A PLAN TO DETERMINE THE ENVIRONMENTAL EDUCATION RESOURCE AND INSERVICE NEEDS OF TEACHERS IN THE CHASKA SCHOOL DISTRICT 112

by

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ABSTRACT

A 1994 draft of the Graduation Rule from the Minnesota Department of Education issued a new set of standards for education. Among these standards are required performances in several areas. In the area of "applying informed decision-making processes", students must demonstrate stewardship of the environment.

To help meet state standards, an Environmental Education (EE) needs assessment was designed and distributed to all schools in the Chaska School District during the spring of 1994. Results of the assessment showed that 75.3% of teachers claim they are teaching EE while 68.8% of teachers spend less than 30 minutes per week teaching it. From research questions that were made, a Pearson's r correlation and a logistic regression did not show a significant correlation between teaching time vs. reference to the curriculum. With regards to training, there was a significant positive correlation between teachers who have received EE training and teachers who are teaching EE. The item most frequently chosen by teachers to strongly influence their teaching of EE however, was hands-on student materials.

Included in the assessment was a form that asked respondents to volunteer to serve on an EE Network. After several phone calls, a group was formed. The group met to review and analyze the results of the assessment. Based on the results and some discussion, the group decided to focus on the acquisition of student/teacher resources and training to improve the teaching of EE in the district. Barriers to this focus, as noted by the network, were funding and time. From this, a plan was designed that involved creating "Envirotrunks" to circulate throughout the district.
The trunks were to contain materials and resources that teachers could easily use, buy and/or copy. Future plans for the group included writing grants for further support and integrating EE. Further studies with this population could be done on the definition of EE and the methods teachers use for teaching EE.
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CHAPTER ONE
THE PROBLEM AND ITS SETTING

The Importance of the Problem

The Minnesota Department of Education developed a *Green Print for Minnesota State Plan for Environmental Education* (EE), a proposal that requires all public schools to include the teaching of EE in their curriculum. EE in the Chaska Public School District currently exists as a unit within the science curriculum. Because EE is included in this academic area, it often takes a "back seat" to the teaching of science, as well as other areas. During the 1993-94 school year, Chaska began working on a revision of the science curriculum. This provided an opportunity to focus on EE instruction and to accomplish the goals of the *Green Print*. With this coordination of the district's revision and a state proposal for organized EE, there comes a call for a plan of action. With district support, an EE needs assessment was be created, disseminated, and analyzed to determine the resource and inservice EE needs of the teachers in the Chaska School District. A committee was then set up to create a plan to meet those needs. Parts of this plan included: an EE network that would provide the district with EE representatives in each school, developing/editing existing curriculum, a resource center and training for teachers. Hopefully, this plan will ultimately enhance the teaching and integration/infusion of EE in the Chaska School District at all levels.
Statement of the Problem

The goal of this project is to develop a plan to meet the Environmental Education inservice and resource needs of teachers in the Chaska School District 112.

Subproblems

1. To develop and disseminate an EE needs assessment for teachers in the Chaska District.

2. To analyze the results of the assessment and:
   a. report on teachers' perceived competencies in their teaching of EE.
   b. report on the amount of class time per week teachers spend teaching EE.
   c. provide information on the teachers' perceptions of and use of the school district EE curriculum.
   d. provide information on the impacts teacher training has on teachers EE classroom practices.
   e. report on teachers' perceptions of incentives to aid them in teaching EE.
   f. report on teachers' perceived barriers to teaching EE.

3. To form an EE network whose members represent the primary, intermediate, middle and high school levels and administration.
4. To formulate a plan (a process) to meet the EE needs of teachers.

**Research Questions**

1. Is there a significant correlation between the amount of class time spent teaching EE vs. reference to the school district's EE curriculum?

2. Is there a significant correlation between teachers who have and have not received prior EE education/training with regards to their teaching of EE:

\[ H_0 = \text{no significant correlation between groups} \]
\[ H_1 = \text{significant correlation between groups} \]

**Delimitations**

1. The findings of this project apply only to the Chaska School District teachers K-12.

2. This project will not measure the effectiveness of individual teachers or committee members.
Definition of terms

Environmental Education (EE)- EE is the interdisciplinary process of developing a citizenry that is knowledgeable about the total environment, in its natural and built aspects, and that has the capacity and the commitment to engage in inquiry, problem-solving, decision-making and action that will assure environmental quality. (A Green Print for Minnesota State Plan for Environmental Education, p. 7 appendix A.)

EE infusion- the process of incorporating the goals and subgoals of EE into the existing curriculum areas without ruining the integrity of the individual courses. The state's goal for EE as selected by the MN EE Advisory Board is: to develop a population that has the knowledge, skills, attitudes, motivation, and commitment to work individually and collectively toward sustaining a healthy environment. (p.6.)

EE network- the network is a committee, or group of representatives including administrators, teachers, staff and/or community members. The role of the group is to:

1. develop a plan, based on the needs assessment, that will meet the EE inservice and resource needs of the teachers in the district.

2. meet during the school year to discuss EE status, disseminate information, work on the acquisition of funding, discuss EE ideas, problems, awareness, and solutions.
3. serve as a "pool" of committed EE teachers that will attend EE workshops/teacher training and be human resources for the district and community.

4. other possibilities include: if needed, write/edit existing EE curriculum to meet state and national standards and to make it more usable and infusable, and help develop an EE resource center for easy teacher access.

Assumptions

1. The Greenprint for Minnesota, a State Plan for Environmental Education, is not yet being effectively incorporated into the curriculum.

2. A needs assessment will accurately determine teachers' inservice and resource needs.

3. A plan can be formulated that will address the EE needs of teachers in the Chaska District.
CHAPTER TWO
REVIEW OF THE RELATED LITERATURE

The State of Education Today

Most of the current educational system is based on an old plan. Today's schools were formed in the industrial age and much of the traditional teaching is based on meeting the needs of society at that time (Rubba et. al, 1993). Content areas in most elementary and secondary schools are separate. Math, the sciences, and English are taught independent of each other. This separateness of subjects does not represent how we learn. We do not pull items apart into small pieces and only think about them one at a time. "The idea of separate studies was invented as a way to discipline the mind and to massage certain sensitive areas of the brain especially tuned to each subject," (Rubba, 1993). Students in this type of structure may never connect the ideas of one discipline to another. In addition, problems that students face in the 20th century are not of a separate nature. "Our planet, however, is affected by problems and issues that are not confined to single disciplines. Ecological, technological, social and economic problems are by their nature multidisciplinary," (Rubba, 1993).

In an article on science education and integrated curricula (Rubba,P. Jaeger, M. et.al.1993), Michael Jaeger stated that new technologies, understandings and communication skills are essential
for individuals that will have to solve the planet's problems. Curriculum for the twenty-first century should provide students with opportunities to invent and reinvent solutions to problems so that they may become good problem solvers. In order for students to do this, school subjects must be integrated across disciplines to reflect real-life problem solving.

"Education takes place inside students. This education is interdisciplinary and integrated whether or not that is the explicit goal of teachers or the school system," (Tanner, 1992). Students connect subject matter to their previous learning, their current personal lives and to their world. Schools can aid each student in this learning process by providing a curriculum that contains meaning and relationships between content.

Integrating subjects can create these relationships. Integrated curriculum, or the connecting of various subjects to create a "whole", can provide students with an opportunity to "intuit, create and solve problems" (Rubba P. Jaeger M. et. al.1993). Integration is also practical. Teachers can create meaningful contexts for learning. For example, if students are studying Egypt, instead of simply reading about pyramids, they can study how they were built using simple machines in science, ratios in mathematics, writing directions in language arts, drawing in art and societal rules in social studies. Science, technology and society curricula demonstrates efforts to link science and theories with applications, values and decisions.
"The notion of integrated subject matter is not new," (Tanner, 1992). In the 1950's integrating language arts with social studies and sometimes science at the Jr. High level was popular. Because of the "explosion" of current knowledge, and global economic competition, a call has been made by business and education to address a more contemporary form of education. "Technological, environmental, social and economic problems demand that we reexamine how we educate the next generation of citizens," (Jaeger/Rubba).

With a need to integrate subjects to create future problem-solvers of our technological and environmental problems, there is a need for environmental education (EE).

Environmental Education

According to Roth, 1992, "a major purpose of education is to provide people with the knowledge and skills to allow them to live successful, productive lives and to function as responsible citizens within society." Therefore, "because education is the vehicle through which society prepares its citizens to carry out their responsibilities, education must be environmental," (Ramsey, Hungerford, Volk. 1992). EE has been a way for educators to integrate subjects through: technological, social, political, cultural and aesthetic aspects of the environment. EE also integrates learning by "bridging the personal, local and national to the global in linking the actions of today with
the consequences of tomorrow," (Ramsey, 1992). EE can be considered an "answer" to today's educational demands and to the "call" for a reexamination of education that will create future problem-solvers and decision makers.

Background

Environmental Education is a result of several historical environmental "starter" programs, such as conservation education, outdoor education and nature study. It received a momentum from the first UN Conference on the Human Environment, held in Stockholm in 1972. The conference representatives passed a recommendation which said, "organizations of the UN system... should establish an international program in EE, interdisciplinary in approach, in-school and out of school, encompassing all levels of education and directed towards the general public..." (Hopkins, 1990-91). The importance of EE was emphasized at a UNESCO Conference in Tbilisi, USSR, in 1977 and reaffirmed in 1987 at a UNESCO conference in Moscow. EE's goal has been defined as:

to help students become environmentally knowledgeable, skilled, and dedicated citizens who are willing to work, individually and collectively, toward achieving and maintaining a dynamic equilibrium between the quality of life and the quality of the environment. (Hungerford & Peyton, 1976, p.2)
Environmental educators have promoted teaching EE and its goals through infusion. Infusion can provide teachers with opportunities for using other disciplines in seeking solutions for problems. Problem-solving using environmental issues makes for meaningful learning (Disinger, 1990). Infusion refers to:

the integration of content and skills into existing courses so as to focus on that content without losing the integrity of the courses themselves (Volk, Ramsey & Hungerford, 1989).

To incorporate EE by integration/infusion, the educational structure needs to change.

**Change**

American education is at the nexus of change--- (Rubba P. Jaeger M., 1993).

Society, with all of its technological, economical, and political influences has changed, but schools have not kept up. From educational research (Rubba P. Jaeger M., 1993) there is wide agreement that schools must meet new demands and challenges. In order to change, there is a need to better understand change.

"Change is a process whereby one's thinking and doing are altered. To change a procedure or method, other procedures or methods must be examined and weighed, the results incorporated...examined," (Fox, 1992). According to Fox this change requires an open-minded approach to ideas. Once the appropriate
change is selected, then it must be systematically implemented so that the ways that things have been done are permanently altered.

A report done by Davis, et. al.(Rubba, 1993), on "Creating Cultures for change in Mathematics and Science Teaching," stated that in order to make significant changes in schools, a shift in how teachers think about teaching and learning must occur. Their research contained basic underlying tenets for education and the nature of change:

- The unique individual person of the teacher is central to the education process
- Teachers have the necessary knowledge and skills to best handle the problems and issues in the schools and bring about school restructuring
- Collaboration, mutual support and learning among teachers is a vital component of teacher empowerment
- Lasting changes must occur within the individual as a result of conscious choice

In any process of educational change, several conclusions and recommendations were made by Fox:

- Change takes time and persistence
- Individuals go through stages and have different needs at different times
- Change strategies are most effective when they are relevant to peoples' needs
- Administrative support and approval are needed for change to occur
- Accept and work with peoples' reactions to change
- Change implementation must be viewed as a process, not an event
Barriers to incorporating EE in the curriculum

"EE has not found an established niche in the U.S. schooling process. . . EE in the U.S. schools is not theoretical, systematic, or comprehensive,"  
(Ramsey et. al., 1992)

Studies in EE have shown that there are many barriers to incorporating EE in the curriculum. Ham & Sewing (1987) list four major barriers: conceptual, logistical, educational and attitudinal barriers. When asked to define EE, 43% of their cases stressed teaching knowledge and awareness of contents of the environment. In a study done by Samuel (1993), conceptual problems were in the areas of knowledge and understanding of environmental issues. Logistical barriers in several studies were found to be a lack of time, funding, materials and training in EE. The highest ranked barrier in Ham's research was a lack of time in the school day, which also may reflect a misconception that EE is a separate entity and competes for time with other subjects. Other educational barriers were a lack of knowledge, and training for teaching EE. Attitudinal barriers were reflected in teacher behavior toward the environment. In general, responding teachers' attitudes were positive but they lacked the commitment to teach EE. Samuel's findings showed that the administrators were convinced that their main barrier was negative attitudes toward EE on the part of teachers, while the study revealed that only 10 percent of teachers' attitudes were negative, but 51 percent of teachers were hampered by a lack of knowledge. The primary barrier revealed by Ham & Sewing, was time.
Current barriers to teaching EE have been found by several researchers. A report on Wisconsin teachers' perceived competencies in, attitudes toward, and class time devoted to teaching about the environment (Lane, Wilke Champeau, Sivek. 1994) revealed that a lack of background in EE and the belief that EE is unrelated to teachers' disciplines are the main reasons that EE is not taught. This report randomly sampled elementary and secondary education teachers around the US. Samuel's report, (as mentioned above), on "Impediments to Implementing EE" contained conclusions that were based on previous studies and a group of interviews and surveys that revealed EE needs at the secondary level.

With regards to change, "implementation of an EE project requires an awareness of how to manage change", and "different perceptions or viewpoints must be taken into consideration if people are to cooperate,"(Samuel, 1993). Based on the results of her studies, which reported secondary level teachers' and principals' needs, she also suggested that teachers need to explore the philosophy behind EE and assess it in relation to their own values and teaching style.

**Techniques for identifying/measuring needs**

There are a number of techniques for identifying needs. Current educational trends include the use of performance based education with students. This type of education is assessed by a demonstration by the students of their skills and knowledge. It does not focus on, but reveals their needs. Qualitative techniques for
measuring needs involve interviewing, observing and documenting data. A combination of these and a needs assessment, or survey, has been commonly used with environmental educators and researchers.

Surveys can be used to aid educational decision making and serve as a way of communicating data and information (Green, 1970). Observable behaviors, attitudes and values can also be reported by surveys (Sudman & Bradburn, 1982). As mentioned earlier, "change strategies are most effective when they are relevant to people's needs," and "individuals go through stages and have different needs at different times, both of which can be gauged objectively through questionnaires (surveys) designed specifically for educational innovations," (Fox, 1992). Questionnaire-type surveys have also been used to determine attitudes, knowledge and school structure in studies by Blum 1988, Childress 1978, and Ham & Sewing 1988.

Examples & Case studies

The Asia Program of the World Wildlife Fund (WWF) developed a survey of EE activities and needs that was conducted in 1989-90. The purpose was to determine what EE activities were currently being conducted and how various groups could assist in developing, implementing, and expanding EE in Asia. Needs revealed were: a lack of training, insufficient funds and a lack of equipment and staff.
In "A National Survey of Current Needs as Perceived by Professional Environmental Educators" (Volk, Hungerford & Tomera, 1984), K-16 educators were assessed in environmental literacy and needs. The findings reflected that EE goals are not being met and extensive needs exist for curricula and teacher education.

An Environmental Education task force in Washington developed a survey-questionnaire to assess the status and needs of EE as perceived by educators in the state's school districts. Most districts had few EE objectives in place. Where EE concepts were taught, most were integrated into traditional classes, but there was a lack of emphasis on environmental issues. Parallel to Volk's research on barriers to implementing EE, logistical barriers were found in the areas of funding, materials and training, (Brouillet, 1986).

In Minnesota, surveys were conducted in 1991 by the University of Minnesota Center for Survey Research in response to 1990 Minnesota legislation. These legislation required environmental learning centers to develop a long-range plan by January 1992. Surveys were sent to teachers, administrators, and residents. Results of this survey are found in the next section.
Minnesota's Approach to EE

Nonformal Education

In 1990, Minnesota legislators required environmental learning centers to develop an EE long-range plan by January, 1992. In response to this the Minnesota State Department of Natural Resources conducted a study entitled "Environmental Education Centers 2000: A study of EE centers, Parts I, II & III," which was published in 1992. Part I describes the mission of EE centers, Part II contains supporting information and Part III contains the surveys and data. Surveys were mailed in the spring of 1991 to teachers, administrators and residents. Results showed that 71 percent of teachers are very interested in environmental issues and 28 percent are somewhat interested. Fifty-one percent of teachers said that funding and support from administration was needed most to help teach EE. Six recommendations were developed by the EE committee for legislative consideration and affirmed by the results of the survey.

