



New England Journal of Environmental Education
SEPTEMBER 2005

Environmental Education in Pennsylvania's Elementary Teacher Preparation Programs: The Fight to Legitimize EE

By Thomas Mastrilli

The New England Journal of Environmental Education is published by the New England Environmental Education Alliance. The views and opinions expressed in the articles are those of the individual authors and do not necessarily represent those of the *New England Environmental Education Alliance*.

Copyright 2005 by the New England Environmental Education Alliance and by the respective authors.
All rights reserved.

www.neeea.org

email: info@neeea.org

Environmental Education in Pennsylvania's Elementary Teacher Preparation Programs: The Fight to Legitimize EE

By *Thomas Mastrilli*

Recently, Rosalyn McKeown-Ice reported on a national survey of environmental education as a component of teacher preparation in higher education institutions. She found that the status of environmental education (EE) as a component of preservice teacher education programs were unknown on a national level. While this study provided important information on a national level concerning teacher preparation in EE, no such data existed for the Commonwealth of Pennsylvania. As a result, the Pennsylvania Department of Education, the Pennsylvania Center for Environmental Education, and the Pennsylvania State System of Higher Education were interested in how Pennsylvania's elementary teacher preparation institutions approached preservice teacher preparation concerning environmental education and the core content area of Environment and Ecology (E&E) recently mandated in Pennsylvania's public schools. The significance of this study is that it reports specifically on *elementary education* preparation institutions. It was reasoned that examining elementary teacher programs would prove beneficial because the preparation of these prospective teachers would be instrumental in providing the foundational aspects of EE to approximately one million elementary-age students in the state. The three basic objectives of this study were: 1) assess the current level of Environment and Ecology standards implementation in Pennsylvania preservice elementary education programs, 2) assess the current level at which EE pedagogical methods and strategies are integrated into Pennsylvania's preservice elementary education programs, and 3) identify positive factors that encourage EE inclusion, as well as barriers.

Method

Procedure

A partnership was formed between the Pennsylvania Department of Education, West Chester University, Slippery Rock University, and the Pennsylvania Center for Environmental Education to conduct a statewide assessment of environmental education inclusion in pre-service elementary education teacher preparation programs. The basic procedure was to develop a survey designed to gather specific information concerning environmental education at a given institution and use these results to address the aforementioned goals of the project.

Survey Development and Description

The instrument used in the study was a modification of the survey employed by McKeown-Ice & the Environmental Literacy Assessment Consortium (1995). Modifications were made to the original survey to meet the specific needs of Pennsylvania. The initial portion of the survey was designed to gather information concerning how pre-service elementary education majors received content knowledge about the new Environment and Ecology standards in required courses. There were also questions that identified specific curricular and instructional methods concerning environmental education.

Part two of the instrument focused on institutional-specific items such as institutional barriers and identification of specific factors which encourage or inhibit the inclusion of EE within a given institution. The third and final portion of the survey gathered general demographic information. Five types of questions were used in the survey. The respondents were asked to reply to yes or no questions, rate on a scale, check appropriate items from a list, provide openended comments, or provide short answers.

Survey Distribution

All elementary education teacher preparation programs in Pennsylvania were identified and included in this survey. The survey, along with an explanatory cover letter and a self-addressed stamped envelope were distributed to each of the 74 identified institutions. The survey was directed to the chairperson of the elementary education department with instructions to forward the survey to the most knowledgeable individual concerning EE if necessary.

Data Entry and Tabulation

Data from the survey were entered into a spreadsheet and analyzed to produce frequency counts. In most cases the data were reported as the percent of all respondents. It should be noted that the number of institutions responding and the total number of responses differ for various portions of the survey instrument because not all respondents replied to every question, and some questions allowed for multiple responses. The database was scanned for entry errors and a representative number of surveys were randomly selected for error analysis. An error rate of (0.20%) was calculated from the random surveys and was not considered sufficient to take remedial measures.

