An Environmental Quiz That Can Open the Door to Inquiry and Learning About Forests & Forestry

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Introduction

Note: This article discusses the development and use of an environmental quiz that was created for use with a variety of student and adult audiences. Before proceeding further, if you wish to experience the quiz firsthand, it can be downloaded from: http://www.dovetailinc.org/documents/EnviroQuiz.pdf ; completion requires about 10 minutes.

Just for fun sometime, ask your kids, grandkids, or another child what they know about forests. What you will find – and this observation is supported by surveys of many young people over a fifteen year period – is a pervasive pessimism about not only forests, but about the environment in general. Moreover, if you ask questions that have verifiable answers (for instance, trends in forest land area, trends in forest growth and harvest, percent of paper collected for recycling) you will encounter answers that are consistently and significantly to the pessimistic side of wrong.

Narrowing the gap between perception and reality requires that students be engaged in thinking and discussion about forests – where they are, how forests in various regions differ, how forests change through time, forest trends, the basics of forest succession; the types and uses of products that come from forests. What is needed is more than a presentation, a video, or a book. Ideally, at least a portion of learning can occur within a forest, but in any event opportunity must be provided for discussion, questioning, informal responses to questions, and more questions. An environmental quiz that has been found useful in initiating such discussion and exploration is available.

An Environmental Quiz

In 1991 a short environmental quiz was developed at the University of Minnesota and has been administered to students annually since that time. This quiz has been extremely useful in stimulating discussion about forest and environmental trends. Focusing on topics from population to raw material consumption trends, the quiz actively engages those who participate in filing it out, stimulates comparison of answers and interaction among participants after the quiz is completed, and provides an entrée to informal discussion and further questions as correct answers are shared.

Origins of the Quiz

The environmental quiz was initiated on one of those crisp, cold days of a Minnesota February following a particularly contentious class session. In 1991, about 100 students representing seven of the University of Minnesota's nineteen colleges had enrolled in a course entitled "Raw Materials and the Environment," a course in which topics ranging from population and economic growth to consumption and environmental trends were

explored. Discussions were particularly interesting that winter quarter, stimulated by the varied backgrounds and interests of the students.

Things went rather smoothly right up to the day when class discussion turned to forests and forest harvesting. By the end of that class session, questions had turned from challenging and stimulating to pointed and hostile. In over 20 years of teaching forestry and forest products-related topics the course instructor had never experienced anything like it. Troubled by the exchange, but determined to better understand where students were coming from, a 25-question quiz was written for use in the next class period. The quiz focused on a number of environmental, economic, and consumption trends.

What the Quiz Tends to Reveal

Student responses to the "environmental quiz" were rather surprising. To every question to which there was a factual, verifiable answer, responses were overwhelmingly to the pessimistic side of wrong, and in almost all cases by a very wide margin. The hostile questions now came into focus. Class members believed that forests worldwide were being decimated, and decimated by logging activity; that the world was on the brink of running out of many important raw materials, and that recycling activity in the U.S. was basically non-existent – none of which was accurate.

A few weeks after the surprising test results, findings were informally shared with a number of professors gathered at a national conference. Plans quickly emerged for testing a number of students at major universities across North America. Over 1,000 students at eleven major universities took the environmental quiz in the fall of 1991. Responses were remarkably similar to those obtained earlier at the University of Minnesota. Again, the responses to *every single question* were to the pessimistic side of wrong.

Subsequently, with minor changes made periodically to update information, the quiz was given annually to University of Minnesota students enrolled in the Environment and Natural Resources curriculum. The most recent quiz was administered in January 2006.

Several examples of quiz questions and responses follow. Percentages shown within parenthesis indicate responses from the 2006 student survey.

- Q: The area covered by forests in the United States today is approximately _____ of the forested area that existed in 1600.

  a. 70 percent (4%)
  b. 50 percent (5%)
  c. 33 percent (19%)
  d. 25 percent (24%)
  e. 17 percent (48%)

  A: There are 749 million acres of forests in the U.S. today, about 68% of the 1.044 billion acres of forests estimated to have covered what is now the United States in the year 1600. Note that the lower the percentage (or the further from reality), the greater the number of responses.

- Q: True (T) or False (F). The geographic area that encompasses the United States today has a greater extent of forest coverage than the same geographic area did in 1920.

