A STUDY TO DEVELOP
AN ENVIRONMENTAL EDUCATION TRAINING CURRICULUM
FOR WISCONSIN INSERVICE TEACHERS
by
Nancy H. Cripe

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APPROVED BY THE GRADUATE COMMITTEE OF:

Dr. Richard Wilke, Committee Chairman
Professor of Environmental Education
Associate Dean, College of Natural Resources

Dr. Randall Champeau
Associate Professor of Environmental Education and
of Natural Resources

Dr. Daniel Sivek
Assistant Professor of Environmental Education

Dr. Michael Offerman
Director of the Division of Continuing Education
and Extension
Abstract

Environmental protection tomorrow will be carried out by today’s students; their teachers are key factors in training and motivating these students to become environmental problem-solvers. However, the majority of K-12 teachers have misgivings about their competency and preparation to teach environmental education effectively. Therefore, the goal of this program was to provide essential environmental education (EE) training for Wisconsin inservice teachers.

A four course sequence in environmental education was developed for the UW-SP teacher outreach program. A select group of 25 professional environmental educators designed the framework for each course during five weekend work sessions between 1989 and 1991, and also served as course instructors statewide. Each course was drafted, reviewed, revised, finalized, implemented, and evaluated. Audiovisual materials, teaching supplies, and a resource library were prepared for each instructor. Each participating K-12 teacher received EE resources and materials as part of the training.

During the first eight months of the program, 413 K-12 teachers enrolled in these courses; 21 of 25 instructors taught or team taught a course.
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It has been my great privilege during this project to have worked closely with many dedicated environmental education professionals. Their vision, perseverance, and delightful sense of humor has encouraged and invigorated me.

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Mike Offerman has shaped my perspective of adult education and its necessary ingredients. The teacher training curricula bears the mark of his guidance in this essential area.

This curriculum development project has been a cooperative venture with 25 outstanding environmental educators throughout Wisconsin. It was only through the immense creativity, energy, devotion, and skill of these men and women that these courses were born. Their contributions were of the very highest quality and absolutely essential to the teacher outreach program in environmental education.
Many sources of funding have contributed to the
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CHAPTER I
THE PROBLEM AND ITS SETTING

The Statement of the Problem

This research proposes to develop an environmental education training curriculum for Wisconsin inservice teachers.

The Subproblems

1. The first subproblem. The first subproblem is to develop the first course of the curriculum, "Principles of Environmental Education".

2. The second subproblem. The second subproblem is to develop the second course of the curriculum, "The Ecological Basis for Environmental Education".

3. The third subproblem. The third subproblem is to develop the third course of the curriculum, "Environmental Education Teaching Strategies".

The Delimitations

The study will not attempt to design the implementation of the curriculum.

The study will not attempt to evaluate teacher competencies in environmental education before or after participation in the training curriculum.
The study will not attempt to evaluate student competencies in environmental education before or after their teacher participates in the training curriculum.

The Definition of Terms

Environmental education. Environmental education is that part of education whose goal is to develop 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. (Wisconsin Department of Public Instruction, 1986)

Inservice teachers. Inservice teachers are those teachers currently certified and employed in a school district.

Abbreviations

EE is the abbreviation for environmental education.

UW-SP is the abbreviation for the University of Wisconsin-Stevens Point.

K-12 is the abbreviation for kindergarten through grade 12.

DPI is the abbreviation for the Department of Public Instruction.
Assumptions

The first assumption. The first assumption is that the need for classroom-based environmental education exists in Wisconsin schools at all grade levels and in all subject areas, and will continue to increase.

The second assumption. The second assumption is that the desire for environmental education inservice training by Wisconsin teachers exists at all grade levels and in all subject areas, and will continue to increase.

The third assumption. The third assumption is that inservice training in environmental education for Wisconsin teachers will enable them to competently teach their students the knowledge, awareness, and skills necessary for effectively resolving environmental issues.

The Importance of the Study

The global environment can best be protected and improved by knowledgeable, aware and concerned citizens who are skilled and motivated to work for positive change. Classroom teachers have a significant impact on the formation of students’ knowledge, values, and commitment to environmental stewardship. Therefore, the most effective environmental education training possible is needed for these educators. Motivated, confident, and possessing the necessary skills, these teachers can successfully develop environmentally
astute and determined students who are able to work effectively toward resolving environmental issues.
CHAPTER II
INTRODUCTION TO THE STUDY

The Need for Inservice Teacher Training in Environmental Education

Environmental protection tomorrow will be carried out by today's students who now sit in classrooms across Wisconsin, the nation, and the world. Because the teacher is a key factor in training and motivating these students to become environmental problem-solvers, environmental education training is essential for inservice teachers. However, the majority of K-12 teachers have misgivings about their competency and preparation to teach environmental education effectively (Ham and Sewing 1988; Champeau, Gross, and Wilke 1980).

The 1975 Belgrade Charter and the 1977 Tbilisi Intergovernmental Conference Report laid the foundation for environmental education goals and objectives. The Wisconsin Department of Public Instruction recommends the following goal statement as the basis for EE curriculum planning:

The goal of education about the environment is to help students become environmentally aware, knowledgeable, skilled, dedicated citizens who are committed to work, individually and collectively, to defend and improve the quality of the environment on behalf of present and future generations of all living things.

Further, five recommended subgoals for environmental education are:

1. **Awareness**: to help social groups and individuals acquire an awareness and sensitivity to the total environment and its allied problems.

2. **Knowledge**: to help social groups and individuals gain a variety of experience in, and acquire a basic understanding of, the environment and its associated problems.

3. **Attitudes**: to help social groups and individuals acquire a set of values and feelings of concern for the environment and the motivation for actively participating in environmental improvement and protection.

4. **Skills**: to help social groups and individuals acquire the skills for identifying and solving environmental problems.

5. **Action**: to provide social groups and individuals with an opportunity to be actively involved at all levels in working toward the resolution of environmental problems.

The goal and subgoals have provided the concise, substantive foundation for the field of environmental education since their delineation. Yet, curriculum developers have struggled with translating the goal and subgoals of EE into manageable instructional objectives for
program and classroom curricula (Hungerford, Peyton, and Wilke 1980). An intermediate set of subgoals was needed to bridge the gap between the general goal of EE, set forth by the Belgrade Charter and the Tbilisi Declaration, and manageable instructional objectives needed by EE practitioners. Thus, the "Goals for Curriculum Development in Environmental Education" were proposed by Hungerford, Peyton, and Wilke (1980). They consist of a superordinate goal for EE accompanied by four levels of subgoals:

The Superordinate Goal: ...to aid citizens in becoming environmentally knowledgeable and, above all, skilled and dedicated citizens who are willing to work, individually and collectively, toward achieving and/or maintaining a dynamic equilibrium between quality of life and quality of the environment.

Subgoal Level 1: Ecological Foundations Level
To provide students with sufficient ecological foundations knowledge to permit them to eventually make ecologically sound decisions with respect to environmental issues.

Subgoal Level 2: Conceptual Awareness Level - Issues and Values
To guide the development of a conceptual awareness of how individual and collective actions may influence the
relationship between the quality of life and the quality of the environment... also, how these actions result in environmental issues which must be resolved through investigation, evaluation, values clarification, decision making, and finally citizenship action.

**Subgoal Level 3: Investigation and Evaluation Level**
To provide for the development of the knowledge and skills necessary to permit students to investigate environmental issues and evaluate alternative solutions for remediating these issues and alternative solutions.

**Subgoal Level 4: Environmental Action Skills Level - Training and Application**
To guide the development of those skills necessary for students to take positive environmental action for the purpose of achieving and/or maintaining a dynamic equilibrium between the quality of life and quality of the environment.

Champeau et al. (1980) assessed central Wisconsin teachers' understanding and use of the "Goals for Curriculum Development in Environmental Education". Their findings indicated that most teachers comprehended the goal and subgoals, and believed that achieving them was important to students' education. Yet, most teachers did not feel that they had the training or instructional resources to
accomplish the Goals. The researchers concluded that "this would appear to be a clear mandate for teacher inservice and EE curriculum projects which address the Goals."

In Wisconsin, two initiatives were implemented by the Department of Public Instruction to address these needs for teacher training in environmental education. First, a 1983 administrative rule identified EE competencies which must be demonstrated by those seeking licenses to teach science, social studies, agriculture, elementary and early childhood education after July 1, 1985 (Appendix A). Secondly, the DPI mandated that all school districts develop, implement, and evaluate a K-12 written curriculum plan for environmental education by September 1, 1990, with greatest emphasis in art, health, science, and social studies (Appendix B). Through these two efforts, Wisconsin began providing preservice teachers necessary training in environmental education and incorporating EE into district-wide curricula. However, the need of Wisconsin inservice teachers for environmental education training remained, both to enable their classroom instruction of EE and for their participation in the district process of curriculum planning in EE. The College of Natural Resources at the University of Wisconsin-Stevens Point, with an extensive history of providing teacher inservice courses, began formulating a cohesive strategy for addressing this need for environmental education by inservice teachers.
Training of inservice teachers has been cited repetitively by many others in professional literature as the greatest need in the systematic implementation of environmental education (Volk 1984; Ritz 1977; Howie 1974). While the need for teacher training has been well-documented, proven delivery systems for providing this inservice training in environmental education are still uncertain (Ham, Rellergert-Taylor, and Krumpe 1988).

Format and Characteristics of Inservice Teacher Training in Environmental Education

Varieties of inservice teacher training programs in EE were launched with federal funds provided by the 1970 Environmental Education Act. Primarily, courses were offered by universities and school districts to teachers from all grade levels and subject areas (Rakow 1985). However, Rakow contended in his study of teacher training programs in EE from 1970 to 1980 that few programs were designed to qualitatively measure their effectiveness. Sufficient evaluative research for validating workshop format and success was absent. Assorted innovative strategies were implemented ranging from multi-week to one day workshops; the usual format was activity-oriented, providing teachers with instructional materials, activity guides, and basic training in EE teaching methods (Ham et al. 1988).
However, research by Ham and Sewing (1988) revealed that the major barriers to teaching environmental education were not necessarily the lack of instructional materials or lack of teaching ability. Results of their study clustered barriers to EE in four categories:

1. **Conceptual**: barriers resulting from a poor understanding about the nature of EE. Environmental education was often equated with science, with outdoor education, or considered a separate subject competing for classroom time.

2. **Logistical**: barriers resulting from perceived lack of time to plan or teach EE, lack of funding, or lack of instructional materials.

3. **Educational**: barriers related to teachers' misgivings about their own ability to teach environmental education, especially their perceived lack of knowledge about EE and natural sciences.

4. **Attitudinal**: barriers stemming from teachers' attitudes toward EE and science.

