

Final Report:

**Development of a Curriculum for a Class Entitled
“Environmental Education in Nonformal Settings”**

Prepared by

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Problem Statement

“Nonformal settings” refers to learning environments such as zoos, aquariums, parks, nature centers, botanical gardens, museums and summer camps; places that people choose to visit rather than are required to visit. Environmental educators in nonformal settings are faced with instructing audiences who are heterogeneous in age, motivations, interests and abilities. Unlike formal school institutions, there are few extrinsic motivations—visitors do not have to visit a site. Once they arrive they have no obligation to read exhibit labels, walk a trail or attend a program. Consequently, nonformal environmental educators must be savvy to techniques for programming to multi-age groups and understand that programs must be **intrinsically** appealing to diverse and sometimes conflicting tastes. As a reaction to recent criticism of environmental education, programmers must also make clear distinctions in their practice between education and indoctrination.

Extensive study of leisure and recreation behavior, combined with a growing body of knowledge about museums, suggests that the basic psycho-social factor mediating attention to learning is intrinsic interest. In nonformal settings individuals are very selective about where they invest their attention. Typically, about five to ten percent of people read any one exhibit label in a museum or zoo. People have no obligation to visit and if they do visit, they have no obligation to attend to any program, message or exhibit. Consequently, a marketing based approach to environmental education that takes into account a psychological quality termed “interestingness” is a highly effective strategy. This is a “what people want to know” rather than “what people need to know” approach. This strategy is inappropriate in schools but the only reasonable approach in nonformal settings.

Need for an Environmental Education Course

The number of individuals working in environmental education settings who have formal training in its methodology is limited. Many environmental education professionals’ degrees are in the life sciences. They know little about education and rarely have been formally introduced to the multiple and interrelated issues involved in providing programs for mixed and multi-age groups. Consequently, many of these educators are ill prepared to work with people. They also rarely understand the importance of motivational factors in nonformal or recreational learning. Too often this lack of knowledge results in incorrect pedagogy that fails to recognize that educational programs must be intrinsically appealing if they are to be useful. Lastly, environmental educators with only a science background often have strong pro-environmental attitudes that are cognitively complex. Unfortunately, this leads to two common errors. First, environmental educators tend to overestimate the ability of non-scientific literate people

to understand and apply concepts. Included in this concern, is a failure to recognize what is interesting to people with less sophistication than the professional ecologist. Secondly, environmental educators often involve themselves in indoctrination rather than education in their enthusiasm to convert other people to being environmentally sensitive.

Target Population

While the course cannot be immediately taught, the target populations for the course include senior level and graduate students enrolled in majors that will include biology, entomology, fish and wildlife, forestry, PRTM (Parks, Recreation and Tourism Management) and education. The curriculum will be targeted at the 400-600 levels, a mixture of senior undergraduates and graduate students. In designing the program, it will be assumed that the student has completed six hours of 300 level or higher of field-oriented courses in the biological or environmental sciences. This course requirement will increase the chance that the students have a working knowledge of the life sciences and are comfortable and competent in outdoor settings. A lab will be part of the course.

Expected Outcomes

The course curriculum is designed to introduce students to key conceptual and pedagogical issues in providing environmental education experiences and/or exhibits for adults and children visiting or using nonformal educational settings. At the completion of the course, students will be able to present two environmental education programs and/or exhibits appropriate for nonformal settings, be able to evaluate existing programs based on multiple attributes, recognize and respond to program issues related to mixed age groups and interest levels in audiences, and distinguish between sound pedagogy and indoctrination. They will also be familiar with key literature and authors in the field of nonformal environmental education. Students will understand how to optimally prepare for a career in nonformal environmental education and understand the attributes of nonformal settings where environmental education programs are typically offered.

Estimated enrollments for initial and subsequent offerings

The curriculum will be designed as a course to be offered once a year with an expected enrollment of 15 students. Until the course is formally taught, components of the course will be imbedded in three courses in the concentration area of Parks and Protected Areas within the Department of Parks, Recreation and Tourism Management.

Procedure used in design

Syllabi from existing environmental education programs were collected from all over North America. Institutions were identified through *Environmental Education Undergraduate and Graduate Programs in the United States*. The guide was obtained from the National Association for Environmental Education. The syllabi provided a good selection of readings and class projects, although none were particularly “market

sensitive.” The guiding principles behind each course were also scrutinized. None of the courses took the approach proposed in this project.

We purposely sought out books and manuscripts that criticize normative practices in environmental education. While some of these position papers were as irresponsible as the worst environmental education programs, several raised legitimate questions and formed the basis for establishing criteria for judging whether an environmental education program was actually educational.

From the syllabi, readings in environmental education, visitor studies (museum sciences), developmental psychology, and marketing, we were able to outline a semester-long course with lab.