  T – (41%)
  F – (59%)

  A: This statement is true. In 1920 there were an estimated 732 million acres of forest covering the area that now comprises the United States. Today there are 749 million acres of forest. The current forested area is 0.8 to 1.5 percent smaller than the forest area of approximately 755 to 760 million acres that existed in 1907 and again in 1970.

- Q: Which of the following statements most accurately describes United States forests:

  a. forest harvest exceeds net growth by 8 percent. (20%)
  b. forest harvest exceeds net growth by 3 percent. (44%)
  c. forest harvest roughly equals net growth. (20%)
  d. net forest growth exceeds harvest by 19 percent. (13%)
  e. net forest growth exceeds harvest by 48 percent. (2%)

  A: Net growth of forests in the United States substantially exceeds harvest. In 1993 it was estimated that growth exceeded harvest on lands classified as timberland (i.e. on those land areas available for harvest by 31%). In the most recent assessment (USDA-Forest Service, RPA Assessment 2000) net growth was estimated to exceed harvest by almost 50% (e). When all lands are counted (including those forest lands designated as reserves or preserves) the net growth to harvest ratios are higher than those indicated above. Note that responses are almost exactly the reverse of reality.

- Q: True (T) or False (F). At current rates of deforestation, 40 percent of current forests in the United States will be lost by the middle of the next century.

  T – (65%)
  F – (35%)

  A: This statement is False. Forests actually increased in area coverage in the United States between 1985 and 2004. However, due to continuing growth of urban areas and building of highways, it is predicted that 3 to 5% of the current area of forest land in the U.S. could by lost by 2050. Two-thirds of responders incorrectly indicated that this statement is true.

- Q: True (T) or False (F). In the U.S. and globally, more species of plants and animals have been driven to extinction by logging activity than any other activity of mankind.

  T – (85%)

F – (15%)

A: This statement is False. There is no documented evidence of even one plant or animal species having been driven to extinction by logging activity in the United States. The answer to this question is less clear globally, but it is evident that logging is but one of a myriad of human activities, including land clearing for agriculture, urban and infrastructure development, mining, and industrial production, placing pressure on native species. Note that five of every six responders indicated that this statement is true.

- Q:True (T) or False (F). Populations of elk, pronghorn antelope, and wild turkey have declined significantly in the United States over the past 60 years.

  T – (80%)
  F – (20%)

  A: Despite the fact that 80 percent of responders indicated otherwise, this statement is False. In fact, the populations of all these species have <u>increased</u> by over 1,000% (10 x) over the past 60 years. The populations of many other species have increased dramatically as well.

- Q: As a percentage of all the paper used in the United States in 2004, _____ was recovered for reuse.

  a. 2.9 percent (9%)
  b. 6.5 percent (26%)
  c. 14.7 percent (33%)
  d. 29.3 percent (26%)
  e. 49.5 percent (6%)
  f. 60.1 percent

  A: In 2004 (the most recent year for which statistics are available), 49.5 percent (e) of all paper used in the United States was collected for reuse. Again, perception is far from reality.

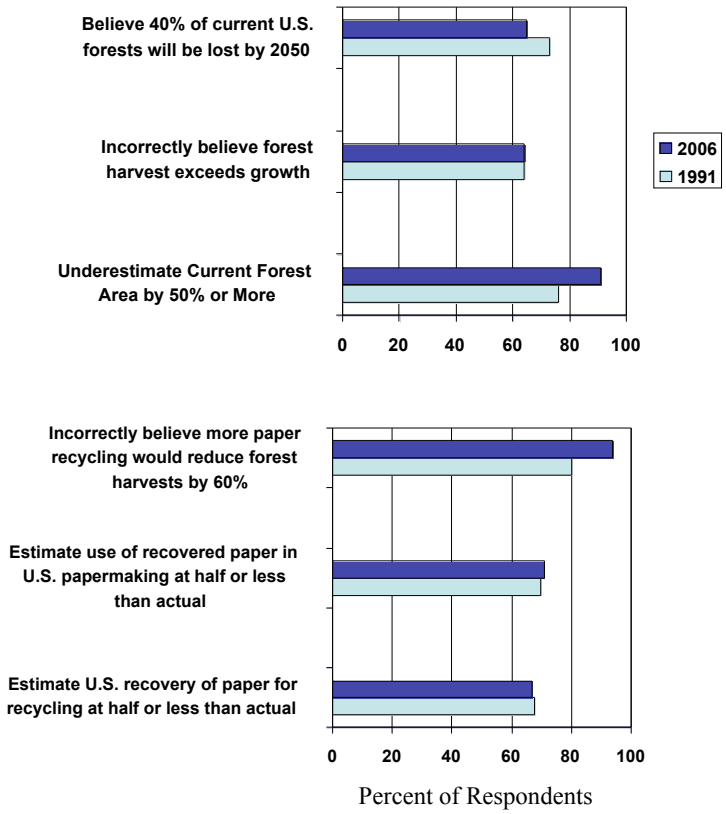
- Q:True (T) or False (F). More extensive recycling of paper could reduce harvesting of forests in the United States by 60 percent or more.