Formal Education

EE was mandated by Minnesota's legislature in 1985 to be included in public school curriculum K-6. Part 3500.1100 Elementary School Curriculum Subpart 1 states that, "The following common branches of learning, or subjects shall be included in grades K to 6 or
K to 8 in the elementary curriculum: ....environmental education." In conjunction with the passing of the 1990 EE Act, the Minnesota Legislature established its own set of EE goals and priorities that encouraged public schools to incorporate EE into the curriculum, assisted by the Department of Education. According to policy 126A.08(a) "The Department of Education shall assist in establishing EE programs in all public elementary and secondary schools." (appendix D, p.4, EEC 2000) This section also states that: (b) "the EE program must be interdisciplinary, integrated into the curriculum, and outcome-based." 126A.09 states that the Department of Education shall develop curriculum, and integration models for a learner outcome-based EE program. In response to the Act, the State Department, in conjunction with the EE Advisory Board created a document called A Green Print for Minnesota, State Plan for EE. The report defined EE as:

the interdisciplinary process of developing a citizenry that is knowledgeable about the total environment, in its natural and built aspects, and that has the capacity and the commitment to engage in inquiry, problem-solving, decision-making and action that will assure environmental quality (p.7).

Seven overall goals for EE were set and included in the section on PreK-12 Students, Outcomes and Strategies(p.13). The goals are quite broad, (ex: 1. Understand scientific principles that define ecological systems.) and are accompanied by sample indicators, which are examples of what students need to do to demonstrate each
goal. The *Green Print* also stresses that EE is more than science education.

... in Minnesota EE is viewed as more than just science education. An environmentally educated citizen must not only understand the scientific basis of an issue or concept, but must also know how social systems interface with environmental issues and be willing to take action as a responsible citizen(p.7).

The plan also lists current needs, strategies to accomplish the goals, partnership opportunities, and actions for implementation. While these tips are general, they do stress who is responsible for each task and give schools an outline for the direction EE should travel.

In May of 1994, the Minnesota Department of Education drafted a "Proposed Graduation Rule" which outlines comprehensive goals for education (appendix D). These goals require that the students who enter high school in the fall of 1996 (the graduating Class of 2000) will demonstrate (1) the Basic Requirements and (2) the Required Profile of Learning. This Profile of Learning lists the required achievement performance of many processes. Among them is "Applying informed decision-making processes to promote... stewardship of the environment." In 1996 the 1985 mandate will expire, and this Graduation Rule will continue to promote EE in Minnesota. The State Department is also working on Exit Outcomes, which are objectives, or individual outcomes students must meet before they graduate. This is the "Curriculum Framework" which will guide schools in preparing their students for graduation. Outcome number 9 states: "The Minnesota graduate will understand
stewardship for the environment." The outcome has attributes which define what stewardship is, and a series of "Developmental Checkpoints" that coincide with grade levels in increments of three (ex: Grades K-2). A description of these checkpoints can be found in the Appendix. These documents stress to public schools the importance of EE in the future.

Chaska's Approach to EE

District 112's mission is "a commitment and responsibility to promote lifelong learning by providing high quality educational opportunities." This definition is found in the District's brochure entitled, "We're Planning to Succeed, Mission, Philosophy, Goals, Strategic Plan,"(appendix E). Mentioned in these goals and philosophy are environmental issues:

(Philosophy) As part of the world community, District 112 recognizes the interdependence of world peoples who are living in a delicate balance with nature. (Goal) Help learners recognize the interdependent nature of the evolving world community culture, their personal rights and responsibilities as citizens and caretakers of the earth, and their responsibility toward the human rights of others.

Environmentalism is also listed as one of the District's nine community values. These values are celebrated each year with activities in the schools as well as in the community.
The most recent active involvement of the Chaska School District in EE was in 1991. With a grant from the Metropolitan Council on waste, Chaska implemented a comprehensive district recycling program that included funding for curriculum writing. A curriculum unit entitled "Environmental Education" was written for grades K-12 and added as a separate item to the science curriculum. Even though EE is considered a part of the science curriculum, the science curriculum mission, philosophy and goals do not contain any mention of environmental education or environmental issues (see appendix G). This effort resulted in the first genuine EE curriculum written for the district, but includes waste and recycling only. EE is currently taught in the District in an unstructured fashion, according to teachers' abilities, resources and time constraints. These barriers, (knowledge, resources and time) to successful implementation of EE in the Chaska District align with those identified in previous studies and can be reduced or remedied.

Reducing Barriers to EE

Ham & Sewing's(1988) research revealed four categories of barriers: conceptual, logistical, educational and attitudinal. The data reported that teachers saw logistical barriers as the most critical obstacles to EE. These were specifically: a lack of time, preparation, materials, funding, class size and transportation problems. Based on this, Ham & Sewing recommended that EE in-service workshops should specifically focus on reducing known EE barriers. Ham et. al.
(1988) conducted an in-service workshop that was designed and implemented to reduce barriers and to increase the number of teachers teaching EE. Results showed that the workshop was able to reduce some, but not all of the barriers to EE. However, the workshop did lead to a greater number of teachers conducting EE.

Additional ideas for reducing barriers have been suggested by Ham & Sewing:

1. Efforts should be directed toward integrating EE into other curriculum areas besides science.
2. School district newsletters might be established for sharing EE resources between teachers and schools.
3. Each district should compile an EE library of instructional materials for each grade level.

Teacher training is also supported in Samuel's study (1993), "Teachers need to explore the assumptions and philosophy behind EE. . . this may involve a workshop type presentation and discussion among teachers." In a report by Unesco on *Strategies for the Training of Teachers in EE*, a need for training was made evident (p.21), "The need for trained EE personnel is apparent in both developed and developing nations."

The value of inservices/training in EE

"Teacher training is recognized to be a significant area for action in achieving the objectives of EE," (University of Malaysia,
It has been documented in many studies that EE training is valuable and a necessary strategy for improving the teaching of EE. According to Wilson (1993), educators, particularly of early childhood, in both formal and informal settings, are in "positions of power" when it comes to influencing attitudes and behaviors toward the earth. Many of them, however, have little or no training in the concepts and methods of EE (Ham & Sewing, 1987-88; Stone, '89). "Country Reports" (1987), presented through International Environmental Education Programme (IEEP) in Asia, suggested priorities for preservice and inservice teacher education:

- Teacher educators have the responsibility of giving pre and in-service teachers a thorough training to develop competencies necessary to meet the demands of EE.
- School-based in-service training in EE should be encouraged so that training could become related to the realities of the immediate environment.

Training teachers, both pre-service and inservice was recommended by the Tbilisi Conference as a top priority for effective implementation and development of EE programs. The training should enable teachers to acquire basic competencies required for effective dissemination of EE (Atreya, et.al., 1985). Schools and teachers play a central role in the system of education and can direct EE if sufficiently trained and knowledgeable. The results of "A National Survey" (Volk, Hungerford & Tomera, 1984), showed that a mandate for increasing inservice education and curriculum development in EE is necessary. Teacher education needs were perceived as "extant" at all levels. Recommendations made by Lane et. al, stated that, as a result of the survey data, "teacher education
courses in EE need to be available to assist teachers to relate environmental topics to their teaching area." Findings cited by Samuel state that teacher training and assistance are essential for an innovation to be put into practice. As a result of her findings, Samuel believes that implementation of a project requires an awareness of how to manage change, organize a development team, gather information and materials, develop a teacher training program, and planning.

Educational plans/goals

Planning

Alsdorf (1988), cites Sharpe on the importance of planning: "On preparing a plan, Sharpe (1982:77) mentions the importance of structure, research and the need for advance statements of goals and objectives." He continues to mention that planning is a process, and there are logical steps to it. It should be ongoing and not viewed as an end to itself. A plan is a dynamic tool that should be flexible to respond to and reflect the changes of an ever-changing society. It should be open to revision; not a static document. This open planning should meet education's ultimate goal: to serve students. Students need structure, particularly goals or objectives to accomplish.
Goals

It has been noted by researchers that in order to plan, a group must set goals. For example, Volk et.al. (1984) decided that since their study had attempted to assess EE curriculum needs, it demanded a set of criteria, or goals to culminate in citizenship action, the ultimate goal of EE. According to Hungerford et al. 1980, goals are needed to provide a sense of direction for curricular instruction and development. They also felt that EE goals should be more definitive than the general goals usually described for EE. The goals provided by the Green Print seem to demonstrate vague goals. "Without a clear statement of goals, a program would become a series of unrelated experiences, focusing on limited program objectives," (Stapp, 1974). Also, "... EE cannot be sufficiently implemented with vague goals," (cited by Samuel, 1993). And, "Unless the goals are clearly defined in advance, and readily understood by those affected, it is impossible to know whether or not the planning effort is successful... Therefore, measurable goals and objectives must be established," (Sharpe/Alsdorf, 1988). An example of a Goal-Referenced Planning/Implementation/Evaluation Model is provided in appendix. H. It describes the process, beginning with an identification of needs, a description of goals, a preassessment of conditions related to goals, design strategies, and a final step of evaluation.
Niedermeyer also gives a model of goals in his "Checklist for Reviewing or Developing EE Programs," (1992). He supports it by saying that the checklist items define what is needed for any program to function effectively in schools. A successful example of planning is Solkov-Brecher's "A Successful Model for School Based Planning," (1992). Through a grass-roots effort, the school group followed a model that contained goals, an action plan and evaluation. The plan addressed the goals they had intended to achieve and their mission was reinforced.

Summary

Updating a curriculum that was created in the industrial age is a necessary element in order for schools to progress academically. This progress can be made only through change and can occur if collaboration, support, learning and empowerment is given to teachers. Studies by many researchers support the integration and multidisciplinary uses of academic subjects. Environmental Education can help aid this integration as well as provide a future of environmentally responsible citizens and problem solvers.

There are many barriers to implementing EE, but if needs are measured and fulfilled, environmental teaching and learning can take place. Steps have been taken in Minnesota to implement EE in the schools. Minnesota's Legislature passed the 1990 Environmental
Education Act making EE a subject to be taught in schools, K-12. In 1993 a document called *The Green Print, a state plan for EE* gives the state board a pathway for helping schools implement EE.

Since the passing of the Act, District 112 in Chaska Minnesota has been an active participant in implementing EE in it's curriculum. EE currently exists as a part of the science curriculum and is taught according to time, ability and resources.

Creating a plan to improve the state of EE in the Chaska District is the focus of this project. Through a needs assessment, goal setting, and evaluation, this plan would help meet the EE inservice and resource needs of teachers in the Chaska District.
CHAPTER THREE
METHODOLOGY

Developing an assessment

Various needs assessments have been created in the area of environmental education and served as models for the Chaska assessment. Before the assessment was created, a meeting was held with the Director of Instructional Services for approval of the project and support. A letter or phone call was then sent to the principal of each school to inform them about the assessment. They were asked to support the project.

An assessment was created using sample assessments found in the literature review. Questions that were appropriate for the goal and district were added, including a final question that asked for volunteers for the network. Some of the questions were put on a likert scale, and others were open-ended, with space on the answer sheet for a more lengthy reply. Answer sheets (form Q10S-General Purpose Questionnaire, Trans-Optic, see appendix B) were provided by UWSP. Questions that required open responses were typed on the answer sheet by hand and copied by the UWSP duplicating office.

The quantitative/qualitative instrument then went through several "draft" phases and was reviewed by a professor of environmental education. This tool was piloted to seven teachers
that represented the basic levels of education K-12: elementary, middle school and high school. Each school received a memo accompanying the assessments to provide some background on the project and to confirm the calls and letters that had been sent to principals earlier. A short form was also attached to the assessments for evaluating clarity, understanding and brevity. After the piloted forms were reviewed and revised, a final copy of the assessment was sent out through the District 112 Office of Instructional Services (curriculum). This connection with administration helped channel results and questions.

At this time, the principals should have been asked to please make sure the assessments were distributed and collected. Some schools did not return any, or some of their surveys without prompting. Several of the schools had a teacher who was selected to do the collecting. This was done to ensure a better return, however, one teacher neglected to return his on time. One administrator left them in the office and indicated in a school newsletter that teachers could pick them up if they so desired. A teacher/colleague was contacted and went around the school distributing and collecting them so there would be a better return rate. Answers were retrieved by the Director of Instructional Services through inner-school mail.
**Formulating a network**

The assessment contained a final question asking for volunteers to serve on an EE teachers' network (or committee). The researcher facilitated the network and its meetings. Teachers representing all grade levels in the district were considered for positions on the network. Those that indicated an interest were contacted and given a further explanation of the group's focus. If the amount of interested teachers had been too large, a selection process that considers grade level, school and subject area would have occurred. Conversely, if the volunteers had been too few, personal contact by phone by the facilitator and district curriculum coordinator would have taken place. Ideally, the network should consist of:

- 1 teacher per grade level (K-5) & 1+ per building
- 1,2 middle school representatives
- 1,2 high school representatives
- 1 district administrator

A meeting of the network occurred in the spring of 1994 and the following items were discussed: the results of the assessment, communication among volunteers, incentives for network members, and/or funding.
Involving the network in EE planning

Analysis of assessments

A report of the assessment results was done by the computer department at UWSP and analyzed using an IBM data program called Statistical Package for Social Sciences (SPSS). To address the research questions several correlations among the data were made. The data was shown to the network and the group decided what action to take using these results. Additional information from the *Green Print* and Minnesota's EE mandates was also presented.

Process for developing a plan of action

Knowing the amount of time it takes for any group to come to a decision, several meetings of the network had to take place to come up with a plan. Support for the group's existence and actions was needed from the Office of Instructional Services. Outside assistance was also sought to help the network achieve its goals and answer questions. Once a plan was developed, subcommittees or selected teachers were assigned various duties to help put the plan into action.
Implementation of plan

Although implementation is not a part of the actual goal of this project, it is ultimately a goal of environmental education. How the implementation will take place will be determined by the network and administrators in the district. If funding is necessary, several options are available. The National Science Foundation awards grants to school districts that train teachers in science and EE, and for curriculum development in these areas. District 112 has a Foundation that supplies grants to teachers with innovative ideas that benefit students' learning. These amounts are small, but helpful.

Communication of the plan was made to the administration as well as the teachers. Opportunities for this were through district workshop days and inner-school mail. The network members also served as communication tools.

Evaluation

The plan was evaluated as it was being created to make sure it met the needs of the district as revealed by the assessment results and teacher input. Though it was not a goal of this project, an evaluation will be made by the network to see if the plan that was put in place accomplished the goals that the group had set.
Timeline 1994-1995

1. The district Director of Instructional Services was contacted in the fall of 1993 for approval of the project and support.
2. A draft of the assessment was created and reviewed-February 1994.
3. Assessments were sent out and collected-April 1994.
4. Results of the assessments were analyzed-May 1994.
5. The network volunteers were contacted and met before the end of the school year, May 1994.
6. A follow up meeting of the network took place after workshops in the fall of 1994.
7. Two half-day release times (for 6 people) were acquired by December, 1994.
8. The plan was in place by spring of 1995.
9. An evaluation of the plan occurred between April, 1995 and the end of the school year.
10. A follow up of the evaluation and future plans for the network will occur early fall, 1995.
11. A grant from the district's foundation was applied for and received in May, 1995. This will be used to purchase materials and workshops for the following school year.
CHAPTER FOUR
RESULTS

Analysis of the results

Preparation

The results were collected and sent to the computer science and information staff at UWSP to tabulate the means and frequencies of each answer. SPSS was used to create graphs to visually show some of the key results. Several items were cross tabulated to show frequencies by grade and subject area as well as class time and preparation. Logistic regressions were used when correlating items in the hypotheses due to the nature of the data.

Responses

Out of 343 teachers, 103 responses were received indicating a 33.3% response rate. Some responses were considered nondata because they responded twice on the same question, or marked an exclusive answer (circles that were not assigned an answer).

1. Report on teachers' perceived competencies in teaching EE

Results of the assessment showed that 75.3% of teachers state they are teaching EE (see figure 1). Questions 15 through 17 ask teachers about their teaching and it's impact on students (see
55.4% of the respondents agreed that they are effective at teaching their students environmental problem solving skills, while only 9.8% strongly agreed. 48.9% of the teachers agreed that the students are more aware of the impact of their individual behaviors on the environment as a result of taking their class. 37.1% of teachers agreed that their students are aware of the need to become involved in resolving environmental issues, while only 11.2% strongly agreed.

![Pie chart showing percentage of teachers teaching EE](image)

**Figure 1.** Percentage of yes and no responses to the question, "Are you currently teaching environmental education?".

2. To report on the average amount of class time per week spent teaching EE:
It was found that 68.8% of respondents spend less than 30 minutes per week teaching EE, with 18.2% spending between 31-45 minutes per week (see figure 2).