Results

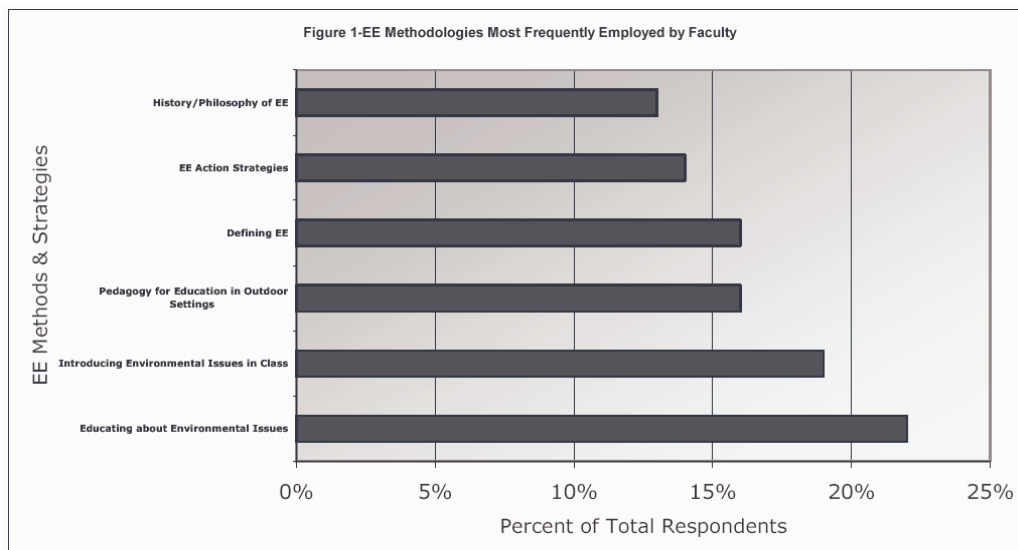
Overall, 42 of the 74 institutions identified in the project as preparing elementary teachers in the Commonwealth of Pennsylvania returned the instrument, resulting in a return rate of 56.8%. Several of the original 74 institutions identified reported that they no longer had elementary preservice programs or that the institution was in transition and moving away from an elementary pre-service program. Of the 42 reporting institutions, 14 were public and 27 were private (one did not respond to this question), with 20 of the private institutions reporting themselves as church-related. The respondents were most often department heads/chairs. The total enrollments at the institutions ranged from less than 1,000 students to more than 10,000, with the majority reporting enrollments in the range of 1,000 to 5,000 students. The enrollments in elementary pre-service programs ranged from less than 50 students to more than 1,000 students.

Integration of EE Methods and Strategies into Education and General Studies Courses

The first survey question asked if pre-service elementary education students were required to take a specific course in environmental education as part of their program. Only 10% of responding institutions indicated that they required such a course.

The respondents were asked to identify which education and general studies courses integrate major environmental education methods and strategies. The results indicated a majority of elementary education programs in Pennsylvania teach some environmental education methods. Half (50%) of the surveyed institutions stated that they provide all six of the EE methods. Approximately 10% of the reporting institutions provided none of the six pedagogical components. When these components were provided, they were most often found in science methods, biology, or general methods classes. Additionally, a few institutions offered environmental education opportunities during practicum or

student teaching. Figure 1 provides a comparison of which environmental methods and strategies were employed most frequently by faculty.

