

A STUDY TO ADDRESS THE
EFFECTIVENESS OF ENVIRONMENTAL ECONOMIC EDUCATION PROGRAMS

CONDUCTED BY PERC
(Political Economy Research Center)

by

Nancy Nicholson

A professional project submitted in
partial fulfillment

of

Master of Science

in

Business Education

MONTANA STATE UNIVERSITY-BOZEMAN
Bozeman, Montana

July 1998

Spec 2-
6 ppts
#378.N524

APPROVAL

of a professional paper submitted by

Nancy Nicholson

This professional paper has been read by each member of the graduate committee and has been found to be satisfactory regarding content, English usage, format, citations, bibliographic style, and consistency.

July 21, 1998
Date

[Signature]
Chairperson, Graduate Committee

Approved for the Major Department

July 21, 1998
Date

[Signature]
Head, Major Department

Table of Contents

Chapter I, Introduction	1
Statement of the Purpose	2
Questions to be Answered	2
Need for the Study	2
Terminology	4
Limitations of the Study	4
Organization of the Study	5
Summary	5
Chapter II, Related Literature	7
Introduction	7
Traditional Environmental Education	7
Environmental Economics	8
Environmental Education Inservice Training	9
Summary	13
Chapter III, Procedures	14
Introduction	14
Sources of Data	14
Data Instrument	15
Time Line	16
Participant Selection	16
Summary	17
Chapter IV, Research Findings	18
Introduction	18
Data	18
Summary	38
Chapter V, Conclusions and Recommendations	41
Introduction	41
Conclusions	41
Recommendations	42
Bibliography	44

Table of Contents--Continued

Appendix A	
Survey Instrument	46
Appendix B	
Cover Letter	51
Appendix C	
Comments	53

Table of Contents for Figures and Tables

Figure 1	
Responses by Grade Level	19
Figure 2	
Length of Instruction	20
Table 1	
Importance of Environmental Economics Integration	21
Table 2	
Development of Values toward the Environment	21
Table 3	
PERC Program Supplied Specific Lessons	22
Table 4.a	
Environmental Education taught in Primary Schools	22
Table 4.b	
Environmental Education taught in Primary Schools (Sorted by Grade Level)	23
Table 5	
Environmental Education taught in Secondary Schools	24
Table 6	
Environmental Economics taught in Primary Schools	25
Table 7	
Environmental Economics taught in Secondary Schools	25
Table 8	
Economics taught in Primary Schools	26
Table 9	
Economics taught in Secondary Schools	26
Table 10	
Environmental Economics Teaching Ability	27
Table 11	
Environmental Economics Approach is Interesting	27

Table of Contents--Continued

Table 12	
“Market Solutions” Should be Taught	28
Table 13	
Environmental Economics as a Helpful Tool	28
Table 14	
Both Strategies Should be Taught	29
Figure 3	
Schools that offer Environmental Education	30
Figure 4	
Schools that offer Economic Education	31
Figure 5	
Schools that offer Environmental Economics	32
Figure 6	
Environmental Economics Integration	33
Figure 7	
Reasons for not offering Environmental Education	34
Figure 8	
Reasons for not offering Economic Education	34
Figure 9	
Reasons for not offering Environmental Economics	35
Figure 10	
Instructional Materials Used	36
Figure 11	
Teaching Approach	37
Figure 12	
Eco-Detectives Workbook Ranking	37
Figure 13	
Class time Dedicated to Environmental Economics	38

A STUDY TO ADDRESS THE EFFECTIVENESS OF ENVIRONMENTAL
ECONOMIC EDUCATION PROGRAMS CONDUCTED BY PERC
(Political Economy Research Center)

Environmental education is a topic that has received increased attention over the last three decades. Its goal is to develop citizens, informed of environmental issues, who are willing to take action in order to promote healthy, environmentally safe actions and behavior. A Bozeman based organization named *Political Economy Research Center*, (PERC), has added the theory of economics to the environmental philosophy. Jane Shaw, Senior Associate at PERC and author of *Facts Not Fears: A Parent's Guide to Teaching Children About the Environment*, supports the partnership of economics and environmentalism in this quote: Economics teaches us about human behavior--the "rest of the story." It sheds light on why we have pollution problems and why some proposed solutions won't work. (1996)

PERC has been conducting teacher inservice seminars over the last few years in an attempt to spread the environmental economic word. The study was conducted to measure the outcomes of these seminars. The major purpose of this study was to determine how attendance of PERC environmental economic programs affected educators' attitudes toward environmental and economic issues.

The majority of the respondents worked in a secondary (grades 9-12) school and had attended 1-2 days of PERC training. Returned surveys were grouped by the amount of environmental economic training the respondent had received. Five categories developed-1 hour, 1-4 hours, 1 day, 1-2 days, more than 2 days, and summer conference 1997 participants. (It should be noted that a return rate of 76% was received from this last group.)

Overall, the respondents responded positively to the theories of environmental economics. Ninety-nine percent of the respondents felt that environmental economics should be integrated into the class they teach. Responses to another question indicated that PERC programs were successful in supplying specific materials to help teachers integrate the concepts of environmental economics into their classroom for 85% (137 of the 167 respondents) of the teachers. The respondents that felt inadequately prepared were the ones who had only attended 1 hour or 1-4 hours of training. The participants that had attended more training felt better prepared. When respondents were specifically asked about the use of "market solutions" to solve environmental problems the majority (59%) of the respondents agreed with the statement, while 40% strongly agreed. It should also be noted that 100% of those who participated in the 1997 summer conference agreed with the "market solutions" statement.

Participants were also asked if they were successful in integrating environmental economic concepts into their classes. The survey indicated that the participants who received the most training were the most successful in integrating environmental economics into their curriculum. Only 14% of the 1 hour participants have been successful in integrating while 48% of those with 1-4 hours of training have integrated the concepts of environmental economics. This percentage increases as the training increases. The remainder of the groups, 1-2 days, >2 days, and 1997 Summer conference expressed a successful integration percentage of 71%, 83%, and 81% respectfully. The overall percentage of successful environmental economic integration is 67%.

In conclusion, PERC programs were well received. Teachers indicated an appreciation for the alternative way to evaluate environmental concerns and look forward to further information on environmental economics.

CHAPTER I

INTRODUCTION

....The shortcoming of today's dominant approach to staff development is that teachers are spoon-fed prepackaged activities and treated as curricular consumers rather than professional educators. (Wade, 1996)

Teachers are frequently presented with innovations and trendy topics that society feels should be integrated into today's classroom. It is the responsibility of the teacher to filter these "prepackaged" theories, adapt the ideas into their curriculum, and monitor its success. Environmental education is one such topic that has received increased attention over the last three decades. Its goal is to develop citizens, informed of environmental issues, who are willing to take action in order to promote healthy, environmentally safe actions and behavior. (Lane, 1995) A Bozeman based organization named *Political Economy Research Center*, (PERC), has added the theory of economics to the environmental philosophy. Jane Shaw, Senior Associate at PERC and author of *Facts Not Fears: A Parent's Guide to Teaching Children About the Environment*, supports the partnership of economics and environmentalism in this quote: Economics teaches us about human behavior--the "rest of the story." It sheds light on why we have pollution problems and why some proposed solutions won't work. (1996)

Statement of the Purpose

The major purpose of this study was to determine how attendance of PERC environmental economic programs affected educators' attitudes toward environmental and economic issues.

Questions to be Answered

1. At what level should environmental and economic education be taught in the attendees schools?
2. What barriers, if any, are there in teaching the theories of environmental economics? Availability of materials? Administrative support? Environmental misunderstandings?
3. How receptive are the students of attendees to the theories of environmental economics education?
4. What inservice methods do the attendees feel provide the most assistance in incorporating the environmental economic theories into their school's curriculum?
5. Overall, what has been the level of effectiveness of PERC's environmental economics program?

Need for the Study

Our nation's desire to increase the level of environmental awareness is evident by the actions 20 states have taken to increase the level of environmental education taught with actions ranging from mandating it through legislation to strongly encouraging the teaching of environmental education. (Satchell, 1996) An increase in the number of environmental organizations (Greenpeace, Zero Population Growth, and Earth First), environmental television programs (National Geographic specials on rain forest destruction), and published literature would indicate that society as a whole is concerned

with environment protection and correction. Unfortunately, some schools have not been successful in their inclusion of environmental education in their curriculum. The Arizona legislature recently overturned a 1990 law requiring environmental education in public schools. (Satchell, 1996) Other schools have had to curb their environmental efforts when confronted by parents whose children return from school criticizing their parent's livelihoods. Children of loggers, for instance, learn at school that cutting down trees is bad, and this contradicts what they learn at home. A middle school envirocamp in Bend, Oregon was canceled in part because some parents felt its commune-with-nature theme was "anti-Christian and paganistic." (Satchell, 1996)

What is behind this contradiction? Why is society supporting environmentalism in public media yet opposed to the teachings in public schools? Perhaps it is the teacher training that needs to be analyzed. Teachers are asked to be experts in many subjects. They attend training sessions, referred to as "inservice workshops", to learn new material and subject matter. Current environmental teacher training programs have been accused of being biased and supportive of activist activities. (Sanera and Shaw, 1996) The people of PERC hope to bridge the gap between environmental education and its opponents with environmental economics. PERC has conducted programs focused on training teachers about a new side to the environmental coin. Their programs demonstrate the application of economic principles to environmental concerns to people who would otherwise be turned-off by environmentalism and/or economics. It is now time to determine the success of these programs. What are the environmental economic attitudes of teachers who have attended these programs? How well have these theories been accepted in the

attendees schools? The answer to these questions could rescue environmental education, an important topic of study for today's youth, by broadening its traditional presentation.

Terminology

The following terminology has been given to aid the reader of this study.