![Time Spent Per Week Teaching EE?](image)

Figure 2. Percentage of responses answering the question, "In all subjects that you teach combined, approximately how much time per week do you spend teaching EE?".

A cross tabulation (table 1) of frequencies of time spent teaching EE by grade level and subject showed:

- Of elementary teachers, Grade 2 spends the most time teaching EE
- Of secondary teachers, more time is spent on EE in science, with social studies a close second (plus or minus minutes within error on the assessment).
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Table 1b Total 90.0 5.0 5.0 20

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Table 1c Total 90.0 10.0 100.0

Table 1a shows a cross tabulation of frequencies of time spent teaching EE at the elementary level. 1b & c show frequencies of time spent teaching EE at the secondary level.
3. To report on teachers' perceptions of and use of the district EE curriculum:

Questions 10,11,12, and 13 refer to teachers' perceptions of and use of the district EE curriculum. With regards to use of the curriculum, 74.7% of teachers stated that they are not using the district's curriculum guide to teach EE. 57.7% stated that they never refer to the guide, 37.2% refer yearly, 2.6% refer monthly, and 1.3% refer either twice a month or weekly to the guide. A mean was calculated using the values 1-5 and item 11 (reference to the guide) received a mean of 1.513, indicating that the average teacher yearly or never referred to the guide. With regards to teachers' perceptions of the curriculum, when based on a likert scale, 61% of teachers were undecided when asked if they felt that the district's current EE program prepares students to deal with environmental issues effectively. 22% of the teachers agreed to this statement. 50.5% of respondents were also undecided when asked if they were pleased with the quality of the school district's EE curriculum. The next highest frequent response was "disagree", with 23.7%.

When cross tabulated (see table 2a-c) by grade level and subject area, references to the curriculum were:

- made most frequently at the elementary level by grade 2
- made most frequently at the secondary level by social studies teachers.
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**Table 2c**

Table 2a shows a cross tabulation of frequencies of references made to the district EE curriculum guide by elementary teachers. Table 2b & c show frequencies of secondary teachers.
4. To report on the impact of teacher EE training on classroom practices:

A cross tabulation (table 3a) of items 9 (class time) and 11 (reference to curriculum) showed that the largest number of respondents, 29, teach less than 30 minutes of EE per week and never refer to the curriculum guide. A cross tab of items 9 by 5 (training, table 3b) showed that 23 respondents teach less than 30 minutes of EE per week and have taken no EE classes in preparation. Fourteen teachers, however, have taken from 1-2 classes and also teach less than 30 minutes per week.

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<td>2</td>
<td>3.9</td>
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</tr>
<tr>
<td>76-90</td>
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<td>1</td>
<td>1</td>
<td>1</td>
<td>1.3</td>
<td></td>
</tr>
<tr>
<td>91-120</td>
<td>6</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1.3</td>
<td></td>
</tr>
<tr>
<td>121-150</td>
<td>7</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>2.6</td>
<td></td>
</tr>
<tr>
<td>&gt; 180</td>
<td>9</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1.3</td>
<td></td>
</tr>
<tr>
<td>Count</td>
<td>43</td>
<td>29</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>76</td>
</tr>
<tr>
<td>Total</td>
<td>56.6</td>
<td>38.2</td>
<td>2.6</td>
<td>1.3</td>
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### Table 3b

<table>
<thead>
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<th>IT9 Minutes by IT5 EE classes</th>
<th>0</th>
<th>1-2</th>
<th>3-4</th>
<th>5+</th>
<th>Total</th>
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<td>2</td>
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<td>4</td>
<td>5</td>
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<td>31-45</td>
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<td>2</td>
<td>8</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>45-60</td>
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<td>1</td>
<td>2</td>
<td>1</td>
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<tr>
<td>61-75</td>
<td>4</td>
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<td>1</td>
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<td>76-90</td>
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<td>1</td>
<td>1</td>
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<td>91-120</td>
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<td>121-150</td>
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<td>9</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Count</td>
<td>39.7</td>
<td>38.2</td>
<td>16.2</td>
<td>5.9</td>
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<tr>
<td>Total</td>
<td>48</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
5. To report on teachers' perceptions of incentives to aid them in the teaching of EE:

The means of responses were calculated in the area of "...strategies for increasing the teaching and infusion of EE". It was found that student materials were the strongest perceived need of teachers to improve their teaching of EE with a mean of 1.957 and a standard error(std err) of .115(see table 4). The next four areas were (in order of need): funding, mean=2.053 std err .113; development of outdoor sites, mean=2.086 std err .123; training, mean=2.096 std err .107; teacher resources, mean=2.160 std err .111.

<table>
<thead>
<tr>
<th>Items</th>
<th>Means</th>
<th>Std err</th>
</tr>
</thead>
<tbody>
<tr>
<td>20. Student Materials</td>
<td>1.957</td>
<td>.115</td>
</tr>
<tr>
<td>24. Funding</td>
<td>2.053</td>
<td>.113</td>
</tr>
<tr>
<td>23. Outdoor School Sites</td>
<td>2.086</td>
<td>.123</td>
</tr>
<tr>
<td>18. Training/Workshop</td>
<td>2.096</td>
<td>.107</td>
</tr>
<tr>
<td>22. Teacher Resources</td>
<td>2.160</td>
<td>.111</td>
</tr>
</tbody>
</table>

Table 4. Means recorded in the area of: increasing the teaching and infusion of EE in the classroom as reported by teachers. Responses were based on a likert scale where the value: 1=very strong, 2=strong, 3=undecided, 4=some, 5=no.
Means in the area of training were found strongest in the areas of EE activities and the training of infusion or integration (table 5a). In the category of curriculum revision, activities, not outcomes or assessments received the strongest response (table 5b).

<table>
<thead>
<tr>
<th>Subitems</th>
<th>Means</th>
<th>Std err</th>
</tr>
</thead>
<tbody>
<tr>
<td>29. EE activities</td>
<td>2.424</td>
<td>.118</td>
</tr>
<tr>
<td>28. infusion/integration</td>
<td>2.478</td>
<td>.107</td>
</tr>
<tr>
<td>32. EE subjects</td>
<td>2.587</td>
<td>.120</td>
</tr>
<tr>
<td>30. issues &amp; action</td>
<td>2.761</td>
<td>.104</td>
</tr>
<tr>
<td>31. EE goals of MN</td>
<td>2.957</td>
<td>.100</td>
</tr>
<tr>
<td>27. technology</td>
<td>3.165</td>
<td>.118</td>
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</tbody>
</table>

Table 5a shows the means and standard error in each subitem in the category: "...influence the teaching of EE in the area of training/workshops". Values for labels are: 1=very strong, 2=strong, 3=undecided, 4=some, 5=no influence.

<table>
<thead>
<tr>
<th>Subitems</th>
<th>Means</th>
<th>Std err</th>
</tr>
</thead>
<tbody>
<tr>
<td>35. activity revision</td>
<td>2.267</td>
<td>.119</td>
</tr>
<tr>
<td>33. outcome revision</td>
<td>3.033</td>
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<tr>
<td>34. assessment revision</td>
<td>3.222</td>
<td>.116</td>
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</tbody>
</table>

Table 5b The means and standard error in each subitem in the category: "...influence the teaching of EE in the area of curriculum revision".
Means were calculated in the area of "improved communication". Strongest responses were the dissemination of materials (table 6a). In the area of "more teacher resources", funding received the strongest mean response (table 6b).

<table>
<thead>
<tr>
<th>Subitems</th>
<th>Means</th>
<th>Std err</th>
</tr>
</thead>
<tbody>
<tr>
<td>36. dissemination of materials</td>
<td>2.576</td>
<td>.111</td>
</tr>
<tr>
<td>37. EE liaison in each building</td>
<td>2.880</td>
<td>.119</td>
</tr>
<tr>
<td>38. more meetings</td>
<td>2.933</td>
<td>.128</td>
</tr>
</tbody>
</table>

Table 6a. The means and standard error in each subitem in the category: "...influence the teaching of EE in the area of improved communication".

<table>
<thead>
<tr>
<th>Subitems</th>
<th>Means</th>
<th>Std err</th>
</tr>
</thead>
<tbody>
<tr>
<td>40. funding/info</td>
<td>2.043</td>
<td>.124</td>
</tr>
<tr>
<td>41. access to speakers, resources people</td>
<td>2.055</td>
<td>.119</td>
</tr>
<tr>
<td>39. EE lesson units/guides, activities</td>
<td>2.187</td>
<td>.118</td>
</tr>
</tbody>
</table>

Table 6b. The means and standard error in each subitem in the category: "...influence the teaching of EE in the area of more teacher resources".

Items 26 and 42 indicated an "other" option to respond openly to the question of "...influence the teaching of EE". Open responses indicated that time, administrative support, materials, training and resource people would greatly influence their teaching of EE (see appendix J).
6. To report on teachers' perceived barriers to teaching EE:

Barriers were not a focus of the assessment, however, open responses to questions in this area varied. The largest number of responses indicated that their subject was not related to, or did not allow room for EE. The second highest response was "not enough time". Other responses were: they do not have enough knowledge to teach EE, and that, EE displaces important curriculum. Responses are included in appendix J.

An EE network

Through the assessment, six people signed up as interested teachers for the network. After they were contacted, several changes had to be made due to their time constraints and distribution of grade level and subject area. At a district workshop given by the author, a sign-up sheet for interested teachers was distributed. Two signed up and neither are on the network due to the time commitment. A few teachers the author has worked with were asked to volunteer. This method seemed to work better. Using administrator leverage helped too! A note was sent to each teacher to meet in June (see appendix K for all meetings and agendas). At this meeting, key results of the assessment were shared. Additional information from the Green Print and Minnesota's EE mandates were also presented.
At the meeting it was decided that trying to make a plan for K-12 was "too much to swallow" at this time. We decided to narrow our efforts to K-8 and perhaps include the high school at some later date. Members of the network were encouraged to talk to colleagues who might be interested in joining the group for the fall. Funding was also brought up as an issue. Some felt that they should get paid for putting effort in "over time". This response from fellow teachers is disheartening, but reality. Members of the administration (including the one on our network, Director of Instructional Services) were contacted and money was found for us to meet for two half days during the year to plan. This money came out of our Eisenhower science funds.

After several attempts at meeting (through notes and phone calls) again, we established our network, including it's members, name, mission and plan. It was decided that our group would remain for grades K-6. Members of the middle school (grades 7, 8) indicated that they would be "messengers" for their school for communication purposes, but did not have time to be on a committee. The group is entitled "Environet" and is made up of one teacher at each grade level, one teacher per building. The goals and details of the plan can be found in appendix L.
Formulating a plan (a process)

Several steps needed to take place before the group could create a plan. Since EE is currently considered a part of the science curriculum, the author volunteered to be on the science committee and met with other teachers in the summer of 1994 to help review and change the current curriculum. In the science mission, philosophy and goals there was no mention of EE. A goal was added to the new draft of the mission that included environmental issues (see appendix G). This goal passed the mission committee and is on review (and will probably be passed) by the board of education. Another step was finding funding. As mentioned above, money was found to release eight teachers for two half days to create a plan. If a stipend cannot be found, then at minimum, release time should be created as teachers are too busy with meetings to meet after school or on weekends.

With a formal group and a set day for the half day release, we met and followed an agenda, using a district office conference room as a meeting site. Our first 15 minutes involved getting comfortable (with munchies included) to satisfy those basic needs. After reviewing our tentative goals and the state's requirements, we established a title and mission for our group. The next hour was spend brainstorming ideas in two areas; concerns, and plans (see November 30 meeting in appendix L). Large newsprint from 3M (the sticky kind) was used to brainstorm on so all of the ideas could be seen. As the facilitator, I knew that it was important to write
down all ideas and concerns (or issues) that members had so that they could feel like they'd been heard. The final hour was spent finalizing our plan, using the newsprint to highlight/narrow the ideas we wanted to use in the plan now and those we wanted to save for later. Several members asked at different points, "Is this going to satisfy our goals?". This was a verbal evaluation that helped us stay on track.

The last task was to delegate the responsibilities. Each member was assigned several duties to perform before the next meeting in order to carry out the plan. Several members were given added duties to complete, including making contacts and future planning. The plan and brainstorming session are found in appendix L.

**Research Questions**

Is there a significant correlation between the amount of class time spent teaching EE vs. use of curriculum?

A Pearson's R correlation and a logistic regression of items 9 and 11 did not show a significant correlation. This results in accepting the null hypothesis, or $H_0$=no significant correlation between the groups(see figure 3).

Is there a significant correlation between teachers who have and have not received prior EE education/training with regards to their teaching of EE:

With regards to the training teachers have received and teaching EE, there was a positive significant correlation, or $H_1$=significant correlation between groups(see figure 4).
Logistic Regression IT 5 BY IT Redo6

Figure 3

Total number of cases: 103 (Unweighted)
Number of selected cases: 103
Number of unselected cases: 0

Number of selected cases: 103
Number rejected because of missing data: 22
Number of cases included in the analysis: 81

Classification Table for REDO6
Predicted

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<thead>
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<tr>
<td>0</td>
<td>62</td>
<td>0</td>
</tr>
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<td>1</td>
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Percent Correct

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<th>100.00%</th>
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</thead>
<tbody>
<tr>
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</table>
Overall 76.54%

------------------------ Variables in the Equation ------------------------

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<th>R</th>
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LOGISTIC REGRESSION

Dependent Variable: REDO9B

Variable(s) Entered on Step Number
1. . IT5  
   IT11  

Classification Table for REDO9B
Predicted

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<th>1.00</th>
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<td></td>
</tr>
<tr>
<td>.00</td>
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<td>5</td>
</tr>
<tr>
<td>1.00</td>
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Percent Correct

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</thead>
<tbody>
<tr>
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<td>26.09%</td>
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</table>
Overall 67.16%

------------------------ Variables in the Equation ------------------------

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<th>Wald</th>
<th>df</th>
<th>Sig</th>
<th>R</th>
<th>Exp(B)</th>
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</thead>
<tbody>
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<tr>
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<td>.0093</td>
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</table>
CHAPTER FIVE
CONCLUSIONS

Problems regarding the assessment

Several teachers indicated problems with the assessment's clarity. In particular, question number six asks if they teach environmental education. Teachers indicated that perhaps they should have been asked to state how they teach it. Even though the definition of EE was given at the top of the assessment, some teachers felt that they define and teach it in their own ways. Item number nine asks how much time per week teachers spend teaching EE. Teachers suggested that the question should read per month. Items 18-26 ask teachers to "rank" each item as it would potentially influence their teaching. The correct term here should be "rate". This did not seem to negatively affect the results however.

Implications from the data

Using the frequencies found in items 10, use of the district guide and 11, references to the guide, one could conclude that teachers do not use the EE curriculum guide for the district. With the information received from teachers through the assessment and from teachers at the planning meetings, teachers do not want more curriculums created. They would like something that is easy and ready to use, something that is creative and hands-on for students.
Not only should it be easy, but it should not be an "add-on" to the heavy amounts of curriculum that is already being taught. A final note made by members of the network was that whatever is given to teachers to include in their curriculum should be "adopted" or "owned" by teachers. If teachers do not have a say, or a chance to contribute to what is being created, they will not feel a part of it; have ownership of it.

How can EE survive in this kind of complicated web? Wait, there's more!

It was found that 47.3% of teachers agreed that it is important to teach EE, while 40.9% strongly agreed. Even though this is a large percentage of the total population of responses, several barriers seem to be in the way. From the open responses received, it appears that teachers found time to be a big barrier to teaching and/or including EE in their curriculum. With all of the subjects that teachers must teach (i.e. multicultural/gender fair, violence prevention, sex education, drug education, etc.) it is no wonder that teachers are tight for time and energy. EE is looked on by some as an "added" responsibility and thus receives a negative response.

Besides time, funding is another area that teachers stated was necessary to create or add EE to the curriculum. It takes money to fund the substitute teachers that release teachers from their regular classroom. District 112 currently funds teachers for creative units created "in style" (according to learning style). With this kind of backing for other curriculum, it seems unfair that EE has to suffer
because teachers are used to getting paid for changing and writing new curriculum.

A final barrier noted by the author of this project is teacher motivation. Each individual is motivated by different factors. Future study may involve discovering what motivates teachers to work toward the end that is desired by the project leader. Not only are teachers motivated to teach what is personally meaningful for them, (or that of which they have ownership) but once ownership is attained, some teachers hold onto their projects. The author discovered that several teachers want a list or index of EE activities that teachers do by grade level so that "favorite" activities or units are not repeated. If teachers are not willing to share their work or experiences for the benefit of others, perhaps another method of meeting teachers' EE needs will have to be explored. What motivation works with some teachers may not work with others!