We failed to complete the last part of the grant. This step involved working with professional environmental educators to determine retrospectively their educational needs after one or more years on the job. Due to unexpected issues with the Clemson University Institutional Review Board (IRB) we abandoned this step. The CU IRB provides oversight of research with human subjects. Early in the approval process they indicated that we may need to obtain written permission from the institutions who employ these individuals. Previous experience with this approval step suggested to us that it would take 6 months to a year to obtain written permissions and would require some travel to make presentations to boards of directors/trustees. Due to these unexpected time and travel costs, this part of the project was abandoned.

The syllabus and the reading list are available in the appendix.

Appendix

Syllabus

Reading List

Environmental Education in Nonformal Settings

PRTM 493/693

Spring Semester

Class meets at

(3,(1)) Lecture plus laboratory

Instructor: Robert Bixler

Phone: 864-656-4849

Email: Rbixler@clermson.edu

Office Hours:

Course Catalog Description: An overview of environmental education in non-formal, non-school settings. Students will learn the basic concepts, principles, and methods for environmental education. Through discussion, readings, assignments, participation, and observation, students will gain an understanding of environmental education in the non-formal setting (non-school) as well as develop tools for implementation of programs and passive and active exhibits. The course takes a market-based approach to program design.

Underlying Assumption of the Course: Nonformal or recreation learning involves the use of a wide-range of institutions such as nature centers, parks, zoos, botanic gardens, science museums, books, internet and visual media to learn about topics of intrinsic interest. Because this type of learning is not conscripted, the environmental educator must be vividly familiar with the interests and abilities of potential audiences. Consequently the use of needs assessments and marketing research is a critical part of identifying what will catch and hold the attention of nonformal learners.

Course Prerequisite

General Biology sequence, one marketing course, PRTM 330 and at least one field-oriented natural sciences course, or permission of instructor.

Required Textbooks

Hungerford, Hr. R., Bluhm, W.J., Volk, T. L., Ramsey, J. M., (Editors). (2001) *Essential Readings in Environmental Education (Second Edition)*. Champaign, IL: Stipes Publishing L.L.C.

Sobel, D. (1996). *Beyond Ecophobia: Reclaiming the Heart in Nature Education*. Great Barrington: Orion Society.

Falk, J. (1992). *The Museum Experience*. Washington D. C.: Whalesback Books.

Reading packet available from Campus Copy Center, 111 Main Street, Clemson, SC

Topics

What is Environmental Education?

- History and types of environmental education

- Environmental education principles
- Goal: How to think--not what to think
- Environmental education contrasted with environmental interpretation

Criticisms of Environmental Education

- Environmental education or environmental indoctrination?
- Minimum competencies expected of environmental educators

Leisure/Recreation Behavior and Learning

- Learning as recreation
- Fundamental properties of leisure behavior (intrinsic motivation, perceived freedom, self expression)
- Implications for environmental education

Markets and Environmental Education

- Interesting/enjoyable versus gloom and doom
- The concept of “Interestingness” in explicit and implicit appeals to participate
- Special populations
- Serving children: cohort differences
- Sources of needs assessments and marketing information
- Ethical responsibilities in using marketing-based approaches
- Barriers to participation in traditional environmental education classes.

The Learner

- Learning styles
- Age group characteristics: developmental characteristics.
- Ecological literacy: What does the public already know and value?
- Environmental load: Demands of the nonformal learning environment.

Education methods used in nonformal education

- Passive exhibit/display design
- Interactive display/exhibit design
- Program design: weaving environmental education within other programs
- Cognitive demands of communication methods
- Motivation and affective components of learning

Finding employment in environmental education

- Skill development
- Sources of job information

Lab: One hour a week will be spent working on market analysis, formative evaluation and final design of an environmental education program or exhibit. Students will present and/or lead an EE program.

Tests: Three tests will be given during the semester. Tests will consist of matching, definitions and short essay questions. Test dates are tentative and may be moved to a later date.

Readings: Readings from the reading packet and textbooks will be assigned throughout the semester.

Assignment Weights:

Tests (3 at 100 points each)	300
Observation exercise at nonformal learning ctr.	100
Patterns of behavior at nonformal learning ctr.	50
Profile of a major nonformal learning ct.	50
Group assignments/class participation	50
Notebook	50
Lab	200

Grade level cutoffs

- A=90%
- B=80%
- C=70%
- D=60%
- F=<60%

Important Dates and Deadlines:

Test One

Last day to drop the class

Profile of a major nonformal learning center:

Spring Break

Test Two

Observation exercise at nonformal learning center:

Patterns of behavior at nonformal learning center:

Notebook due

Test Three

Observation exercise at nonformal learning center: Choose a location where you can observe several exhibits. You will observe for at least 8 hours, in several different periods, during ideal visitation hours. Design an observation scheme that allows you to observe and record the differences in how people use passive exhibits. You will develop a typology of visitor behavior at exhibits. Your instructor will provide further details. Extremely busy (crowded) learning centers like zoos may not be a good choice. Likewise, visiting a low-use area may not produce enough visitors to observe in an

efficient manner. You will need a camera, and a hand-held tape recorder, for dictating notes to yourself would be helpful.