Teachers in Ham and Sewing's study rated logistical barriers to EE highest, especially lack of time and lack of EE instructional materials. Almost two-thirds of the teachers considered science the main area where environmental education should be taught, rather than across the curriculum; over half believed their educational
background inadequate to teach EE. Interestingly, teachers had very positive attitudes toward environmental education; thus, attitude was not considered a significant barrier.

Ham and Sewing strongly recommended that inservice teacher training workshops focus on reducing or eliminating these known barriers to EE. To accomplish this goal, they suggested the following characteristics be included in teacher training:

1. Attract teachers from all backgrounds, not just science;
2. Deal with EE in all areas of the curriculum, stressing methods as well as content;
3. Provide training in using the classroom and schoolyard as sites for EE;
4. Provide a holistic view of EE by presenting both the cognitive and affective dimensions of learning;
5. Provide opportunities to explore a variety of EE instructional materials;
6. Be motivational, especially for the non-science teachers unsure of their competence to teach EE.

These recommendations were formalized into a pilot teacher training workshop utilizing a pretest-posttest evaluation procedure (Ham et al. 1988). The results from the study supported the validity of these characteristics in
significantly reducing or eliminating many barriers to environmental education in a workshop format.

Often the proliferation of EE has been linked to extensive outdoor experiences for students under the tutelage of professional environmental educators at nature centers. Student participation in this type of program within a nature center setting continues to be a useful EE methodology (Lewis 1981). Yet:

*The most exciting outdoor program is only as beneficial to the students as the preparation their classroom teachers were competent enough to provide. Perhaps the first job of EE is not to develop bigger and more vivid outdoor programs but to provide more extensive in-service training for the classroom teachers....* (Howie 1974)

Reluctance by many excellent teachers, especially non-science teachers, to participate in environmental education training workshops is often driven by a strong dislike of science-dominated courses (Ritz 1977). Beginning involvements in EE for teachers should not be "overly science-y"; what they must do is two-fold, Ritz asserted. First, enthusiasm for EE needs to be produced in teachers. Second, "easy-to-grasp handholds" need to be provided for teachers to begin teaching EE. Characteristics of beginning inservice teacher training in environmental education proposed by Ritz paralleled many of those tested by Ham and Sewing:
1. Include basic science without being science-dominated;
2. Involve teachers from a wide variety of backgrounds;
3. Train teachers in both the methods as well as the content of EE;
4. Provide a strong motivational impact on participants;
5. Encourage teachers to environmentalize their teaching;
6. Provide direct involvement with particular environments being studied; and
7. Engage teachers in exploring their personal attitudes and feelings about the relationship between humans and the environment.

Procedures for Developing an Environmental Education Curriculum (Hungerford and Peyton 1986), written for the United Nations Educational, Scientific and Cultural Organization (UNESCO), outlined guidelines for teacher preparation in EE. Whereas specific characteristics of inservice training were set forth by Ham and Sewing (1988) and Ritz (1977), Hungerford and Peyton described specific competencies which should be gained by inservice teachers as a result of their training in environmental education:
Teacher preparation in EE should:

1. focus on the interdisciplinary nature of EE, providing teachers with the opportunity to acquire and apply the knowledge, skills and attitudes inherent in environmental education, including:
   a) training in ecology;
   b) field or laboratory experiences in environmental science;
   c) knowledge of environmental issues;
   d) knowledge of the role of human values in environmental issues;
   e) competencies in environmental problem-solving (identification, investigation, evaluation, and action).

2. provide instruction and experience with infusion curricula as well as instructional activities and methods appropriate for the classroom;

3. provide instruction on the philosophy and goals of EE, and the nature of interdisciplinary and multidisciplinary (infusion) curricula. Teachers should be trained in the implementation of these models;

4. provide training in the use of EE content to teach basic general educational skills;
5. provide opportunities for teachers to develop skills in identifying, inventorying, and evaluating local resources for use in EE.

An integral, common theme ran throughout the procedures of this international training model in EE: the training methods experienced by teachers during inservice workshops should be congruent with the teaching methods they are expected to utilize while instructing EE in their classrooms with their students. In the words of Hungerford and Peyton,

*EE must develop problem-solvers, and thus, should itself, utilize a problem-solving approach.*

The unique yet critical role of environmental education as a vehicle for teaching basic skills while simultaneously accomplishing EE goals was described by the authors. This perspective on EE can be especially palatable to teachers struggling with time constraints in their planning and "back to basics" classroom schedules. Research by Ham et al. (1988) identified teachers' lack of planning and instructional time as a major barrier to EE. In their pilot teacher training workshop, evaluation revealed that the greatest shortcoming of the workshop was its failure to decrease the sense of importance which teachers placed on the logistical barrier of time. Paul Hart (1987), in addressing the subject of environmental education in the school curriculum, issued words of caution to environmental
educators who would minimize the working conditions and time restrictions many teachers experience:

Environmental educators have focused their attention on the development of environmentally-related goals and have neglected to probe deeply enough into the educational implications, particularly at the level of the teacher... Environmental educators have not focused on the real-life working conditions of teachers, their perceptions about change, and the support system needed to facilitate change in teaching method demanded by these new curriculum materials.

Conclusions

While the overarching goals of environmental education have been firmly established since the Belgrade Charter and the Tbilisi Declaration, modifications such as the "Goals for Curriculum Development in Environmental Education" have helped translate these larger principles into workable objectives for practitioners. Teachers comprehend the goals of EE and attest to their importance; yet, many feel underprepared and limited in their planning and instructional time.

Few effective formats for inservice teacher training in environmental education have been validated by thorough evaluation and research. Preliminary evaluation of selected characteristics by researchers supported the following format components for inservice teacher training:

1. Involve teachers from all grade levels and subject areas;
2. Provide training in the methods as well as content of EE;
3. Provide training in using the classroom and schoolyard as primary sites for EE;
4. Provide opportunities to explore and utilize a variety of EE instructional materials;
5. Motivate teachers unsure of their abilities to teach EE;
6. Deal with EE in all areas of the curriculum to demonstrate its interdisciplinary nature;
7. Provide training in the use of EE content to teach basic general educational skills;
8. Model *training methods* during inservice workshops congruent with the *teaching methods* which teachers are expected to utilize while instructing EE in their classrooms;
9. Provide training in ecology and field or lab-based experiences in environmental sciences;
10. Provide training in environmental issue identification, evaluation, and action (i.e., environmental problem-solving).

Well-documented need exists for inservice teacher training in environmental education, although the most effective program design for that training has yet to be determined through research. The critical state of the global environment dictates that evaluation of program
design must occur simultaneously with increased efforts to prepare educators to equip their students as environmentally astute, active, and determined citizens. The best training, not merely training, is imperative for educators in Wisconsin, the nation, and the world in order to achieve what R. Thomas Tanner (1980) called "the ultimate goal":

The ultimate goal of environmental education is the modest one of saving the earth; there should be some elephants, some energy, and some clean water left for our grandchildren.
Development of Program Framework by Steering Committee

Development of an environmental education training curriculum for K-12 inservice teachers was identified as a high priority by the College of Natural Resources at the University of Wisconsin-Stevens Point. Groundwork for the teacher outreach program in EE was initially laid by a steering committee assembled in 1987. Members included UW-SP College of Natural Resources faculty, Continuing Education personnel, and the EE coordinator for the Stevens Point, Wisconsin school district. This group proposed and evaluated a variety of strategies to meet the needs of K-12 inservice teachers for training in EE. After considerable deliberation, the format selected by the committee was a series of one credit courses focused on specific areas of environmental education. Four courses were designated for the series:

1) **Principles of Environmental Education**

   Natural Resources 411/611. 1 credit.

2) **Ecological Basis for Environmental Education**

   Natural Resources 412/612. 1 credit.

   Prerequisite:  NR 411/611
3) *Citizen Action in Environmental Education*
Natural Resources 413/613. 1 credit.
Prerequisite: NR 412/612

4) *Environmental Education Teaching Strategies*
Natural Resources 414/614. 1 credit.
Prerequisite: NR 412/612

The course series was flexibly designed to accommodate the varying interests, schedules, and needs of participating inservice teachers. A teacher could enroll in any or all of the four courses; however the first course, an introductory overview to the field of EE, was stipulated as a prerequisite to the later three courses. Although somewhat modular by design, the four course series would provide inservice teachers a coherent, progressive program of study in EE.

With 481 school districts and nearly 48,000 K-12 teachers in Wisconsin, the instructor needs for the outreach course program had to be carefully examined. Clearly, the UW-SP College of Natural Resources faculty would not be able to serve as the core instructional personnel due to responsibilities at the University. Also influencing the instructor question was the committee’s desire to have outreach courses taught in the schools and districts from which the teachers would be enrolling, rather than base the program at UW-SP. In this way, modeling of EE at the school site and in the community would be possible. An extensive network of non-faculty instructors would be needed
throughout the state to offer the outreach courses. The steering committee selected 25 EE professionals from across Wisconsin and recruited them for academic instructional staff positions in the EE outreach program. Each of the instructors held at least a Master's Degree, possessed extensive teaching experience, and was an accomplished professional in the field of EE. Geographic distribution in Wisconsin was also considered in their selection. Instructors were recruited from numerous educational fields: seven school teachers and/or curriculum coordinators; ten nature center directors and educators; two Wisconsin Department of Natural Resources staff members; four University of Wisconsin Extension 4-H and Youth Agents; a school superintendent and the supervisor of EE for the Wisconsin DPI were also selected as instructors. (A complete listing of the instructors by name and professional position is found in Appendix C.) Those selected as instructors chose to participate in the outreach program primarily because of their commitment to environmental education in the Wisconsin K-12 curriculum. Additionally, an instructor would receive a $500 stipend for each course taught.

Under the steering committee's original vision, the teacher outreach program in EE would be jointly administered between the UW-SP College of Natural Resources and Continuing Education Office. A third partner, the Wisconsin Center for Environmental Education, entered into the venture
in April 1990 when the state legislature passed Environmental Education Act 299, creating the UWSP-based Center. Because the Act legislated responsibilities to the Wisconsin Center for Environmental Education which included the development of teacher training programs in EE, the Center assumed a major role in the teacher outreach program already underway.

Initially, courses would have been offered through the UW-SP Continuing Education Office to generate revenue from tuition fees to pay for course materials and instructional expenses. However, a National Science Foundation grant allowed a majority of teachers enrolling in courses during 1990-1991 to participate on a tuition-free basis. After the conclusion of the National Science Foundation grant period, the courses will revert to being supported by tuition-generated revenues as originally planned.