Future study could involve what motivates teachers to teach EE. This will involve finding the answers to questions such as: "What values do teachers hold regarding education for the benefit of all?", "What are the definitions of EE according to the teachers in the Chaska District?" and "What are the methods teachers currently use to teach EE in the district?".
Summary

With all of the barriers for implementing environmental education, several things remain clear. Teachers need time, funding and ownership of the product in order for curriculum to be used. From this project it was discovered that an extraordinary amount of time and energy is needed by the facilitator of the group, as well as support from an administrator and a small group of energetic, committed staff.

A final need for implementing EE is support from the state and national governments. As this is being written, Minnesota's Graduation Rule has still not passed the legislature. Some say that too many mandates or rules are constricting to a democracy. Unfortunately, the teachers in public education (which is a state run institution), need to see that the "big cheese" backs whatever curriculum is used in schools or it won't get taught. In other words, EE needs these mandates.
References


APPENDIX A

A GreenPrint for Minnesota: state plan
A GREENPRINT FOR MINNESOTA

State Plan for Environmental Education

SCALE: 1/2" = 25 miles
The plan identifies recommendations for:

- **The Minnesota Legislature**
- Environmental educators working with specific audiences
- **The Office of Environmental Education and Environmental Education** Advisory Board.

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**Introduction**

The 1993 Environmental Education Plan was prepared by the Office of Environmental Education, under the direction of the Environmental Education Advisory Board, and with input from Minnesota citizens interested in helping to achieve Minnesota’s goals for environmental education.

By passing the 1990 Environmental Education Act, the Minnesota Legislature recognized the need to increase the environmental literacy of its citizens. The Act established state goals for environmental education, created an Office of Environmental Education and an Environmental Education Advisory Board, and outlined duties and processes for providing environmental education to Minnesota students and other citizens (See Appendix, Minnesota Statutes 126A.).

The plan identifies three sets of recommendations and strategies for those responsible for helping achieve the state’s goals for environmental education:

- The Minnesota Legislature;
- Environmental educators working with specific audiences;
- The Office of Environmental Education and the Environmental Education Advisory Board.

Environmental education programs and activities should be designed for learners of all ages, varying abilities, cultural backgrounds, and places of residence. It is important to draw from and build upon the rich traditions and life experiences of Minnesota’s culturally diverse populations.
In preparing the plan, the Environmental Education Advisory Board identified and prioritized the following target audiences for environmental education:

- PreK-12 Students
- Higher Education Students
- Government Officials and Boards
- Consumers
- Producers/Landowners
- Regulated Community
- Business Community
- Outdoor Recreation Resource Users
- Citizen and Youth Groups
- Religious Groups

The 1990 Environmental Education Act requires environmental education to be outcome-based. The Department of Education defines an outcome-based educational program as one that:

- Clearly identifies what the student is to learn;
- Measures progress by observing behaviors;
- Accommodates the needs of students by using multiple instructional strategies and assessment tools;
- Provides each student time and assistance to reach his or her potential.

The plan has been prepared in an outcome-based manner. Behavioral outcomes for each audience have been identified. These outcomes are observable, measurable behaviors that demonstrate an increase in environmental literacy. The outcomes are listed in priority order for each audience, and each outcome contributes to one or more of the state’s goals for environmental education.

**Goals**

In the 1990 Environmental Education Act, the Minnesota Legislature adopted seven environmental education goals for students and citizens of the state. The goals were adapted from the Learner Outcome Goals prepared by the Department of Education in 1977 and revised in 1990 by means of a citizen input process.

Minnesota’s environmental education goals for pupils and other citizens of the state:

- To understand ecological systems.
- To understand the cause and effect relationship between human attitudes and behaviors and the environment.
- To be able to analyze, develop, and use problem-solving skills to understand the decision making process of individuals, institutions, and nations regarding environmental issues.
- To be able to evaluate alternative responses to environmental issues before deciding on alternative courses of action.
- To understand the potential complementary nature of multiple uses of the environment.
- To provide experiences to assist citizens to increase their sensitivity and stewardship for the environment.
- To provide the information citizens need to make informed decisions about actions to take on environmental issues.

In order to meet the state’s goals for environmental education, the 1993 Environmental Education Plan identifies philosophical principles, audiences, outcomes, and strategies for action to guide environmental education in Minnesota over the next ten years. In preparing this plan and building on previous environmental education efforts in Minnesota, the Minnesota Environmental Education Advisory Board selected the following mission for environmental education in Minnesota:

- To develop a population that has the knowledge, skills, attitudes, motivation, and commitment to work individually and collectively toward sustaining a healthy environment.

Minnesota’s environmental education mission corresponds to the U.S. EPA’s National Environmental Education Advisory Council’s 1992 definition:
Environmental education is the interdisciplinary process of developing a citizenry that is knowledgeable about the total environment, in its natural and built aspects, and that has the capacity and the commitment to engage in inquiry, problem-solving, decision-making and action that will assure environmental quality.

**Background**

Environmental education in Minnesota has been evolving over the past twenty years. Over that period a series of philosophical principles for environmental education have emerged. Those principles contributed to and expand upon the goals of the 1990 Environmental Education Act.

Minnesota’s philosophy of environmental education reflects similarities to and differences between the approaches of other states and the federal government. Although an understanding of ecological systems is essential to, and the basis of, a good environmental education program, in Minnesota environmental education is viewed as more than just science education. An environmentally educated citizen must not only understand the scientific basis of an issue or concept, but must also know how social systems interface with environmental issues and be willing to take action as a responsible citizen.

The philosophical guidelines incorporated into this plan are drawn from the definitions of “environmental education contexts” identified by the Department of Education and from citizen review of current state and national goals for environmental education.

- **The natural context:** An environmentally educated person understands the scientific concepts and facts that underlie an environmental issue and the interrelationship of these realities. This knowledge comes from the study of science including ecology, chemistry, meteorology, geology, astronomy, physics, and biology.

- **The social context:** An environmentally educated person understands how human society is influencing the environment, as well as the economic, legal, and political mechanisms that provide avenues for addressing issues and situations. This knowledge comes from the study of how societies affect and deal with environmental issues, problems, and realities.

- **The valuing context:** An environmentally educated person explores his or her values in relation to environmental issues; and from an understanding of the natural and social contexts, the person decides whether to keep or change those values.

- **The action context:** An environmentally educated person becomes involved in activities to improve, maintain, or restore natural resources and environmental quality.
Decision makers and environmental educators should strive to develop environmental education programs for Minnesotans that include the following objectives and characteristics:

- To develop an environmental ethic, environmental education should:
  - Examine the impacts of past and current societies and cultures on the environment;
  - Explore the concept of sustainable development, recognizing the impact of population growth, multiple use of resources, economic consequences, and impact on jobs;
  - Raise the level of awareness of environmental degradation and the need for stewardship of the environment;
  - Provide the skills to examine the evidence and weigh the alternatives about environmental issues;
  - Encourage responsible organizational and individual action;
  - Provide opportunities for learning in outdoor settings;
  - Raise awareness of and appreciation for the natural environment.

- To improve ecological, scientific and technical literacy, environmental education should be based on:
  - Ecological principles;
  - Current scientific and technical research;
  - Sustainable resource management principles.

- To ensure that the educational approach is effective, environmental education should:
  - Be lifelong for all citizens;
  - Be integrated into all education programs;
  - Use a mix of educational disciplines and media;
  - Be designed and delivered in an outcome-based education manner so that it is focused on the individual and is results-oriented;
  - Emphasize experiential, hands-on learning techniques.

- To provide access to the diverse resources available, the environmental education delivery system should:
  - Provide citizens a variety of choices of environmental educators and instructional materials;
  - Provide information on public and private resources related to the environment, environmental issues, and instructional methodology;
  - Provide information that supports responsible local decision making.
The Environmental Education Advisory Board identified priority audiences for the state environmental education plan. The outcomes, needs, partnership opportunities, and strategies listed for each audience were developed by the Board working in cooperation with representatives of each audience. The Board recommends that organizations, agencies, groups, and individuals interested in environmental education use this portion of the plan as a guide for their work and planning over the next ten years.

Priority Audiences

The audiences, listed in priority order are:

- PreK-12 Students
- Higher Education Students
- Government Officials and Boards
- Consumers
- Producers/Landowners
- Regulated Community
- Business Community
- Outdoor Recreation Resource Users
- Citizen and Youth Groups
- Religious Groups

Priority audiences were identified by the Board using the following criteria. Audiences that:

- Have direct impact on the natural resources;
- Have impact on resource law and management;
• Are in a position to model behavior to others;
• Are capable of changing behavior;
• Are caught up in situations that bring personal involvement in environmental issues to the fore.

For each of the priority audiences, needs have been identified and strategies and implementation actions have been formulated. The outcomes and strategies are listed in priority order for each audience.

Environmental educators and those interested in environmental education are encouraged to work in partnership to help achieve Minnesota's goals for environmental education. Opportunities for such partnerships have been identified for each audience and are suggested in each implementation action.
PreK-12 Students

Outcomes & Strategies

Audience:

Students in the formal education system from prekindergarten through twelfth grade.

Outcomes:

PreK-12 Students will:

1. Understand scientific principles that define ecological systems.
   Sample Indicator: Students can define concepts central to ecology.

2. Develop critical thinking skills to be able to understand opposing views in issues that effect the environment.
   Sample Indicator: Students will be able to debate opposing view points on environmental issues.

3. Develop personal appreciation, sensitivity, and stewardship for the environment.
   Sample Indicator: Increased number of students involved in positive actions with the environment.

4. Be aware of the effects of personal decisions and actions on the local and global environment.
   Sample Indicator: Students can describe some local and global environmental, social, and economic implications of an issue.

5. Be wise consumers.
   Sample Indicator: When describing how they make decisions about purchases, students include environmental considerations.

State Goals for Environmental Education

To understand ecological systems.
To understand the cause and effect relationship between human attitudes and behavior and the environment.
To be able to analyze, develop, and use problem-solving skills to understand the decision-making process of individuals, institutions, and nations regarding environmental issues.
To be able to evaluate alternative responses to environmental issues before deciding on alternative courses of action.
To understand the potential complementary nature of multiple uses of the environment.
To provide experiences to assist citizens to increase their sensitivity and stewardship for the environment.
To provide information citizens need to make informed decisions about actions to take on environmental issues.
Related Background Information:

- Minnesota State Board of Education Rules (1986) lists environmental education as required curriculum for kindergarten through the last elementary grade in each elementary school.
- The 1990 Environmental Education Act requires the Minnesota Department of Education to assist in establishing environmental education in all public elementary and secondary schools.
- There are 766,784 PreK-12 students in Minnesota public school and 80,653 students in private schools. There are 49,045 teachers in public schools and 5,759 teachers in private schools.
- Prekindergarten, kindergarten and elementary average daily membership is expected to grow by about 4500 students through 1994. It will then decline each year through the year 2000, with a decrease in average daily membership of 25,000 by the year 2000. (MDE, 1992).
- Because of enrollment changes, school districts will hire fewer than 100 new elementary teachers each year through 1994-95. After that, around 240 elementary positions will probably be eliminated each year through the year 2000. (MDE, 1992).
- Secondary school average membership is projected to increase by some 84,500 students from 1991-92 through the year 2000. (MDE, 1992).
- During the next 10 years there is expected to be an annual increase of about 490 secondary teachers because of enrollment increases. (MDE, 1992)
- About 3000 to 3500 new PreK-12 teaching jobs are created annually through turnover. (MDE, 1992).
- In March 1993, the State Board of Education approved graduation content outcomes that include an outcome assigned to environmental education. (Content outcomes describe the knowledge and processes that give the graduate an in depth understanding of various contexts.)
  - The Minnesota graduate understands stewardship of the environment.
- Competence in teaching environmental education is not included as a requirement for teacher licensure or relicensure.
- In a 1991 survey of Minnesota teachers, when asked what kinds of training they have had in environmental education sixty-nine percent indicated they received their training from personal experience; forty-five percent from workshops/seminars; thirty-two percent from inservice; twenty-two percent from continuing education classes; and fourteen percent from pre-service. (Minnesota Center For Survey Research [MCSR], 1991).
- Minnesota teachers surveyed in 1991 indicated that the media (newspapers, TV news, TV news magazine shows) are major sources of information on environmental education resources and services. After the media, environmental organizations, state and local governments, and magazines were identified as major sources of such information. (MCSR, 1991).
- Sixty-eight percent of Minnesota teachers surveyed said they had conducted environmental activities with students in their classes during the 1990-1991 school year. However, only thirty-three percent of Minnesota teachers felt they definitely knew enough about environmental education to incorporate it into their own teaching. (MCSR, 1991).
- Among Minnesota teachers surveyed, eighty-one percent of the physical/biological science teachers conducted environmental education in the 1990-1991 school year, but only sixty percent indicated they definitely knew enough about environmental education to incorporate it into their teaching. (MCSR, 1991).
- Among Minnesota teachers surveyed, eighty-two percent of the teachers who teach all subjects (primarily elementary teachers) conducted environmental education in the 1990-1991 school year, but only thirty-two percent of those teachers indicated they definitely knew enough to incorporate environmental education into their teaching. (MCSR, 1991).
- Minnesota teachers surveyed indicated that in order to conduct environmental education their greatest needs were for funding and support from administration (fifty-one percent), naturalists/speakers (forty-nine percent), training on environmental issues (forty-seven percent), and environmental learning stations/kits (forty-one percent). (MCSR, 1991).
- The Department of Education has identified an environmental education teacher contact in each public and private PreK-12 school in Minnesota. In a 1992 survey, these teachers indicated that the following factors were equally useful in assisting teachers in providing environmental education:
  - teacher training
  - off-school-site experiences
  - school environmental education site within walking distance
  - resources (materials, audio/visual aids, etc.). (Department of Education, 1992)
- In the same survey, about one-third of the teachers indicated they had a site for environmental education
within walking distance and just under half indicated that they had been to a residential environmental education center. (Department of Education, 1992).

- When Minnesota teachers were asked what they needed to take students off school grounds for environmental education, they indicated a need for money for transportation (seventy-six percent), money for fees (seventy-one percent), information about places to go (fifty-seven percent), and time for planning (forty-five percent). (MCSR, 1991).

- Minnesota teachers and administrators surveyed indicated that it was very important to include environmental concepts in science and social studies. To a lesser degree, they supported including environmental concepts in reading, English, and art. (MCSR, 1991).

- Twenty-three percent of Minnesota school administrators surveyed indicated that their districts had a written plan for environmental education and five percent indicated they had a separate budget line for environmental education activities. (MCSR, 1991).

- Minnesota school administrators surveyed indicated that money for transportation (eighty-one percent), money for fees (seventy-four percent), and information about places to go (sixty-two percent) would allow teachers in their school districts to take students off school grounds for environmental education experiences more often. (MCSR, 1991).

- Minnesota school administrators surveyed indicated that in the 1990-1991 school year financial support was provided for environmental education in the areas of off-site trips (fifty-two percent), teacher training (thirty-five percent), curriculum purchase (thirty percent), program development (twenty-eight percent), and equipment (fourteen percent). (MCSR, 1991).

- Minnesota school administrators indicated that teachers in their district needed funding and support (seventy-three percent) and training in environmental issues (sixty-one percent) to do environmental education activities with students. (MCSR, 1991).

d. Teachers need access to current and accurate materials, resources, and resource people.

**Partnership Opportunities:**

- local schools
  - Department of Education
  - Educational Cooperative Service Units, education districts, and organizations serving local schools
  - higher education institutions
  - environmental education centers
  - parent, teacher, and student associations
  - state and federal agencies
  - local governments
  - volunteer groups (outdoor recreation groups, citizen and youth groups, environmental groups, producer/land owner groups, hunting and fishing clubs)
  - regional agencies (Soil and Water Conservation Districts [SWCD], Board of Water and Soil Resources [BWSR])
  - business and regulated communities
  - Community Education
  - School Nature Area Project
  - public television stations

**Strategies:**

I. Provide Incentives

Provide incentives for PreK-12 school administrators and school board members to implement programs and activities that achieve the goals of the 1990 Environmental Education Act.

**Implementation Actions:**

- Adopt proposed comprehensive environmental education outcomes required for high school graduation.

- Develop clear measurable goals and testable outcomes for PreK-12 environmental education.
  - Who: Department of Education, local school districts.

- Promote and monitor school district efforts to achieve the goals and requirements of environmental education.
  - Who: Department of Education.

**Needs:**

a. School administrators and boards need to support environmental education.

b. Teachers need to be prepared to teach environmental education content and concepts using experiential teaching methodology.

c. Students need access to a variety of learning sites beyond the classroom.
• Participate in annual conferences of school board members, superintendents, and principals.
  Who: Office of Environmental Education, Department of Education.