Environmental education: The teaching of environmental issues in the classroom. Topics frequently included, but not limited to, are endangered species protection, rain forest destruction, ecosystem balance, acid rain effects, and solid waste disposal. This subject can be taught as a specific class but is most frequently taught as a unit within an existing science curriculum. (Smith-Sebasto and Smith, 1997)

Environmental economics: A theory based on the premise that environmental solutions can be found through the application of economic principles. This theory maintains that the forces that promote economic growth, such as private initiative, entrepreneurship, respect for property rights, and capital investment can be enlisted on the cause of environmental protection. (Simpson, 1997)

Inservice training: The continuing education practicing teachers receive. This training is often presented in workshop form, where teachers of many grade levels and subject areas attend a clinic or classroom situation lasting from a few hours to several days. These workshops may take place at a teachers home school or at another educational facility. (Wade, 1996)

Limitations of the Study

The researcher limited her study to the teachers who have attended PERC workshops. This population is limited to a small number of people who have opportunities to teach environmental economic education. Although this group will be able to give information concerning their own attitudes, they will give little insight to non-attendees' attitude toward environmental economics. Regardless of these limitations, this group will provide a baseline to PERC for evaluating their programs and determining future action.

Organization of the Study

This research project is organized into five chapters. Chapter I shows the problem statement, additional questions to be answered, the need for the study, the definitions of terminology used, the limitation of the study, and the organization of the report.

Chapter II presents a review of literature relating to this study. Chapter II is divided into the following areas:

1. Traditional Environmental Education
2. Environmental Economics Theories
3. Environmental Education Inservice Training

Chapter III is a review of the procedures used in completing this paper. This chapter will describe the population to be used and the procedure for sample size determination. It will also describe the instrument design, time line, and survey procedures.

Chapter IV will contain the results of the study. Findings of the survey instrument will be presented and analyzed.

Chapter V will summarize the study. Study conclusions will be drawn and author recommendations will be made in this section.

Summary

Issues concerning the state of, protection of, and the reclamation of the environment are much debated topics in today's media and schools. Public schools have attempted to address the issues of the environment and have received a certain amount of criticism for their attempt. The proponents of environmental economics are taking a new

approach to the issues of environmentalism. The theories of environmental economics could be what rescues environmental education from elimination. This new approach provides balance to the frequently biased views of current environmental education lessons. (Satchell, 1996) If solutions to today's environmental concerns are to be found, new ideas must be explored and alternative concepts must be studied.

CHAPTER II

RELATED LITERATURE

Introduction

The ultimate goal of environmental education (EE) is to develop informed and skilled citizens who are willing and able to take action to resolve environmental issues. Furthermore, these citizens will understand the importance of maintaining a healthy balance between the quality of life and the quality of the environment. (Hungerford cited in Lane et al., 1995)

Few would dispute the claim that the state of the world's environment is an important topic to be discussed. Some would even go as far as to say it should be discussed in the classroom. In fact, Congress felt strong enough to authorize \$65 million over five years to support environmental education in 1990. (Sanera and Shaw, 1996)

Teachers were then given the task of learning about environmental education and transferring this knowledge to their students. There are two schools of thought when it comes to environmental education. The first will be referred to as traditional environmental education, and the second will be referred to as environmental economics.

Traditional Environmental Education

Despite the efforts to make environmental education multi-disciplinary (including lessons in environmental education in various subject areas) and interdisciplinary (integrating more than one subject at a time into a single environmental education activity) it is typically confined to the science curriculum. (Ham et. al., 1988) Traditional

methodology strives to develop a relationship between the students and the environment. This theory advocates the raising of environmental consciousness as a means of inducing changes in behavior. (Santopietro, 1995) Lessons designed to develop this relationship involve field trips to study habitats, letter writing campaigns supporting or opposing particular behavior, recycling campaigns, and endangered species protection projects (adopt-a-whale).

These programs are frequently developed by popular environmental associations such as Project Wild, Learning Tree, Greenpeace, and Earth First!. (Ham et. al., 1988) These programs are often criticized for being biased, presenting only one side of the environmental story. Michael Satchel, author of the U.S. News and World Report article, *Dangerous Waters? Why Environmental Education is Under Attack in the Nation's Schools*, believes that these biased materials are creating the current rejection of environmental education. (1996)

Environmental Economics

Environmental economists want people to make environmentally sound choices. The reasoning used by the person debating his or her choices is what separates the two theories. Environmental economists believe that application of free market economic principles to environmental concerns would encourage people to make the environmentally sound choice. One application of this theory is described as “the tragedy of the commons.”

The principle of “the tragedy of the commons” explains the phenomenon that ownership of property results in better managed property. Public property, property with

no specific or identifiable owner, is frequently mistreated. Yards in front of homes are neat and clean while public parks tend to be dirty. The owner of the property has a strong interest in taking care of that property. Homeowners can keep their own yard clean, and can usually prevent others from littering it. But even if a person cleans a public park, they are unable from keeping others from making a mess of it as soon as they are done. Consequently, it is not cleaned. (Sanera and Shaw, 1996)

Wild animals are often the victims of “the tragedy of the commons.” Australian crocodiles were on the verge of extinction due to the illegal poaching of the animals for their meat and hides. But crocodile extinction was thwarted when people were allowed to establish crocodile farms. Planned reproduction and preservation provided restaurants and retailers all the crocodile meat and skins they needed. There was no need to poach them any longer. Crocodile ownership provided an incentive to preserve the crocodile population.

Providing incentives is at the base of many environmental economists theories. Simply put, people will make environmentally sound choices if they have the incentive to do so. (Anderson and Leal, 1991)

The ‘incentive’ policy is often rejected by non-economist environmentalists. They object to allowing people to pay to pollute and having to pay (provide an incentive) them to stop. (Santopietro, 1995)

Environmental Education Inservice Training

Regardless of whether a teacher supports the traditional environmentalism view or the environmental economic view he or she will seek training to learn the skills

necessary to teach the topic. Several current studies have been completed studying the effects of teacher inservice training on environmental education. The most current study was conducted in Illinois. The conclusions of this study supported those of a study it replicated which was administered in Wisconsin. When teachers who participated in environmental education programs were asked to evaluate their attitude toward environmental issues, they responded positively. Furthermore, 98 percent of the survey's respondents felt that their teaching of environmental education did contribute to the development of environmentally literate citizens, a goal of environmental education. (Smith-Sebasto and Smith, 1997)

An additional conclusion was made, this one somewhat contradictory to the first. The amount of time respondents spent teaching environmental education was in direct contrast to their overall positive attitudes toward environmental education. The majority of the respondents reported spending less than 25% of their time integrating environmental education concepts into their curriculum. (Smith-Sebasto and Smith, 1997) The survey of the Wisconsin teachers found a relationship between the number of environmental training courses completed by a teacher and the amount of class time that teacher devoted to environmental education. The more training completed, the more environmental education taught. Interestingly, the attitude toward environmental education was not found to increase with an increase in training courses. (Lane et al., 1995) Attitude level remained as positive as it was after attending the initial training workshop.

Another study that clarifies the concern with inservice teacher training is a survey completed by *The National Consortium for Environmental Education and Training* (NCEET). This study focused on environmental education training in all 50 states. The analysis revealed that environmental education training focused on science teachers. This organization feels that an interdisciplinary approach to environmental education would be more desirable (Wade, 1996).

Another study determined that despite its best efforts, some barriers to teaching environmental education were not overcome by inservice training. Barriers to teaching concepts of environmental education can be classified into four categories.

1. Conceptual--barriers stemming from lack of consensus about the scope and content of environmental education.
2. Logistical--barriers stemming from a perceived lack of time, funding, instructional resources, suitable class size, and so forth.
3. Educational--barriers stemming from teachers' misgivings about their own competence to conduct environmental education programs.
4. Attitudinal--barriers stemming from teachers' attitudes about science and environmental education. (Ham et. al., 1988)

An inservice workshop was designed and implemented specifically to reduce these barriers and to increase the number of teachers conducting environmental education. Evaluation of this objective was accomplished through comparison of pre-test and post-test surveys completed by the workshop participants. The workshop, which consisted of a variety of presentations and hands-on activities, was determined successful in decreasing conceptual, educational, and attitudinal barriers, but was unable to reduce

logistical barriers. (Ham, et. al., 1988) In other words, teachers who attended the workshop felt environmental education was an important subject to teach, felt capable of teaching the subject, and felt the subject could be taught in a variety of non-science areas. However, the teachers' difficulty in finding the teaching time, in finding preparation time, and in adjusting activities to accommodate class size were not effectively addressed by the workshop.

Little was found by this researcher addressing the effectiveness of the environmental economic approach to environmental education. In their book *Free Market Environmentalism*, Terry Anderson and Donald Leal suggest that environmental solutions could be found through the application of economic principles with the following quote.

Comparing free market environmentalism with ecosystems serves to emphasize how market processes can be compatible with good resource stewardship and environmental quality. As survival rewards species that successfully fill a niche, increased wealth rewards owners who efficiently manage their resources (Anderson and Leal, 1991).

In her article, *Environmental Education Teacher Inservice Education: The need for New Perspectives*, Kimberly Wade recognizes a need for a new approach for environmental education. (1996) Environmental economics is that new perspective. First of all, this approach would attract non-science teachers, (a goal of NCEET), by the application of principles taught in social studies, business, and economic areas. Secondly, this approach increases the resources available to teachers looking for strategies to promote environmentally healthy citizens.

This desire for a new perspective is found in unusual places. *The Journal of Environmental Education*, a periodical normally devoted to the teachings of traditional environmental education, has recently reported the benefits of integration of business and environmentalism. In his article "The Greening of a Business School, Thomas Becker, an associate professor of international business at the University of South Alabama in Mobile, recognizes the usefulness of incentives when encouraging business people to make environmentally sound decisions. (1997).