Process of Course Development

To create both high quality curricula and strong ownership in the courses, it was critical to use the skills and experiences of the instructors as an integral part of the course development process. Four weekend planning sessions with instructors, UW-SP College of Natural Resources faculty, and UW-SP graduate students in EE were held in 1989 and 1990; a fifth session is scheduled for June 1991. Each
session was held at the Central Wisconsin Environmental Station, a UW-SP field station located 18 miles east of Stevens Point. Housing and meals were provided by the Environmental Station at no cost to the instructors. Approximately 20 instructors participated in each session, as well as 5-7 faculty and graduate students. Complete agendas for each session are found in Appendix D. A synopsis of each of the sessions follows:

1) November 3-5, 1989: On Friday evening, instructors were welcomed by the Dean of the College of Natural Resources at UW-SP. Following introductions, participants discussed logistics of the outreach program and goals for the weekend. On Saturday, four working groups of 5-6 participants identified major concepts and objectives for the first course, Principles of Environmental Education. Each group prioritized their top 3-5 objectives and developed activities and methods, materials, suggested readings, time requirements, and an evaluation strategy for each objective. (The task cards provided to each group to guide this process are found in Appendix E.) In the evening, each group shared their work using flip charts, followed by discussion. On Sunday morning, new working groups of 5-6 participants used the nominal group process to develop major concepts and objectives for the
three remaining courses. One hour was allotted per course. (The task cards provided to each group to guide this process are found in Appendix F.) Again, groups shared their work prior to lunch and departure. A compilation of all group results (Appendix G) was transcribed within two weeks and presented to the steering committee.

2) March 30-April 1, 1990: The draft version of the first course, Principles of Environmental Education, was taught in a "dry run" format. Fourteen instructors volunteered to teach a lesson or part of a lesson to the entire group, which then critiqued the course and made recommendations for revision.

3) August 3-5, 1990: On Friday night, participants discussed recent developments in the outreach program including funding, marketing, and course scheduling. On Saturday, participants selected one of two courses, Ecological Basis of EE or EE Teaching Strategies, and joined an 8-10 member working group. Utilizing the outline developed in the November 1989 planning session, each group expanded the course framework and delineated specific unit objectives, teaching methodologies, assignments, and course resources. On Sunday morning, each group presented its proposed course
syllabus followed by discussion. The entire group also proposed and ranked various EE resources to be purchased for resource libraries.

4) December 7-9, 1990: On Friday evening, six instructors who had taught Principles of EE during the autumn reported their impressions of the course to the group. Course schedules were reviewed, and discussion of the outreach program followed. On Saturday the agenda called for the draft version of the second course, Ecological Basis for EE, to be taught in a "dry run" format. After deliberation, the group voted to review and discuss the eight units of the draft course in sequence instead of utilizing the "dry run" format. All of Saturday, and most of Sunday morning was spent on this process. Later Sunday morning, one hour was devoted to further discussion of the next course being drafted, EE Teaching Strategies. The group agreed to convene again on June 21-23, 1991, to review the third and fourth courses.

Process of Curriculum Writing

The purpose of writing a curriculum for each of the four courses was to provide 25 instructors with a basic framework from which to teach each course. Each course curriculum
included goals, objectives, lessons, assignments, grading
criteria, instructor resources, references, appendices,
bibliography, and a Book of Readings (as a text or text supplement). The format for each lesson was standard:

1) objectives
2) method
3) instructional time
4) readings
5) background information
6) materials
7) procedure
8) extensions
9) evaluation
10) assignment

Each course required 16 contact hours of instruction. Within this general framework instructors had the flexibility to teach lessons creatively, while instructional consistency and accountability were maintained throughout the statewide program. Course curricula for Principles of EE, Ecological Basis for EE, and Teaching Strategies in EE are found in Appendix K, L, and O, respectively.

A tentative two year timetable for the outreach program in EE was set in late 1989, containing the following curriculum development deadlines:

1) February 1990: draft of first course completed
   May 1990: final version of first course completed
   Summer 1990: begin offering first course

2) September 1990: draft of second, third courses completed
December 1990: final versions of second, third courses completed
Winter 1991: begin offering second, third courses

3) November 1990: draft of fourth course completed
February 1991: final version of fourth course completed
Spring 1991: begin offering fourth course

During the summer of 1990, the timetable was reevaluated. The first course, a prerequisite for the other three courses, was designated as the major offering of the teacher outreach program until mid-1991. This emphasis on the first course created a larger constituency of teachers who had completed the prerequisite and were desirous of further inservice training in EE. It also provided the additional time needed for curriculum development work on the second, third, and fourth courses. Originally, one author was to develop all four curricula using the framework of the steering committee and instructors; this plan was abridged so that one author would develop three curricula, and a second author would develop one curriculum. The target date for all four courses being offered statewide was adjusted to the summer of 1991.

The curriculum development phase of the outreach project commenced with the November 1989 planning session, and followed this sequence:
1) course drafted
2) course reviewed
3) course revised
4) course finalized
5) course implemented
6) course evaluated

Course drafted. Utilizing the four course framework designed by the steering committee and instructor contributions generated in the planning sessions, a draft version of each course curricula was written. The draft was a complete version of the curriculum.

Course reviewed. Each instructor and steering committee member was mailed a draft copy of the curriculum with an evaluation form (Appendix H) and a postage-paid return envelope. Each reviewer was asked to return the evaluation within a three to four week period. Verbal recommendations for course curricula taught in "dry run" format during planning sessions were also recorded and incorporated into the revision process.

Course revised. All recommendations, critiques, and notations were compiled onto a master copy of the draft curriculum. Responses to evaluation questions which used a Likert scale were averaged and incorporated into the review process. Based on the evaluative data provided, the curriculum was revised to reflect the consensus of the reviewers.
Course finalized. The final version of the course curriculum was printed and distributed to all instructors and steering committee members.

Course implemented. Following program guidelines, instructors began scheduling outreach courses for K-12 teachers in EE during the summer of 1990. Actual instruction began in September of 1990.

Course evaluated. Evaluation was designed to occur at several different levels. Initially, instructors completed a brief evaluation form assessing the curriculum (Appendix I). Graduate students are designing and implementing an extensive pretest-posttest evaluation for both the teachers who complete these courses and their K-12 students. In addition, the standard UW-SP course evaluation forms are being completed by all participating teachers.

Selection And Preparation Of Course Materials And Resources

In addition to the written curriculum, each of the 25 instructors was provided with supplementary audio-visual materials, teaching supplies, and a resource library. Audio-visual materials included overhead transparencies, slide sets, and one master video tape containing narrated arrangements of all video segments and slides. Teaching supplies of markers, tape, laminated discussion sheets, and activity materials were distributed. A resource library containing EE infusion curricula, activity guides, and
nature guides was provided to each instructor so that K-12 teachers could borrow these items during the course and increase their familiarity with and usage of EE materials. A complete list of materials provided to each instructor is found in Appendix J.

Teachers participating in the outreach courses received a number of resources. For each course, teachers received a Book of Readings either as a text or a text supplement; several of the courses also utilized a text. During the first year of course offerings (1990-1991), National Science Foundation grant monies also provided to each teacher a one year magazine subscription to Wisconsin Natural Resources, a one year membership in the Wisconsin Association for Environmental Education, a paperback copy of Sand County Almanac by Aldo Leopold, A Guide to Curriculum Planning in Environmental Education by the Wisconsin Department of Public Instruction, and a $100 stipend for successfully completing course requirements.
 CHAPTER IV
RESULTS

Evaluation Results: Draft of First Course

The draft version of the first course, Principles of Environmental Education, was evaluated by instructors and steering committee members between February 11 and March 1, 1990. (The evaluation form is included in Appendix H.) Of the 25 instructors receiving drafts to review, 16 responded by returning their evaluation forms. Of the 8 steering committee members receiving drafts to review, 4 responded by returning their evaluation forms. Overall, a 60% return rate of evaluations was obtained.

The first question asked evaluators to assess lesson effectiveness and strengths by recording written comments directly on the draft curriculum and returning it with the evaluation form. For questions two through six, evaluators responded using the following Likert scale:

<table>
<thead>
<tr>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Neutral</th>
<th>Agree</th>
<th>Strongly Agree</th>
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<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
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</table>

Evaluator responses were averaged and accompany each of the following questions:
Evaluation Question                     Average Score

2. The curriculum taken as a whole meets the goals and objectives developed for the course during the November 3-5, 1989 planning session at CWES.  
   \( x = 4.3 \)

3. The methods and activities selected to meet the course objectives are appropriate for inservice teacher training in environmental education.  
   \( x = 4.4 \)

4. The ten lessons progress cohesively and logically to form a unified course in the principles EE.  
   \( x = 4.3 \)

5. The layout format of the curriculum (e.g., margin size, font size, graphics, quotes, reading ease) is appropriate.  
   \( x = 4.2 \)

6. I am enthusiastic about instructing this curriculum in its present form.  
   \( x = 4.4 \)

The draft curricula was revised to reflect the consensus of instructors and steering committee members based on two types of evaluative information. Written evaluations as described above were the first source. Verbal critiques of the course during the "dry run" at the March 31-April 1, 1990 work session at the Central Wisconsin Environmental Station were the second source. The revised, final version of Principles of Environmental Education was distributed to instructors and steering committee members in May 1990. (The course curriculum for Principles of EE is found in Appendix K.)
Evaluation Results: Draft of Second Course

The draft version of the second course, Ecological Basis for Environmental Education, was evaluated by instructors and steering committee members between October 30 and November 26, 1990. (The evaluation form is included in Appendix H.) Of the 25 instructors receiving drafts to review, 12 responded by returning their evaluation forms. Of the 8 steering committee members receiving drafts to review, 4 responded by returning their evaluation forms. Overall, a 48% return rate of evaluations was obtained.

As in the prior evaluation, the first question asked evaluators to assess lesson effectiveness and strengths by recording written comments directly on the draft curriculum and returning it with the evaluation form. For questions two through six, evaluators responded using the following Likert scale:

<table>
<thead>
<tr>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Neutral</th>
<th>Agree</th>
<th>Strongly Agree</th>
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<td>2</td>
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Evaluator responses were averaged and accompany each of the following questions:

<table>
<thead>
<tr>
<th>Evaluation Question</th>
<th>Average Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>2. The curriculum taken as a whole meets the goals and objectives developed for the course during the November 3-5, 1989</td>
<td></td>
</tr>
</tbody>
</table>
and August 3-5, 1990 planning sessions at CWES.  

3. The methods and activities selected to meet the course objectives are appropriate for inservice teacher training in environmental education.  

4. The eight lessons progress cohesively and logically to form a unified course in ecological principles basic to EE.  

5. The layout format of the curriculum (e.g., margin size, font size, graphics, quotes, reading ease) is appropriate.  

6. I am enthusiastic about instructing this curriculum in its present form.

As before, the draft curricula was revised to reflect the consensus of instructors and steering committee members based on two types of evaluative information. Written evaluations as described above were the first source. Verbal critiques of the course during the December 7-9, 1990 work session at the Central Wisconsin Environmental Station were the second source. The revised, final version of Ecological Basis of Environmental Education was distributed to instructors and steering committee members in June 1991. (The course curriculum for Ecological Basis of EE is found in Appendix L.)