• Participate in regional and local environmental education conferences and networks.
  Who: Office of Environmental Education, Department of Education.

• Provide “Environmental Education Act Implementation Made Easy” materials to district and school administrators.
  Who: Office of Environmental Education, Department of Education.

• Recognize exemplary ways that school districts have used the inclusion of environmental education in the PER cycle review process to assure integration of environmental education into the curricular programs.
  Who: Department of Education, Office of Environmental Education.

II. Provide Programs

Provide education programs in environmental education for current PreK-12 teachers.

Implementation Actions:

Inservice programs should:

• Prepare teachers to integrate environmental education into their teaching.

  Provide training to early childhood; elementary; and secondary science, social studies, and agriculture teachers in all Minnesota school districts in the use of the environmental education model curriculum integration process developed by the Department of Education.
  Who: Higher education institutions, Department of Education, environmental education centers, Community Education.

• Provide in-depth training on environmental concepts, issues, and environmental education methods.

  Identify and adapt model environmental education programs for ongoing teacher education.
  Who: Department of Education, higher education institutions, state agencies, environmental education centers.

• Provide opportunities for teachers to be inspired about environmental education and introduced to current information and methods.

  Provide training to PreK-12 teachers using national programs such as Project Learning Tree, Project WILD and Aquatic WILD.
  Who: Community Education, Department of Natural Resources, Department of Education, environmental education centers, and higher education institutions.

• Encourage state environmental agencies to adopt or adapt materials on environmental issues within their purview, and disseminate these materials to teachers using the model currently employed by the Department of Natural Resources for the distribution of Project WILD and Project Learning Tree.

• Provide in-service training through workshops on how to use video and other technologies on environmental education.
  Who: Local schools, media, higher education institutions.

Provide access to a variety of out-of-classroom environmental educational experiences.

Implementation Actions:

• Encourage schools to provide out-of-classroom environment educational experiences at each grade level PreK-12.
  Who: Department of Education, Office of Environmental Education, environmental education centers, regional and local environmental agencies, environmental organizations.

• Encourage all school districts to adopt a three-tier, out-of-classroom environmental education program using school/neighborhood, community, and statewide sites.
  Who: Department of Education, Department of Natural Resources, environmental education centers, School Nature Area Project.

• Implement information and education programs for parents and school administrators outlining the academic value of out-of-classroom environmental education programs.
  Who: Department of Education, environmental education centers.
This section includes a brief introduction to the role and activities of various agencies, institutions, and organizations providing environmental education in Minnesota.

In Minnesota, environmental education activities are provided by a variety of groups and organizations but these programs do not often have a common focus or goal. The variety of programs and projects is great and the content diverse. Funding sources include public monies, private nonprofit and private for-profit businesses, and organizations. The state plan recognizes and is designed to encourage this diversity, while providing a prioritized set of goals, outcomes, and strategies. Partnerships between public agencies and private entities are strongly encouraged.

To some extent the diverse development of environmental education in a diverse manner has contributed to a lack of stable, long-term funding and coordination. Materials are developed but often not effectively distributed. Projects suffer from a lack of long-term commitment. There is no evaluation process in place to assure that a balance of environmental issues and concepts are covered in programs and materials. Many important audiences are not being addressed.

A review of funding sources for organizations and individuals included in the database at the Office of Environmental Education shows that:

- More producers of environmental education materials are publicly funded than privately funded;
- The business community, the philanthropic community, user fees, and fund raising by groups are major sources of private funding for organizations;
- More publicly and privately funded environmental education resources have been identified for K-12 students and teachers than for any other audience.
According to the *E.E.C. 2000* study, the Blandin and McKnight foundations place a priority on supporting environmental education.

**Legislative Commission on Minnesota Resources (LCMR)**

The Minnesota Legislature provides funding for specific environmental information and education projects as recommended by the Legislative Commission on Minnesota Resources (LCMR). Funding for these projects comes from the Minnesota Future Resources Fund, the Minnesota Environment and Natural Resources Trust Fund, and oil overcharge money. Request for proposals are sought every other year and projects receive legislative funding for two years. It is the Legislature's intent to fund such projects for a limited period and not to provide ongoing funding for projects and programs from these same sources. In the 1991-1993 biennium, $2,885,000 was allocated to environmental education projects.

**State Agencies**

Many state agencies, with appropriations by the Minnesota Legislature, support or directly deliver environmental education programs or information to a wide range of citizens. Environmental education components are often woven into the ongoing information provided by agencies related to their charge and mission. Often the state is involved in partnerships for developing or coordinating information, while other organizations carry out the delivery of that information.

**Department of Education**: In 1977 the Department of Education developed “Essential Learner Outcomes” for environmental education. These outcomes were revised in 1990 and are reflected in the present “Model Learner Outcomes for Environmental Education” document and in five of the goals incorporated into the 1990 Environmental Education Act.

The Minnesota Environmental Education Act of 1990 created an Office of Environmental Education and established the Environmental Education Advisory Board. The Act provides the director of the Office of, along with other duties, the authority to coordinate informal environmental education with K-12 and post-secondary environmental education programs. The Board includes representatives of nine state environmental and education agencies and eight citizen members appointed by the Governor. The Department's fiscal year 1993 budget provided $100,483 to support the activities of the Office and the Board.

In 1991, the Minnesota Legislature, upon recommendation by the LCMR, provided funding to the Department of Education to develop an outcome-based, interdisciplinary, environmental education integration process with curriculum models that demonstrate how to integrate environmental education into existing curricula. The integration process and curriculum models are being developed by teachers in seven individual Minnesota school districts and one consortium of eight districts. They will be available for dissemination to Minnesota school districts in the fall of 1993; however there is limited funding available for dissemination.

Currently, the State Board of Education’s proposed graduation rule contains an environmental education content outcome which reads, “the Minnesota graduate understands stewardship of the environment.”

**Environmental Conservation Library (ECOL)**: ECOL is a state-funded, central library of environmental information and resources, located within the Minneapolis Public Library’s Technology/Science Department. ECOL acquires environmental materials and makes them available to all citizens, especially educators. The Minnesota Legislature has allocated money to ECOL to assist in the acquisition of materials of interest to environmental educators. State funding only covered a portion of ECOL’s acquisitions.

**Department of Agriculture**: The Department’s Energy and Sustainable Grant Program will provide $57,000 a year in 1994-1995 to farmers, higher education institutions, and nonprofit organizations as an incentive for implementing sustainable farming practices. Grant funded practices are disseminated to farmers by means of demonstration days and summary reports.

The Department, working in partnership with the agricultural industry, makes materials available to teachers through “Minnesota Agriculture in the Classroom.” These materials are designed to help develop an understanding and awareness of agriculture and its impact on all people.

**Office of Waste Management**: The Office provides a variety of services and programs related to waste education. All programs are funded through the 6.5 percent sales tax placed on garbage collection and disposal. WHATAWASTE, a K-12 waste reduction and hazardous waste education curriculum, was developed and is being distributed free statewide. The SMART Shopping Campaign is a public education campaign on source reduction, educating communities and individuals at the point of purchase. The program allocation for fiscal year 1993-1994 is $414,000. The Waste Education Grant
Develop adequate programs and facilities to provide PreK-12 students with access to out-of-classroom environmental education experiences.

Provide day-use programs within fifty miles of each school and in populated areas, at least one for every 100,000 individuals.

Since there is a state park within fifty miles of all Minnesota citizens, consideration should be given for using these parks as cost-efficient opportunities for providing out-of-classroom day-use programs for environmental education. Curriculum should be adapted for state parks that allow teachers to conduct their own off-school-site environmental education activities at the parks.

Local units of governments should encourage and contribute financially to the development of an adequate number of day-use centers to serve their population.

Establish residential environmental education centers in specific areas of the state where they do not currently exist in order to provide access for schools and education on all of Minnesota's biomes, i.e., northwest, southwest, southeast and urban, prairie, and agricultural parts of the state.

Once residential environmental education centers have been initiated in unserved parts of the state and as demand grows, increase the capacity at existing residential environmental education centers in order to assure that requests for such an experience can be accommodated at least once during a student's K-12 schooling.

Who: Environmental education centers, Minnesota Legislature, local governments, public and private non-profit agencies, camps.

Develop and implement a curriculum adaptation and planning process that ties out-of-classroom studies more closely to schools' environmental education goals.

Who: Department of Education, environmental education centers, school districts, other environmental education deliverers.

III. Provide Access to Information

Develop and improve access to information and resources that will improve the ability of PreK-12 teachers to provide environmental education to students.

Implementation Action:

- Develop, disseminate, and continually update an annotated, regionally-referenced guide to off-school-site environmental education opportunities.
  Who: Environmental education centers, Office of Environmental Education.

- Create a central clearinghouse that can provide statewide access to information about resources.
  Who: Minnesota Legislature, Office of Environmental Education

- Identify and implement a network of regional resource centers.
  Who: Office of Environmental Education

- Establish an environmental education team in each district composed of school board members, teachers, media specialists, and community representatives.
  Who: School districts
APPENDIX B

Needs assessment
Pilot survey
Answer sheet
Memos to principals
AN ENVIRONMENTAL EDUCATION (EE) NEEDS ASSESSMENT

Please fill out and return to your building principal by **Wed, April 20**

The purpose of this assessment is to discover the EE resource and inservice needs of teachers in the Chaska District. Your consideration and honest responses will be greatly appreciated. (Please fill in the circles on the attached answer sheet as neatly as possible with a number two pencil.)

The state plan for Environmental Education was finalized by the members of the State Department of Education in 1993 and defined Environmental Education as:

quote...the interdisciplinary process of developing a citizenry that is knowledgeable about the total environment, in its natural and built aspects, and that has the capacity and the commitment to engage in inquiry, problem solving, decision-making and action that will assure environmental quality. (A Green Print for Minnesota State Plan for Environmental Education, p.7.)...quote

1. Please indicate the name of your school.
   1.) ECC    2.) Chanhassen El.    3.) Chaska El.    4.) East Union    5.) Jonathan El.    6.) Chaska Middle School    7.) Chaska High School

2. If you teach grades K-8, indicate the grade level you teach, using this key: (1=first, 2=second, etc.  9=sp. ed  0=Kindergarten) then skip to number 5.

3. If you teach a special or secondary, choose one response from those listed in items 3 and 4. If you teach more than one subject, choose the one you teach most often.
   1.) science    2.) social studies    3.) English
   4.) math    5.) business    6.) consumer ed.
   7.) music    8.) art    9.) health/PE

4. (Secondary choices continued.)
   1.) agriculture    2.) industrial tech.    3.) world languages
   4.) media    5.) gifted & talented    6.) computer ed.
   7.) communications    8.) other

5. How many EE classes/workshops have you participated in? (ex: Project WILD, Learning Tree, graduate courses, etc.)
   1.) 0    2.) 1-2    3.) 3-4    4.) 5 or more

6. Are you currently teaching environmental education? 1.) Yes  2.) No
   If NO, please list the main reason why on the answer sheet, then skip to number 13.

-Over-
7. If YES, do you teach EE:  
1.) as a separate subject  
2.) infused into one or more subjects  
3.) other  

[INFUSION refers to the integration of environmental concepts and skills into an existing course to focus on those concepts and/or skills without jeopardizing the integrity of the original course.]

8. If you infuse EE, in which subjects do you infuse EE most often?  
1.) soc. studies  
2.) math  
3.) language arts  
4.) science  
5.) health  
6.) other

9. In all subjects that you teach combined, approximately how much time per week do you spend teaching EE?  
1.) Less than 30 minutes  
2.) 31-45 minutes  
3.) 45-60 minutes  
4.) 61-75 minutes  
5.) 76-90 minutes  
6.) 91-120 minutes  
7.) 121-150 minutes  
8.) 151-180 minutes  
9.) Over 180 minutes

10. Do you teach EE using the district's curriculum guide? 1.) Yes 2.) No  
(K-9, & biology teachers-it's located in your district science curriculum guide, in the "green" pages.)

11. How often do you refer to the district curriculum guide for EE?  
1.) Never 2.) Yearly 3.) Monthly 4.) Twice a month 5.) Weekly

For questions 12-17, use the following key to indicate your opinion.  
1=strongly disagree 2=disagree 3=undecided 4=agree 5=strongly agree

12. The district's current EE program prepares students to deal with environmental issues effectively.

13. I am pleased with the quality of the school district's EE curriculum.

14. I believe it is important to take the time to integrate environmental concepts and issues that are related to my discipline into my teaching.

15. I am effective at teaching my students the skills they need to engage in problem-solving, decision-making, and action to assure environmental quality.

16. As a result of attending my class, students are more aware of the impact their individual behaviors have on the environment.

17. After taking my class, students are aware of the need to become involved in resolving environmental issues.
Items 18-26 are strategies for increasing the teaching and infusion of EE into your classroom. Please rank each item as it would potentially influence your teaching using the following scale:

1.) very strong influence  2.) strong influence  3.) influential  4.) some influence  5.) no influence

18. training/workshops
19. curriculum revision
20. more hands-on student materials
21. improved communication/information
22. more teacher resources
23. development and use of outdoor school sites
24. additional funding for supplies, field trips, etc.
25. administrative support
26. other (rank and see answer sheet)

Items 27-32 are subitems in the area of "training/workshops". Please rank each workshop topic as it would influence you to teach EE. (Using the key above.)

27. technology/computers
28. infusion/integration of EE
29. EE activities (Project Learning Tree, Living Lightly, etc.)
30. environmental issues and action strategies
31. understanding MN EE goals
32. EE subject matter (wildlife, forestry, water, etc.)

Items 33-35 are subitems in the area of "curriculum revision". Using the key above, please rank the influence these would have on your teaching of EE.

The revision or creation of:
33. EE outcomes
34. EE assessments
35. EE activities

Items 36-38 are subitems in the area of "improved communication". Using the key above, please rank the influence these would have on your EE instruction.

36. dissemination of materials and EE information
37. an EE liaison in each building to share information and provide assistance
38. meetings for interested staff on environmental issues, etc.

Items 39-41 are subitems in the area of "more teacher resources". Please rank these.

39. EE lesson units/guides, activities
40. funding/information regarding field trips, projects
41. access to speakers, resource people

42. If there are any other subitems that would influence your teaching of EE, please write them on the answer sheet.

Please read and/or respond to question 43 on the answer sheet also.

Thank you for completing this assessment!
#6. If you answered "NO", please list the main reason why below.
#26. If you have any written comments for the "other", please list them below.

42. If you have any additional subitems that would influence your teaching of EE, please write them below.

43. If you have expertise, or INTEREST in this area, we are looking for EE "advocates" from each school who will serve on the network to help shape the future of EE in the district. We will use this assessment to determine the needs of the teachers in our district and formulate a plan to implement during the '94-'95 school year.

YES! I am interested in advocating for EE on the network.

Name ____________________________________________

Address _________________________________________

Home phone(____)_____________ Work phone(____)________

THANKS!!
Pilot Survey

Please let me know what you thought of the survey so that I may make any changes before all teachers receive it. Be honest in your responses. Thanks!

( I'll be in town mon-thurs. )

1. How long did it take to complete the survey?  10 min

2. Were the questions clear, easy to read? If not, what are your recommendations?

3. Were the answers provided clear and thorough? If not, what are your recommendations?

4. Was the format of the survey convenient for you? (The "bubble" answer sheet vs. hand scoring)

5. Would you volunteer to be on the network committee?

Comments: Excellent format, easy to do, clear. Good job! Ling.

Thanks!!
To: Principals
From: Susan Hagstrum
Re: Environment Ed.
Date: January 19, 1994

Please note the attached letter from Angie Wanless, a District 112 elementary teacher on leave of absence this year, who is working on a project towards her masters degree in environmental education. I believe that we and our students can benefit from this project. She is requesting answers to a few questions and would like to have your input on this subject.

Please return the 2nd page of her letter with answers to the questions by February 1st. Thanks for your time and assistance to Angie and me.

cc: Betsy Bralts
Memo:

To: Principals, Chaska School District 112  
From: Angie Wanless  
Re: Environmental Education Graduate Project  
Date: Monday, January 17, 1994

Environmental Education: "the interdisciplinary process of developing a citizenry that is knowledgeable about the total environment, in its natural and built aspects, and that has the capacity and the commitment to engage in inquiry, problem-solving, decision-making and action that will assure environmental quality." (A Green Print for Minnesota State Plan for Environmental Education. p.7).

Greetings from the graduate world!! I am on a year leave from the district to work on my masters degree in environmental education at the University of Wisconsin, Stevens Point. I really am enjoying school, but I miss teaching a lot! For my degree, I am working on a non-thesis project and am requesting your help in completing it.