Patterns of behavior at nonformal learning center: Spend two, two-hour periods at a public nonformal learning center. One period should be in the morning and the other in the afternoon. The observations do not have to be on the same day, but they should be within a short duration of each other and the weather must be similar. The location should be different than for the observation exercise. For each period, record the weather and the time period covered. Count the number of families (adult with child), couples and single individuals entering the area. If plausible, note the personality of groups. More on this in class.

Profile of a major nonformal learning center: Choose a nonformal institution that is known for innovative educational programs. Get approval for your choice from the instructor. Provide a detailed profile of the institution through internet and database searches. Your profile should include history, mission, financing, program offerings, media coverage, visitor research conducted at the center, and tourism data for the area the center is located. Additional topics are welcome. Limit text to ten pages plus a rich appendix illustrating what you found.

Notebook: I ask that you maintain a notebook of your activities in this class. Please keep this notebook beyond the end of the class, as it is designed to contain information that will be helpful to you in your new career.

Contents of the notebook should be well organized with dividers, sensitive to the needs of the grader to quickly check to see if all components are present. A three-ring binder should work well. Innovative and creative approaches to constructing a notebook are welcome. The notebook will be collected and graded toward the end of the semester. To earn a grade of “B” on the notebook, the contents must minimally include:

- 1) a cover page with the course name, your name, semester date
- 2) copy of the syllabus
- 3) lecture notes
- 4) handouts
- 5) weekly notes on at least one current event related to environmental education, nonformal learning or funding sources that you have found in print or web based media. A brief note of the source should accompany each one-paragraph description. A current event is any event occurring after January 1, 200*.
- 7) a copy of your revised and updated resume.
- 8) copies of five different environmental education job announcements posted after January 1, 2003.

Readings List

Reading and Resource List

What is Environmental Education?

Archie, M. (1998). *Environmental Education Materials: Guidelines for Excellence*. North American Association for Environmental Education.

Ham, S. and Sewing, D. (1987). Barriers to Environmental Education. *Journal of Environmental Education*, 19 (2), 17-24.

Ham, S., Rellergert-Taylor, Mar, and Krumpel, Edwin. (1987). Reducing Barriers to Environmental Education. *Journal of Environmental Education*, 19 (2), 25-33.

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Hungerford, Hr. R., Bluhm, W.J., Volk, T. L., Ramsey, J. M., Editors. (2001). *Essential Readings in Environmental Education* (Second Edition). Champaign, IL: Stipes Publishing L.L.C.

Criticisms of Environmental Education

Adler, J. (1993, April 14). The Greening of America's Youth. *The Wall Street Journal* [Eastern Edition], p. A14:3.

Ashley, M. (2000). Science: an unreliable friend to environmental education? *Environmental Education Research*, 6(3), 268-280.

Hart, P. Jickling, B. and Kool, R. *Starting Points; Questions of Quality in Environmental Education*. Retrieved September 17, 2001, from the Wide Web: <http://eduweb.brandonu.ca/~science/ee/hjk.htm>.

Hudson, S. (2001). Challenges for Environmental Education: Issues and Ideas for the 21st Century. *BioScience*, 51(i4), 283 - 288.

Knapp, D. (1998, March/April). The Thessalaoniki Declaration – The Beginning of the End for Environmental Education? *Environmental Communicator*, 12-14.

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Sanera, Michael. (1998). *Textbook Trash: The Polluting of Environmental Education*. Denver, CO: The Center For the New West.

Sanera, Michael. (1998, April 22). *A Balanced World View is Best: On Environmental Issues, Students Too Often Hear only One Side*. *New West Politics & Policy Studies*. Retrieved September 17, 2001, from the Wide Web: http://www-test.newwest.org/new_west/eeri/sanjose_op.html

Sobel, David (1996). *Beyond Ecophobia Reclaiming the Heart in Nature Education*. Great Barrington, MA: The Orion Society and The Myrin Institute.

School Reform News. (1998, March). *Textbooks Mislead Future Teachers on Environmental Issues*. Chicago, IL: The Heartland Institute. Retrieved September 17, 2001, from the Wide Web: <http://www.heartland.org/education/mar98/textbook.htm>.

Scott, W. and Oulton, C. (1999). Environmental Education: arguing the case for multiple approaches. *Educational Studies*, 25(1), 89 –97.