Evaluation Results of Third and Fourth Courses

The third course in the outreach program, Citizen Action in Environmental Education, was written by another author and is not included in this thesis.
The draft version of the fourth course in the series, *Environmental Education Teaching Strategies*, was evaluated and revised after the completion of this study. However, the revised, final version of *Environmental Education Teaching Strategies* is found in Appendix M; the evaluation form is found in Appendix N; and the evaluation results are found in Appendix O.

**Instruction of Outreach Courses in Environmental Education**

Between September 17, 1990 and April 9, 1991, twenty course offerings of *Principles of Environmental Education* were completed in various locations throughout the state of Wisconsin. Enrollment for these fifteen courses totalled 413 K-12 teachers. Five additional courses are scheduled between April 10 and July 31, 1991, with an anticipated enrollment of 125 teachers. Therefore, approximately 538 inservice teachers will have participated in an environmental education course during the first year of the UW-SP outreach program.

Of the 25 instructors selected to teach outreach courses, 21 instructors taught or team-taught *Principles of Environmental Education* as of April 9, 1991. Course formats were selected by instructors, in consultation with participating teachers. Possible course formats included variable session numbers (usually four, five, or eight) totalling sixteen hours of direct instruction.
<table>
<thead>
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<th>Format</th>
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<tr>
<td>3 sessions</td>
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<td>4 sessions</td>
<td>7</td>
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<td>5 sessions</td>
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<tr>
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<td>2</td>
</tr>
<tr>
<td>TOTAL</td>
<td>15</td>
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</table>

The steering committee decided to eliminate the weekend option as a possible course format after reviewing instructor and teacher recommendations. A number of instructors reported at the December 7-9, 1990 work session at the Central Wisconsin Environmental Station that compact course formats did not allow for adequate study time between sessions. Multi-week formats with at least four sessions appeared to be more effective, allowing adequate study and reflection time for participating teachers.
Strengths and Weaknesses of the Curriculum Development Model

Inherent in this approach to curriculum development were certain advantages and disadvantages. Two major strengths, strong ownership and high quality of curricula, were identified. Two major shortcomings, time constraints and difficulty in reaching consensus, influenced the project. Specifically, two major strengths of the model were:

1) Ownership: involving over 30 professional environmental educators as steering committee members and instructors in the course development process produced a strong sense of ownership in the resulting curricula. This was evidenced by the fact that 21 of the 25 instructors taught at least one course during the first half year in which outreach courses were offered.

2) Quality: the quality of the final curricula benefitted tremendously from the abundance of ideas, resources, teaching methods, and critiques contributed by a diverse group of instructors and steering committee members.
Specifically, two major weaknesses of the model were:

1) Time Constraints: the time-intensive nature of the project was a major constraint for nearly all instructors and steering committee members. Arranging dates for weekend work sessions at the Central Wisconsin Environmental Station to accommodate the schedules of instructors was difficult. However, the majority of instructors felt that the weekend sessions were extremely valuable, not only for the curriculum development work, but also because of the esprit de corps shared with other professional environmental educators. This curriculum development process, utilizing over 30 contributors, required more time than a more streamlined method. The original timetable for the project was revised and extended to reflect the increased time needed for each phase of curriculum development.

2) Reaching Consensus: on certain aspects of the curricula, consensus was not always possible. The diverse backgrounds, experiences, and opinions of the instructors proved challenging when trying to reach agreement on some issues. To reconcile these differences, the course framework was structured so that each instructor could teach the major concepts and objectives of a course while adapting the instructional procedures to fit personal teaching
and learning styles. This strategy allowed for consistency throughout the statewide program while encouraging instructor creativity and innovation.

**Suggested Changes to Increase the Model's Effectiveness**

Overall, the procedure utilized to develop the four teacher outreach courses in EE appeared to be highly successful. Three modifications are proposed to improve the efficiency of the process and create a greater sense of participant satisfaction:

1) A facilitator should moderate all aspects of weekend work sessions. The role of the facilitator should be clearly communicated from the outset to participating instructors and steering committee members. The facilitator’s responsibilities should include keeping the group on task and on schedule; limiting discussion to pertinent aspects of the project; and bringing closure to work sessions by summarizing areas of consensus and areas where further work needs to occur. Ideally, the facilitator would have an impartial and independent role, not contributing to the process as an instructor or steering committee member.

2) During each of the weekend work sessions, several hours should be designated for professional development of the participants. Outside
specialists should be contracted to provide mini­workshops for instructors and steering committee members on topics pertinent to environmental education. Three options for 2-3 hour professional enrichment workshops are:

a) the Myers-Briggs Type Indicator Test;
b) "Fast Plants" and "Bottle Biology" programs from the University of Wisconsin-Madison; or
c) presentations from recognized environmental educators (e.g., Bill Hammond on "The Monday Group").

The rationale for providing these professional development opportunities is twofold: first, as a means of expressing appreciation for the time invested and contributions made to the outreach program by participants; and secondly, to promote attendance at weekend work sessions by offering valuable professional training.

3) Course evaluations should be completed by instructors within two weeks following course completion. Course evaluations were sent to all instructors in April 1991 who taught courses between September 1990 and April 1991. Evaluations provided valuable information, yet their effectiveness would be significantly increased if administered immediately after the conclusion of each course. (See Appendix I for evaluation and results.)
Recommendations for Further Research

Ultimately, the effectiveness of any teacher training program in EE must be measured by evaluating not only the teachers, but the students of those teachers.

Evaluation of teachers should measure to what extent the teacher training program:

a) reduced perceived barriers to EE (conceptual, logistical, educational, attitudinal) as reported by Ham and Sewing (1988);

b) increased environmental literacy (awareness, knowledge, values and attitudes, citizen action skills, and citizen action experience); and

c) improved teacher competencies in teaching EE;

d) enabled teachers to infuse EE into their own grade level and subject area, as well as at the district level.

Evaluation of students should primarily measure to what extent the students' environmental literacy (awareness, knowledge, values and attitudes, citizen action skills, and citizen action experience) increased as a result of their teacher's participation in the EE training program.

Further research into what methods of teacher training in EE significantly accomplish these desired outcomes in teachers and their students should be conducted.
Conclusion

In order to systematically implement environmental education throughout school curricula, the training of inservice teachers is essential. The quality of this training will largely determine a teacher’s commitment, confidence, and ability to teach environmental education. Therefore, the four courses of the UW-SP teacher outreach program in EE were designed to provide K-12 Wisconsin teachers with a solid grasp of the knowledge, skills, resources and teaching strategies considered fundamental to effective environmental education.

The advantages of gathering a group of dedicated environmental educators from the public and private sectors to work cooperatively in developing courses were notable: these educators, who also served as course instructors, developed a strong sense of ownership in the resulting high quality curricula.

The validity of the curriculum development process has yet to be confirmed by extensive evaluation of both teachers and students. However, the initial results indicate that this method of course development could serve as a model for the development of future inservice teacher training programs in environmental education.
APPENDIX A

Environmental Education Competencies Required of Wisconsin
Preservice Teachers Effective July 1, 1985
Wisconsin Administrative Code PI 3.05(4)

Environmental education. Effective July 1, 1985, adequate preparation in conservation of natural resources is required for a license to teach early childhood, elementary education, agriculture, and for secondary education licenses in science and social studies with the exception of philosophy, psychology, and religious studies. Programs shall provide students with the following knowledge:

(a) Knowledge of the wide variety of natural resources and methods of conserving these natural resources;
(b) Knowledge of interactions between the living and nonliving elements of the natural environment;
(c) Knowledge of the concept of energy and its various transformations in physical and biological systems;
(d) Knowledge of local, national, and global interactions among people and the natural and built environments including:
   1. Historic and philosophical review of the interactions between people and the environment;
   2. The social, economic, and political implications of continued growth of the human population.
   3. The concept of renewable and nonrenewable resources and the principles of resource management;
   4. The impact of technology on the environment; and
   5. The manner in which physical and mental well-being are affected by interaction among people and their environments.
(e) Ability to use affective education methods to examine attitudes and values inherent in environment problems.
(f) Ability to incorporate the study of environmental problems in whatever subjects or grade level programs the recipient of the certificate or license is permitted to teach through the use of the following methodologies:
   1. Outdoor teaching strategies;
   2. Simulation;
   3. Case studies;
   4. Community resource use; and
   5. Environmental issue investigation, evaluation, and action planning.
(g) Knowledge of ways in which citizens can actively participate in the resolution of environmental problems.
School District Curriculum Plan in Environmental Education
Mandated by the Wisconsin Department of Public Instruction
Curriculum Plan
Section 121.02(1), Wis. Stats.

Each school board shall:

(k) By September 1, 1988, develop a written, sequential curriculum plan in at least 3 of the following subject areas: reading, language arts, mathematics, social studies, science, health, computer literacy, environmental education, vocational education, physical education, art and music. The plan shall specify objectives, course content and resources and shall include a program evaluation method.

By September 1, 1989, develop a written, sequential curriculum plan in at least 3 additional subject areas specified in subd. 1.

By September 1, 1990, develop a written, sequential curriculum plan in all of the remaining subject areas specified in subd. 1.
Curriculum Plan

Overview

Standard (k) requires districts to develop, implement, and monitor curriculum plans for 12 subject areas. Areas to be covered include reading, language arts, mathematics, social studies, science, health, computer literacy, environmental education, physical education, art, and music. An additional curriculum plan in vocational education is to be developed for grades 7 through 12.

Curriculum development is important for a number of reasons:

- The need to restructure a traditional subject area in the light of recent research findings or the emerging needs of students.
- Recent local, state, or federal statutory changes such as the passage of graduation requirements or participation in a competency-based testing program.
- The demands for excellence affecting local curriculum.
- The impact of educational technology on local curriculum.
- The need to incorporate equity concepts and multicultural, sex-fair course objectives into a curriculum.

An organized district process of studying, reviewing, developing, and updating curriculum plans helps educators representing the various subject areas to examine over a period of time the appropriateness of the content of each curriculum plan and the effectiveness of instruction in each area.

If program and student objectives have been attained, no unusual curriculum revision may be indicated. However, in no instance should curriculum development stop completely. Even the best of curriculums can profit from continuous examination. New knowledge, improved techniques, changing philosophies, and local priorities make curriculum development a never-ending challenge.

