

This section integrates the findings of the student, teacher, and administrator surveys and tests. It provides implications, conclusions, and strategies relative to improving environmental education in the K-12 schools of Wisconsin.

### Importance of Environmental Education

*Students believe that learning about the environment and associated issues is relatively important, and they are sincerely interested in receiving K-12 classroom instruction in this area. Further, teachers and administrators overwhelmingly agree that education about the environment should be a priority in K-12 instruction even if it must be implemented through legislative mandates.*

**Implications:** There is significant support to include environmental education as a part of the institutional processes and disciplines that presently comprise K-12 education in Wisconsin. Historically, environmental education (EE) has been treated as a supplemental or peripheral discipline. A more contemporary view held by students, teachers, and administrators seems to place it in line with the core goals of our state's education system.

**Conclusion:** Schools should evaluate their approach to implementing environmental education. Institutional planning should provide the area of environmental education with comparable financial support, time, and other resources that are allotted to other subjects or educational processes that are considered priorities.

*Teachers and administrators believe and expect that environmental education will be a part of pre-service and in-service teacher education programs in Wisconsin.*

**Implications:** Teacher education institutions in Wisconsin will have to concern themselves with providing quality EE in-service and pre-service programs.

**Conclusion:** The state of Wisconsin, through its teacher education institutions, should accommodate the expectation of pre-service training in environmental education by ensuring that university pre-service programs offer appropriate environmental education course work. In-service programs in environmental education should be made available to educators around the state. Also, appropriate incentives should be offered to teachers who elect to pursue these in-service opportunities. In-services should be designed and offered for teachers from a variety of disciplines (subject areas) and grade levels (K-12). Also, in-services should range from introductory environmental education instruction to advanced leadership opportunities in environmental education.

### Implementing Environmental Education

*Teachers and administrators in Wisconsin agree that all students should experience environmental education as it relates to appropriate awareness/knowledge, attitudes/values, and behaviors/actions-skills. Further, they believe schools should have K-12 scope and sequence plans for education about the environment.*

**Implications:** Schools planning on implementing environmental education programs should have appropriate scope and sequence objectives (i.e., subject area and grade level objectives) that address identified awareness/knowledge concepts, attitude/value concepts, and behavior/action-skill concepts.

**Conclusion:** Schools should work to ensure the effectiveness of their environmental education efforts by assessing the degree to which students are achieving the expected awareness/knowledge, attitude/value, and behavior/action skill concepts.

## Student Achievement

*Ecological knowledge and awareness of environmental issues in the average Wisconsin student is lacking relative to expected educational standards. Higher standards are achievable and desirable.*

**Implications:** It is widely agreed that environmental issues will ultimately be prevented or remedied as a result of the general citizenry pursuing ecologically sound actions or behaviors. Presently, Wisconsin students have limited awareness of existing environmental issues. Further, they are lacking in the ecological knowledge base that would be appropriate to analyzing or understanding the multifaceted nature of environmental concerns. As these students graduate from high school, it seems justifiable to suggest that, as a population, they will be cognitively ill-prepared to deal with the many environmental concerns that plague both the health and economy of this state.

**Conclusion:** Results of this assessment indicate that students can achieve higher standards as exemplified by the significantly higher scores of students who were self identified and identified by teachers as being environmentally literate. In the future, schools will have to provide environmental education programs that strive to improve upon present ecological knowledge and environmental awareness of the average student population.

*Students highly value environmental quality and are sincerely concerned about environmental problems. They believe problems*

*are preventable and solvable. They feel more should be done by government, industry, agriculture, and education. They feel they are personally responsible for contributing to the prevention or solution of environmental problems.*

**Implications:** Students have strong feelings about establishing a societal structure that works toward maintaining environmental quality.

**Conclusion:** Given that student cognitive scores on this assessment were considered lacking, it's possible that the present student population might be more inclined to make environmental decisions more on how they feel rather than on what they know. Schools should make every attempt to incorporate affective education methods in their environmental education programming. This would allow students the opportunity to analyze their values and beliefs relative to appropriate cognitive information (e.g., ecological and economic information).

*Actual involvement of students in pro-environment behaviors or actions is limited or primarily viewed as a "sometimes" occurrence. When students do take actions they are prone to more personal actions such as conserving water, picking up litter, or turning out lights. They are less inclined to pursue nonpersonal actions like encouraging others (e.g., family and friends) to practice pro-environment actions or behaviors. This limited pro-environmental action taking would seem to suggest that students do not view this behavior as an established part of their lifestyles.*

**Implications:** The student assessments clearly indicate that a strong majority of students

expect a societal structure that establishes environmentally responsible behavior across all sectors. Additionally, they feel that they are personally responsible for pursuing environmentally responsible actions. The question then becomes, “Why are they reporting such limited action taking?” The statewide assessments of teachers and administrators indicate that schools are providing limited educational opportunities in understanding or practicing personal or nonpersonal environmental action taking.

**Conclusion:** If the expectation is that environmentally sound behaviors become a part of this state’s social norms, then the schools will have to develop educational programs that more readily help students understand and incorporate pro-environment actions into their lifestyle.