Program evaluation is a necessary process in improving inservice workshops. Deborah Bainer of Ohio State University takes the concept of evaluating inservice training one step further. She states that inservice programs should not be judged by how many teachers and administrators participate or by how satisfied they are with the program, but by whether the program alters instruction in ways that benefit students. (Bainer, 1995) A valid, yet difficult, thing to measure.

Summary

Studies conducted of this nation's teacher training, in relation to environmental education, has shown that after attending environmental education programs teachers feel positive about the subject and capable of teaching it, but unable to find the time to integrate it into their curriculum. This study will investigate these claims by evaluating the effectiveness of environmental economic education training sessions.

CHAPTER III

PROCEDURES

Introduction

The major purpose of this study was to determine how attendance of PERC environmental economic programs has affected educators' attitudes toward environmental and economic issues.

Chapter III will examine the following areas: 1) sources of data, 2) construction of the survey instrument, 3) time line for data collection, and 4) participant selection.

Sources of Data

Three strategies were used to collect data for this research paper. First, journal articles and published professional research papers were accessed from Montana State University-Bozeman, Renne Library. Second, published environmental economics literature was received from the PERC office. This material consisted of books and organization reports. Although authors disagree on environmental education content, proponents of both methods (traditional environmental education, and environmental economic education) strongly agree that the topic should be addressed in today's public schools. Literature also indicated that while teacher inservice programs on environmental education were effective in improving teacher attitude toward the subject, it did little to solve the time constraints caused by an already full curriculum.

The third source of data was collected through a survey instrument. This instrument was designed to measure attitudes of PERC program participants toward environmental economics. The instrument analyzed how, and if, teachers who attended PERC programs have incorporated the lessons into their classrooms.

Data Instrument

A survey instrument was used for this study (see appendix A). Survey content was based on the readings from the literature review.

The survey form was sent to all teachers who had attended a PERC program accompanied with a cover letter (see appendix B). Some programs dealt with environmental economics as its exclusive focus. Other programs presented environmental economics as just one item on their agenda. Both type programs were included in the study. Total participants was approximately 400 people. The instrument contained questions related to the following areas:

1. The level environmental and economic education taught in the attendees schools.
2. Barriers, if any, in teaching the theories of environmental economics.
3. Attendees' students' response to the theories of environmental economics education.
4. Inservice methods the attendees felt provided the most assistance in incorporating the environmental economic theories into schools.
5. Overall, the level of effectiveness of PERC's environmental economics program.

The researcher's advisor, Dr. Norman Millikin, College of Business, Montana State University-Bozeman, reviewed the initial draft of the survey instrument. It was also examined by business education graduate students enrolled in Research in Business Education during the summer of 1997. The instrument was also reviewed by selected PERC staff. Upon review completion, the instrument was tested on several local PERC attendees. Final revisions were made with the approval of Dr. Norman Millikin.

Time Line

July 1997	Completion of instrument
September 1997	Pilot survey
October 1997	Final Approval
November 1997	Mail survey & cover letter
January 1998	Follow-up survey (if necessary)
March 1998	Data analysis
July 1998	Final report completed

Participant Selection

For the purposes of this study the population and the sample size were the same. All members of the population, teachers having participated in a PERC program, received a survey. The researcher obtained the participant list from the PERC office in Bozeman, Montana. The 400 surveys were mailed in November 1997. The researcher planned for a return rate of 50 percent.

Summary

Chapter III addresses the issue of the attitudes and perception of PERC program attendees on environmental economics. The survey instrument, reviewed by Dr. Norman Millikin, business education graduate students, and PERC executives, contains questions relating to this issue. A pilot survey was conducted with local PERC attendees to test validity of the questions followed by final approval by Dr. Norman Millikin. All participants of PERC programs received a survey.

CHAPTER IV

RESEARCH FINDINGS

Introduction

Questionnaires were sent to 414 PERC program participants. The researcher mailed surveys to addresses on a mailing list provided by PERC. The mailing list included names of every educator to have ever attended a PERC program.

One-hundred and ninety-seven responses were received from the 414 mailed, a return rate of 48%. Thirty of the 197 were not useable. Thirteen responses indicated that the recipient had been unable to attend the PERC workshop or were not educators, the other 17 unusable surveys were from people who were unfamiliar with PERC and unsure why they were included in the list. This left 167 useable responses from which the following information is based.

Data

Initial survey questions provided background information to be used in sorting and classifying the responses. This researcher found that classifying respondents by the amount of PERC training received provided the most logical and informative separation.

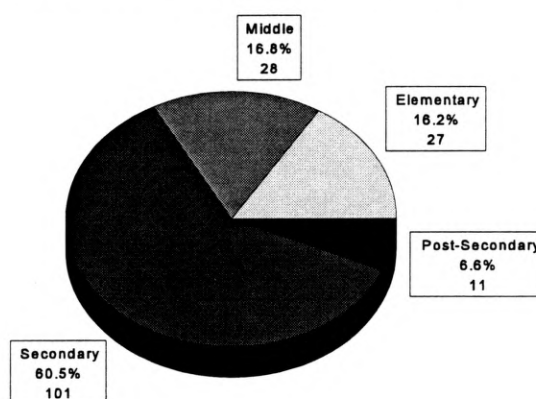
Section 2 of the survey provided information about participants attitudes toward economic education, environmental education, and environmental economic education.

The final part of the survey determined if economic education, environmental education, and environmental economic education is currently taught in schools and if not, why not. Schools currently offering a course were asked to share information about that course.

- What teaching methods are used in the course?
- What teaching aids are used in the course?
- How much time is committed to the subject?

Each figure or table represents a specific question and the data illustrate the responses. Each figure or table is followed by a brief summary of the data and related comments.

Figure 1
Responses by Grade Level of School



The above chart shows that the majority of the respondents work in secondary (grades 9-12) schools. The second largest group of respondents were middle school level followed closely by elementary level. Post-secondary respondents were the smallest group.

When surveys were separated according to the amount of PERC training respondents received, 5 categories developed, 1 hour, 1-4 hours, 1-2 days, more than 2 days, and summer 97. The summer 97 category identifies an unique week long conference during the summer of 1997. It should be noted that of the 29 surveys mailed to this group, 22 were returned, a return rate of 76%.

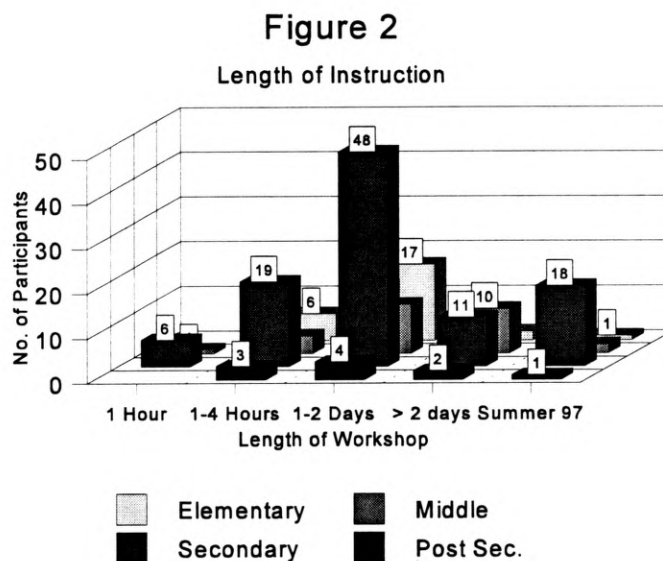


Figure 2 shows that without exception, secondary school staff members are the largest group of respondents in every category. The largest group of respondents had attended 1-2 days worth of training (80 respondents), followed by the respondents who received 1-4 hours of training (32). Next came the group who received more than 2 days of training (25), followed closely by the people who attended the 1997 summer conference (22). The last group consists of the people who received only 1 hour of instruction (7). The final group, the 1 hour participants is not the smallest group, just the group with the smallest number of respondents.

The second section of the survey focused on the respondents attitude toward economic education, environmental education, and environmental economic education.

Table 1						
It is important to integrate environmental economics education into the subject area(s) or the grade I teach.						
	1 Hour	1-4 Hours	1-2 Days	>2 Days	Summer 97	Total
Strongly Agree	29%	34%	39%	42%	52%	40%
Agree	71%	63%	59%	58%	48%	59%
Disagree	0%	3%	2%	0%	0%	2%
Strongly Disagree	0%	0%	0%	0%	0%	0%

Table 1 shows without exception, all groups agree that environmental economics should be integrated into classes. Interestingly, the summer 97 group was the only group that had a higher percentage in the strongly agree category than in the agree category.

Table 2						
Teachers should help students develop values and feelings toward the environment.						
	1 Hour	1-4 Hours	1-2 Days	>2 Days	Summer 97	Total
Strongly Agree	14%	38%	46%	40%	33%	41%
Agree	71%	59%	48%	56%	43%	52%
Disagree	14%	3%	5%	0%	19%	6%
Strongly Disagree	0%	0%	1%	4%	5%	2%

Table 2 shows similar patterns in all categories. The majority of the respondents feel that teachers should help students develop values about the environment. This statement did have more respondents answer in the disagree and strongly disagree section than the other questions. Thirteen of the 167 respondents felt that teachers should not help their students develop values pertaining to the environment. Respondents comments

on this section expressed the teacher's desire to present their students with all the facts and allow them to develop their own conclusions.

Table 3						
Attendance of a PERC program supplied me with specific lessons that were (will be) integrated into my curriculum with little adjustment.						
	1 Hour	1-4 Hours	1-2 Days	>2 Days	Summer 97	Total
Strongly Agree	20%	16%	25%	24%	45%	26%
Agree	60%	55%	61%	64%	50%	59%
Disagree	20%	26%	13%	12%	5%	14%
Strongly Disagree	0%	3%	1%	0%	0%	1%

According to table 3, PERC programs were successful in supplying specific materials to help teachers integrate the concepts of environmental economics into their classroom for 85% (137 of the 167 respondents) of the teachers. The respondents that felt inadequately prepared were the ones who had only attended 1 hour or 1-4 hours of training. The participants that had attended more training felt better supplied.