DPI has published guides to curriculum development to provide support and assistance to educators responsible for revising or developing curriculum to meet local needs and aspirations. This includes providing models for improving curriculum and instruction; criteria for content selection; strategies for K-12 articulation, implementation, and evaluation of curriculum; statements of curriculum content for educators, school boards, and the community; and guidelines for preservice teacher education programs.

Administrative Rule

PI 8.01(2)(k)/2. Each school district board shall develop, adopt, and implement a written school district curriculum plan which includes the following:

a. Kindergarten through grade 12 sequential curriculum plan in each of the following subject areas: reading, language arts, mathematics, social studies, science, health, computer literacy, environmental education, physical education, art, and music, and

b. Grades 7 through 12 sequential curriculum plan in vocational education.
3. Each sequential curriculum plan shall specify objectives, course sequence, course content, resources, and an allocation of instructional time by week, semester, and school term. The school district board shall establish in the school district curriculum plan the allocation of instructional time, by week, semester, and school term, among all subject areas.

4. Each sequential curriculum plan shall include a program evaluation method which provides a systematic, continuous, and objective process of determining whether pupils attain the specified objectives. Components of the sequential curriculum plan shall be monitored continuously, and the overall program evaluation method shall be reviewed at least once every 5 years and revised as appropriate to ensure that pupils meet the curriculum objectives.

5. The school district curriculum plan shall be consistent with the approved education for employment program under ch. PI 26.

6. The school district board shall develop sequential curriculum plans in at least 3 of the subject areas specified in subd. 2 by September 1, 1988; in at least 3 more of the subject areas specified in subd. 2 by September 2, 1989; and in all of the remaining subject areas specified in subd. 2 by September 1, 1990. The computer literacy and environmental education curriculum plans shall be developed as follows:

a. Computer literacy objectives and activities shall be integrated into the kindergarten through grade 12 sequential curriculum plans,

b. Environmental education objectives and activities shall be integrated into the kindergarten through grade 12 sequential curriculum plans, with the greatest emphasis in art, health, science, and social studies education.

Definition of Terms

**Computer literacy.** The ability to use computer programs to assist learning, handling of information, and problem solving and the ability to make informed judgments concerning social and ethical issues involving computers and information systems. (From PI 8.01(2)(k)1.a., Wis. Admin. Code)

**School district curriculum plan.** The composite of the sequential curriculum plans. (From PI 8.01(2)(k)1.b., Wis. Admin. Code)

**Sequential curriculum plan.** An organized set of learning experiences that build upon previously acquired knowledge and skills. (From PI 8.01(2)(k)1.b., Wis. Admin. Code)
APPENDIX C

Professional Environmental Educators Recruited As Instructional Academic Staff for the University of Wisconsin-Stevens Point Outreach Courses in Environmental Education
PROFESSIONAL ENVIRONMENTAL EDUCATORS
RECRUITED AS INSTRUCTIONAL ACADEMIC STAFF
FOR THE UNIVERSITY OF WISCONSIN-STEVEN'S POINT
OUTREACH COURSES IN ENVIRONMENTAL EDUCATION

<table>
<thead>
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<th>Name</th>
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<tr>
<td>Elaine Andrews</td>
<td>Environmental Education Specialist, University of Wisconsin Extension Service</td>
</tr>
<tr>
<td>Mark Breseman</td>
<td>Environmental Education Director, Bethel Horizons Foundation</td>
</tr>
<tr>
<td>Terrie Cooper</td>
<td>Environmental Park Director, Elwood H. May Environmental Park</td>
</tr>
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<td>Terry Dunn</td>
<td>Park Ranger/Naturalist</td>
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<tr>
<td>Dave Engleson</td>
<td>State Coordinator of Environmental Education, Wisconsin Department of Public Instruction</td>
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<tr>
<td>Nancy Franz</td>
<td>4-H and Youth Development Agent, Assistant Professor of Youth Development, University of Wisconsin Extension Service</td>
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<tr>
<td>Harvey Hayden</td>
<td>Science Teacher, Lincoln High School</td>
</tr>
<tr>
<td>Judy Klippel</td>
<td>Assistant Director, Havenwoods Environmental Awareness Center</td>
</tr>
<tr>
<td>Lynne Krueger</td>
<td>Elementary Teacher, Menomonie School District</td>
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<tr>
<td>Dorothea Ledin</td>
<td>Program Manager, Center for Biology Education, University of Wisconsin-Madison</td>
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<tr>
<td>Cindy S. May</td>
<td>4-H and Youth Development Agent, Assistant Professor of Youth Development, University of Wisconsin Extension Service</td>
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<td>Ted May</td>
<td>4-H and Youth Development Agent,</td>
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</table>
Carrie Morgan  
Assistant Professor of Youth Development, University of Wisconsin Extension Service

Bryan Pierce  
Environmental Education Specialist, Wisconsin Department of Natural Resources

Curt Powell  
Development Coordinator, Trees for Tomorrow Education Center

Pat M. Sanders  
Superintendent of Schools, Tomahawk School District

Lori Smith  
Science Teacher, Appleton School District

Joe Smogor  
Program Coordinator/Naturalist, Gordon Buboltz Nature Preserve

Beverly Southern  
Environmental Education Teacher K-8, Waukesha School District

David Stokes  
Science Curriculum Supervisor, Beloit School District

Suzanne Wade  
Assistant Director of Education, Schlitz Audubon Center

Dennis Weibel  
Environmental Education Specialist, Riveredge Nature Center

Dennis Yockers  
Elementary Teacher, Menomonie School District

Dean Sauers  
Statewide Environmental Education Coordinator, Wisconsin Department of Natural Resources

Environmental Education Coordinator and Social Studies Teacher, Menasha School District
APPENDIX D

Agendas for Weekend Work Sessions of the Instructors and Steering Committee Members at the Central Wisconsin Environmental Station (November 3-5, 1989; March 30-April 1, 1990; August 3-5, 1990; December 7-9, 1990)
Proposed Agenda
UW-SP Adjunct EE Faculty Training Session
Central Wisconsin Environmental Station
November 3 - 5, 1989

Friday, November 3

6:30 - 7:00 p.m. Arrival
7:00 - 9:00 Introductions

Goals for weekend
Introduction to program
UW-SP perspective on Environmental Education - Slide show
Course format
Task identification. Get in working groups.

Saturday, November 4

7:00 - 8:00 Breakfast
8:00 - 9:45 Small group work session I
9:45 - 10:00 Break
10:00 - 11:45 Small group work session II
11:45 - 12:30 Lunch
12:30 - 2:15 Small group work session III
2:15 - 2:30 Break
2:30 - 4:15 Small group work session IV
4:15 - 4:30 Summary
5:00 Dinner & free time
7:00 - 8:30 Presentation of small group results to whole group
8:30 Social hour.
Agenda, cont....

Sunday, November 5

7:00 - 7:45  Breakfast
8:00 - 8:45  Introduction/overview of other courses
8:45 - 9:30  Small group work - Course 2
9:30 - 9:45  Break
9:45 - 10:45 Small group work - Course 3
10:45 - 11:45 Presentation of small groups re course 2 & 3
11:45 - Noon  Wrap - up. The future.

THANKS FOR COMING!!! Have a safe trip home!
TENTATIVE SCHEDULE
"Dry-run" of Principles of Environmental Education
NR 411/611

Friday, March 30
6:00 - 7:00  Arrival
7:00 - 7:15  Introduction to session
7:15 - 7:45  "To Begin With..." - Franz
7:45 - 9:15  "What in the World's Going On?" - Wade, Pierce, Stokes, Cripe
9:15 - 9:45  Critique

Saturday, March 31
7:30 - 8:00  Breakfast
8:15 - 9:15  "Introducing Environmental Education" - Breseman, Ledin
9:15 - 10:30  "What's an Environment?" - Yockers, Sauers
10:30 - 10:45  Break
10:45 - 11:45  "Goals of EE" - Cripe
11:45 - 12:15  Critique
12:15 - 2:00  Lunch and nature break
2:00 - 5:00  "Anatomy of an Issue" - Sivek
5:00 - 6:15  Dinner
6:15 - 7:15  "The Method of Environmental Issue Investigation" - Smogor, Finger
7:15 - 7:45  Critique
Sunday, April 1 (no fooling!)

7:30 - 8:15 Breakfast
8:15 - 9:15 "Environmental Sensitivity" - Klippel
9:15 - 10:15 "Avoiding Infusion Confusion" - Hayden
10:15 - 10:30 Break
10:30 - Noon Critique
Handbook
Publicity

Next course - How shall we proceed?
TENTATIVE SCHEDULE
August 3-5, 1990
Course Development Workshop at CWES

Friday, August 3
6:00 - 7:00  Arrival at Walker Lodge
7:00 - 8:00  What's new?
- NSF Grant
- Course Scheduling
- Marketing
- Scheduling a TV conference.
  Potential dates:
  - September 17
  - September 18  Bring your calendar
  - September 19
- Others

8:00 - 9:00  Organization for Saturday session
9:00  R & R

Saturday, August 4
7:30 - 8:15  Breakfast
8:15 - Noon  Small group sessions. We will have half the
             group working on the ecology course; the
             other half working on the teaching methods
             course. At some point during the weekend,
             we'll switch and have groups critique and
             refine each others' efforts.

A draft of the citizen action course will be
developed by Dan, based on last November's
meeting. This will be sent out later for
your comments. A TV conference may be
scheduled later to iron out details of that
course.

Noon - 2:00  Lunch and nature break
2:00 - 5:00  Same as a.m. session
5:00 - 6:15  Dinner
6:15 - 9:00  TBA
Sunday, August 5

7:30 - 8:15  Breakfast
8:15 - Noon  Refine courses
  Noon       Lunch. Departure.

Thank you very much for coming!!! Have a safe trip home!
TENTATIVE AGENDA

FRIDAY, DECEMBER 7

6:00 - 7:00  Arrival & move in
7:00 - 7:15  Icebreaker. Anybody got an idea?
7:15 - 9:00  Updates

- Instructor impressions of NR 411/611
- News from Continuing Education and the steering committee
- Site arrangements
- Participant lists for pre/posttest
- Course schedule

9:00 - ?  Games, etc.

SATURDAY, DECEMBER 8

7:30 - 8:15  Breakfast
8:15 - Noon  Ecology course dry run.
Noon - 2:00  Lunch and nature break.
2:00 - 5:00  Same as morning
5:00 - 6:15  Dinner
6:15 - 9:00  Wrap-up ecology course

SUNDAY, DECEMBER 9

7:30 - 8:15  Breakfast
8:15 - Noon  NR 413/613 Methods course. What next?
             NR 414/614 Citizen action course. A beginning
Noon        Lunch. Departure

THANK YOU FOR YOUR TIME!!! Have a safe trip home and a relaxing holiday season!
APPENDIX E

Task Cards for Course Planning Work Sessions: Saturday

November 4, 1989
TASK CARD FORMAT FOR SATURDAY WORK SESSIONS 1-4

1. Freely discuss the task for the 1 hour and 45 minute work session. (5 minutes)

2. Recruit 2 recorders from your group for this work session: one for recording group work and writing the proposal worksheet, one for writing the flip-chart page.

