

## **An Assessment of an Aquatic Resources Education Program**

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**New Mexico study (phase I of study ran from February 1989 - April 1993)**

*Study Evaluated (mailed questionnaire):*

1. The means and extent a sample of formal educators were aware of and incorporated aquatic resources education into their teaching.
2. How capable aquatic resource educators believed that they are to teach 25 aquatic topics and how important they believe those 25 topics are for students to learn.
3. How aquatic resource educators believe available money can best support aquatic resource education.

*Results:*

- Knowledge of program varies widely.
- Educators believe topics are important but most feel they lack the knowledge necessary to teach most topics.

*Discussion:*

- Aquatic Project WILD was the primary delivery tool for aquatic education.

(WREEC 1992) Project WILD's underlying constructivist theory does not believe that learner outcome is always predictable, simply stated with one correct answer, or involving only lower order thinking skills. (Charles 1988) These factors seem to suggest that program evaluation cannot be completed through short-term, quantitative studies alone.

- Difficult to assess if Project WILD is responsible for outcomes or other materials also used, or a combination.

Many studies including Mayer and Fortner (1987) established that short, intensive workshops with a follow-up contact were the best delivery tool for ensuring that supplementary environmental education curriculum materials were used.

*Literature Review of Previous research:*

Miller (1990): 54.2% of respondents used Project WILD materials in year after workshops.

Charles (1986): 70%

Standage Accureach (1990) 78.5% used Project WILD materials after attending workshop.

New Mexico results were consistent with these results.

Reasons given for not using (Cantrell, 1986; Charles, 1986; Standage Accureach 1990): not enough planning time, present job does not permit, not enough room in curriculum.

Standage Accureach (1991) those who attended shorter workshops (6 hours or less) used fewer activities per year than those with longer training (9 hours or more) "Students of teachers who took part in longer workshops are more likely to do more action projects."

## **2/Daniel Shaw -- New Mexico Study, 1993**

(Cantrell 1986; Charles 1986; Smith 1988; Miller 1990; Standage Accureach, 1990) showed that over 50% of Project WILD users use between 1 and 6 activities per year. Standage Accureach determined that when teachers use Project WILD more frequently, the impact on students increases.

(Cantrell 1986, Carlson 1986; Charles 1986; Miller 1990; Standage Accureach, 1990) activities are used more by elementary teachers than HS and it appears (Greene 1992; Shaw & Stuever 1992; Toomsen 1991) those activities developed specifically for HS students are rarely used.

Although interdisciplinary, primarily used as supplementary science program (Cantrell 1986; Carlson 1986; Charles 1986; Fleming 1983; Standage Accureach 1990).

Only anecdotal evidence as to which activities are used most (Cantrell 1987; Greene 1992; Toomsen 1991; Shaw and Stuever 1992). Most popular Project WILD activities are the kinesthetic simulations such as "Oh Deer!" and "Quick Frozen Critters." Activities requiring library style research such as "Planning for People and Wildlife" and "Wildlife Bibliography" are rarely used. Activities that give students direct experience with wildlife and other aspects of the environment have mixed success rates. "Owl Pellets" and "Wildlife is Everywhere." appear to receive wide usage whereas "Can Do!" and "Eco-Enrichers" seem to have little appeal.

Aquatic WILD: kinesthetic "Hooks and Ladders" widely used; library style research "Facts and Falsehoods" rarely used.

Standage Accureach (1990) reported that the impact of Project WILD varies based on the number of Project WILD activities a teacher used in one year. The more activities a teacher reported using in a year, the more likely it was for the teacher to report gain in understanding about less obvious wildlife topics such as cultural influences related to wildlife.

Fleming (1983) established that Project WILD had a definite impact on students and teachers. Fleming (1985) established that there were significant differences between students exposed to Project WILD and students who were not. Project WILD students scored better on both cognitive and affective instruments than students in the non-exposure control groups.

Gilchrist (1991) established that students of Project WILD trained teachers knew more about wildlife than controls whose teachers had not been trained and did not use Project WILD.

Race (1990) indicated ". . .that no significant differences exist in knowledge or attitudes between students who have been exposed to Project WILD and students who have never participated in a Project WILD activity. Also acknowledged that "Definitive conclusions on the effectiveness of Project WILD cannot be drawn from this evaluation for several reasons" Those reasons include: investigator is unable to control for other knowledge influencing wildlife activities including hunting, reading and television. Others (Carlson 1986; Standage Accureach 1990) have suggested that it is impossible to find a control group without any Project WILD influence -- even through summer camps and other nonformal exposures. This is also why definitive conclusions are difficult.

