADD VARIETY TO MY TEACHING OF BASIC SUBJECTS, SKILLS, AND CONCEPTS

____ TO PROVIDE A WAY FOR STUDENTS TO MASTER AND RETAIN DIFFICULT, OFTEN ABSTRACT CONCEPTS, BY PROVIDING OPPORTUNITIES TO EXPERIENCE THOSE CONCEPTS IN CONCRETE WAYS

____ TO FULFILL ONE OR MORE REQUIREMENTS OF MY GRADED COURSE OF STUDY

____ TO MEET DISTRICT/SCHOOL GOALS FOR INCORPORATING ENVIRONMENTAL TOPICS IN OUR CURRICULUM

____ TO HELP MEET SCIENCE REQUIREMENTS

____ TO HELP MEET SOCIAL STUDIES REQUIREMENTS

____ TO HELP MEET LANGUAGE ARTS AND ENGLISH REQUIREMENTS

____ TO HELP MEET MATHEMATICS REQUIREMENTS

____ TO PROVIDE A BREAK FROM REGULAR STUDIES

____ OTHER:_____

9. I assess what students learn from Project WILD activities by: (Please check all that apply.)

____ USING SOME OR ALL OF THE SUGGESTIONS FOR EVALUATION AT THE END OF EACH PROJECT WILD ACTIVITY

____ TESTS OR QUIZZES

____ CLASSROOM DISCUSSION

____ OBSERVATION

____ A PROJECT OR PRODUCT

____ NO SPECIFIC EVALUATION

____ OTHER:_____

10. Of my Project WILD Activity Guide (either elementary or secondary), I have read:

____ ALL OF IT

____ MOST OF IT

____ SOME OF IT

____ NONE OF IT

11. I have loaned or shown my Project WILD Activity Guide to:

____ ONE OTHER TEACHER

____ TWO OR THREE OTHER TEACHERS

____ FOUR OR MORE OTHER TEACHERS

____ NO OTHER TEACHERS

____ OTHER:_____

12. I use Project WILD in my classroom:

____ AS THE BASIS FOR MY TOTAL CURRICULUM

____ AS THE BASIS FOR A COURSE I TEACH

____ AS THE BASIS FOR ONE OR MORE INSTRUCTIONAL UNITS

____ BY SELECTING AND INCLUDING WILD ACTIVITIES WHERE APPROPRIATE IN MY EXISTING CURRICULUM

13. In order to more easily and effectively include Project WILD activities in my teaching, it would help me if: (Please check all that apply.)

____ I WAS GIVEN ADDITIONAL PLANNING TIME IN ORDER TO MATCH UP PROJECT WILD ACTIVITIES WITH MY EXISTING CURRICULUM MATERIALS

____ I WAS PROVIDED WITH A CROSS-REFERENCE BETWEEN PROJECT WILD AND THE TEXTBOOKS I USE

____ I WAS ABLE TO COORDINATE WITH OTHER TEACHERS IN MY SCHOOL SO THAT WE COULD DECIDE WHO WOULD USE WHICH ACTIVITIES AT WHICH GRADE LEVEL AND AT WHAT TIME OF YEAR

____ THE SCHOOL ADMINISTRATION WOULD ENCOURAGE ME TO USE PROJECT WILD AS AN INTEGRAL PART OF THE CURRICULUM

____ I WERE PROVIDED WITH ADDITIONAL MATERIALS FROM PROJECT WILD TO SUPPLEMENT THE GUIDES, SUCH AS STUDENT WORKSHEETS AND MATERIALS FOR LEARNING CENTERS

____ OTHER:_____

14. Project WILD has affected the amount of time I spend on teaching about wildlife and the environment by:

____ GREATLY INCREASING THE TIME

____ MODERATELY INCREASING THE TIME

____ NOT CHANGING THE TIME

____ DECREASING THE TIME

15. My school principal encouraged me to attend the Project WILD workshop:

____ YES

____ NO

16. My school principal attended the Project WILD workshop in which I participated, or has participated in another Project WILD workshop:

____ YES

____ NO

____ I DON'T KNOW

17. Based on my experience with Project WILD, my overall view of the program is that it:

____ ENCOURAGES EXPLOITATIVE AND/OR INHUMANE TREATMENT OF WILDLIFE

____ ENCOURAGES A PROTECTIONIST AND/OR PRESERVATIONIST APPROACH TO WILDLIFE

____ PROVIDES A BALANCED AND FAIR APPROACH TO CONSIDERATION OF ENVIRONMENTAL AND WILDLIFE ISSUES

18. My plans for continued use of the Project WILD materials and strategies are:

____ I WILL USE THEM, MAKE THEM INTEGRAL TO MUCH OF MY TEACHING, AND WILL ENCOURAGE OTHERS TO USE THEM.

____ I WILL USE QUITE A FEW ACTIVITIES FROM THE MATERIALS IN MY TEACHING.

____ I WILL USE AT LEAST SOME ACTIVITIES FROM THE MATERIALS IN MY TEACHING.

____ I WOULD USE ACTIVITIES FROM THE MATERIALS IF I COULD, BUT I WILL NOT BE TEACHING IN A SITUATION WHERE USE WILL BE POSSIBLE.

____ I HAVE NO PLANS TO USE THE MATERIALS IN THE FUTURE.

19. I will recommend Project WILD to other educators:

____ YES

____ NO

____ MAYBE

20. PLEASE COMPLETE:

City_____State_____

ZIP_____

Job Title or Description:_____

Grade Level, if applicable:_____

School Subject Area or Areas, if applicable:_____

Approximate Month and Year Attended a Project WILD Workshop:

Month_____ Year_____

THIS QUESTION IS OPTIONAL! My five favorite and/or most frequently used Project WILD activities are: (Please list!)

_____

_____

_____

_____

_____

THIS QUESTION IS OPTIONAL TOO! Any comments or suggestions?

Providing your name and address is also optional:

Name:_____

School Name and Address:_____

_____

City_____

State_____Zip_____

We sincerely appreciate your assistance with this questionnaire!

Please fold and tape the questionnaire shut, and mail it to us by May 1, 1986. The postage is prepaid. Thanks!

VITA

Cynthia LeAnn Smith

Candidate for the Degree of

Doctor of Philosophy

Thesis: AN ASSESSMENT OF THE USE AND EFFECTIVENESS OF PROJECT WILD (WILDLIFE IN LEARNING DESIGN) BY TEACHERS AND YOUTH LEADERS IN OKLAHOMA

Major Field: Environmental Science

Biographical:

Personal Data: Born in Gene Autrey, Oklahoma, Ardmore Air Force Base, October 5, 1956; the daughter of Doratha and Claudus Smith. Married to William David Walters on September 2, 1987.

Education: Graduated for Tushka High School, Tushka, Oklahoma, in May, 1974; received the Associate of Science degree from Murray State Junior College in 1976; received the Bachelor of Science in Educations degree from East Central Oklahoma State University in 1978; received the Master of Science in Curriculum and Instruction from Oklahoma State University in December, 1984; completed the requirements for the Doctor of Philosophy in Environmental Science degree at Oklahoma State University in July, 1988.

Professional Experience: Junior High School Science Teacher, Dickson Public Schools, Dickson, Oklahoma,1978-1981; Middle School Science Teacher, Okemah Public Schools, Okemah, Oklahoma, 1981-1982; Middle School Science Teacher, Stillwater Public Schools, Stillwater, Oklahoma, 1982-1983; Graduate Teaching Assistant, Oklahoma State University, 1983-1984; Education Coordinator, Oklahoma Conservation Commission, Stillwater, Oklahoma, 1984-1988.

Professional Organizations:Oklahoma Science Teachers Association; National Science Teachers Association; Soil and Water Conservation Society of America; Conservation Education Association; National Wildlife Federation; Oklahoma Wildlife Federation; Nature Conservancy, Payne County Audubon.