Currently, environmental education (EE) is being taught as a unit within the science curriculum. Teachers in the district that are science committee members are also EE representatives. Because of this, EE often takes a "back seat" to the teaching of science, as well as other academic areas. Recently, the Minnesota Department of Education developed a Green Print for Minnesota State Plan for Environmental Education; a proposal that requires all public schools to include the teaching of EE in their curriculum. A district and state need for organized EE indicates there is a cause for a plan of action. This is where my project, with your support, is important. An EE network could be created which provides the district with EE representatives in each school, an EE committee to edit/develop curriculum, and resources/training for teachers. This plan would ultimately enhance the teaching of EE in the Chaska School District.

"Another committee and set of responsibilities?!!" you say? My plan is one that involves infusion-the insertion of EE into all subject areas, and coordinated subject area meetings so that EE is made easily accessible and "low stress" for teachers.

What I need from you at this point is to simply answer a few questions:  
(Please see the 2nd page of this letter.)

Thank you so much for your time and commitment to education! Please return these to Susan Hagstrum as soon as possible. I will be sending the surveys to be distributed sometime during the spring.

Sincerely yours,

Angie Wanless
Environmental Ed. Questions to be answered:

1. Do you support the idea of an EE network to help create environmentally aware students?

2. Would you be willing to hand out an EE survey to your teachers and return it so that we may be able to assess EE needs?

3. Would you list some barriers you think a network or project of this kind would encounter?

PLEASE RETURN TO SUSAN HAGSTRUM BY FEBRUARY 1st.
MEMO:

To: Principals
   Jim O'Connell, Mike Werner, Len Takkunen, Dennis Baldus,
   Helen Merchant, Cathy Gallagher, Dick Ewert, Adrienne Carrica,
   Jim Miller
From: Susan Hagstrum
Re: Environment Ed.
Date: April 12, 1994

Please note the attached letter from Angie Wanless, regarding the
Environmental Education Needs Assessment. A copy of the assessment and
answer sheet are attached.

The following teachers have volunteered to help Angie collect the
questionnaires at each location. Please see that they receive the attached packet.
Their names are at the top:

Krista Hammann - Chaska High School
Kris Romine - Chaska Middle School
Mark Taintor - Chanhassen Elementary
Ethel Nelson - Early Childhood Center
Lisa Hopkins - East Union Elem.
? - Chaska Elementary (I do not have names for
? - Jonathan Elem. (Chaska or Jonathan Elem. Please
choose one. Thank you)

A #2 pencil should be used to fill in the answer sheet.

Thanks for your help in gathering this important information. It should
help us improve our environmental education program.

Please return the answer sheets to the Instructional Services
Office as soon as survey is completed but no later than April 20.
Thanks!

Enclosures: Questionnaires and answer sheets

cc: Betsy Bralts
    Angie Wanless
    Environmental Ed.
To: Principals, Chaska School District 112  
From: Angie Wanless  
Re: Environmental Education Needs Assessment  
Date: April 11, 1994

Thank you for returning the questionnaire regarding my graduate project in environmental education (EE). I really appreciate your support!

My project is summarized as follows. I'm sending an environmental education needs assessment to all teachers to assess the needs the district has in the areas of resources and training. (see an enclosed copy) This assessment fulfills a graduate requirement for me, while fulfilling a state "requirement" for the district.

EE is rapidly becoming a way to develop in students an awareness, concern and motivation to action for the environment. To help educate students in environmental decisions and issues, state after state is making EE a priority in the curriculum. Minnesota created the Green Print, a document that describes the state plan for environmental education. The plan recommends "networks" and committees to help implement EE.

The last question of the needs assessment asks for volunteers to become part of a network. This network would use the results of the needs assessment to create a plan that would help improve the teaching of EE in the district, starting summer/fall, 1994. This plan may include curriculum development/revision, teacher training, and an addition of resources. To make this workable, and not just another "task" for teachers, I am going to suggest that the network rewrite the curriculum, (which would be done as a part of the science review anyway) "infusing" EE into each subject, so that it is made an integral part of teaching; not an addition.

Would you please distribute the needs assessments to your teachers, brief them on it's purpose, and collect them by the date above so that I may scan them and analyze them as soon as possible? I have asked a few teachers in individual schools to collect them so that you don't have to, or you may choose someone appropriate for this task.

This could really benefit Chaska and serve as a model for other school districts in the area of environmental education.

Thanks again!!  
Angie Wanless
APPENDIX C

Appendix A

The Tbilisi Declaration

The World’s First Intergovernmental Conference on Environmental Education, organized by UNESCO in cooperation with the United Nations Environment Programme (UNEP), was convened in Tbilisi, Georgia (USSR), from 14 to 26 October 1977.

Delegates from 66 Member States and observers from two non-Member States participated as well as representatives and observers from eight agencies and programmes of the United Nations system, three other intergovernmental organizations and 20 international nongovernmental organizations. In all 265 delegates and 65 representatives and observers took part in the Conference.

The Conference was opened by Unesco’s Director General Amadou-Mahtar M’Bow and welcomed by a message of greeting from Leonid I. Brezhnev, Secretary-General of the Communist Party of the USSR and Chairman of the Presidium of the Supreme Soviet of the USSR. Similarly participants were welcomed by Z.A. Pataridze, Chairman of the Council of Ministers of the Georgian SSR, host of the Tbilisi Conference. UNEP’s Executive Director Mostafa K. Tolba then joined Mr. M’Bow in an address to the participants before they began almost two weeks of working sessions.

Adopted by acclamation at the close of the Intergovernmental Conference, the Tbilisi Declaration noted the harmony and consensus which had prevailed and the unanimous accord in the important role of environmental education in the preservation and improvement of the world’s environment, as well as in the sound and balanced development of the world’s communities.

In the last few decades, man has, through his power to transform his environment, wrought accelerated changes in the balance of nature. The result is frequent exposure of living species to dangers which may prove irreversible.

The Declaration of the United Nations Conference on Human Environment organized in Stockholm in 1972 proclaimed: “to defend and improve the environment for present and future generations has become an imperative goal for mankind.” This undertaking urgently calls for new strategies, incorporated into development, which particularly in the developing countries is a prerequisite for any such improvement. Solidarity and equity in the relations between nations should constitute the basis of a new international order, and bring together, as soon as possible, all available resources. Education utilizing the findings of science and technology should play a leading role in creating an awareness and a better understanding of environmental problems. It must foster positive patterns of conduct towards the environment and nations’ use of their resources.

Environmental education should be provided for all ages, at all levels and in both formal and nonformal education. The mass media have a great responsibility to make their immense resources available for this educational mission. Environmental specialists, as well as those whose actions and decisions can have a marked effect on the environment, should be provided in the course of their training with the necessary knowledge and skills and be given a full sense of their responsibilities in this respect.

Environmental education, properly understood, should constitute a comprehensive lifelong education, one responsive to changes in a rapidly changing world. It should
prepare the individual for life through an understanding of the major problems of the
contemporary world, and the provision of skills and attributes needed to play a productive
role towards improving life and protecting the environment with due regard given to
ethical values. By adopting a holistic approach, rooted in a broad interdisciplinary base,
it recreates an overall perspective which acknowledges the fact that natural environment
and man-made environment are profoundly interdependent. It helps reveal the enduring
continuity which links the acts of today to the consequences for tomorrow. It
demonstrates the interdependencies among national communities and the need for
solidarity among all mankind.

Environmental education must look outward to the community. It should involve the
individual in an active problem-solving process within the context of specific realities,
and it should encourage initiative, a sense of responsibility and commitment to build a
better tomorrow. By its very nature, environmental education can make a powerful
contribution to the renovation of the educational process.

In order to achieve these goals, environmental education requires a number of specific
actions to fill the gaps which, despite outstanding endeavors, continue to exist in our
present education system.

Accordingly, the Tbilisi Conference:
Appeals to Member States to include in their educational policies measures designed
to introduce environmental concerns, activities and contents into their education
systems, on the basis of the above objectives and characteristics;
Invites educational authorities to promote and intensify thinking, research and
innovation in regard to environmental education;
Urges Member States to collaborate in this field, in particular by exchanging
experiences, research findings, documentation and materials and by making their
training facilities widely available to teachers and specialists from other countries;
and lastly,
Appeals to the international community to give generously of its aid in order to
strengthen this collaboration in a field which symbolizes the need for solidarity of all
peoples and may be regarded as particularly conducive to the promotion of
international understanding and to the cause of peace.

The Role, Objectives and Characteristics of Environmental Education

The Tbilisi Declaration together with two of the recommendations of the Conference
constitutes the framework, principles and guidelines for environmental education at all
levels—local, national, regional and international—and for all age groups both inside and
outside the formal school system.

1. The Conference recommends the adoption of certain criteria which will help to
guide efforts to develop environmental education at the national, regional and
global levels:
   — Whereas it is a fact that biological and physical features constitute the
natural basis of the human environment, its ethical, social, cultural and
economic dimensions also play their part in determining the lines of approach
and the instruments whereby people may understand and make better use of
natural resources in satisfying their needs.

   — Environmental education is the result of the reorientation and dovetailing of
different disciplines and educational experiences which facilitate an
APPENDIX D

Minnesota Outcome 9
Minnesota Graduation Rule (draft)
Minnesota 1990 Environmental Education Act
CURRICULUM FRAMEWORK

Outcome 9: The Minnesota graduate will understand stewardship for the environment.

ATTRIBUTES

This outcome includes:

1. Acquiring ecological knowledge, cultural concepts, and skills to evaluate the effect of human behaviors on the environment.

2. Understanding issues involving the personal and cultural struggle to balance the concept of preserving ecological systems with satisfying human needs and wants.

3. Applying critical thinking and decision making skills to environmental topics/issues.

ESSAY

The National Environmental Education Advisory Council of the U.S. EPA has defined environmental education as the interdisciplinary process of developing a citizenry that is knowledgeable about the total environment, in its natural and built aspects, and that has the capacity and the commitment to engage in inquiry, problem-solving, decision-making and action that will assure environmental quality. The interdisciplinary connections expressed in the attributes for Outcome #9 are consistent with PROJECT 2061: Science For All Americans, which recommends that the boundaries between traditional subject-matter categories be softened and connections emphasized (p. 4). In addition, emphasizing important concepts from the natural and social sciences that promote an understanding of the environment meets the criteria stated in that report: utility, social responsibility, the intrinsic value of knowledge, philosophical value, and childhood enrichment (p. 21).

Stewardship for the environment, which is the goal of environmental education, rests on a knowledge base from many content areas. It requires actions based on a commitment to future generations. Individuals must understand concepts of responsible management, legacy, respect, and ownership. A personal ethic must be developed in each individual in each generation that results in a wisdom of practice regarding the environment. Stewardship must be communicated in a way that is understood and put into practice by all people if planet Earth and its inhabitants are to survive.

A solid ecological knowledge base in the natural and social sciences is required for citizens to understand the issues and actions needed to preserve, maintain, or restore healthy environments that support life in all its diverse forms. Complex biotic and abiotic interactions occur within natural or human-made environments. Naturally occurring interactions are sometimes perceived by uninformed citizens as being destructive to components of the environment they value, when in fact these interactions are necessary for balance in the ecosystem. An example is fire dependent ecosystems.

The conscious and deliberate consideration of the human impact on the environment requires knowledge of many cultural concepts. Cultural concepts include understanding the diverse levels of social values, political structures, economic practices and development, religious beliefs, and educational systems throughout the world. Human behaviors can affect naturally occurring interactions in many ways. These behaviors may be intentional or unintentional, personal or cultural. The culturally based value systems that drive decisions can change over time, but the effects of previous actions on natural ecosystems can be lasting and irreversible.

Critical thinking skills are necessary for individuals to solve problems and make good decisions. A problem solving process includes the ability to recognize and state the problem, find options, evaluate options, decide upon the best option and plan a course of action to follow in implementing the option selected. It involves creative thinking, risk assessment, value judgments, and scholarly discussion.

A distinction is made between environmental issues and environmental topics. Not all topics important to developing a robust understanding of ecological systems are issues. Topics need to be addressed because of the role they play in broader understandings or because of their interest to individuals. Environmental issues are topics that are in a state of controversy. Issues must be addressed at appropriate developmental levels and in sufficient depth if students are to develop a sense of empowerment and hope in resolving them.
LEVEL 1 (Grades K - 2)
DevelopmentalCheckpoint

Upon completion of second grade, students should understand the concepts of living and non-living, habitats, properties of objects, and growth and development of organisms. They are able to make observations and classify objects by sorting, grouping and measuring. Students are able to make personal choices and consider their impact on others. They are able to differentiate between needs and wants.

Indicators:
Students are able to:
1. Classify selected animals into their natural habitats.
2. Identify and describe patterns in the environment, i.e. natural patterns such as life cycles and seasons, and human patterns such as music and poetry.
3. Categorize personal choices that affect the environment as needs and wants.
4. Trace the changes which occur in an environment from season to season, e. g. leaves on trees, color changes in animal fur, migration.

LEVEL 2 (Grades 3 - 5)
DevelopmentalCheckpoint

Upon completion of fifth grade, students should understand the concept of cycles, non-living factors that affect life, and knowledge of food chains and webs. Students are able to make inferences from observations, identify variables, and understand cause/effect relationships. They can collect data, read graphs, and use estimation skills. Expanding the world view to community needs and wants, students can identify criteria in making decisions.

Indicators
Students are able to:
1. Demonstrate the concept of cycles, e. g. water cycles, life cycles.
2. Observe an environment, collect data on a specific population, and make inferences from the data.
3. Develop and weigh criteria for making a decision about a community or regional environmental issue.
4. Identify variables in an experiment involving a specific habitat.
5. Describe cause/effect relationships of changing an environment.
6. Use estimation skills and information from graphs to explain or predict a population change.

LEVEL 3 Middle School (Gr. 6-8)
DevelopmentalCheckpoint

Upon completion of eighth grade, students should understand the interaction of living and non-living components of an ecosystem, the diversity and adaptability of life, and the dynamics of atmosphere, geology, and hydrology. They have begun to understand how cultural diversity impacts the global community. Students can analyze data and recognize bias. Through problem solving techniques, they can generate defensible criteria for solutions to environmental problems.

Indicators
Students are able to:
1. Construct a model of an ecosystem, identifying the roles of various inhabitants and their interactions with their environment.
2. Research and communicate cause/effect relationships of specific land use practices (e.g. agriculture, industry, urbanization, recreation) on the environment.
3. Determine potential bias in communications on an environmental topic.
4. Using a problem solving process, research and suggest solutions to a current environmental problem.

5. Infer the immediate and long term effects of the introduction of an exotic species into a local ecosystem.

6. Predict and portray long-term effects of decreased diversity of organisms in a specific food web.

7. Graph the depletion of a limited resource and communicate the consequences of continuing the trend.

8. Select an environmental issue; compare and contrast policies of selected countries regarding the issue; determine the cultural reasons for the differences; and analyze the effects on the world community.

LEVEL 4 High School (GRADES 9-12)
Developmental Checkpoint

Prior to graduation, students will understand the interdependency of components of an ecological system: the cycling of matter, energy flow, and the diversity and evolving nature of living things in a changing environment. Students will apply a problem solving process to an environmental issue, balancing ecological principles with cultural forces. They will analyze how their own personal actions impact the environment.

Indicators

The students are able to:

1. Identify and interpret the interdependency of essential components (matter, energy, diversity of species) in a chart of an ecological system.

2. Describe how the removal or addition of a species may affect an ecological system.

3. Analyze an environmental issue by identifying diverse viewpoints generated by cultural forces.

4. Explain how societies with developing economies place differing values on ecosystem preservation and maintenance.

5. Evaluate their personal actions in light of effects on the environment and be able to suggest alternative behaviors for actions that have negative effects.

Framework Writing Team
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Lynn Montgomery, Grade 1, Adams Elementary School
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Mim Seim, Grade 6, Jackson Middle School
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Dale Zellmer, Social Studies Consultant, Anoka-Hennepin
Brian Krebsach, Social Studies
The State Board of Education is committed to a continuously improving, results-oriented education system for students in Minnesota's public schools. It believes that the mission of the public schools will be fulfilled when all graduates can function effectively as:

[COMPREHENSIVE GOALS FOR EDUCATION]

- purposeful thinkers,
- effective communicators,
- self-directed learners,
- productive group participants, and
- responsible citizens.

The ability to perform effectively in these roles requires that graduates are able to use fundamental lifelong learning skills, concepts, and processes at the highest possible level.