Table 4.a						
Environmental education should be taught in the primary schools (K-8).						
	1 Hour	1-4 Hours	1-2 Days	>2 Days	Summer 97	Total
Strongly Agree	29%	36%	40%	52%	38%	40%
Agree	57%	58%	58%	48%	48%	55%
Disagree	14%	6%	3%	0%	14%	5%
Strongly Disagree	0%	0%	0%	0%	0%	0%

Table 4.a summarizes the data to the question of whether or not environmental education should be taught in the primary grades (K-8). Once again we see that the majority of the respondents either strongly agree or agree. This table also shows that the

PERC participants that attended more than 2 days of training strongly agree with the statement “Environmental education should be taught in the primary schools”. Overall 95% of the respondents agree with the statement.

Since this question deals with the age at which environmental education should be introduced, it is pertinent to analyze this data according to grade level of teachers as well as length of PERC training. This analysis is shown in table 4.b.

Table 4.b					
Environmental education should be taught in the primary schools (K-8).					
	Elementary	Middle	Secondary	Post-Secondary	Total
Strongly Agree	42%	39%	43%	20%	41%
Agree	54%	54%	53%	70%	54%
Disagree	4%	7%	4%	10%	5%
Strongly Disagree	0%	0%	0%	0%	0%

Table 4.b shows the same trend as 4.a. The majority of the respondents agree that environmental education should be included in the primary grade curriculum. Ninety-five percent of the respondents agree or strongly agree that environmental education should be taught in primary grades. The same percentage as when the data was sorted by length of workshop training in table 4.a.

Table 5						
Environmental education should be taught in the secondary schools (9-12).						
	1 Hour	1-4 Hours	1-2 Days	>2 Days	Summer 97	Total
Strongly Agree	14%	48%	52%	48%	57%	50%
Agree	86%	45%	47%	52%	38%	48%
Disagree	0%	6%	1%	0%	5%	2%
Strongly Disagree	0%	0%	0%	0%	0%	0%

Table 5 illustrates the respondents belief that environmental education should be included in the secondary curriculum. In fact, percentages of agreement increased in all categories when table 4.a is compared with table 5. Respondents who had attended 1 hour of training increased in agreement from 57% to 86%. Participants from workshops lasting from 1-4 hours and 1-2 days strongly agreed with the statement. Those who attended more than 2 days of training had more agree responses that strongly agree, this could be caused by their feeling that environmental education should be introduced at a younger grade level. This attitude is reflective in table 4.a where 52% strongly agreed as compared with table 5 where 48% strongly agreed. Overall, the majority of the respondents strongly agreed that environmental education should be taught at the secondary level.

Table 6						
Environmental economic education should be taught in the primary schools (K-8).						
	1 Hour	1-4 Hours	1-2 Days	>2 Days	Summer 97	Total
Strongly Agree	14%	28%	23%	32%	43%	27%
Agree	57%	53%	65%	64%	48%	60%
Disagree	29%	19%	10%	4%	10%	12%
Strongly Disagree	0%	0%	3%	0%	0%	1%

Table 7						
Environmental economic education should be taught in secondary schools (9-12).						
	1 Hour	1-4 Hours	1-2 Days	>2 Days	Summer 97	Total
Strongly Agree	14%	61%	34%	52%	68%	46%
Agree	86%	39%	66%	48%	32%	54%
Disagree	0%	0%	0%	0%	0%	0%
Strongly Disagree	0%	0%	0%	0%	0%	0%

Tables 6 and 7 analyze the respondents' beliefs pertaining to the grade level environmental economics should be taught, primary or secondary level. While both tables show that the majority of the responses favored teaching environmental economics at both levels, the answers were unanimous about including this subject at the secondary level of education. Not one respondent disagreed or strongly disagreed with the statement, where 13% disagreed with the subject's inclusion at the primary level.

Table 8						
Economics should be taught in the primary schools (K-8).						
	1 Hour	1-4 Hours	1-2 Days	>2 Days	Summer 97	Total
Strongly Agree	29%	35%	38%	39%	70%	41%
Agree	71%	48%	53%	57%	25%	50%
Disagree	0%	13%	10%	4%	5%	9%
Strongly Disagree	0%	3%	0%	0%	0%	1%

Table 9						
Economics should be taught in secondary schools (9-12).						
	1 Hour	1-4 Hours	1-2 Days	>2 Days	Summer 97	Total
Strongly Agree	29%	61%	34%	52%	68%	46%
Agree	71%	39%	66%	48%	32%	54%
Disagree	0%	0%	0%	0%	0%	0%
Strongly Disagree	0%	0%	0%	0%	0%	0%

There is a trend in tables 8 and 9 that is similar to the one represented by tables 6 and 7. The subject in question in tables 8 and 9 is what level economic education should be taught. While both tables show a positive response, table 9 suggests economic education at the secondary level, is unanimous. It is also interesting to note that as the amount of training increased in table 9, the percentage of respondents that agreed with the statement also increased. Those that attended more than 2 days of training, including the 1997 summer conference participants, had a higher number of responses strongly agreeing with the statement than merely agreeing with the statement.

Table 10						
I am comfortable with my ability to teach environmental economic education lessons.						
	1 Hour	1-4 Hours	1-2 Days	>2 Days	Summer 97	Total
Strongly Agree	0%	24%	16%	20%	43%	21%
Agree	43%	52%	66%	48%	57%	58%
Disagree	29%	18%	16%	32%	0%	18%
Strongly Disagree	29%	6%	1%	0%	0%	3%

Table 10 analyzes the respondents confidence in their ability to teach environmental economics. There is a very strong trend evident. As the length of training increases, the level of confidence increases. In fact, none of the participants of the 1997 summer conference doubted their ability to teach environmental economics. Overall, the majority (79%) of the respondents felt comfortable teaching this subject.

Table 11						
I find the environmental economic approach the environmental problems interesting.						
	1 Hour	1-4 Hours	1-2 Days	>2 Days	Summer 97	Total
Strongly Agree	17%	27%	41%	36%	62%	39%
Agree	83%	67%	59%	64%	38%	60%
Disagree	0%	6%	0%	0%	0%	1%
Strongly Disagree	0%	0%	0%	0%	0%	0%

Table 11, as the remainder of the tables, show the participants attitude toward the concepts of environmental economics. Table 11 asks if the topic is interesting. Sixty percent agreed that the subject is interesting while 39% strongly agreed. A total of 99%!

Table 12						
“Market solutions” to environmental concerns should be taught to students and considered along with usual government mandated solutions.						
	1 Hour	1-4 Hours	1-2 Days	>2 Days	Summer 97	Total
Strongly Agree	14%	26%	39%	36%	76%	40%
Agree	86%	68%	61%	64%	24%	59%
Disagree	0%	6%	0%	0%	0%	1%
Strongly Disagree	0%	0%	0%	0%	0%	0%

Table 12 shows the results from the statement that specifically asks about the concept of “market solutions”. Once again, the majority (59%) of the respondents agreed with the statement, while 40% strongly agreed. It should also be noted that the majority (76%) of those that participated in the 1997 summer conference strongly agreed with the “market solutions” statement.

Table 13						
Environmental economics is a helpful tool when evaluating environmental issues.						
	1 Hour	1-4 Hours	1-2 Days	>2 Days	Summer 97	Total
Strongly Agree	17%	31%	37%	20%	62%	36%
Agree	83%	63%	62%	72%	38%	61%
Disagree	0%	6%	1%	4%	0%	2%
Strongly Disagree	0%	0%	0%	4%	0%	1%

Table 13 concentrates on the participants attitude toward the usefulness of environmental economics. Once again a positive attitude is portrayed. Thirty-six percent and 61% strongly agreed and agreed, respectfully, with the statement. Once again the trend of the 1997 summer conference participant strongly agreeing is displayed.

Table 14						
Traditional environmental education focuses on building a positive environmental attitude. Environmental economic education emphasizes getting the “incentives right” in order to promote positive environmental education. It is appropriate to offer both strategies to today’s students.						
	1 Hour	1-4 Hours	1-2 Days	>2 Days	Summer 97	Total
Strongly Agree	17%	31%	37%	20%	62%	36%
Agree	83%	63%	62%	72%	38%	61%
Disagree	0%	6%	1%	4%	0%	2%
Strongly Disagree	0%	0%	0%	4%	0%	1%

Table 14 illustrates a trend similar to the trend shown in the other tables that analyze the participants attitude toward environmental education, positive. A total of 97% of the respondents agreed or strongly agreed with the statement dealing with including environmental economic strategies with traditional environmental education concepts. The 1997 summer group once again strongly agreed with the statement while the other groups only agreed.

The third section of the survey asked whether or not the respondents’ schools offered environmental education, economic education, and/or environmental education either as a specific class or as topics integrated into other subjects. This section also asked respondents to state reasons why these classes weren’t being offered when necessary.

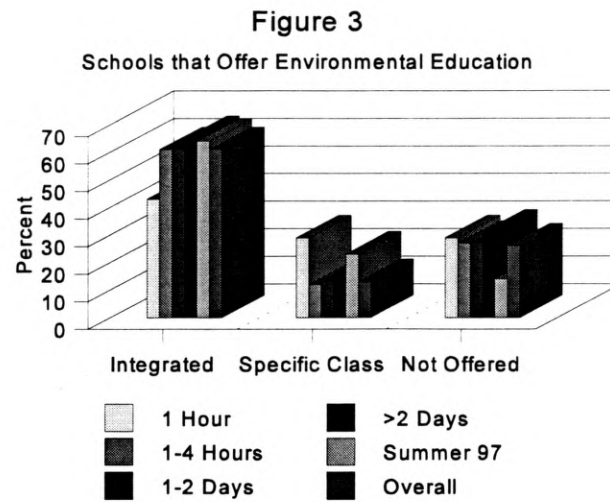


Figure 3 shows that the majority of the respondent's schools offer environmental education as a topic integrated into another class, 61%. This chart also shows that the respondents that received longer PERC training integrate the subject more. Those that received more than 2 days of training, or that attended the summer 1997 conference have 65% and 64%, respectively, of their schools integrating the environmental subject.