3. Individually, write down as many instructional objectives possible for the stated goal(s) of the work session. The group facilitator will record on the flip-chart as your group compiles a composite list of objectives. Prioritize (vote on) the top 3-5 objectives of the group list (1, 2, 3, 4, 5). (20 minutes)

4. Start with the group’s most important objective. Rephrase the wording, if needed, to be learner-centered, concise, and clear. Brainstorm the following to meet the objective:
   a) Activities/methods of instruction
   b) Materials needed
   c) Suggested readings to accompany objectives
   d) Time required to teach objectives
   e) Evaluation

   Choose, by group consensus, the most appropriate/effective options of those generated and record them on the proposal worksheet (or use another method of comparable format). Concurrently, record the proposal on the flip chart page, in similar format, to be shared with the entire adjunct faculty in the evening. (no more than 30 minutes)

   * A model of one objective with accompanying activities/methods, materials, readings, time, and evaluation is provided as a guide. It is only a guide! Be creative! Be innovative!

5. Continue to the second and third objectives (fourth and fifth if time allows) and follow the same procedure as for the first objective. (45 minutes)

6. Feel free at any time to utilize the resources available in your planning strategies.
Proposed components for the first course, "Introduction to Environmental Education":

**OBJECTIVE:**

**ACTIVITIES/METHODS OF INSTRUCTION:**

**MATERIALS:**

**SUGGESTED READINGS TO ACCOMPANY OBJECTIVE:**

**TIME REQUIRED TO TEACH OBJECTIVE:**

**EVALUATION:**
ADJUNCT FACULTY PLANNING SESSION
ENVIRONMENTAL EDUCATION COURSES FOR INSERVICE TEACHERS

Proposed components for the first course, "Introduction to Environmental Education":

OBJECTIVE: to recognize the distinctive characteristics of environmental education compared to other related disciplines (outdoor education, nature study, conservation education, science education).

ACTIVITIES/METHODS OF INSTRUCTION:
1. Have each teacher write a completion to this phrase: "Environmental education is......."  
2. Have small groups of teachers (4-6) share and analyze one another’s descriptions, categorizing each, by using a handout, into one of the following:
   a) Science;  
   b) Knowledge and awareness about the environment;  
   c) Appreciation for the environment;  
   d) Interactions/interdependencies in the environment;  
   e) Wise use, human impact, and protection of the environment;  
   f) Environmental problems/problem solving;  
   g) Outdoor education  
3. Tally the entire class’s response, discuss, and begin to focus on the Tbilisi/Belgrade definition. Distinguish other related disciplines (above) from EE using characteristics a-g. Give specific examples of other related fields and compare to EE.

MATERIALS:
1. Handout of categories a-g with additional descriptions (modeled after Ham et al. 1988)  
2. Chalkboard/dry erase board/flip chart to tally class results

SUGGESTED READINGS TO ACCOMPANY OBJECTIVE:
1. DPI Curriculum Guide to EE: pp.67-69  
3. We suggest looking for a reading describing EE in all its many facets and applications, though we don’t know the exact whereabouts or author of one.

TIME REQUIRED TO TEACH OBJECTIVE: 40 minutes

EVALUATION: At the end of the course, have teachers again write a completion to this phrase: "EE is....", and compare to the first set of responses.
APPENDIX F

Task Cards for Course Planning Work Sessions: Sunday
November 5, 1989
1. Freely discuss the task of the 1 hour work session. (5 minutes)

2. Recruit 2 recorders from your group for this work session: one for recording group work and writing the proposal worksheet, one for writing the flip-chart page.

3. React individually to the proposed course by writing down your thoughts (likes and dislikes, additions and deletions, "lump or split" ideas, etc.) During the first work session you will react to course 2, Ecological Basis for Environmental Education; during the second work session course 3; and so forth. The group facilitator will record on the flip-chart as your group shares reactions using nominal group process. Then, add/delete/rearrange/change the concepts of the proposed course by group consensus. (30 minutes)

4. Write major objectives for the course correlated to the concepts which the group has now identified. Record these concepts and objectives on the proposal worksheet (or use another method of comparable format). Concurrently, record the proposal on the flip-chart page, in similar format, to be shared with the entire adjunct faculty. (25 minutes)
ADJUNCT FACULTY PLANNING SESSION
ENVIRONMENTAL EDUCATION COURSES FOR INSERVICE TEACHERS

Proposed components for:

TITLE OF COURSE:

SEQUENCE (second, third, or fourth course):

MAJOR CONCEPTS IN THE ORDER IN WHICH THEY SHOULD BE TAUGHT:

MAJOR OBJECTIVES FOR THE COURSE:
APPENDIX G

Transcripts and Results of the November 3-5, 1989 Weekend Work Session at the Central Wisconsin Environmental Station


**COURSE ONE: FOUNDATIONS OF ENVIRONMENTAL EDUCATION**

**Summary** of the adjunct faculty work session on the first course, "Foundations of EE":

1. It is important for students to develop a personal definition of EE and an environmental ethic.
2. Activities should be selected from a variety of sources, not just PLT/PW.
3. Characterize the interdisciplinary nature of EE.
4. Assume that students have a minimum level of skill, interest, and background in EE.
5. Introduce ISSUES: especially the local/global connection; build awareness around issue investigation.
6. Be outdoors some of the time as a model of EE instruction.
7. Review the state mandates, preservice and inservice requirements, and competencies needed in EE.

The goals for the first course, "Foundations of EE" (as adapted from the Tbilisi Declaration, 1977):

1. To promote awareness and concern for the economic, cultural, political, and ecological interdependence which exists worldwide.

2. To provide every person the opportunity to acquire the knowledge, values, commitment, and skills necessary to protect and improve the environment.

3. To create in individuals and society new, positive patterns of behavior toward the environment.

**Tentative Course Outline**

I. Philosophy and Rationale of EE
II. Goals of EE
   A. Forerunners of EE
   B. Investigating Environmental Issues
   C. Sub-goals of EE (awareness, knowledge, values, skills, participation)
III. Theory Base for EE
IV. Curriculum Planning in EE
V. Teaching Methods in EE
I A. Objectives for Philosophy and Rationale of EE:

1. Show by example how the quality of life is directly related to the quality of the environment.
2. Define environment in its totality: natural and built, technological and social (economic, political, cultural, historical, moral, aesthetic).
3. Identify and describe 5 critical global environmental issues and 3 local/regional environmental issues.
4. Analyze ways in which global and local environmental issues are interrelated.
5. Describe the positive and negative impact that human activities and individual choices can have on global and local environmental issues.
6. Evaluate and communicate how these environmental issues impact their lives.
7. Determine what makes an environmental issue and what influences people’s viewpoints on those issues.
8. Summarize the implications of Wisconsin's EE mandate.
9. Describe the role of education in:
   a) forming social beliefs and values
   b) resolving environmental issues
10. Examine and summarize current philosophies of EE (Tbilisi; Belgrade Charter; DPI Guide; Hungerford, Peyton and Wilke).
11. Synthesize a personal definition of EE.
12. Write a lesson plan based on the 5 EE subgoal progression (awareness, knowledge, values, skills, participation).
13. Justify the process of infusion for integrating EE into K-12 curriculum.
14. Explain why EE is considered "interdisciplinary" in nature and apply this to curriculum development.
15. State the importance of a continual, lifelong instructional framework for EE.
I B. Suggested Activities and Methods for Philosophy and Rationale of EE:

Currently, these fall into 3 general groupings:


2. Audio-visuals (videos, slide shows, overheads)

3. Active Participation
   a) PW/PLT/Living Lightly and other activities
   b) Cooperative learning
   c) Ecodrama
   d) In-depth issue investigation
   e) Awareness-to-action activities developed from issue investigation and infused into curriculum
II A. Objectives for Goals of EE

1. Demonstrate an understanding of the primary goal of EE:

"The goal of EE is to help students become environmentally knowledgeable, skilled, 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. The sub-goals: Awareness; Knowledge; Values/Attitudes; Skills; Participation."

2. Compare and contrast related educational movements (outdoor education, ecology, nature study, conservation education, interpretation) to EE. Identify the contributions of each to the field of EE.

II B. Suggested Activities and Methods for Goals of EE:

1. Combination of PW/PLT/LL/etc. activities with issue investigation patterned after Hungerford modules.

III A. Objectives for Theory Base for EE:

1. Apply standard learning theory to the field of EE.

2. Examine the variables which determine environmental activism and formulate teaching strategies to maximize this outcome in learners.

III B. Suggested Activities and Methods for Theory Base for EE:


2. Administering SIU/Trudi Volk's test to assess environmental activism of participants; analyze results and apply to teaching strategy.
IV A. Curriculum Planning in EE:

1. Describe the infusion process.
2. Assess curriculum and select areas for infusion of EE.
3. Demonstrate how EE can be infused consistently into the curriculum.

IV B. Suggested Activities and Methods for Curriculum Development in EE:

1. Examine samples of EE infusion lessons/units (Martha Kronholm's wolf unit, Jan Langton video (1989 WAEE Teacher of the Year)).

2. Teachers assess a portion of their curriculum and select areas for EE infusion. A lesson or unit plan is then developed, based on the issue investigation model.

3. Develop an outline for a multidisciplinary unit about a local environmental issue (elementary teachers' assignment).

4. Develop an outline for cooperating with other subject area teachers to teach a unit about an environmental issue (secondary teachers' assignment).

VA. Teaching Methods and Strategies for EE

**Planning in this area raised questions and strong feelings by the adjunct faculty. There were 2 trains of thought:

1. Teachers will be turned off by the notion that we EE "professionals" would try to instruct them in teaching methods. Also, this information (cognitive, affective, etc.) is general educational theory which they can learn through other types of inservice training. The focus in "methods" should be INFUSION, and time/guidance to review materials (PW/PLT/LL/etc.) and select activities which will enable them to teach EE effectively. This is a hook with a worm on it; they'll come back for more (courses 2,3,4).