Therefore, beginning with the students who enter high school in the fall of 1996 (the graduating Class of 2000), all Minnesota public schools will phase in the following requirements for earning a high school diploma

(on a schedule to be set by the Board based on the experience of pilot sites and research indicating the ability of the system to deliver and assess effectively these requirements for all students):

*This document is a work-in-progress, presented by the State Board of Education and the Department of Education for discussion, response, and revision. Your comments are needed and appreciated.
To qualify for a high school diploma, the student must have demonstrated both (1) the Basic Requirements and (2) the Required Profile of Learning listed below:

1. **Basic competency in the skills of:**
   - Reading
   - Mathematics
   - Writing

   **Basic knowledge of fundamental concepts from:**
   - Science
   - Government
   - Physical health and safety
   - Geography

2. **Engagement and achievement in academic performance of the following processes:**

   *(REQUIRED PROFILE OF LEARNING)*
   - Comprehending, interpreting, and evaluating information received through reading, listening and viewing;
   - Understanding and applying information from technical materials such as manuals and research documents;
   - Writing and speaking clearly for academic, technical, and personal purposes with a variety of audiences;
   - Understanding the processes and meaning of artistic expression;
   - Applying concepts of shape and space to illustrate and describe the physical world and solve problems;
   - Analyzing patterns and functions to understand relationships;
   - Applying data handling and measurement techniques to solve problems and justify conclusions;
   - Applying methods of inquiry needed to conduct research, draw conclusions, and communicate and apply findings;
   - Understanding the past and continuous development of societies and cultures in human history;
   - Understanding how principles of interaction and interdependence operate in physical and social systems;
   - Applying informed decision-making processes to promote well-being of the individual and society, lifework choices, and stewardship of the environment;
   - Using technology and understanding the application of technological systems;
   - Approaching information from a variety of perspectives;
   - Understanding the effective management of resources in a household, business, community, and government; and
   - Communicating in a language other than English.
Legislation enacted in 1990
1990 Environmental Education Act
Chap 126A, EE

AN ACT

relating to education; providing for the environmental
education act; creating the office of environmental
education; proposing coding for new law as Minnesota
Statutes, chapter 126A; repealing Minnesota Statutes
1988, sections 116E.01; 116E.02; 116E.03; subdivisions
2, 3, 4, 5, 6, 7, 7a, 8, and 9; and 116E.04; Minnesota
Statutes 1989 Supplement, sections 116E.03,
subdivision 1; and 116E.035.

BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF MINNESOTA:

Section 1. [126A.01] (ENVIRONMENTAL EDUCATION GOALS.)
The environmental education program described in this
chapter has these goals for the pupils and other citizens of
this state:

(1) to understand ecological systems;
(2) to understand the cause and effect relationship between
human attitudes and behavior and the environment;
(3) to be able to analyze, develop, and use problem-solving
skills to understand the decision-making process of individuals,
institutions, and nations regarding environmental issues;
(4) to be able to evaluate alternative responses to
environmental issues before deciding on alternative courses of
action;
(5) to understand the potential complementary nature of
multiple uses of the environment;
(6) to provide experiences to assist citizens to increase
their sensitivity and stewardship for the environment; and
(b) assist the educational cooperative service units by collecting and distributing environmental education teaching materials, displays, computer programs, resource person lists, and audio/visual aids, and provide assistance with teacher training workshops and programs on request.

Sec. 7. [126A.07] [RELATIONS WITH THE DEPARTMENT OF EDUCATION.]

Subdivision 1. [COOPERATION AND SUPPORT.] The director shall cooperate with and support the environmental education program developed by the state board of education and the department of education.

Subd. 2. [LIST.] The cooperation and support must include, but is not limited to, the items mentioned in the list in this subdivision.

(a) The director shall encourage all environmental education programs developed for pupils and other citizens to strive for achievement of the goals and the environmental learner outcomes developed by the department of education.

(b) The regional resource centers shall collect, house, promote, and circulate environmental education materials, displays, audio/visual aids, and computer materials for use by the educational cooperative service unit environmental education coordinators.

(c) The resource centers shall evaluate, promote, and distribute to educators materials produced by other agencies and organizations.

Sec. 8. [126A.08] [ESTABLISHMENT OF ENVIRONMENTAL EDUCATION PROGRAM; CHARACTERISTICS; IMPLEMENTATION; IN-SERVICE.]

(a) The department of education shall assist in establishing environmental education programs in all public elementary and secondary schools.

(b) The environmental education program must be interdisciplinary, integrated into the curriculum, and outcome based.

(c) The program must be implemented through the department of education's learner outcome, assessment and feedback, and
APPENDIX E

Chaska District 112 Mission brochure
WE'RE PLANNING TO SUCCEED

MISSION

PHILOSOPHY

GOALS

STRATEGIC PLAN

Independent School District 112
Chaska, Minnesota
MISSION

District 112 has a primary commitment and responsibility to promote lifelong learning by providing high quality educational opportunities.

PHILOSOPHY

School District 112 comprises all those who live or work in the community. For each of its unique members, the District seeks and fosters full development of personal capabilities, including ethical values and emotional strength, physical well-being, and intellectual and vocational advancement.

The educational process is one of cooperation and flexibility which recognizes that:

- All individuals have the potential to learn.
- Learning experiences can and do occur at any time, in any place.
- At various times, each person has the ability to be both a provider and a recipient of education.
- The family and a nucleus of caring others provide vital support and encouragement toward personal learning.
- Learning is of value when pursued either toward a long-range goal or simply for personal enjoyment.

Full utilization of available educational resources by District 112 will be achieved by:

- Sharing assets and ingenuity between the public and private sectors.
- Developing the District's role as a facilitator and coordinator to link its members to the network of other learning opportunities.

- Establishing a process of continuing District self-evaluation toward enhancement of service to respond to an ever-changing world.

As part of the world community, District 112 recognizes the interdependence of world peoples who are living in a delicate balance with nature.

Learning is the means by which people renew themselves and by which society is renewed.

DISTRICT 112 GOALS

- Provide opportunities for the development of the social, ethical, emotional, intellectual, aesthetic and physical elements that make up the total person. Encourage self-awareness, self-worth, and self-responsibility.

- Provide the opportunity to master the 3C's (creativity, communication, and computing) while also emphasizing cooperation, decision-making, problem solving, and higher level thinking skills for learners of all ages.

- Create an individual learning path that is less age-oriented and more achievement-oriented and a system flexible enough to accommodate different learning styles and rates through a variety of curriculum formats.

- Insure that everyone at any age has access to educational resources while providing the mechanism to facilitate meeting the educational needs throughout our community.

- Help learners recognize the interdependent nature of the evolving world community culture, their personal rights and responsibilities as citizens and caretakers of the earth, and their responsibility toward the human rights of others.
- Encourage and actively seek out human and technological resources from the public and private sector; develop strong partnerships with the home, community, and various other community groups in order to assist with the education of all learners.

- Work with the community continuously to communicate, assess, evaluate and redefine relevant skills to meet the ever-changing needs of our society.

DISTRICT 112 PRIORITIES
IDENTIFIED IN THE STRATEGIC PLAN FOR 1992-93 AND BEYOND

- Develop a District plan for addressing the issue of class size. This plan will include attention to the relationship between staffing patterns and:
  - student learning
  - diverse and changing needs of learners
  - instructional practices
  - organization, training and management of instructional staff
  - availability and allocation of resources
  - current and future facilities
  - teacher and parent perspectives
  - decentralized decision-making.

- Create strategies to ensure financial stability:
  - Establish a minimum reserve fund
  - Evaluate the use of existing resources
  - Develop a plan to influence the legislative process
  - Maximize resources through cooperation and partnerships with other agencies, governmental units, business, and community groups
  - Support the growth and development of the District 112 Education Foundation
  - Explore differentiated compensation for differentiated responsibility.

- Emphasize sound management practices to ensure the continued ability of District 112 to provide a high quality educational experience to all learners

- Continue the development of a strategic management process

- Improve systematic communication with our stakeholders

- Continue planning to meet future facility needs and to maintain existing facilities.

- Using outcome-based education as the context, school improvement efforts underway in District 112 will be addressed in a systematic and integrated manner. Continued priority to staff and program development should focus on:
  - outcome-based curriculum
  - development of individual learning plans for all learners
  - school-centered decision making
  - integration of special and regular education
  - integration of learning across disciplines
  - learning styles
  - parent involvement in their child's learning and development
  - effective use of technology
  - continuous communication with stakeholders.
APPENDIX F

Chaska EE curriculum cover for grade 5
SCIENCE
ENVIRONMENTAL ED.
July, 1990

Funded through a grant from the Metropolitan Council. The 3R's Program 1990
APPENDIX G

Chaska School District's science curriculum mission, goals & philosophy (old & revised)
SCIENCE
(K-12)

MISSION

The science program of District 112 is designed to provide development in lifelong learning skills, inquisitive thinking and investigative minds.

PHILOSOPHY

The science program of District 112 is dedicated to the development of the individual's fullest potential. This development involves helping students acquire the knowledge and skills essential for evaluation and application of information.

We recognize that:
- all scientific knowledge is based on experimentation and limited in scope & accuracy
- scientific knowledge is ever-changing
- scientific growth is through discovery.
- an open mind is necessary for scientific growth
- there are social and environmental implications of science
- with scientific knowledge comes responsibility
- there is a unique and separate body of scientific knowledge
- there may exist ideas and concepts in science beyond our detection or understanding.

GOALS

1. Each learner will have the opportunity for process-based, hands on, acquisition of scientific knowledge.
2. Each learner will be given the opportunity to acquire, develop and use higher order thinking skills.
3. Each learner will be exposed to an environment that promotes curiosity and an appreciation of science.
4. Each learner will be instructed in the use of scientific tools.
5. Each learner will have access to current scientific books, periodicals and audio-visual materials.
6. Each learner will have an opportunity to acquire basic scientific skills and knowledge.
K-12 SCIENCE

MISSION

The science program of District 112 promotes scientific literacy in order to help people live interesting, responsible and productive lives.

PHILOSOPHY

We believe that science is the application of human intelligence to understanding how the universe works.

We believe that students can become responsible citizens and consumers as a result of the accumulation of learning experiences through science.

We believe that scientific knowledge is ever-changing and is a result of contributions from women and men from all parts of the world.

GOALS

1. Students will be exposed to an environment that promotes curiosity and an appreciation of science.

2. Students will learn the use of scientific tools and technology.

3. Students will demonstrate knowledge, skills and application of the scientific process through written and verbal communication.

4. Students will demonstrate knowledge, skills and application of current scientific issues.

5. Students will demonstrate knowledge, skills and application of Environmental issues.

6. Students will demonstrate scientific responsibility in decision-making.
APPENDIX H

Goal Referenced Planning Model
A Goal-Referenced Planning/Implementation/Evaluation Model (Rocchio and Lee 1974: 35) was used in preparation of this curriculum plan. The model's authors explain:

"The system begins with the collection and study of data concerning the problems and needs. This information is translated into general goals, which are then spelled out in terms of measurable objectives or outcomes expected to be attained. Strategies are developed to achieve these objectives. Built-in, program specific evaluation instruments and measurement techniques are employed to provide (1) continuous assessment of progress, (2) a feedback mechanism for self-correcting improvement, and (3) comparison of objectives achievement with the baseline data."

"This systematic process insures that the functions of planning, implementation, and evaluation become an integrated operating structure leading to successful achievement of program goals. A simple schematic representation appears in the following [Figure 1].:"

Figure 1.

Goal-Referenced Planning/Implementation/Evaluation Model

Identification of problems/needs → Description of goals & measurable objectives → Preassessment of conditions in relation to goals & objectives (baseline data) → Design & implementation of strategies/activities to achieve objectives → Evaluation of outcomes in terms of achievement of objectives

If objectives are not achieved, revise strategies.

As objectives are achieved, augment them or conclude the program.

APPENDIX I

Frequencies of data from the EE Needs Assessment
### Frequencies and Means of Responses Items 1 through 41

#### IT1 school

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**Total** 103 100.0 100.0

**Mean** 4.283  **Std err** .221

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**Mean** 3.582  **Std err** .316

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**Mean** 4.393  **Std err** .528
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**Mean** 5.182  **Std err** 0.736

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**Mean** 1.807  **Std err** 0.095

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**Mean** 1.247  **Std err** 0.045

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**Mean** 2.030  **Std err** 0.037
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**Mean** 3.563  
**Std err** .182

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**Mean** 1.714  
**Std err** .176

### IT10 use district guide

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**Mean** 1.747  
**Std err** .051

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**Mean** 1.513  
**Std err** .083
### IT12: Program Prepares Students

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Mean: 3.061 \( \text{Std err} = .078 \)

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Mean: 2.925 \( \text{Std err} = .088 \)

### IT14: Important to Teach EE

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Mean: 4.215 \( \text{Std err} = .090 \)

### IT15: Teacher EE Effectiveness

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Mean: 3.587 \( \text{Std err} = .095 \)
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**Mean**: 3.711  **Std err**: 0.095

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**Mean** 1.957  
**Std err** .115

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**Mean** 2.606  
**Std err** .108

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**Mean** 2.160  
**Std err** .111

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**Mean** 3.308  **Std err** .276

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**Mean** 3.165  **Std err** .118
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Mean 2.478  Std err .107

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Mean 2.424  Std err .118

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Mean 2.761  Std err .104

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Mean 2.957  Std err .100
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**Mean** 3.033  **Std err** .119

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**Mean** 2.880  **Std err** .119

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**Mean** 2.933  **Std err** .128

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**Mean** 2.187  **Std err** .118
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Mean: 2.043  Std err: .124

### IT41 Speakers, Resource People

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Mean: 2.055  Std err: .119

### IT42 Open Responses
APPENDIX J

Open responses of assessment questions
Open Responses to EE Needs Assessment

#6. Are you currently teaching EE? If no, please list the main reason why

"I don't have enough 1)knowledge 2)resources to teach this important subject"

"I don't have the time and don't see how it could be smoothly integrated into my curriculum (social studies-HS) on a regular basis"  *"Environmentalism is a topic at the end of the year when we deal with current issues/problems confronting us."

"EE displaces important content already in our curriculum. Units/lessons do not exist that integrate mathematics/EE except those that involve math in some trivial way." (HS)

"Do not know enough about it." (health/PE)

"It is not my field of expertise or interest." (HS-English)

Items 12-17 were not answered & "not familiar with the materials to comment" was written on answer sheet (CMS-English)

"I am a Chapter I teacher; I could be incorporating it into literacy instruction, however."

"no knowledge or background" (health/PE)

"Because I do not currently teach science for my team." (6th grade)

"My curriculum is full now. I would have to develop environmental issues curriculum myself and I am not aware of any resources. Also little to no emphasis has been put on EE."

"No time in curriculum, no materials, no knowledge of how to teach this other than interjecting my own opinions about EE into my own curriculum, science does an excellent job already in teaching EE."

"The issue is sometimes covered in my classes depending upon the unit of study." (CMS-English)

"It is taught in science."

"The time is a big problem. How much should we cover? How many areas can we teach? What priorities? If EE is a high priority, let us know. Then assign specific
grade levels to cover this strongly and the others could integrate throughout subjects. There is only so much that we can do. Earth week is a time for us to do a short unit. Another chapter in 6th grade science is passed over for that reason."

"lack of usable materials, new to grade level"

"It is extremely difficult to integrate the topics into performance classes. I stress recycling with test papers, etc. and have a recycling box in back of room by the door." (music, CHS)

"I'm not in an interdisciplinary setting."

"Little relationship to my subject area—we have a hard enough time covering our necessary outcomes." (music CHS)

"No time" (4th grade)

"We have attended a lyceum on recycling and have written on the experience in class; however, I am not directly teaching a unit on EE. My student aides recycle cans & paper weekly. Also, students are verbally encouraged to recycle paper and pop cans throughout the school day." (English—CHS)

"Because I am not a full time classroom teacher, currently I teach a math class." (4th grade, JES)

"I could integrate EE, but so far have viewed it more as a geography/social studies imperative. Our dept. does show 'Emerald Forest' which deals with rainforest destruction and splintering of Indian tribes. I've never seen the district curriculum guide for EE. Never seen EE curriculum." (CHS, foreign language)

#26. If you have any written comments for "other" (strategies) please list them below.

"speakers at school such as the Science Museum of Minneapolis"

"provide time for departments to write lesson plans into current units of study"

"TIME to develop curriculum that suits the students in my classrooms needs. Materials that are available for our classroom to use—many times it takes 2-3 weeks for science materials from the sci center to come. It's difficult to predict when a great day for outdoor exploration will occur—I am uncomfortable with monopolizing materials 'just in case' I need them."