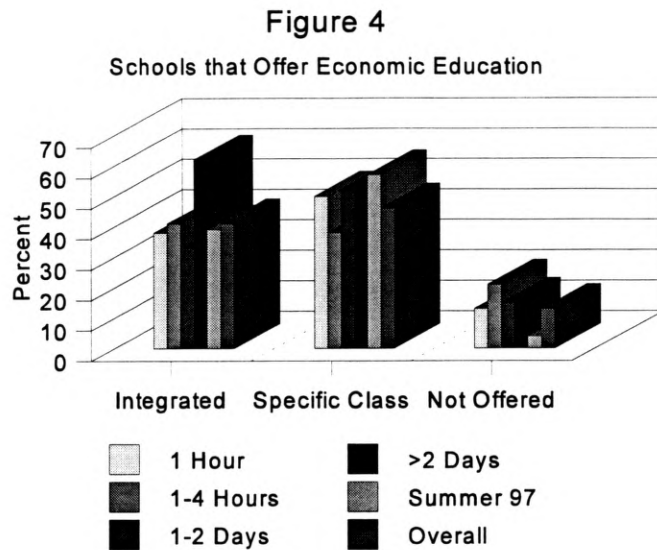


Figure 4 shows that economics is offered as a specific class at the majority of the respondent's schools. Overall, 46% of the schools teach economics. When figure 4 is compared with figure 3 it is seen that while both environmental education and economic education are taught, economic education is offered more frequently. Twenty-six percent of the responding schools do not offer environmental education while only 13% do not offer economic education.

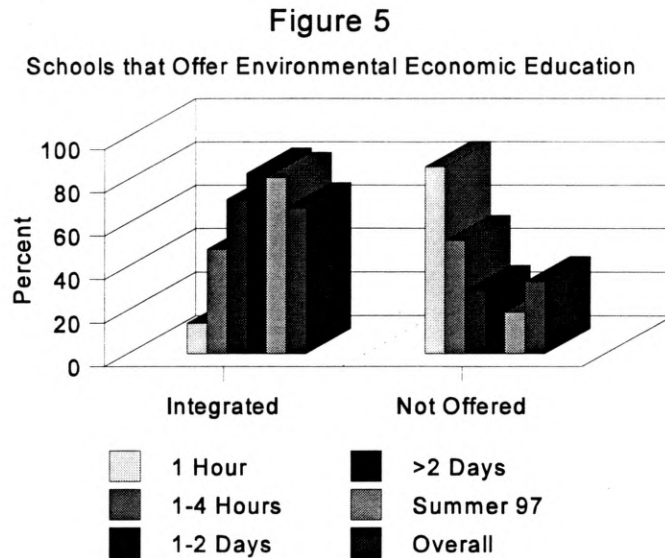


Figure 5 clearly shows that the participants that received the most training are the most successful in integrating environmental economics into their curriculum. Only 14% of the 1 hour participants have been successful in integrating while 48% of those with 1-4 hours of training have integrated the concepts of environmental economics. This percentage increases as the training increases. The remainder of the groups, 1-2 days, >2 days, and 1997 Summer conference expressed a successful integration percentage of 71%, 83%, and 81% respectively. The overall percentage of successful environmental economic integration is 67%.

Figure 6
Classes in which Environmental Economics is Integrated

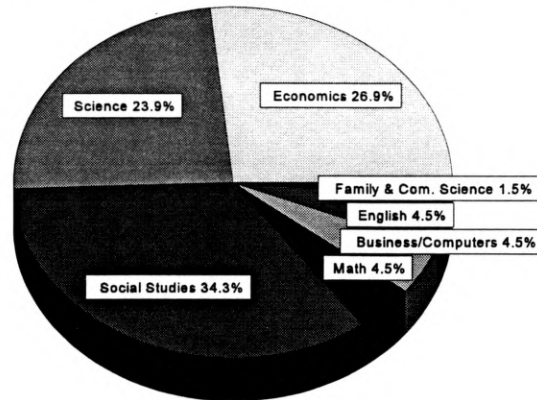


Figure 6 identifies the classes in which environmental education is most frequently integrated into. It should be noted however that very few respondents identified the class of integration. Of the 106 respondents that integrate environmental economics, only 67 identified which class. Of those that did share this information, 34% include the environmental education concepts as part of the Social Studies curriculum. Twenty-Six percent include it in economics classes and 23% include it in science classes. This is different than the current literature finding that environmental education is most commonly found in the Science area.

The following pie charts represent the reasons the responding schools were unable to offer environmental, economic, or environmental economic concepts either as integrated subjects or as specific classes.

Figure 7
Reasons Why Environmental Education is Not Offered

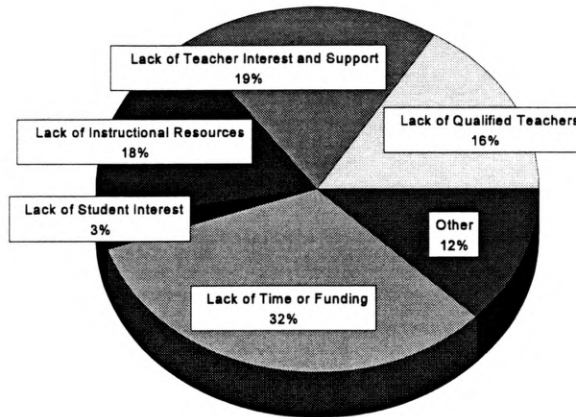


Figure 7 identifies the lack of time and funding as the most frequent reason why environmental education is not offered. When the respondents who answered “other” were asked to specify the reason, the most frequent response was because they were not required to. Other reasons not listed included “concept not included in text book”, “idea so new that it isn’t included in curriculum yet”.

Figure 8
Reasons Why Economic Education is Not Offered

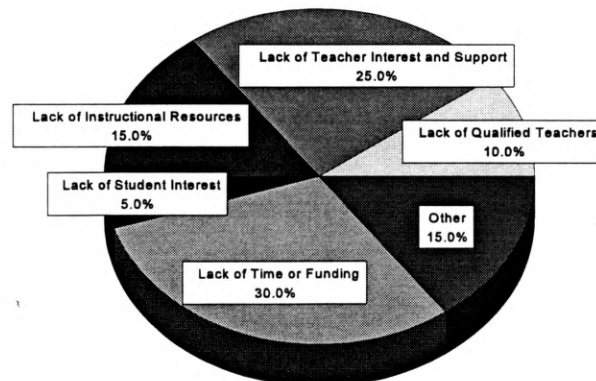


Figure 8 shows the same trend as figure 7. Lack of time and funding is the most frequent reason economic education is not taught in the responding schools. Interestingly, lack of teacher interest and support was a close second with 25%. Keep in mind that only 13% of the responding schools do not offer economic education so figure 8 represents a small portion of the responding population.

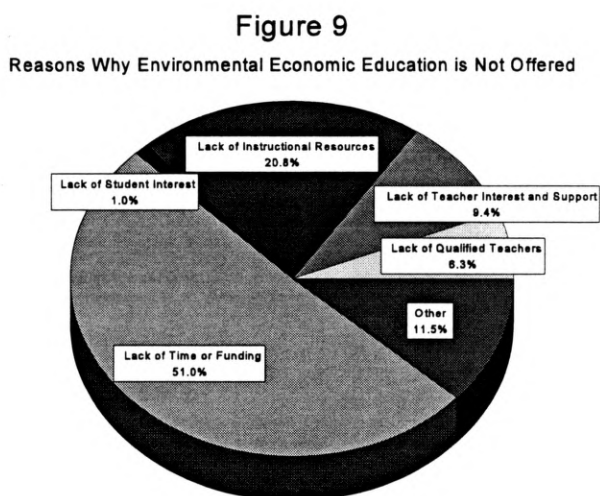


Figure 9 also shows that lack of time and funding as the biggest obstacle to teaching environmental economic education, claiming 51% of the responses. The second highest reason, claiming 21% of the responses, is lack of instructional resources. When asked to elaborate, many respondents stated a desire for more case studies, computer simulations, and hands-on activities that could be used to demonstrate the concepts of environmental economics.

The remainder of the survey questions asked those who successfully integrate environmental economics into their curriculum to share their methods and approaches. Respondents were also asked to rate the usefulness of the workbook *Economics and the*

Environment--Eco Detectives, a lesson plan book given to many workshop participants by PERC. Finally, participants were asked the length of classroom time that was dedicated to teaching the theories of environmental economics.

Figure 10
Instructional Material Used

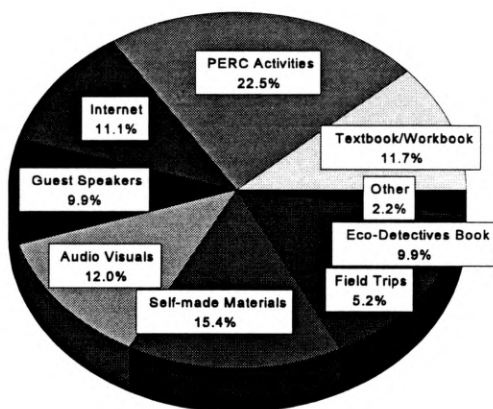


Figure 10 shows a wide variety of materials used to assist in the teaching in environmental economic education. Activities from PERC workshops is the most frequently used, followed by materials developed by the teachers. The Internet proved to be another valuable source for material as were national newspapers (identified in the other category).