  T – (94%)
  F – (6%)

  A: This statement is False. Several studies have shown that while paper recycling is extremely important, and a major contributor to reducing demand for virgin pulpwood, increasing recycling to the maximum level allowed by current technology would have the effect of reducing demand for virgin fiber by only 12-13 percent. Moreover, when taking into consideration the time that will be required to move to the technological limit of recycling, and the population growth that will occur in the meantime, it is likely that demand for virgin fiber will continue to increase, even with aggressive recycling programs. A stunning 94 percent of respondents incorrectly indicated that this statement is true; given the response to the previous question, it is not difficult to understand why.

Interestingly, quiz responses of 1991 almost exactly mirror those of 2006 (See Figure 1). Moreover, results in every year have been indistinguishable from those before and after.

Figure 1
Comparison of Quiz Responses 1991 and 2006



Getting Back to Reality

Does it make any difference that young people have little knowledge and deep, pessimistic perceptions about forest and environmental trends? Might not this actually be a good thing, since a sense of crisis could bring about action that might otherwise not come about? That is what some believe. However, surveys of students at universities across the United States have revealed a consistent 2-3 percent of students in every audience surveyed who now believe the global environmental situation to be hopeless; anyone who truly believes this is unlikely to do anything to try to change the course of future events. Moreover, in the big scheme of things, young people become adults and societal leaders in a remarkably short period of time, and surveys also show that perceptions gained early in life are slow to change. Thus, young adults have essentially the same perceptions about the environment and of forests as those of children – pervasively pessimistic, with perceptions well separated from reality. The result: people who are now coming into decision-making roles who see the world though glasses

clouded by deep misperceptions about the world around them. Neither the environment nor society is likely to benefit from this situation.

Given the depth and breadth of misperceptions, changing perceptions generally cannot be accomplished either quickly or easily. For example, experimentation at the University of Minnesota has shown that when students who have taken the environmental quiz are subsequently exposed to a single classroom presentation, video, or assigned readings covering the same topics and then re-tested, answers provided by about one-third of students remain largely the same as in the initial testing. Moreover, it has been repeatedly found that when students are exposed to trend data through assigned readings and accompanying class presentations over a period of several weeks, and given during that period an opportunity for extensive class discussion, about 10 to 15 percent of students still do not change their perceptions based on answers to written examination questions at the end of a 16-week academic semester.

Thus the misperception problem is difficult to address, and the solution clearly involves more than exposure to a single lecture, video, or article. What seems to work best is repetition involving a variety of approaches to information delivery and discussion and exploration. A key factor is active engagement.

One way to prepare students or any other audience for exploration of environmental topics is through the use of a pre-test. As noted earlier the environmental quiz actively engages those who participate in filing it out, stimulates comparison of answers and interaction among participants after the quiz is completed, and provides an entrée to informal discussion and further questions as correct answers are shared. An enhanced version that includes answers and commentary serves as an effective follow-up to information delivery and discussion that tends to elicit questions and further discussion. The quiz and the accompanying answer and commentary piece are updated semiannually and FREE, can be downloaded from the Network (http://www.freenetwork.umn.edu/teachers/envquiz.html/).

The Bottom Line

Whether teaching environmental topics or simply debating contentious environmental issues, we must deal with deep underlying assumptions upon which we base our discussions. Whenever there are vast discrepancies and inaccuracies in those underlying assumptions the ability to come to a common understanding is virtually eliminated. Thus resolving these misperceptions is critical to the development of rational programs to address environmental concerns. Although a single educational tool can apparently change the perceptions of a significant number of people, a greater impact can be obtained through active engagement of a target audience, repetition, and further engagement. The University of Minnesota environmental quiz has been found to be a useful tool for use in beginning this process and for building a common ground upon which true progress can be made.

A copy of the enhanced version of the quiz that includes answers and commentary can be downloaded from: *http://www.dovetailinc.org/documents/EnviroQuizAns.pdf*

References

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