"provide a list of experts who are willing to come into the classroom to work with students."
#42. If you have any other subitems that would influence your teaching of EE, please write them below.

"Administrative support (right now EE seems a minor issue), Student Council support (this would make EE "fashionable" as a concern to all students, Student committee that is ongoing (like Amnesty International) & Key Club? with a paid faculty advisor."

"Where would we possibly have money to cover a liason in each building when we hardly have money for math books!! Priorities?"(2nd grade)

"I am very excited about the support of St. Olaf towards developing an outdoor site at Jonathan. I think it will provide many great opportunities!"

"Train the science teachers and they can be our resources while working on an interdisciplinary team. Or train interested families during the summer."

"Please don't require us to take a workshop to include EE into every curriculum. Our curriculums are packed as is unless it takes place on an interdisciplinary team."

"Keep the wild areas around our school safe from development i.e. the ravine behind CES"

"Materials, Materials, Materials! NOT more worksheets! NO textbooks-children don't learn about respecting our environment by reading about it. They need to get out there and actually make a difference." (4th grade)

"would like to infuse OWN units"
APPENDIX K

Memos to the Network
MEMO
TO: Interested EE Network Advocates
FROM: Angie Wanless
RE: EE Needs Assessment/Network
DATE: May 19, 1994

Dear Chaska 112 Teacher:

Thank you so much for responding to my survey and indicating an interest in the network! With the new Graduation Rule coming out, EE is going to be one of the District’s Exit Outcomes. (It’s on the cutting edge!!) I’ve been working on my EE masters’ degree for almost a year now and I feel that EE is something that needs more emphasis in the district.

For those of you whom I have not met, I taught fifth grade at East Union Elementary for three years and was on the Thoughtful Education Professional Development Trainers program and the science committee. I will be teaching 6th grade next fall. The current EE curriculum was developed by a grant from the Metropolitan Recycling Council, and as you can guess, focuses on waste.

I would like to meet with those of you that are interested in changing our current state of EE in the District before the end of June. This would just be an informational meeting, (snacks included!) to take a look at the results of the assessment, share EE ideas and perhaps come up with a few ideas in response to these results. I really think you’ll find what teachers have said to be interesting! I am currently applying for several grants to acquire funding for this project, but if you have any ideas that would help motivate you to meet a few times this summer with me, please let me know.

Please indicate what times/days would be best for you. Also, if you know who the science committee member is in your school (or anyone else who is interested), please ask them if they would like to be involved. I would like to see EE eventually become a separate entity from science.
An EE Advocate would:
serve as the “EE Rep/liason” (like any committee member) in your school which
includes getting mail, communicating ideas/information to your staff, and meeting several
times during the year with the Network to help prepare a plan to improve EE in our district.
Schools all over Minnesota are beginning to have liaisons and even EE specialists in their
districts!

Please list what comments you have below and return it by inter-school mail to:
Lisa Hopkins at East Union. If you have any questions, you can call me at home
(715) 344-0643 or fax me at work(715)346-3025, or leave me a message at
612-293-1746. Thanks!

PLEASE RETURN BY Thursday, May 26

Name____________________________________Phone #__________________________

_____I would like to attend the first meeting.
  My preferred times to meet are:
    (please rank 1,2,3—1st choice, 2nd choice and third choice)

(The time would be approximately 4:00 at the District Offices.)

   _____Wed. June1        _____Thur. June 2          _____Tue. June 7
   _____Mon. June 13  _____Tue. June 14  _____Other (after school is
                              out)

Some incentives for me to be involved as an Advocate in the Network are:
Environmental Education in the Chaska School District 112.

4:00, Tuesday, June 7, 1994
District Offices

1. Greetings; pass out agenda, needs assessment and results, assign a minutes-taker

2. Discuss barriers to involvement in network.

3. List incentives to involvement in network.
   a. Susan Hagstrum listed: $ for an afternoon of planning, dinner, first choice at professional growth money, small grants for fall, etc.
   b. Identify 1 key person to lobby for advocates, or each person finds one other who is interested.

4. The state of EE in Chaska
   a. the results of the needs assessment
   b. EE curriculum in Chaska
   c. EE as defined by the state (exit outcomes, Green Print)

5. Directions for the future of the group
   a. next meeting?
   b. focus?
   c. tasks?
MUCHAS MUCHAS GRACIAS!!

TO: EE Network: Lisa Hopkins, Michael Anderson, Kathy Kinghorn, Ethel Nelson

FROM: Angie Wanless

Thanks for volunteering your time. Please arrange for a sub for Wednesday afternoon, November 30 from 12:30-3:30. The sub code # is 610-00-143-000-01200. Our meeting will be in the conference room in the office of the Director of Instructional Services (Susan Hagstrum's Office). I'll provide some munchies.

To prepare for this meeting, please: review the State Goals for EE (enclosed), (the Ecosystem Management article is FYI), bring your grade level EE curriculum --it's in the science curriculum--if you can find it, and bring any EE activities your school has done this year to share.

This will be an afternoon of brainstorming and planning. Thanks!! ANGIE

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MEMO

RE: Meeting for the Environmental Network

TO:

FROM: Angie Wanless

HEY ALL YOU DRIVEN TEACHERS.... How do you feel after a little break? All energized I hope! Fall is a great time to appreciate our environment..."Habitat Lap Sit" from Project WILD is a great game to do at the beginning of the year with your students. Not only can they learn about habitat, but you can use it to discuss how each class needs to work as a team in order to be successful.

I'd like to meet for about an hour at the district offices (Susan Hagstrum's office) to discuss the direction we'd like to take this year in environmental education planning. Susan has given us a couple 1/2 days to be released from our classrooms to plan!!

The science curriculum committee met and adopted environmental education as a broad goal under mission and philosophy! It would be great if all subjects could follow suit. Our meeting will be Tuesday, October 25 at 4 pm. Please call me at the Chan Middle Center if you are unable to attend. (#934-6116, or home-975-0730).

Peace & Serenity..........................Angie
From: Angie Wanless, CMC

To those environmental educators K-8:

The director of instructional services has given us two 1/2 day release times to plan environmental education (EE) goals and activities. If you are interested in increasing the awareness of EE in our district (which is going to be a graduation outcome), our first 1/2 day will meet on Wednesday, November 30, from 12:30 to 3:30 (and be released by subs) at the district offices. (I will let you know the sub code #.)

Enclosed is a copy of the state's EE goals K-12 and an article on ecology management (FYI). Please look these over and bring to the meeting any information on activities your school has been doing in the area of EE. Also, if anyone is interested in attending the 1994 MN EE Conference in Alexandria, I was planning on attending. Saturday, November 19. If you're remotely interested, call me and I'll send a copy of the brochure to you. Judy Braus, author of Ranger Rick's Nature Scopes will be leading the final session that day.

Note: I have included your name in this "network" system because of your interest and involvement in EE. If anyone else in your school is interested in being included in this group, or if you want to be removed from the list, please let me know.

PLEASE RETURN THIS TO THE CMC BY NOVEMBER 10.

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EE 1/2 day release planning session
Name_________________________________ School________________

____ YES! I will attend the 1/2 day release on Wednesday, November 30 to help plan the direction EE will take in the Chaska School District.
____ NO, I cannot attend the meeting but would like information on it.
November 30, 1994        EE Network Meeting        Agenda

12:30-12:45-Hello, pass out agendas

12:45-1:15-Share science mission and philosophy, state EE requirements (Greenprint), review results of needs assessment (spring 1994)

1:15-2:15- Brainstorm ideas for improving EE in the district and how to create a plan

2:15-3:15- Create a plan (rough draft) and submit to Director of Instructional Services

3:15-Other items?
APPENDIX L

The Plan
Further memos
Minutes from November 30 EE Network Meeting

In attendance: Lisa Hopkins (EU), Michael Anderson(CES), Kathy Kinghorn(CHANEI), Ethel Nelson(ECC), Anna Edlund(ECC), Angie Wanless (CMC)

Notes--HA,HA,HA, HA, HA, HA, HA (Just Kidding! We did laugh!)

1. Our goal from last spring’s meeting was reviewed, as well as the state’s objectives.

2. We brainstormed concerns and ideas to improve EE in the district, while fulfilling teachers’ needs. (See attached notes.)

3. We created a plan to announce the existence of “Environet” and plan to create “Envirotrunks” on our next half day, February 3. (The plans for this meeting are attached and the North Board room has been reserved for us.)

“Environet” (an environmental education network of teachers, K-8)
Mission: to celebrate and PR the Environmental Education activities and events in the district.
This group shall be comprised of a teacher(s) from every school K-8 in District 112. Each teacher is a volunteer, and is not necessarily a part of any other committee.

Each member’s responsibilities will include:
A. To represent Environet at building staff meetings and update their staff on EE activities and events in the district.
B. To represent Environet at Network meetings to improve the state of EE in District 112.
C. To inform the Network facilitator (Angie) and/or members, of EE activities in the District.

Plans for Environet, 1994-95
1. Attend the next staff meeting in your building as an Environet representative and inform them: we exist as a formal/informal group
   - our mission, definition, etc., (if necessary)
   - mention Envirotrunks in a limited way “We hope to plant & grow...”

2. Some members will contact other teachers to complete our staff.
   - Michael will contact a core team teacher from the new school
   - Anna will contact Rick Edlund and/or Pam Curren from CMS
   - Angie will contact Susan Galstrand (or other) from JES and St. Huberts

3. On a 1/2 day in February, we will create “make it & take it” trunks (Envirotrunks) to circulate to each school K-8 for one week to let teachers peruse.
a. **Trunk contents:** make and take materials, focus list of environmental issues, cross references for curriculum, copies of activities that have been done in class, and/or novels and EE tradebooks.
   1. Activities should be “inviting” to teachers
   2. Activities will have somewhat of a scope & sequence
   3. Some activities will focus on narrowed science topics
      (to receive final word from Susan H.)
   4. Ideas in trunks can be used or new.

b. Review old curriculum to keep/throw/add to.
c. Teachers can add to trunk activities as they come to the schools.

4. Two members of Environe (Lisa & Angie) will write a grant to the District Foundation 112 to apply for money to build group efforts in 1995-96.
   Ideas: EE in a suitcase, traveling camera/video tape, make it & take it stations, workshops in and outside of district, outdoor site development (besides at JES), all curriculum areas would adopt the application of an environmental issue as a curriculum goal. (Lofty, but good!)

**Summary ( & small details)**

1. Announce our existence at next staff meeting.
2. January-we'll phone each other to firm up trunk process. Give staff more information on the trunks at this time. Open up the trunks for donations of ideas. (Please be in charge of collecting these for our February meeting.)
3. February 3rd meeting (Friday pm) 12:30-3:30 in North Board room. Create trunks (Where can we get this equipment?)
4. Start circulating trunks Feb. 20th, giving each school 1 week to look. Pick 1 location in your school to keep trunk(library?). Network member is in charge of mailing/taking trunk to the next school. We can plan this on Feb. 3.
5. I will send a reminder memo about the Feb. 3 meeting and what to bring. Until then, please call me to update EE happenings and I'll forward them. (934-6116)
Concerns

- We cannot create or buy more materials that will just SIT and not be used.
- Current EE curriculum is not being used
- We need to give teachers a “how to”
- Let teachers “buy in” to whatever we create to give them ownership or it won’t be used
- How to PR?
- Raise level of awareness
- How do we know what is happening in other buildings? (communication)
- Do teachers have time to read a newsletter (more waste)?
- Other teachers should be involved in the selection/creation process

Ideas

- PTO student councils could adopt EE as a theme
- Hold a competition for staff in some EE area in buildings
- Create EE building goals
- Attend staff meetings and “show & tell”
- Take photos, Xapshot, or video to show EE activities in each building and have kids narrate
- “EE in a suitcase”-get staff to volunteer to conduct hands-on workshops
- Make it and take it- a. stations in each school, b. a traveling trunk
- EE newsletter on paper
- EE newsletter on computer
- Attend staff meetings to communicate EE events
- Bring in Jim Brandenberg (Medina-Ethel’s)
- School science fairs should include EE
ENVIRONET MEETING!

To: Anna Edlund & Ethel Nelson-ECC, Lisa Hopkins-EU, Susan Gulstrand-JES (sorry about the “U”), Kathy Kinghorn-(I hope you’re feeling better) CHAN, Michael Anderson-CES, ANY MIDDLE SCHOOL 7,8??

From: Angie Wanless
RE: February 3 meeting

DON’T FORGET-- Our next meeting is Friday, February 3 from 12:30-3:30 in the Board Room at the District Offices!! We’ll be making our “Enviroturks”. The sub code is 01-200-612-000-143-000.

TO BRING:  
-all EE activities and lessons you’ve done, to share,  
-lessons other teachers have contributed  
-cross curriculum lessons from math, science, L.A & soc.s  
(bring your teacher’s manuals so we can reference)  
-old magazines, newsletters, catalogs of EE/science items  
-EE books to share, or create a bibliography  
-paper  
-pencils, pens, paper clips, stapler, Post-lts, etc.

SCIENCE: topics for each grade level are:  
1-animals, plants  
2-water/energy, 3-solar systems/plants, 4-rocks&minerals, machines & matter, 5-weather/ecosystems

-Try to bring lessons/activities that coordinate with these topics also.

SEE YOU ON THE 3rd!
February 13, 1995

To: ENVIRONET: Lisa Hopkins (EU), Michael Anderson (CES), Kathy Kinghorn (CHANEL), Ethel Nelson (ECC), Anna Edlund (ECC), Susan Gulstrand (JES)

From: Angie Wanless

RE: Our last meeting

Thanks for coming to the Feb. 3rd meeting! I realize that we didn’t get everything done that we needed. If you have time to spare on Friday February 17 (a day off!), it might be a good time to get the Envirotrunk done. I will be doing mine at the CMC that afternoon if anyone has any questions or needs help.

Here are the dates for circulation. Please be sure your trunk gets to these places to the building rep (with the exception of the ECC) and has a little note attached for explanation. Each building rep should make sure that the trunks get seen! (I may attach balloons to mine.)

- East Union before Friday March 3
- Chaska El week of March 13-17
- ECC (shows theirs March 17)
- Jonathan week of March 20-24
- Chanhassen week after break April 3-7 (7 is a workshop day!)
- 6th grade will travel solo in April

Here’s a reminder of what we thought we’d put in the trunks.

a. Trunk contents: make and take materials, focus list of environmental issues, cross references for curriculum, copies of activities that have been done in class, and/or novels and EE tradebooks.
   1. Activities should be “inviting” to teachers
   2. Activities will have somewhat of a scope & sequence
   3. Some activities will focus on narrowed science topics (to receive final word from Susan H.)
   4. Ideas in trunks can be used or new.

If you can, by March 1, please make a reference list of what is in your trunk for your own copy and please make one for me. Send me the list by March 1 so I can put a reference list in the boxes that are traveling solo (ECC, 6th). I will also try and get Ann Brovold’s books to include in your trunks.

Please call if you have any concerns or questions. (934-6116)
HELP! HELP! HELP! HELP! HELP! HELP!
Help our teachers teach about the environment!

To: Jane Steck,(JES) Carolyn & Claudette(CMS)

From: Angie Wanless
RE: Environmental activities for our “ENVIROTRUNKS”

Hey folks! I’m sending this note to you three in particular because I know I can count on your communication. For my masters degree I’m working on an environmental project that involves increasing the Environmental Education (EE) that teachers teach by meeting their teaching needs. I got together with representatives from each building K-6 and we decided that creating trunks full of EE activities and resources would be the easiest and friendliest way to accomplish our goal.

I would like to circulate the trunks to the 6th grade buildings in April before Earth Day (April 22).

Would you do me a BIG favor and ask the members of your staff to contribute (or make a list of) any EE activities they do during the year, and in preparation for Earth Day? I will then put these ideas in the trunk so that ALL 6th grade teachers can find out what GOODIES we have and share them at our grade level. I will try and get a list of things done at the other levels so that we can see if there are any doubling, and perhaps create a scope and sequence.

Please try to get these to me ASAP (by Feb. 28 if possible, I want to send out a list to all elementaries.) Listed below are the building reps and dates for circulation in other buildings. THANKS SO MUCH!!

ENvironet: Lisa Hopkins (2-EU), Michael Anderson(5-CES), Kathy Kinghorn(4-CHANEL), Ethel Nelson(1-ECC), Anna Edlund(K-ECC), Susan Gulstrand(3-JES) Angie Wanless(6-CMC)

TRUNK TRAVEL: before Friday March 3
East Union before Friday March 3
Chaska El week of March 13-17
ECC (shows theirs March 17)
*Jonathan week of March 20-24
Chanhassen week after break April 3-7 (7 is a workshop day!)

*6th grade will travel solo to CMS in April