Figure 11
Teaching Approach

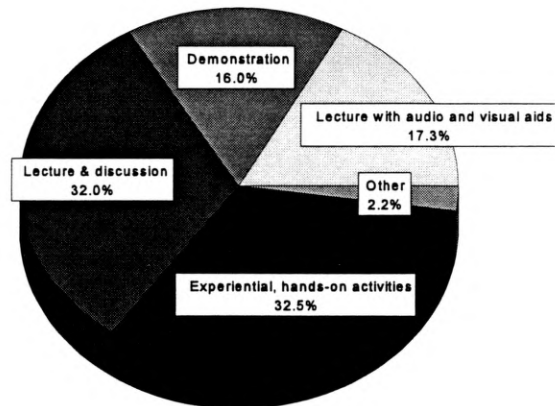
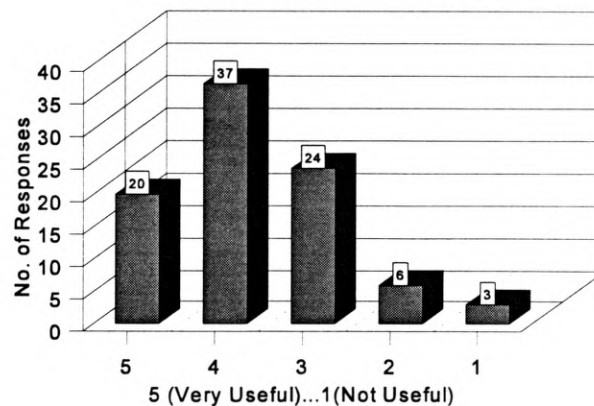


Figure 11 identifies experiential activities as being the most popular approach to teaching environmental economic principles. Approaches mentioned in the “other” category included small group discussion and research projects.

Figure 12
Eco-Detectives Workbook Ranking



The Eco-Detectives workbook, published by the National Council on Economic Education, ranked fairly high in the types of materials used to teach environmental economic theories (Figure 10) receiving 10% of the responses. Figure 12 shows the results of the respondent's ranking of this book. Participants tend to find this book useful. Only 9 users ranked this book below average.

Figure 13
Class Time Dedicated to Environmental Economics

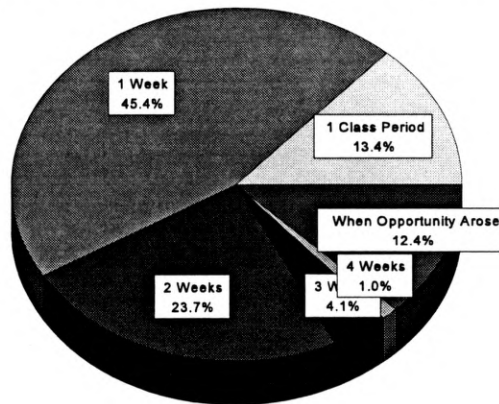


Figure 13 identifies the most common length of classroom time dedicated to the instruction of environmental economics is 1 week, followed by 2 weeks. This survey question frequently received a “write-in” response that the researcher had not anticipated. This response is the final option, “when opportunity arises”. Twelve percent of the respondents stated that they include environmental economic lessons sporadically, whenever an opportunity presents itself.

Summary

Respondents came from various levels of education (elementary, middle, secondary, and post-secondary) and various lengths of PERC instruction (1 hour, 1-4

hours, 1-2 days, more than 2 days, and 1997 summer conference). The researcher anticipated that as the grade level increased, respondents would feel more positive about environmental economic concepts. Instead no major differences among grade level were found. Overall, respondents attitudes and responses were very positive toward environmental economic principles and theories. Agreement was strong that environmental, economic, and environmental economic education should be taught in school. If not at the K-8 grade level, then definitely by the 9-12 grade level. Groups also agreed that environmental economics is a helpful tool when evaluating environmental issues and should be used along with traditional environmental education methods.

Survey results indicated that responding PERC participants teach in schools that offer environmental education as a topic integrated in other subjects, economic education as a specific class, and environmental economic education as a topic integrated in other subject areas. There was a definite trend in which schools had been successful in integrating the concepts of environmental economics. Those that had received the most training in PERC workshops taught the most environmental economic lessons. Those that were unable to integrate environmental economics found that lack of time and funding to be the obstacle. This barrier would fit the “logistical” category of barriers as defined in current literature.

A wide variety of resources and approaches are used to teach the concepts of environmental economics. The most popular resources are PERC activities which includes their lesson plan book *Economics and the environment--Eco Detectives*, rated highly by the respondents. While most teachers spend 1 week focusing on the theories of

environmental economics, 24% of the respondents have found that the topic often arises during units on other subjects and can be included nicely into these other unit's plans.

Many respondents took advantage of the final survey questions asking for additional comments and suggestions. These comments can be found in their entirety, grouped by length of workshop training, in appendix C.

CHAPTER V

CONCLUSIONS AND RECOMMENDATIONS

Introduction

The purpose of this study was to determine the effectiveness of PERC environmental economic training. This training was provided to teachers in various forms ranging from 1 hour lectures to a week long conference conducted summer of 1997.

To achieve this purpose questionnaires were administered to 414 PERC participants. A return rate of 47% was attained. Responses from these questionnaires were tabulated and analyzed in Chapter IV.

Conclusions

1. Respondents that had attended longer amounts of programs had integrated environmental economics more frequently than those with little training. More than 80% of the participants that have attended more that 2 days of training have successfully integrated the theories of environmental economics into their classes.
2. Respondents supported the teaching of environmental economics as an additional strategy in interpreting environmental situations.
3. Logistical barriers (lack of time, funding, and resources) were the most common obstacles for the schools that were unable to include environmental economics in their curriculum.
4. Environmental economics is most frequently taught in 1 week units by the schools that have been successful in adding this topic to their curriculum.

5. Those that teach environmental economics do so with a variety of methods and materials. The most common are hand-on activities and activities developed by PERC.
6. Inservice programs identified in current literature have been successful in improving teachers attitudes toward environmental topics but has been unsuccessful in overcoming time restraints and other logistical barriers. This study shows that PERC programs have overcome this problem. Sixty-seven percent of the participants have integrated the concepts of environmental economics into their program.

Recommendations

Based on the previous conclusions and the review of literature, the writer makes the following recommendations.

1. Environmental education has had a rocky start. Many programs have been abandoned because of controversy. Environmental economic principles are useful tools in evaluating environmental issues and have been positively received as an alternative approach to environmental education. These principles should be considered in addition to the traditional environmental education practices. Programs that illustrate the environmental economic principles should continue to be offered.

2. PERC's programs that have been most successful in providing teachers with information and instructional strategies are longer than 2 days. The 1997 summer conference was particularly well received. The hands-on information it was able to provide with the field trips and expert speakers was invaluable to the participants. PERC should consider their 1997 program very successful and consider sponsoring more programs with this type of format in the future.

3. PERC should be careful to present their information in a balanced format.

Some participants, especially those attending the short programs, view the theory as biased as information made available from environmental extreme groups such as Earth First and Green Peace. (This recommendation is based on the comments provided in appendix C.)

4. PERC materials have been very helpful in supporting the environmental economic principles. Further development of activities (computer simulations and case analyses) would be well received and further promote the concepts of environmental economics.

5. Since economics significantly impacts our daily lives, teacher training programs should assure that basic economic principles and concepts be included at all levels of teacher preparation.

6. Since many current teachers have never had a basic course in economics, in-service programs should be designed to include basic economic principles and concepts.

BIBLIOGRAPHY

- Anderson, Terry L., and Donald R. Leal. (1991) *Free Market Environmentalism*. San Francisco: Pacific Research Institute for Public Policy.
- Bainer, Deborah. (1995, April) "The impact of Reform-Based Partnerships on Attitudes Toward Environmental Science and Partnering and on Classroom Instruction." Paper presented at the Annual Meeting of the American Educational Research Association. San Francisco CA.
- Becker, Thomas. (1997) "The Greening of a Business School." *The Journal of Environmental Education*, Vol. 28, No. 3, 5-9.
- Ham, Sam H., Mary H. Rellergert-Taylor, and Edwin E. Hrumpe. (1987) "Reducing Barriers to Environmental Education." *The Journal of Environmental Education*, Vol. 19, No. 2, 25-33.
- Lane, Jennie, Richard Wilke, Randy Champeau, and Dan Sivek. (1995) "Strengths and Weaknesses of Teacher Environmental Education Preparation in Wisconsin." *The Journal of Environmental Education*, Vol. 27, No. 1, 36-45.
- Sanera, Michael, and Jane S. Shaw. (1996) *Facts Not Fears: A Parent's Guide to Teaching Children about the Environment*. Washington D. C.: Regency Publishing, Inc.
- Santopietro, George D. (1995, June) "Raising Environmental Consciousness Versus Creating Economic Incentives as Alternative Policies for Environmental Protection." *Journal of Economic Issues*, Vol. 29, 517-524.
- Satchell, Michael. (1996, June 10) "Dangerous Water? Why Environmental Education is Under Attack in the Nation's Schools." *U.S. News & World Report*, 63-64.
- Schug, Mark C., and Richard D. Western. (1997, October) "An Economic Perspective on Protecting the Environment." *Social Education, Economics and the New Environmentalism*, Vol. 61 No. 6, 329.
- Simpson, Michael. (1997, October) "Editor's Notebook." *Social Education, Economics and the New Environmentalism*, Vol. 61 No. 6, 307.

