

An Evaluation of the Wilderness and Land Ethic Curriculum and Teacher Workshops

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The Effectiveness of Wilderness Education

Many researchers and managers consider education the key to solving recreational use problems in wilderness. They believe education to be the most effective light-handed management strategy to reduce impacts and conflict in wilderness, while retaining visitors' freedom of choice. Yet little is known about the effectiveness of existing educational programs in changing knowledge, attitudes, and beliefs of visitors. Despite the diversity of wilderness information and education techniques, there has been little research on the design, application, and effectiveness of wilderness education programs (McCool and Lucas 1990). Educating the public has long been considered an important function of land stewardship. In the past, this has largely meant training wilderness visitors in low-impact camping techniques and user ethics. However, many wilderness managers and

researchers believe wilderness education needs to expand by instructing visitors on how to build a shared understanding of the role and value of wilderness to society.

During the past decade wilderness managers have turned to school-based programs as one wilderness education technique (Hendricks 1999). These programs may be effective in influencing the behavior of current and future wilderness users, but little is *documented* about that effectiveness. Wilderness education programs have not been tested for their effectiveness in changing levels of knowledge about desired behavior, or changing behavior. This study sought to determine how the Wilderness and Land Ethic curriculum and teacher workshops could be improved to better address knowledge, attitudes, and beliefs about wilderness.

Wilderness and Land Ethics Curriculum and Teacher Workshops

The K-8 wilderness education curriculum on Wilderness and Land Ethic is distributed by the interagency Arthur Carhart National Wilderness Training Center. It was designed to provide classroom teachers, land managers, and outdoor educators with an interactive resource to promote awareness and appreciation of the cultural, environmental, and experiential values of wilderness. The curriculum lessons and activities are tied to a collection of educational resources, including skulls, skins, puppets, maps, books, and videos known as the Wilderness and Land Ethic Box (Arthur Carhart National Wilderness Training Center 1995).

The teacher workshops are a vehicle for implementing the Wilderness and Land Ethic curriculum and are designed to educate teachers about wilderness and to familiarize them with the materials box and curriculum. Since 1992, teacher



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workshops have been led by workshop instructors and are offered in a number of states. Instruction is provided by environmental educators, K–8 teachers, professors, wilderness advocates, and wilderness managers. Content of the workshops includes: (1) curriculum organization and ideas for implementation; (2) information about wilderness values, the National Wilderness Preservation System, and an overview of the national history of the wilderness movement; (3) experiential teaching opportunities with lessons from the curriculum; and (4) participation in low-impact camping methods. Workshop length ranges from a half-day to three days, and locations vary from classroom settings to outdoor education centers. Training in curriculum use has been offered for academic credit from state colleges and universities. Teachers attending the workshops are supplied with a copy of the curriculum and are asked to evaluate the workshop in a formal evaluation. Teachers who take the workshop for academic credit are required to field-test lessons from the curriculum and report the results back to the workshop instructors.

Because the Wilderness and Land Ethic curriculum and teacher training workshops are modeled after Project WILD, a review of Project WILD research studies was conducted. Project WILD, a nationally recognized K–12 interdisciplinary wildlife education program, has been widely used since its inception in 1983 and has undergone several evaluations for program effectiveness. Comprehensive studies conducted on teachers' use of Project WILD identified barriers to implementation and reasons why teachers attend workshops (Fleming 1983; Pitman 1996). A large majority of Project WILD workshop participants used the materials in their classrooms. If teachers did not use Project WILD materials, the most common reasons were: they were planning

on using them in the future, but had not yet; lack of planning time; lack of instructional time; difficulty integrating materials into their curriculum; no opportunity to use in their current position; and lack of administrative support.

Methods

The research design in the Gunderson study (2001) used multiple qualitative and quantitative data collection methods. Evaluation of the Wilderness and Land Ethic curriculum used teacher interviews and a mail-back survey. The teachers selected for this study had participated in a Wilderness and Land Ethic workshop and had used the curriculum with their students.

Telephone interviews were conducted with 12 teachers, two from each of six geographic areas of the United States. The focus of these interviews was on three issues: (1) to arrive at a set of objectives that helped guide the curriculum evaluation process; (2) to determine how teachers believe the curriculum influences students' knowledge, attitudes, and beliefs about wilderness; and (3) to identify the patterns of curriculum use, characteristics of teachers, and factors influencing implementation.

Using the results from the initial telephone interviews, a mail-back survey was developed and administered to a sample of 224 teachers who had used the Wilderness and Land Ethic curriculum to determine their perceptions of its effectiveness and how it could be improved. The survey used a multiple-choice scale and included some open-ended questions.

A follow-up telephone contact was initiated with 15 nonrespondents. The intention was to telephone these nonrespondents to determine why they had not responded, and if there were significant differences in responses from the 52% of teachers who had returned



A teacher workshop field trip on the Rocky Mountain Front in Montana. Photo by Kari Gunderson.

surveys. The nonrespondent follow-up indicated responses similar to those of teachers who had returned the survey.