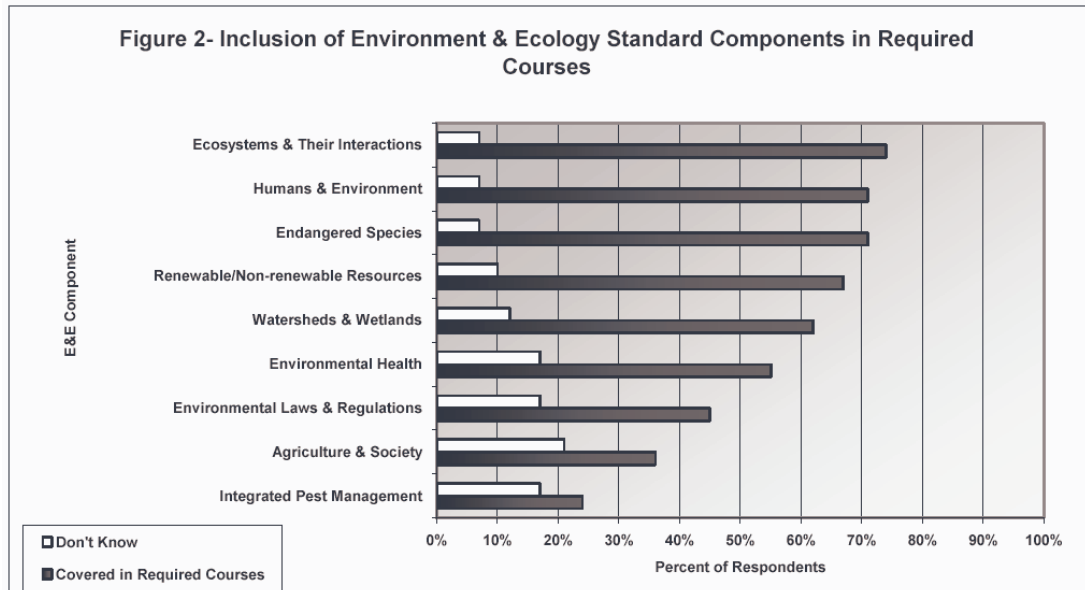


The survey also asked respondents to identify which specific instructional methods were most frequently taught to preservice elementary education students relative to environmental education (table 1). According to the respondents, faculty demonstrated clear preferences for which instructional methods they wanted preservice teachers to use when teaching about the environment. The most commonly used methods were discussion, cooperative learning, integration across the curriculum, inquiry, and field trips (all used by more than 70% of the respondents).

Instructional Method	Percent of Respondents	Instructional Method	Percent of Respondents
Cooperative learning	83%	Experiments	57%
Discussions	83%	Issues investigations	50%
Integrating across the curriculum	79%	Computer-oriented activities	48%
Inquiry	74%	Self-directed learning	48%
Field trips	71%	Data acquisition and analysis	43%
Discovery	69%	Role playing and dramatization	43%
Problem solving/critical thinking	67%	Values analysis	29%
Outdoor teaching strategies	67%	Case studies	29%
Learning styles	60%	Other	10%
Lectures	60%	Do not know	2%
Simulations	57%		

Environment and Ecology Standards Inclusion

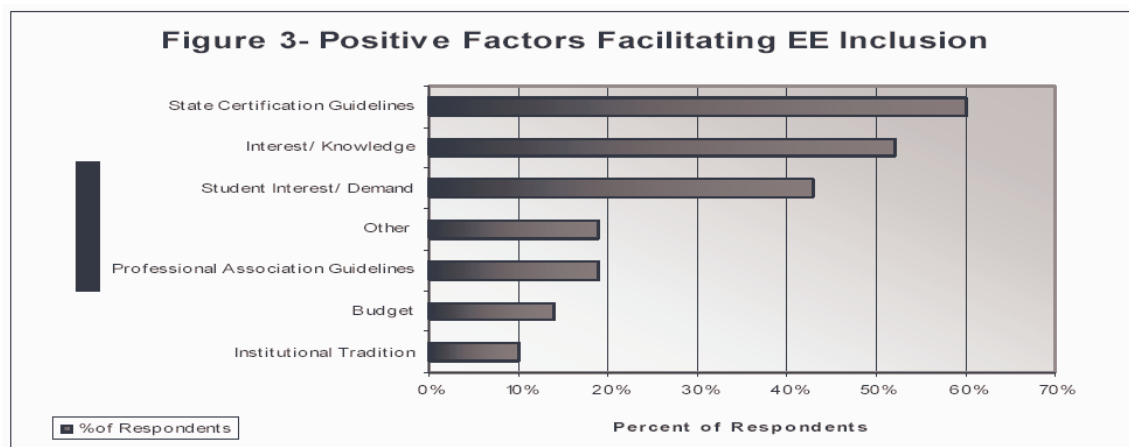
The respondents were asked to indicate where elementary majors receive content knowledge in Environment and Ecology through *required* courses. Environment and Ecology is an