- Smith-Sebasto, N. J., and Theresa L. Smith. (1997) "Environmental Education in Illinois and Wisconsin: A Tale of Two States." *The Journal of Environmental Education*, Vol. 28, No. 4, 26-36.
- Wade, Kimberly S. (1996) "EE Teacher Inservice Education: The Need for New Perspectives." *The Journal of Environmental Education*, Vol. 27, No. 2, 11-17.
- Wentworth, Donald R., Mark Schug, and John S. Morton. (1997, October) "Who Worries About the Future of Chickens as a Species?." *Social Education, Economics and the New Environmentalism*, Vol. 61 No. 6, 331.

APPENDIX A

QUESTIONNAIRE

Purpose Statement

This questionnaire will be used to determine how attendance of *Political Economy Research Center* (PERC) environmental economic programs has affected educator's attitudes toward environmental and economic issues.

Directions

Section I

Please place a check mark (✓) on the appropriate line and answer the questions that apply to your school.

1. What is the student enrollment of the school in which you teach?

☐ Less than 300 ☐ 301 to 600 ☐ 601 to 900 ☐ 901 to 1,200	☐ 1,201 to 1,500 ☐ 1,501 to 1,800 ☐ 1,801 to 2,100 ☐ Over 2,100
---	--

2. What is your position within the school? (Check all that apply)

☐ Administrator	☐ Teacher (What area(s))
--	---

3. With what grade level do you work? (Check all that apply)

☐ Elementary (K-6) ☐ Middle (7-8)	☐ Secondary (9-12) ☐ Post-Secondary (beyond 12)
--	--

4. How many years have you been in your current position?

☐ 1-5 years ☐ 6-10 years	☐ 11-15 years ☐ More than 15 years
---	---

5. How many **environmental economics** programs have you attended?

☐ 1 ☐ 2 or 3	☐ 4 or 5 ☐ More than 5
---	---

6. How long has it been since you attended your most recent program?

☐ 1-6 months ☐ 7 months-12 months	☐ 1-2 years ☐ More than 2 years
--	--

7. How much time have you spent in workshops committed to **environmental economics**?

☐ 1 hour ☐ 1-4 hours	☐ 1-2 full days of instruction ☐ More than 2 days
---	--

More on back (33)

Section II

Please use the following scale to indicate your level of agreement/disagreement with the following statements. (Circle the corresponding attitude)

	Strongly Agree SA	Agree A	Disagree D	Strongly Disagree SD
8. It is important to integrate environmental economics education into the subject area(s) or the grade level I teach?	SA	A	D	SD
9. Teachers should help students develop values and feelings toward the environment.	SA	A	D	SD
10. Attendance of a PERC program supplied me with specific lessons that were (will be) integrated into my curriculum with little adjustment.	SA	A	D	SD
11. Environmental education should be taught in primary schools. (K-8)	SA	A	D	SD
12. Environmental education should be taught in secondary schools. (9-12)	SA	A	D	SD
13. Environmental economic education should be taught in primary schools. (K-8)	SA	A	D	SD
14. Environmental economic education should be taught in secondary schools. (9-12)	SA	A	D	SD
15. Economics should be taught in primary schools. (K-8)	SA	A	D	SD
16. Economics should be taught in secondary schools. (9-12)	SA	A	D	SD
17. I am comfortable with my ability to teach environmental economic education lessons.	SA	A	D	SD
18. I find the environmental economic approach to environmental problems interesting.	SA	A	D	SD
19. "Market solutions" to environmental concerns should be taught to students and considered along with usual government mandated solutions.	SA	A	D	SD
20. Environmental economics is a helpful tool when evaluating environmental issues.	SA	A	D	SD
21. Traditional environmental education focuses on building a positive environmental attitude. Environmental economic education emphasizes getting the "incentives right" in order to promote positive environmental education. It is appropriate to offer both strategies to today's students.	SA	A	D	SD

More on next page(⇐)

Section III

Please place a check mark (✓) on the appropriate line and answer the questions that apply to your school.

22. Is **environmental** education presently offered in your school?

☐ YES (integrated in other subjects) ☐ YES (a specific class)
☐ NO
 If NO, why isn't environmental education presently offered in your school?
☐ Lack of qualified teachers ☐ Lack of student interest
☐ Lack of teacher interest and support ☐ Lack of time, or funding
☐ Lack of instructional resources ☐ Other (please specify) _____

23. Is **economic** education presently offered in your school?

☐ YES (integrated in other subjects) ☐ YES (a specific class)
☐ NO
 If your answer to question 23 was NO, why isn't economic education presently offered in your school?
☐ Lack of qualified teachers ☐ Lack of student interest
☐ Lack of teacher interest and support ☐ Lack of time, or funding
☐ Lack of instructional resources ☐ Other (please specify) _____

24. Have you been able to integrate **environmental economics** into your school's curriculum?

☐ YES (Please specify subject area) _____ (Please answer questions 25-28 before continuing on to section IV)

☐ NO (Please go to question 29 before continuing on to section IV)

25. If integrated in other courses, what is the amount of time spent teaching **environmental economic** education?

☐ 1 class period ☐ 3 weeks
☐ 1 week ☐ 4 weeks
☐ 2 weeks ☐ More than 4 weeks (please specify) _____

26. Which type of instructional material do you use in teaching **environmental economics**?

☐ Textbook and/ or workbook ☐ Audio visual
☐ Activities taken from PERC programs ☐ Materials developed yourself
☐ Internet ☐ Field trips
☐ Guest speakers ☐ Eco Detectives workbook
☐ Other (specify) _____

27. Please rate the *Economics and the Environment--Eco Detectives* workbook you received at the PERC program.

(Very Useful) 5 4 3 2 1 (Not Useful)

28. Which approach do you use when teaching **environmental economics**?

☐ Lecture and/or audio visual ☐ Lecture & discussion
☐ Demonstration ☐ Experiential, hands-on activities involving students
☐ Other (Please specify) _____

More on back (33)

29. What is the reason you have not integrated **environmental economics** into your curriculum?
- | | |
|---|---|
| ☐ Lack of qualified teachers | ☐ Lack of student interest |
| ☐ Lack of teacher interest and support | ☐ Lack of time, or funding |
| ☐ Lack of instructional resources | ☐ Other (please specify) |
| | _____ |

Section IV

30. What additional materials do you (or would you) find helpful in teaching the theories of **environmental economics**?

31. Please provide any comments or suggestions regarding the PERC program you attended.

If you would like a copy of the survey results mailed to you, please include your name and address below:

THANK YOU FOR YOUR HELP!



APPENDIX B

November 26, 1997

Dear Educator:

Thank you for taking the time out of your busy schedule to read this letter. I am a teacher myself and understand the limitations of your time. I am also a graduate student at Montana State University-Bozeman, College of Business. It is in this capacity that I am asking for your help.

All teachers who have attended a *Political Economy Research Center* (PERC) program on environmental economics are being asked to complete the enclosed survey. The purpose of the survey is to evaluate the environmental economics program training. This will assist PERC in developing future programs that will provide teachers with materials, skills, and information useful in classroom application. I am not an employee of PERC and will keep your responses confidential. Like yourself, I have attended a PERC environmental economic program and received the same information you have.

Completion of the survey will take no more than 12 minutes. Please return the survey in the enclosed self-addressed, stamped envelope.

Enclosed is a piece of gum for you to enjoy as you "chew" on the questions in the survey. Please accept it as a "thank you" for your time. Your participation is valuable to this study and greatly appreciated.

Sincerely,

Nancy Nicholson
Graduate Student

Enclosure

APPENDIX C

1997 Week-Long Teachers Conference

What additional materials do you (or would you find helpful in teaching the theories of environmental economics?

1. The Wall Street Journal has had many articles on the subject lately, as has the WSJ Classroom Edition. The National Council on Economic's focus series also has several good lessons on the field.
2. Copies of editorials from major newspapers published by PERC associates.
3. I have read Facts not Fear and Breaking the environmental Policy Grid Lock. I have also recently purchased Eco-sanity-all are great resources. Eco detectives and economics and the environment are also wonderful for teaching environmental economics. The problem is finding adequate space/time to fit the material in.
4. Wish I had time and wherewithal to teach side-by-side with the environmental teacher, could add real depth.
5. As many case studies as possible.
6. I would like to find more guest speakers and hands-on activities.
7. I teach ecology. Therefore any material related to or tying together ecology and economics would be useful.
8. I would like short segment videos (20-30 minutes) in which to build/complement lessons.
9. More data and articles.
10. Whatever the experts find and continued receipt of PERC Reports publication. Would hope Iowa Council on Economic Education figures out how valuable PERC program is!!
11. Would like access to more of the materials published by PERC.
12. Nothing specific. I think I have a variety of materials but simply need to make the time to use them.
13. Any materials available from PERC. A significant amount of materials from the Free Enterprise Institute. A significant number of Terry Anderson's and Mark Schug's materials and books.
14. Open to available resources.

Please provide any comments or suggestions regarding the PERC program you attended.

1. The program I attended helped me become aware of the areas in which I relate to my students. Without the insight I received at the seminar I don't think I would be integrating environmental economics (issues) into our curriculum.
2. Without a question, the PERC experience was one of the most rewarding educational experiences I've had. I definitely recommend this experience to all educators. The individuals involved in the program last summer were informative and extremely helpful. The entire staff at PERC were some of the nicest, most congenial individuals I've ever worked with.