## Structural Support

*School administrators report they do take actions to support environmental education, however most actions were considered relatively passive. Financial and personnel support specifically for environmental education is mediocre or lacking in many schools.*

**Implications:** Substantial progress in environmental education might be achieved if it was afforded equitable (i.e., to other academic priorities) resource distribution.

**Conclusion:** Districts could improve their EE programs by identifying environmental education leadership positions (e.g., coordinators or specialists) and/or by establishing an active environmental education committee. These personnel appointments would serve to help promote environmental education, develop curriculum, and evaluate the effectiveness of the programs. Appropriate personnel appointments could be established by directly providing funds for positions or, more realistically, by providing appropriate release

time. The establishment of these positions also sends a message to teachers that this is an important curriculum area and deserving of their attention.

*Despite a mandate that environmental education be included in all school district curriculum plans by 1990, not all schools have provided such a plan. Of those that do have an environmental education curriculum plan, a fair number of administrators are “not sure” or “dissatisfied” with the quality of implementation.*

**Implications:** Obviously, if a school has no environmental education curriculum plan, or if it lacks the appropriate personnel to implement it, there is limited chance that students are experiencing a quality environmental education program.

**Conclusion:** Correlation results from the teachers’ assessment indicate that teachers in districts with active environmental education curriculum plans spend more time infusing environmental education. Additionally, teachers using plans are relatively more confident and comfortable with infusing environmental education.

*Teacher pre-service and in-service experience are a factor that seems to impinge on the amount and type of environmental education offered by teachers in the state.*

**Implications:** Teachers who have experienced in-service or pre-service environmental education report spending more time at infusing environmental education into the classroom. Additionally, they report feeling more confident and comfortable with infusing environmental education into the classroom.

**Conclusion:** Many teachers (more than 50%) who should have received pre-service environmental education report not receiving it. It's possible that teachers received it and do not remember it (i.e., little or no impact) or their teacher education institution did not offer an EE experience. Obviously, teachers who have little or no environmental education training are not as likely to offer a quality environmental education experience to students as those who have had an appropriate EE pre-service experience.

Many school districts (25-40%) have not offered any environmental education in-services, workshops, or courses in their district. Thus, teachers are having to seek out programs on their own or do without. The majority of teachers in Wisconsin hold pre-1985 (i.e., when the pre-service EE mandate became effective) certification, meaning they probably did not have an opportunity to experience pre-service training in EE. Thus, there are a substantial number of practicing teachers who have had no formal training in what environmental education is, how to offer it, or how to evaluate it. Students experiencing classes with these teachers are probably less likely to do well on environmental education achievement than those who experience classes with teachers that have had appropriate EE experiences.

## Summary

In general, Wisconsin has a K-12 educational atmosphere that is very supportive of developing and improving environmental education. Wisconsin mandates in EE seem to be effective, given that teachers are more active in providing environmental education if they had pre-service training in EE and/or if they are working in a district with an EE curriculum plan. There is however substantial room for continued improvement which is validated by the questionable achievement of students on the environmental literacy assessments. Additionally, there are a fair number of schools and teachers which admittedly are not offering appropriate environmental education to their students. Wisconsin will have to work on improving the

quality of environmental education where it is presently provided and to initiate quality EE where it is not being provided and should be. The following strategies have been identified as possible avenues to improving environmental education in Wisconsin schools.

Student environmental literacy can and should be improved. Mechanisms suggested for doing this are presented in the following recommendations.

### 1) Provide clarification on what constitutes an effective K-12 environmental education program.

Establish content and performance standards for environmental education.

Establish K-12 scope and sequence plans for environmental education based on appropriate frameworks for ecology, water resources, air resources, soil resources, energy resources, biodiversity, environmental economics, resource management, environmental health, and citizen participation.

### 2) School districts should be provided with incentives to further establish environmental education as part of the core curriculum offered by schools. Environmental education should no longer be viewed as supplementary.

Establish environmental literacy standards for students in the state.

Incorporate environmental literacy into achievement testing.

Continue to improve the infusion of environmental education into elementary school curricula.

Recognize environmental studies/science as a core part of high school science and/or social studies requirements.

Recognize high school environmental studies/science credits toward the UW system's freshman entrance requirements.

### 3) Continue to improve K-12 teacher in-service, pre-service, and leadership programs.

In-service on environmental education should be continuous and should support the institution of the district environmental education scope and sequence plan.

University and college pre-service EE programs should be evaluated by environmental educators so as to establish, validate, or improve pre-service teacher training in environmental education.

Provide for advanced degree programs in environmental education for teachers and establish appropriate incentives to pursue these programs (e.g. pay scale recognition, position status equitable relative to other disciplines, scholarships, stipends)

### 4) School districts must be encouraged to provide equitable (relative to other disciplines) resources and personnel allocation to environmental education.

Hire teachers appropriately trained to practice environmental education and provide leadership in the development and evaluation of environmental education.

Establish school or district curriculum committees to work on the development and evaluation of environmental education programs.

Establish a consistent, comprehensive environmental literacy testing program (e.g., objective and performance based assessments).

Establish an on-going environmental education in-service program.

Provide teachers with access to appropriate environmental education materials.