### **3/Daniel Shaw -- New Mexico Study, 1993**

Project WILD workshop attendees generally have quite positive feelings about Project WILD. Better than 99% of Project WILD workshop participants, through end of workshop evaluations, rate Project WILD workshops as either "good" or "excellent" with 73% of all US and 83.9% of New Mexico workshop participants rating their workshops as "excellent" (Charles 1991). Cantrell found that 94% of workshop participants would encourage others to attend a workshop and Standage Accureach (1990) determined that 86.5% of workshop participants actually did encourage others to attend a Project WILD workshop. Tudor (1992) noted that there was "intense loyalty to Project WILD . . . among environmental educators, teachers, (and state department of wildlife) personnel."

Standage Accureach established that 98.7% of Project WILD workshop participants either strongly (80.2%) or somewhat (18.2%) agreed . . . that Project WILD provides a balanced and fair approach to the study of wildlife and environmental issues.

Miller (1990) found that 74% of Project WILD participants in one eastern state were unaware of the Aquatic guide.

Bureau of Educational Services and Applied Research, 1992 -- In a mid-western state, 5% of all of that state's teachers reported using the Aquatic Project WILD guide during the previous year and 29% of that states Project WILD/Project WET trained teachers reported using the Aquatic Project WILD guide during that same time.

Standage Accureach (1990) found in a national survey that 37% of the workshop participants had used the Aquatic Guide. They went on to observe, "Specific use of the Aquatic Guide nearly doubles for each additional workshop attended" They also reported that "Those (teachers who received) the aquatic guide through the mail were much less likely to mention usage than those from either combined or specific aquatic workshops. Obviously, those who received the guide at a specific aquatic workshop have the highest utilization (of the aquatic guide).

Standage Accureach (1991) established that "The aquatic guide is clearly distributed more widely to secondary than elementary teachers." However figures show that discrepancy is not that wide 17.9% k-6; 23.7% 10-12.

*Results of this New Mexico Survey:*  
Majority of respondents were female.

Majority were elementary teachers.

All had formerly taken Aquatic WILD workshops -- 91.9% reported that they did recall taking the workshop.

27.5% had taken more than one environmental education workshop

Comments to open-ended questions from respondents included:

- desire for more time to prepare and use materials
- desire for more training, materials, or programs
- praise for New Mexico Project WILD newsletter

### **4/Daniel Shaw -- New Mexico Study, 1993**

Although many materials (videos, magazines, newspapers, coloring books, television programs, etc.) are available to these educators from the New Mexico Department of Game and Fish, when indicating their primary sources of information on Aquatic Wildlife topics, Project WILD was listed first. It was also listed as the material they used most (of these supplementary materials).

Most often used activities are diverse in both style and substance. Learning strategies employed with frequently used activities include gaming ("Are You Me?"), direct environmental exploration and study ("The Edge of a Home," "Deadly Skies,"), kinesthetic simulations ("Migration Headache"), role playing (To Dam or Not to Dam"), water inspired language arts ("Mermaids and Manatees," and "Aqua Words"), modeling (How Wet Is Our Planet?), and using scientific data for artistic creations (Whale of a Tail," "Designing a Habitat," and "Fashion a Fish"). Activities that direct learners to conduct library style research as a major part of the activity were rarely used.

What resources do teachers want?

--Needs are varying and specific to individuals.

--Educators across all grade levels consider shorter trainings to have higher value than longer trainings.

--HS educators request equipment, mini-grants for aquatic projects, computer programs, and technical assistance for hands-on projects.

--Middle school educators request guest speakers, computer programs, posters, and resource trunks.

--Elementary school educators request 2-4 hour training sessions and information sheets on aquatic topics, posters, and resource trunks.

More than 80% of respondents teach at least one environmental topic.

Less than 24% are required to teach any environmental topics.

When educators teach about the environment, they are at least two times as likely to do so from choice than from obligation.

Educators are most aware of and most often use Project WILD and Project WILD Aquatic guides.

When respondents attended two or more workshops, their reported usage of program materials increased.

Most educators do not believe they are prepared to teach about most of the considered aquatic topics.

Ingraham (1990) demonstrated that Project WILD lacked a deep ecology perspective. Tudor (1992) established that Project WILD had yet to show that the program let do responsible environmental action. Since the results of this study suggest that some Aquatic Project WILD activities are rarely used and previous research identified program gaps, the replacement of some infrequently used activities with new activities addressing deep ecology perspectives and environmental action deserves consideration.

## **5/Daniel Shaw -- New Mexico Study, 1993**

### *Recommendations From This Report:*

- tailor and market programs by grade level groupings
- increase awareness and knowledge of program
- hold more frequent, shorter workshops
- replace Project WILD library style research activities with new activities that focus on the presently underrepresented areas of improving local aquatic habitats and deep ecology perspectives.