3. I think the PERC program is great for economics teachers and should be broadened to include business, science, environment, and agriculture teachers.
4. Outstanding.
5. A very worthwhile week spent! Presentations were informative, thought provoking, and interesting. Field trips were exciting and really made the material discussed more real!
6. The PERC program that I attended was very organized and inciteful. I learned a lot as a result of my attendance.
7. Program was excellent in almost every regards, but could have devoted more time to the instructional aspects--model lessons, lesson development.
8. I truly enjoyed the PERC program and found it very useful. My only concern about the entire subject is that I do not want our national parks, forests, etc. to become owned by individuals or companies to make money or become more monopolized than the government has already done. I believe the EPA and other environmental agencies have done some positive things.
9. This program was very enlightening. It opened my eyes to new dimensions in environmental economic education. I have altered all my lesson plans due to the information I received.
10. Was an excellent enriching program! A++
11. Outstanding in every respect.
12. The program and activities were excellent.
13. Fantastic, wonderful experience. Would like to do it again--now that I've had a chance to integrate some of it. Would reinforce and add new level of meaningfulness. Maybe some of us could be hosts or some such at future conferences.
14. The PERC program is a wonderful resource for teachers to utilize in helping students make better decisions on the environment. Students and the public need to understand that the government does not have the monopoly on environmental solutions. With the current summit in Japan, people need to realize all is not lost, and the environment is not going to be destroyed overnight.
15. It was excellent and had much useful information. The word needs to be spread. I will be doing a presentation about this in April at our state social studies convention.
16. More actual lessons from the Eco Detectives and the National Council's Economics and the Environment could have been taught and simulated. The faculty and field trips were superb as were the PERC handouts. A great week well spent! Questions on the Pre and Post tests should be covered before we depart.

Attended more than 2 days worth of training

What additional materials do you (or would you find helpful in teaching the theories of environmental economics?

1. PERC materials.
2. Any new materials or videos would be appreciated.

3. More training.
4. Case histories.
5. Continued up-dates on Montana issues. More courses.
6. I always appreciate gaining "hands-on" type activities to use with active middle school students.
7. District workshop.
8. More of a balanced approach--perhaps arguments for and against. Eco-detectives seems pretty biased and I don't agree with some of the forecasts.
9. Computer Programs

Please provide any comments or suggestions regarding the PERC program you attended

1. I enjoyed them.
2. More programs are needed.
3. Needed more direct classroom application.
4. Time line was too intense-lost interest at times due to over saturation.
5. It was presented in a very interesting forum.
6. Needed a second day almost--It was a packed day of great info.
7. I found it to be interesting and informative--gained some useful activities to use in my classroom.
8. I attended 1 day-- I think 3-5 days would have been better.
9. Scheduling too long--missed some concepts because of fatigue.
10. Needed more classroom application. Not very useful to classroom activities.
11. I thoroughly enjoyed business week at MSU and it gave me a broader perspective of economics and environmental issues.

Attended 1 to 2 days worth of training

What additional materials do you (or would you) find helpful in teaching the theories of environmental economics?

1. Current Virginia=VA book.
2. Trade books for k-6 reading level, fiction and nonfiction. The Lorax by Dr. Suess and A River Ran Wild by L. Cherry.
3. More hands-on, experiential lessons to integrate into other subjects.
4. High interest videos modeling peers demonstrating concepts.
5. News articles and magazine pictures.
6. Videos on the geographical areas I'm currently teaching: Eurasia, Africa, Mid east.
7. More case studies.
8. More economics materials.
9. Scenarios were students conclave out a decision.
10. Video and guest lectures in area

11. A video presentation highlighting the specific principles of environmental economic education would be helpful.
12. Lesson Plans, specific activity books.
13. Can everything be quantified? Look at land use vs erosion, Rangeland management, Alaska oil?
14. Any relevant materials and issues that will impact our people and society.
15. Anything!
16. Newspaper/magazine articles. Any PERC materials.
17. Computer programs and simulations.
18. The material I received at the PERC program will be used in my economics classes after Christmas. I feel I need more training and an introduction to some of the material used in the area.
19. Text concerning the theories of environmental economics, lesson plans, and student handouts.
20. More simple, user friendly lesson plans for slower students.
21. Video, CD, Video Disc, pamphlet style information.
22. More training opportunities.
23. Curricula, lesson plans, and unit plans.
24. More workshops.
25. Love those workbook applications.
26. Specific and recent information about Montana sent regularly with the newsletter.
27. Audio-visual tapes about cases such as the nature conservancy in Louisiana.
28. I'd like to see information that has more than one point of view.
29. Up to date examples.
30. A mandated economics course in all secondary schools.
31. Color transparencies.
32. Newspaper articles and latest research on cost vs. environment dealing with issues such as logging vs. owl, fishing vs. industry.
33. Good videos, sample mini-lessons for teachers.
34. More case study materials.
35. Additional texts.
36. This is my first experience with PERC materials and training. I am impressed but have not had a chance to use them widely in my classes.
37. Updated audio visual information!
38. A greater selection of affordable resource material.
39. Low cost units that are age appropriate which teachers could utilize much the same way they do with 'Scholastic Magazine'.
40. Take the politically correct materials we get from the government and answer point by point.
41. More ways to include environmental economics lesson plan ideas.
42. Hands-on activities included in a Environmental/Environmental Economics unit. More hands-on materials, Non-isolate material that blends economics and social issues, broader based materials, Internet site, exchange of ideas for teachers.

- 43. Curriculum and funding ideas.
- 44. Some stuff from radical environmentalists like Earth First.

Please provide any comments or suggestions regarding the PERC program you attended.

- 1. Was most interesting and I had never thought quite so much about how environment and economics are connected like a "hand to an arm"-very closely.
- 2. Keep at it!
- 3. Well run, good ideas. Since my class is near the bottom of the grade range aimed at, I need to do a lot of modification to the curricula.
- 4. Too much politics in program. I do not believe economic environmental education needs to be portrayed as industry vs. government mandate. This is particularly true at the elementary level.
- 5. I thought that the workshop was excellent. I would like to integrate this information into my curricula; but have no support from the school and most teachers on my team. In the future, if I can create a team with similar interests, I hope to incorporate much more economics. I feel it is important to start this at least in the 7th grade.
- 6. Coordinator did not fully understand the role of teachers (I felt manipulated into doing things I'd rather not do).
- 7. Enjoyed it very much.
- 8. Well presented, good insights.
- 9. It didn't feel very "green" at times-in terms of green meaning pro-environment, it was green in terms of \$ the whole day.
- 10. The speaker was fantastic! He gave real world examples I could use in my classes.
- 11. A different way of thinking about environmental education.
- 12. I felt the program was one-sided. The two fellows had some very interesting points but had nothing positive to say about E.P.A. Present some lecture, but present all the lessons in the booklet.
- 13. Continue to emphasize a moderate tone so as to convince people that you can support open markets and maintain a positive stance toward the environment.
- 14. More workshops like the one I attended.
- 15. Outstanding help in providing timely useful materials.
- 16. I thought the workshop I attended was wonderful and love the workbook, it is easy to use, fun discussions, and the students enjoy the easy to understand examples which make the economic concepts easy to grasp--a common comment is "Gee, I never thought about it that way!!"
- 17. It was excellent!
- 18. I appreciate the PERC newsletter that arrived the other day! The PERC program I attended was very professional and worthwhile for the educator ideas.
- 19. It was outstanding! I gained a new insight to economic education.
- 20. More Workshops.
- 21. It was great, I'd like to see more.
- 22. I enjoyed the program help in Richmond.

23. I enjoyed it, I learned a lot. I became aware of economics and the part it plays in cleaning up and maintaining the environment.
24. I found the PERC conference very informative and the materials (eco-detectives), etc. useful in integrating environmental economics into my course material. I teach world cultures and family life to grades 9-12. During 2nd semester I will use the materials received at the conference while teaching the Industrial revolution and interdependence of nations. In "family life" it will be used as we study health and being a responsible consumer/citizen.
25. Start from basics.
26. I enjoyed the workshop and benefited from it. I can always use good supplemental materials.
27. Well organized, lots of ideas. Do we always think of economics when we take some form of action? Don't we sometimes act out of or react out of emotion?
28. Very enjoyable--I have used some of the ideas already!
29. The ones I attended I thought were great.
30. Eye opening!
31. Very good presentation and great examples. I'm not 100% convinced their theories are the best but I think it's important to present all possibilities to students so they can make up their own minds.
32. Time most valuably spent. Quality presentation and materials.
33. It was very informative. Materials are great.
34. Interesting-not all of it relevant to my area. Good Luck!
35. It was extremely interesting and enlightening to me personally but hard to translate into our program/curriculum here at GSES (Good Shepard Episcopal School).
36. To be successful you need to get kids thinking much earlier, K-3.
37. I think your PERC people are too Republican and conservative and you have the economic paradigm of the early 80's. Try looking globally to the 21st century.

Attended 1 to 4 hours worth of training

What additional materials do you (or would you) find helpful in teaching the theories of environmental economics?

1. Web sites, data to use.
2. Specific lessons, more staff training, materials. Any materials that contain single economic concepts related to the environment that could integrate into history classes.
3. Lesson plans, graphs about data, video (short), discussion topics.
4. Series of Science American articles elaborating on some non-traditional approaches, models for environmental assets.
5. My textbook is over 10 years old. I am in dire need of pertinent curriculum.
6. Politically far right.

7. Case studies, simulations.
8. Lesson ideas.
9. Workbooks with case studies.

Please provide any comments or suggestions regarding the PERC program you attended.

1. Interesting point of view perhaps a little too “capitalism will solve all environmental problems” approach.
2. Workshop and workbook make some valuable points, but some exercises do appear to be biased and give the perception of a political agenda. I would use it as a foil to teach critical thinking.
3. Make it more available and advertise the availability through econ councils at state level and Internet.
4. They need to be offered in more locations, in Washington they are only (or seem to be) offered in the greater Seattle area.
5. Feel I need to know more, need time.
6. It was quite informative and interesting.
7. I found the program very enlightening. I have used several activities out of the Eco-detectives book. I think this provides the students with a fresh perspective on discussing the environment.

Attended 1 hours worth of training

What additional materials do you (or would you) find helpful in teaching the theories of environmental economics?

1. Specific plans within each curricular area.