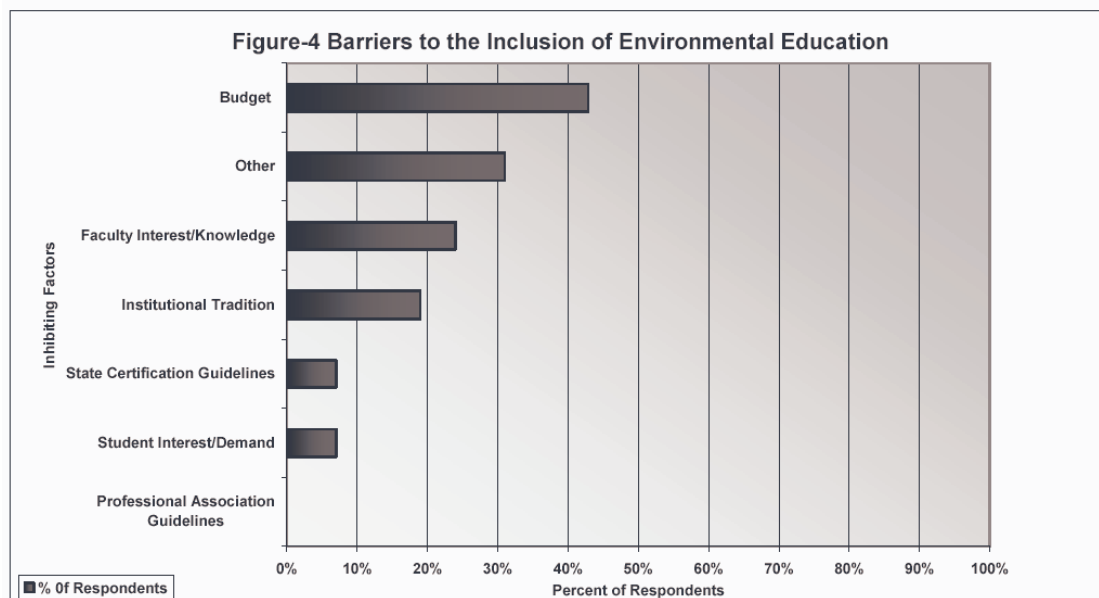
educational standard and academic core subject in Pennsylvania. Most teacher preparation programs did not provide the full nine components of the Environment & Ecology standards as required by Pennsylvania law.

Institutional Factors That Facilitated or Inhibited Inclusion of EE in Preservice Elementary Education Programs

A majority (76%) of the 42 responding institutions indicated that there were positive factors at their institution that facilitated the inclusion of environmental education in their pre-service elementary education programs (Figure 3). The two positive factors noted most frequently were state certification guidelines/standards (60%) and faculty interest/knowledge (52%).



With regard to factors that inhibited the inclusion of environmental education, two-thirds (67%) of the responding institutions indicated that such barriers do exist. Figure 4 illustrates that the specific factors most frequently reported were budget (43%) and faculty interest/knowledge (24%). It is important to note that many respondents wrote in other comments (31%), the majority of which related to time constraints within existing curricula and schedules.



Discussion

The great variation of responses regarding the inclusion of environmental education methodologies and the Environment and Ecology standards makes it very difficult to predict where in the curriculum, and to what depth, students will receive this content and pedagogy. The data also suggest that much of what was identified as environmental education was fragmented within the curriculum, with no identifiable scope and sequence for either environmental education methods or the Environment and Ecology standards.

The data may suggest that many universities and colleges across the commonwealth have not institutionalized the inclusion of environmental education within their elementary education programs. This lack of institutionalization is seen in the relatively small number of colleges and universities offering required courses in environmental education and generally agrees with findings from the McKeown-Ice national survey (2000).