Smyth, J. (1998, July/August). Environmental Education – The Beginning of the End or the End of the Beginning? *Environmental Communicator*, 14-16.

Leisure/Recreation Behavior and Learning

Bramwell, B. and Lane, B. (1993). Interpretation and Sustainable Tourism: The Potential and the Pitfalls. *Journal of Sustainable Tourism* 1(2), 71-80.

Cable, T., Knudson, D., Udd, E. and Steward, D. (1987). Attitude Changes as a Result of Exposure to Interpretive Messages. *Journal of Interpretation Research* (68) 46-60.

Culen, G. Volk, T. (2000). Effects of an Extended Case Study on Environmental Behavior and Associated Variables in Seventh- and Eight-Grade Students. *Journal of Environmental Education*, 31(2), 9-15.

Falk, J. (Ed.) (2001). Free-Choice Science Education. New York: Teachers College Press.

Gramann, J. and Vander Stoep, G. (1987). Prosocial Behavior Theory and Natural Resource Protection: a Conceptual Synthesis. *Journal of Environmental Management*, 24, 247-257.

Kiely-Brocato, K. (1980). An Assessment of Visitor Attitudes Toward Resource Use and Management. *Journal of Environmental Education*, 11, 29-36.

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Manfredo, M. and Bright, A. (1991). A Model for Assessing the Effects of Communication of Recreationists. *Journal of Leisure Research*, 23(1), 1-20.

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McArthur, S. (1994). Acknowledging a Symbiotic Relationship – better heritage management via better visitor management. *Journal of the Royal Australian Institute of Parks and Recreation*, 30(3), 12-17.

Orams, M. (1995). Using Interpretation to Manage Nature-based Tourism. *Journal of Sustainable Tourism*, 4(2), 81-94.

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Rowe, M. B. (Ed.). (1979). *What Research Says to the Science Teacher Volume 2*. Washington D.C.: National Science Teachers Association.

Watkins, M. (2000). Ways of Learning about Leisure Meanings. *Leisure Sciences*, 22, 93-107.

Markets and Environmental Education

Acuff, D. and Reiher, R. (1997). *What Kids Buy and Why*. New York, NY: The Free Press.

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Cole, D., Hammond, T. and McCool, S. (1997). Information Quantity and Communication Effectiveness: Low-Impact Messages on Wilderness Trailside Bulletin Boards. *Leisure Sciences*, 19, 59-72.

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Hino, J. and Jensen, E. (1996). Science-Based TV Spots: Educating the Public About Forestry. *Journal of Applied Communications*, 80(1), 5-19.

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Methods and Strategies of Environmental Education

Ham, S. and Krumpal, E. (1996). Identifying Audiences and Messages for Nonformal Environmental Education – A Theoretical Framework for Interpreters. *Journal of Interpretation Research*, 1(1), 11-23.

Hwang, Y., Kim, S., and Jeng, J. (2000). Examining the causal Relationships Among Selected Antecedents of Responsibly Environmental Behavior. *Journal of Environmental Education*, 31(4), 19-25.

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Self Understanding (Cognitive, Affective, and Social)

Alerby, E. (2000). A Way of Visualizing Children's and Young People's Thoughts about the Environment: a study of drawings. *Environmental Education Research*, 6(3), 205-222.

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Kawagley, A. O. and Barnhardt, R. (1999). Education Indigenous to Place Western Science Meets Native Reality. In Smith, G. A. and Williams, D. R. (Eds.) *Ecological Education in Action on weaving Education, Culture, and the Environment*. Albany, NY: State University Press of New York Press.

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Self Understanding (Cognitive, Affective, and Social) Continued

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Weber, J. Hair, J., and Fowler, C. (2000). Developing a Measure of Perceived Environmental Risk. *Journal of Environmental Education*, 32(1), 28-35.

Ecological Literacy

Environmental Education Research Web Sites

<http://www.edu.uleth.ca/ciccte/naceer.pgs/pubpro.pgs/Abstracts/abstractmain.html>

North American Association for Environmental Education

<http://www.naaee.org/>

National Project for Excellence in Environmental Education

<http://www.naaee.org/npeee/>

EE Link

<http://eelink.net/ee-linkintroduction.html>

Environmental Association of South Carolina

<http://scssi.sctv.org/eeasc/index.html>

South Carolina Reptiles and Amphibians

<http://www.snakesandfrogs.com/scra/>

USAID: Environment

<http://www.usaid.gov/environment/pubs.html>

South Carolina Environmental Education and Nature Centers

<http://www.epa.gov/region4/water/wetlands/states/sccenters.html>

US EPA Environmental Education Center

<http://www.epa.gov/teachers/>

Bureau of Land Management Environmental Education

<http://www.blm.gov/education/index.html>