2. The other side of the coin is the feeling that teachers need to have further exposure and training in the higher cognitive and affective teaching strategies. The entire course should model a variety of EE teaching methods (e.g., co-op learning, dramatization, writing, art, brainstorming, music, role playing, simulations, problem-solving/critical thinking, data gathering and analysis, investigative action projects). This portion of the course, "teaching methods", would allow for further exploration and practice of these "experiential" techniques.
TRANSCRIPT OF GROUP WORK: NOVEMBER 3-5, 1989 PLANNING SESSION AT CENTRAL WISCONSIN ENVIRONMENTAL STATION

SUMMARY OF COURSES 2-4

COURSE 2: Ecological concepts and humanity interrelated

COURSE 3: Strategies for Infusion
   Learning Styles
   Creating and Infusing Lessons (followed by school/district workshops by grade and subject to familiarize all teachers with activities, plan)

COURSE 4: Action
   Model after Hungerford modules - action strategies
   Locus of control
   K-6 models of action needed (most is awareness; action geared for upper grades)

COURSE 5?? Field trips, developing a school site for EE, outdoor teaching

COURSE 2: ECOLOGICAL BASIS FOR EE

GROUP ONE: Ecological Basis for EE

Major Concepts:
1. Use Hungerford, DPI Guide, Wilke/Peyton
2. Ecological foundations interwoven with human interactions (to distinguish from Biology Dept.)

Major Objectives:
1. Overlay concepts on AKVSP framework
2. Build awareness and knowledge of ecological concepts
3. Move toward skills/participation (e.g. application) of concepts to teaching

GROUP TWO: Ecological Basis for EE

Major Concepts:
1. What is ecology?
2. Communities/ecosystems/populations
3. Food chain/web
4. Cycling/matter/energy transfer/energy resources
5. Adaptation
6. Succession
7. Interdependence
8. Man as an ecological factor

Major Objectives:
1. To understand and apply the above concepts

GROUP THREE: Ecological Basis for EE

Major Concepts:
1. Individuals
2. Population dynamics
3. Interaction
4. Interdependence
5. Limiting Factors
6. Energy Transfer
7. Biogeochemical cycling
8. The community
9. The ecosystem
10. Succession
11. Homeostasis
12. People as an ecological variable

Major Objectives:
1. Provide students with an understanding of basic ecological concepts
   a. Students will recognize that humans are an integral part of their environment
   b. Students will be able to define ecology
   c. Students will give examples of the application of Barry Commoner's 4 Laws of ecology
2. Students will relate ecological concepts to environmental issues
   a. Students will be able to evaluate potential ecological consequences of alternative solutions to env. issues
   b. Students will recognize non-ecological aspects of env. issues

COURSE 3: TEACHING STRATEGIES IN EE

GROUP ONE: Teaching Strategies in EE

(Suggested that the title has a negative connotation toward teachers; recommended a change to "Infusion")

Major Concepts:
1. Infusing EE
   a. Review goals of curriculum development in EE
   b. Review DPI mandate as justification for infusion
c. Identifying relevant EE principles for teachers' curriculum (use plans and/or textbooks); work in small groups by grade level (elementary) or subject area (secondary); use revised DPI Guide and "concept map" those for grade level
d. Share "mapped concepts" for each grade level; compare overlaps, weak spots
e. Introduce "Avoiding Infusion Confusion" guides, plus additional text/EE guide summaries
f. ID relevant EE activities for their curriculum from Infusion Confusion and text/EE guides; read through the activities and select appropriate ones for grade/subject
g. Share activities by grade level to compare overlap

2. Other topics:
   a. "You may already be doing it"
   b. relation to district EE plan (if it exists)
   c. "environmentalizing" as a way of thinking about EE in their classroom

Major Objectives:
1. Convey importance of infusion
2. Help teachers identify EE principles/concepts relevant to their grade level and curriculum
3. Help teachers identify EE activities from a variety of resources relevant to their grade level and curriculum

GROUP TWO: Teaching Strategies in EE

Major Concepts:
1. Assess knowledge and skills in applying learning theories
2. Familiarize with EE materials and resources
3. ID the learning theories that validate teaching strategies
4. Various teaching strategies exist to accomplish EE goals

Major Objectives:
1. ID learning theories
2. Apply learning theories and strategies to EE
3. Develop infused lessons that use strategies to teach ecological principles
4. Apply strategies and methods then teach other teachers
   *Process and discuss methods used*
5. Apply strategies in the classroom and evaluate the learning of kids!
GROUP THREE: Teaching Strategies in EE

Major Concepts:

Major Objectives:
1. Students will understand and apply standard learning theories to the field of EE (see Piaget, Kohlberg, etc.)
2. Students will experience a variety of EE teaching methodologies
3. Students will be able to determine appropriate teaching methods for their grade level
4. Students will plan and evaluate EE curriculum

COURSE 4: CITIZEN ACTION

GROUP ONE: Citizen Action

Major Concepts:
1. What is citizen action?
2. What is the difference between problem and issue
   a. values analysis clarification
   b. attitudes - values - beliefs
3. Issue investigation
4. Problem-solving
5. Locus of Control
6. Where does it fit in the curricula? (subject and grade)
7. Action strategies
8. Decision-making

Major Objectives:
1. Students will ID issues in their local community and implement an action plan in their classroom
2. Be able to explain the difference between a problem and an issue

GROUP TWO: Citizen Action

Major Concepts:
1. Concepts as found in the Hungerford modules - delete some that are covered earlier in the courses

Major Objectives:
1. Lifestyle assessment re: environmentally positive behaviors the student already participates in; why do you/ don’t you take action?
2. Look at predictors of env. action taking
3. Global to local issues
4. Looking at environmental issue, how does issue affect the student's life; how does student's lifestyle affect the issue?

5. Investigate and evaluate real local issues. Decide whether to take action.

6. Provide overview of various environmental issues, e.g. ones introduced in course

7. Look at issue as it impacts at local - regional - global levels

8. How to use TV, videos to teach about issues (e.g., Discovery Channel, PBS 10 part series on issues/action)
APPENDIX H

Instructor and Steering Committee Member Evaluation Forms
for Draft Versions of Curricula
NR 411/611: "PRINCIPLES OF ENVIRONMENTAL EDUCATION"

COURSE ONE OF THE INSERVICE TEACHER TRAINING PROGRAM IN EE

Instructor Evaluation of Curriculum

Evaluator: ____________________________ Date: __________

Evaluators: Thank you for taking time to critique this
draft version of the curriculum for the first course,
"Principles of Environmental Education". Your recommenda­tions for improving the curriculum are essential, and will
be integral in revising this draft of the course.

PART I: Question 1 lists specific points to guide your
critique on various aspects of the curriculum. Please make
comments directly on the curriculum itself, and return it
with this form (but not the Book of Readings) in the post­
paid envelope by March 1.

PART II: In addition, please answer questions 2 - 11,
including comments as desired.

1. For each area of the ten lesson plans, please evaluate
effective aspects of the lesson and also ways the lesson
could be strengthened:

   a) What is your overall reaction to the lesson?

   b) Is the amount of suggested instructional time
      realistic?

   c) Are the readings which accompany the lesson
      appropriate? Should additions or deletions be made?

   d) Is the background information provided on the lesson
      sufficient and accurate?

   e) Are the steps in the "Procedure" section clear,
      logical, and sequential? Would you
      rearrange/add/omit any portion?

   f) To what extent are the lesson extensions valuable?

   g) Does the suggested evaluation strategy and/or
      assignment accurately measure student learning?

   h) How well does the lesson accomplish the goals and
      objectives for the course?

   i) Can you suggest an alternative method or lesson
      format to better meet the goals and objectives?
For the following questions, please circle the number which best represents your critique of the curriculum:

2. The curriculum taken as a whole meets the goals and objectives developed for the course during the November 3-5, 1989 planning session at CWES.

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Comments:

3. The methods and activities selected to meet the course objectives are appropriate for inservice teacher training in environmental education.

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Comments:

4. The ten lessons progress cohesively and logically to form a unified course in the principles EE.

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Comments:

5. The layout format of the curriculum (e.g., margin size, font size, graphics, quotes, reading ease) is appropriate.

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Comments:

6. I am enthusiastic about instructing this curriculum in its present form.

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Comments:
7. What resources would you like to have included in a potential "resource library" which you and your students could use during the duration of your course?

8. What resources would you like to have for an in-depth case study on Martha Kronholm's Wolf study (conducted with fifth grade students from the Mead School in Wisconsin Rapids) for Lesson Five?

9. Critique the four proposed assignments included in the course. Describe an equitable method for all the instructors (over 20 statewide) to evaluate the assignments consistently and fairly.

10. What is the strongest part of the draft curriculum? What part of the curriculum most needs to be changed or revised for maximum effectiveness and quality?

11. Is there a portion of a lesson (or a complete lesson) which you would be willing to instruct at the CWES training weekend March 30-April 1? If so, describe which one:

THANKS FOR ASSISTING IN THE EVALUATION OF THIS CURRICULUM ©
Instructor Evaluation of Curriculum

Evaluator: ______________________ Date: __________

Instructors: Thank you for taking time to critique this draft version of the curriculum for the second course Ecological Basis for Environmental Education. Your recommendations for improving the curriculum are essential, and will be integral in revising this draft of the course.

PART I: Question 1 lists specific points to guide your critique on various aspects of the curriculum. Please make comments directly on the curriculum itself, and return it with this form (but not the Book of Readings) in the post-paid envelope by Monday, November 26, 1990.

1. For each of the eight lesson plans, please evaluate effective aspects of the lesson and also ways the lesson could be strengthened:

a) What is your overall reaction to the lesson?

b) Is the amount of suggested instructional time realistic?

c) Are the readings which accompany the lesson appropriate? Should additions or deletions be made? (The Book of Readings is intended to be a supplement for a course text, which has not yet been selected. If you have recommendations for a text appropriate and economical for a one credit course, please suggest these under question 8 in Part II.)

d) Is the background information provided on the lesson sufficient and accurate?

e) Are the steps in the "Procedure" section clear, logical, and sequential? Would you rearrange/add/omit any portion?

f) To what extent are the lesson extensions valuable?
g) Does the suggested evaluation strategy and/or assignment accurately measure student learning?

h) How well does the lesson accomplish the goals and objectives for the course?

i) Can you suggest an alternative teaching method, learning activity, audio/visual, demonstration, or reading to better meet the goals and objectives? (This is a DRAFT curriculum, so we would really like to have your suggestions and improvements!!!) Please submit any written materials or references which you are able to provide.

**PART II:** Please answer questions 2-11, including comments as desired.

For questions 2-6, please circle the number which best represents your critique of the curriculum:

2. The curriculum taken as a whole meets the goals and objectives developed for the course during the November 3-5, 1989 and August 3-5, 1990 planning sessions at CWES.

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Comments:

3. The methods and activities selected to meet the course objectives are appropriate for inservice teacher training in environmental education.

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Comments:
4. The eight lessons progress cohesively and logically to form a unified course in ecological principles basic to EE.