In a third data collection method, teachers who had recently completed a workshop were interviewed by telephone. Individual telephone interviews were conducted with 24 teachers within six months of their participation in a training workshop to (1) determine if there was a relationship between workshop attendance and use of the curriculum, (2) determine if teachers were receiving adequate information on best practices for current state and national educational standards, and (3) develop guidelines for an optimal training workshop model or delivery mechanism to meet curriculum goals and objectives. Comparisons were made between information gathered from teacher surveys and interviews



Teachers and natural resource professionals study wilderness maps. Photo by Kari Gunderson.

Table 1—Teachers' Evaluation^a of the Wilderness and Land Ethic Curriculum in 2001

In general, the curriculum:	Mean
Has a clear focus on wilderness concepts	4.42
Helps students understand benefits of wilderness	4.31
Is well designed	4.24
Responds to different learning activities	4.24
Presents information and ideas relevant to wilderness	4.23
Challenges students to use critical thinking skills	4.23
Improves students' ability to address wilderness issues	4.20
Is easy to use	4.16
Provides adequate background information	4.13
Offers adequate resource materials in the box	4.09
Has everything needed to teach the lessons	3.82
Meets curriculum standards	4.04
Gives teacher confidence to teach something previously taught by guest speakers	3.80

^a Teachers responded on a 5-point scale with 1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, and 5 = strongly agree.

with teachers who attended training workshops.

Results and Discussion

The analysis of teacher mail survey results indicated that 80% of the teachers who responded have used the curriculum in their classrooms and tend to use it as individual, supplementary lessons. Over 90% of teachers surveyed who used the curriculum said the curriculum is well designed (see Table 1). Teachers who used the curriculum tended to use it to fulfill educational standards (82%) and would

like a cross reference of lesson plans with science, math, and social studies standards. Two variables, where teachers grew up and the size of the school where they teach—did not appear to influence curriculum use. However, teachers who live close to a designated wilderness (within 100 miles) are more likely to be curriculum users (80%).

Teachers involved in this study indicated that the Wilderness and Land Ethics curriculum was well designed, has a clear focus on wilderness concepts, improves students' ability to address wilderness issues, and challenges students to use critical thinking skills. Teachers who used the curriculum to satisfy academic standards tended to rate the curriculum design highly. If the curriculum is to be used by teachers, individual lessons need to be correlated with the Excellence in Environmental Education Guidelines for Learning by the North American Association for Environmental Educa-

tion, and national and state standards for science, mathematics, social studies, language arts, and physical education. Through a constructivist approach, lessons could be sequenced to build a level of background knowledge on the subject of wilderness in order to broaden its understanding.

Despite attendance at a teacher workshop, teachers expressed a lack of confidence about introducing wilderness concepts to their students and would like a guest speaker to come into the classroom. Teachers also expressed concern for relevancy of the curriculum to students. One teacher said, "Somehow we have to make wilderness relevant to students. In their world wilderness isn't even a consideration." Grade level relevancy is also a concern. Teachers suggested that the curriculum be separated into individual curricula for primary, elementary, and middle school levels.

Analysis of the telephone interviews with 24 teachers six months after they attended a workshop revealed that the workshops increased teachers' knowledge of wilderness, wilderness values, appropriate behaviors, and uses. Of the teachers who have used the curriculum, 70% used it to supplement their science program. Teachers indicated that the greatest strengths of the workshops were (1) the workshop format that allowed participants to teach and actively participate in lessons from the curriculum, (2) the teaching resources made available to them, and (3) the in-depth knowledge of the instructors. Teachers also indicated it is important to offer workshops for academic credit (92%) and renewal credits (88%). Teachers want more age-appropriate lessons and more professional enhancement opportunities. They suggested that a wilderness education courseshould be made available on the Web, so teachers in remote areas can



A horse-packing demonstration. Photo by Kari Gunderson.

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Through an integrated information/education program, visitor attitudes and behaviors were changed. Current surveys of wilderness users show that people are using canisters and think they should be mandatory. A survey conducted during the summer of 2001 showed that nearly 87% of Yosemite Wilderness users favored mandatory canister use, and in 2002, more than 85% were using food storage canisters rather than the still-legal hanging of food bags.

The WildLink program illustrates another approach to wilderness education. WildLink, a product of the interagency Sierra Nevada Wilderness Education Project, uses a combination of web-based information (<http://wildlink.wilderness.net>), multimedia messaging, direct classroom outreach, hands-on fieldwork, and role modeling by

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trained volunteers to take culturally diverse students from rural and urban settings through multiple levels of wilderness development. Students are taken from a level of no wilderness awareness to the role of wilderness ambassadors. After completing the program, students are asked to take the wilderness values they have learned back to their schools, their friends, and their families. To date, over 160 kids have completed the program, and former WildLink students are now mentors for current students.

"In wilderness is the preservation of the world," said Thoreau. The wilderness managers at Yosemite believe that

"in education is the preservation of wilderness." 

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learn and integrate the wilderness curriculum into their existing curriculum.

The results of this study indicate that school-based wilderness education curricula can be effective in educating the wilderness visitor and future visitors on appropriate wilderness behavior. Wilderness managers and teachers will benefit from reviewing the results of this study to determine the most effective methods of providing school-based wilderness education programs and professional development for educators. 

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