The number of institutions that do not have a faculty member with interest or knowledge in environmental education also illustrates the lack of institutionalization. The data suggest that one faculty member may frequently have the major responsibility for environmental education at a given institution. Over 85% of respondents reported that they had no full-time elementary education faculty specializing in EE. McKeown-Ice noted the same pattern in her national survey concluding, "because environmental education is not institutionalized, its presence in the curriculum is at the mercy of the continued employment of one person. This leaves environmental education in a precarious position. Other educational disciplines are in stronger positions".

The responses to the question about instructional methods used in teaching environmental education reflected a much higher consistency than the questions about particular course offerings. More than 70% of the respondents reported the use of discussion, cooperative learning, integration across the curriculum, field trips, and inquiry. It is interesting to note that "outdoor teaching strategies" and

“critical thinking” were *not* among the most-frequently used instructional methods, despite being among the most appropriate methods for teaching environmental education.

In regard to factors that impact the inclusion of environmental education in pre-service elementary education programs, the most frequently cited positive factor influencing environmental education inclusion was "state certification guidelines and standards." It is encouraging that many institutions find state guidelines and standards to be a positive influence on environmental education inclusion. However, based upon the current level of inclusion of the Environment and Ecology standards, it would appear that the positive factors currently in place have not resulted in the prioritization and ultimate inclusion of these standards in teacher preparation. It is important to note that the majority (86%) of respondents identified "limited course time/conflicts with mandated course content" as a significant factor limiting the inclusion of environmental education in their programs. This factor was cited considerably more often than the next most-frequent limiting factors, budget and limited faculty preparation time (cited by 43% of respondents). This result may have significant policy implications. While greater funding is often seen as a solution to the problem, respondents to this survey suggest that there is simply insufficient time to comprehensively include environmental education.

Conclusions

According to the survey data, environmental education pedagogy and Environment and Ecology content knowledge are not institutionalized in Pennsylvania's elementary education teacher preparation programs to any significant extent. The demands made upon course-time and faculty were a major impediment to the comprehensive inclusion of environmental education in pre-service teacher preparation programs. The type of information gathered in this survey can serve as a starting point for further inclusion of EE in Pennsylvania's schools and the basis for subsequent investigation. Indeed the state report generated from this survey has played an important role in fundamentally changing the approach the Pennsylvania Department of Environmental Protection has taken to provide grants to selected teacher education institutions to further the implementation of EE in their programs.

Several recommendations may serve to mitigate the current situation. First, the establishment of a committee to prepare and implement a strategy for increasing inclusion of Environment and Ecology content knowledge and environmental education teaching methodologies on a statewide level. Second, environmental education teaching methodologies and Environment and Ecology content knowledge should be added to the general knowledge portion of the Praxis test for teachers. Finally, faculty in teacher preparation and general studies need to cooperatively design a scope and sequence to address environmental education pedagogy and Environment and Ecology content knowledge. Efforts must be made to integrate environmental education methods and standards *into existing coursework* in a manner that does not significantly increase time demands and workloads, while at the same time not sacrificing the quality of the environmental education instruction.

References

- Center for Education Research and Innovation. (1995). *Environmental Learning for the 21st Century*. Paris, France: Organization for Economic Co-operation and Development.
- Disinger, J. F., & R. W. Howe. (1990). *Trends and issues related to the preparation of teachers for environmental education*. (ERIC Document Reproduction Service No. ED 335233).
- Mastrilli, T., Johnson, P., & McDonald, A. (2001). *Inclusion of Environmental Education in Pennsylvania Teacher preparation Curricula: A Survey of Elementary Pre-Service Teacher Programs*. The Pennsylvania Center for Environmental Education.
- McKeown-Ice, R. (2000). Environmental education in the United States: A survey of pre-service teacher education programs. *The Journal of Environmental Education*, 32 (1), 4-11.