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</table>

Comments:

5. The layout format of the curriculum (e.g., margin size, font size, graphics, quotes, reading ease) is appropriate.

<table>
<thead>
<tr>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Neutral</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

Comments:

6. I am enthusiastic about instructing this curriculum in its present form.

<table>
<thead>
<tr>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Neutral</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

Comments:

7. What resources and materials would you like to have to supplement the NR 411/611 Principles of Environmental Education resource library for you and your students to use during the duration of your course?
8. Can you recommend an appropriate and economical text for NR412/612, Ecological Basis for Environmental Education?

9. Critique the two proposed assignments included in the course. Also, describe an equitable method for all the instructors (over 25 statewide) to evaluate the assignments consistently and fairly.

10. What is the strongest part of the draft curriculum? What part of the curriculum most needs to be changed or revised for maximum effectiveness and quality?

11. Is there a portion of a lesson (or a complete lesson) which you would be willing to instruct at the CWES planning weekend December 7-9, 1990? If so, describe which one:

OTHER COMMENTS:

THANKS FOR ASSISTING IN THE EVALUATION OF THIS CURRICULUM ©
APPENDIX I

Environmental Education Outreach Instructor Evaluation of Course Taught
UW-SP ENVIRONMENTAL EDUCATION OUTREACH INSTRUCTOR EVALUATION

Name of Instructor: __________________________________________

In order to evaluate and improve the teacher outreach course in
environmental education which you instructed, please answer the
following 10 questions. Return this form to Dr. Dan Sivek, CNR,
UW-SP, Stevens Point, WI 54481.

1. For which course are you completing this evaluation?
   □ NR 411/611 Principles of Environmental Education
   □ NR 412/612 Ecological Basis for Environmental Education
   □ NR 413/613 Citizen Action in Environmental Education
   □ NR 414/614 Environmental Education Teaching Strategies

2. In what format did you instruct the course? (number and length of sessions)

   For questions 3-9, please circle the number which best represents your
   assessment of the course's effectiveness. Space for additional
   comments is provided after each question.

3. To what extent do you think the course met its actual stated objectives?

<table>
<thead>
<tr>
<th>Not at All</th>
<th>Minimally</th>
<th>Adequately</th>
<th>Quite Well</th>
<th>Fully</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

   Comments:

4. To what extent do you think the course increased the commitment and
   confidence of participants to teach environmental education?

<table>
<thead>
<tr>
<th>Not at All</th>
<th>Minimally</th>
<th>Adequately</th>
<th>Quite Well</th>
<th>Fully</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

   Comments:

5. To what extent did teachers participate in course discussions and
   activities?

<table>
<thead>
<tr>
<th>Not at All</th>
<th>Minimally</th>
<th>Adequately</th>
<th>Frequently</th>
<th>Fully</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
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<td>3</td>
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<td>5</td>
</tr>
</tbody>
</table>

   Comments:
6. I believe the amount of outside reading and assignments required in this course was appropriate for one credit.

<table>
<thead>
<tr>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Neutral</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

Comments:

7. I believe the course materials (resource library, teaching materials, worksheets and handouts) provided to me by UW-SP were comprehensive and useful in my instruction of the course.

<table>
<thead>
<tr>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Neutral</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

Comments:

8. To what extent do you think this course successfully introduced participants to the knowledge and skills necessary to infuse EE into their own curricula?

<table>
<thead>
<tr>
<th>Not at All</th>
<th>Minimally</th>
<th>Adequately</th>
<th>Quite Well</th>
<th>Fully</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
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</tbody>
</table>

Comments:

9. Beyond this course, I believe there is a need for additional courses to provide participants with further knowledge and skills necessary to infuse EE into their own curricula.

<table>
<thead>
<tr>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Neutral</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
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<td>5</td>
</tr>
</tbody>
</table>

Comments:

10. What specific revisions, additions, or corrections would you recommend making to the course curriculum? (Attach a separate sheet if needed.)
RESULTS

UW-SP ENVIRONMENTAL EDUCATION OUTREACH INSTRUCTOR EVALUATION

Of the 21 instructor evaluations distributed in early April, 10 had been returned as of April 26, 1991. The data from responses have been averaged for questions 3-9, and are listed under the appropriate question.

1. For which course are you completing this evaluation?
   All 10 respondents instructed NR 411/611, Principles of Environmental Education.

2. In what format did you instruct the course? (number and length of sessions)
   See thesis, page 37, for complete summary of formats.

3. To what extent do you think the course met its actual stated objectives?

<table>
<thead>
<tr>
<th>Not at All</th>
<th>Minimally</th>
<th>Adequately</th>
<th>Quite Well</th>
<th>Fully</th>
</tr>
</thead>
<tbody>
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<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
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</tbody>
</table>

*Average = 4.3*

4. To what extent do you think the course increased the commitment and confidence of participants to teach environmental education?

<table>
<thead>
<tr>
<th>Not at All</th>
<th>Minimally</th>
<th>Adequately</th>
<th>Quite Well</th>
<th>Fully</th>
</tr>
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<tbody>
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<td>1</td>
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<td>3</td>
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<td>5</td>
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</tbody>
</table>

*Average = 4.0*

5. To what extent did teachers participate in course discussions and activities?

<table>
<thead>
<tr>
<th>Not at All</th>
<th>Minimally</th>
<th>Adequately</th>
<th>Frequently</th>
<th>Fully</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
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</tbody>
</table>

*Average = 4.7*
6. I believe the amount of outside reading and assignments required in this course was appropriate for one credit.

<table>
<thead>
<tr>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Neutral</th>
<th>Agree</th>
<th>Strongly Agree</th>
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<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
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</tbody>
</table>

Average = 3.4

7. I believe the course materials (resource library, teaching materials, worksheets and handouts) provided to me by UW-SP were comprehensive and useful in my instruction of the course.

<table>
<thead>
<tr>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Neutral</th>
<th>Agree</th>
<th>Strongly Agree</th>
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<tbody>
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<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
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</tbody>
</table>

Average = 4.8

8. To what extent do you think this course successfully introduced participants to the knowledge and skills necessary to infuse EE into their own curricula?

<table>
<thead>
<tr>
<th>Not at All</th>
<th>Minimally</th>
<th>Adequately</th>
<th>Quite Well</th>
<th>Fully</th>
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<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
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</table>

Average = 3.9

9. Beyond this course, I believe there is a need for additional courses to provide participants with further knowledge and skills necessary to infuse EE into their own curricula.

<table>
<thead>
<tr>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Neutral</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
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<tbody>
<tr>
<td>1</td>
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<td>3</td>
<td>4</td>
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</table>

Average = 4.8

10. What specific revisions, additions, or corrections would you recommend making to the course curriculum? (Attach a separate sheet if needed.)

Compiled responses not listed in this summary.
APPENDIX J

Checklist of Materials and Resources Provided to Instructors of Environmental Education Outreach Courses
Principles of Environmental Education
NR 411/611

Materials checklist
03/11/91

LONG TERM SUPPLIES

<table>
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<th>Quantity</th>
<th>Item</th>
<th>Description</th>
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<tbody>
<tr>
<td>1</td>
<td>3 ring binder for instructor curriculum</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Videotape (contains all videos and slides from NR 411/611</td>
<td>in order according to the course curriculum Lessons 1 - 10.)</td>
</tr>
<tr>
<td>12</td>
<td>Ethi-dilema game cards</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>of p. 103</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>of p. 104</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>Overhead transparencies</td>
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</tr>
<tr>
<td>14</td>
<td>Overhead transparency frames</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Laminated discussion sheets for:</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>lesson 5</td>
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<tr>
<td>7</td>
<td>lesson 6</td>
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<td>1</td>
<td>CLASS Project</td>
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<tr>
<td>1</td>
<td>50 Simple Things You Can Do to Save the Earth</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Investigating and Evaluating Environmental Issues</td>
<td>and Actions Skill Development Modules (i.e. &quot;The Hungerford Modules&quot;)</td>
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<tr>
<td>1</td>
<td>Living Lightly in the City</td>
<td></td>
</tr>
<tr>
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<td>K - 3</td>
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<tr>
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</tr>
<tr>
<td>1</td>
<td>volume I</td>
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<tr>
<td>1</td>
<td>volume II</td>
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<td>Amazing Mammals Part II</td>
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<tr>
<td>1</td>
<td>Birds, Birds, Birds!</td>
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<tr>
<td>1</td>
<td>Discovery Pac (Insects)</td>
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<td>1</td>
<td>Endangered Species: Wild &amp; Rare</td>
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<tr>
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<td>Incredible Insects</td>
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<tr>
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<td>Let's Hear it for Herps</td>
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<tr>
<td>1</td>
<td>Pollution: Problems and Solutions</td>
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<td>Trees are Terrific!</td>
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<td>1</td>
<td>Wading into Wetlands</td>
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<td>O.B.I.S. Human Impact Module</td>
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<td>Project Learning Tree</td>
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<tr>
<td>1</td>
<td>Elementary</td>
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<td>1</td>
<td>Aquatic</td>
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</tr>
<tr>
<td>1</td>
<td>Elementary</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Secondary</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Sand County Almanac</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Sharing Nature With Children</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>The Global Ecology Handbook</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Understanding the Game of the Environment</td>
<td></td>
</tr>
</tbody>
</table>
LONG TERM CONSUMABLES
2
Overhead projector marking pens (water based)
16
Markers
1 roll
Masking tape

CONSUMABLES
25 sets of pages for the book of readings
25 of each
Handouts
(orange) "Preliminary Thoughts About Environmental Ed."
(violet) "Environmental Sensitivity"
(blue) "Summary of Assignments for NR 411/611" (2 pages)
(yellow) "Principles of Environmental Education" (3 pages)
(cream) "Environmental Timeline" (without events)
(brown) "Environmental Timeline" (with events)
(pink) "Timeline" (mixed dates; 2 pages)
"Natural Resources RESOURCES: Educational Publications" (D.N.R.)
25
Envelopes for timeline strips
25
Continuing Education registration forms
25
WAEE membership application forms
25 of each
UWSP instructor evaluation forms
computer scored sheet
narrative sheet

Goldfish crackers (Please purchase your own and return the receipt to UW-SP for a refund.)

N.S.F. funded courses only

<table>
<thead>
<tr>
<th>Quantity</th>
<th>Item</th>
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<tr>
<td>25</td>
<td>Honorarium forms** participant</td>
</tr>
<tr>
<td>1 or 2</td>
<td>instructor(s)</td>
</tr>
<tr>
<td>25</td>
<td>Sand County Almanac</td>
</tr>
<tr>
<td>25</td>
<td>labels for the book of readings</td>
</tr>
<tr>
<td>1 year</td>
<td>Subscription to Wisconsin Natural Resources magazine</td>
</tr>
<tr>
<td>1 year</td>
<td>Membership in WAEE</td>
</tr>
</tbody>
</table>

**These must be completed and turned in by each participant before s/he will receive the $100.00 honorarium.


