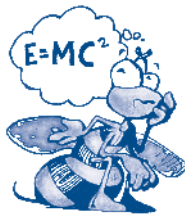


Lesson Plan



Note: This lesson plan can be used with any *Natural Inquirer* monograph or article.

Time Needed: 1 class period

Materials (for each student or group of students):

- *Natural Inquirer* monograph or article
- Sample Student Abstracts
- Abstract Graphic Organizer
- Writing utensil

In this lesson, students are introduced to scientific abstracts and how to read and write them.

Methods:

Prep

Familiarize yourself with a *Natural Inquirer* monograph or article. Review a few scientific abstracts and try writing your own as an example for the class.

Day One

Discuss scientific abstracts with your students. A scientific abstract is a very short version of an entire scientific paper. Although the abstract is placed at the beginning of the paper, it is written last.

The abstract contains enough information for the reader to identify: **1)** the problem and the research question; **2)** how the study was conducted; **3)** the major findings; and **4)** the significance of the results.

An abstract is usually written in one paragraph, just long enough to provide the essential information. The reader of a scientific article begins by reading the abstract. If the article is of sufficient interest, the whole article can be read.

Provide students with a copy of the example abstracts from the *Natural Inquirer* Student Scientist edition. Students should individually read the abstracts, noting the following pieces of information:

1. The problem and research question;
2. How the study was conducted;
3. What was discovered; and
4. The significance of the findings

For each of the abstracts, have students complete the Abstract Graphic Organizer.

After students have completed this exercise, hold a class discussion about whether this was easy or difficult. Use this as a beginning point to discuss the four main sections of a research paper, including Introduction, Method, Findings, and Discussion.

You may divide your class into groups, with each group reading one article. Alternatively, all students can work on the same article. Either individually or in groups, have students write an abstract for the article they read. Students can use the Abstract Graphic Organizer to help guide their abstract writing.

After students have identified the four essential points, have them write the abstract in paragraph form, using the Sample Student Abstracts to guide them.

Hold a class discussion about the value of scientific abstracts. Here are some questions to get you started:

- Did the student abstracts adequately summarize the study they read?
- How my abstracts be used by scientists?
- Should an abstract be used without reading the entire article? Why or why not?

Sample Student Abstracts

The Oxbow and Outdoor Recreation

Our group addressed the recreational issues at the Henry Ford Oxbow. One major problem in urban areas is getting more people involved in outdoor recreation. Greenfield Village, where the Oxbow is located, would like to see more people involved in outdoor recreation activities and also at the same time have fun. Our group went outside and explored the Oxbow to determine what types of activities would be good to have. We observed the Oxbow and determined where different activities might be placed. We also took a survey to see what visitors would really like. Through our research we determined that there are barriers and restrictions everywhere. Regardless of the environment there are things you

should be aware of. The first barrier would have to be safety. Safety means protecting the visitors from poison ivy, animal attacks, and anything else. Another thing that could be a barrier is mosquitoes. Activities should be restricted to daytime, since anyone who is in the Oxbow would need to see what they are doing. Some ideas for activities are making walking sticks, fishing, hiking, and learning the history of the island. Through our survey we learned that visitors would like all the activities we had planned, which worked out well for our group. So now we hope that everyone who did not take our survey feels the same as we do.

Bringing Bats to the Oxbow

The mosquito population in the Oxbow is staggering. Unfortunately they are a menace to tourists because of their huge numbers. The large number of mosquitoes makes the Oxbow one of the least popular attractions in Greenfield Village. Bats are a necessary part of a forest ecosystem. Bats feed on insects that reproduce quickly. Although they provide the best mosquito-eating service, they have gained a bad reputation. We decided that it would be good to attract one species, the Big Brown Bat, to the Oxbow using

bat houses. We went to the Oxbow and identified the best places to put wooden bat houses. As part of our project, we visited the Oxbow and marked potential trees for houses. We recommend placing wooden bat houses on living trees or hollowing out some dead ash trees. These wooden houses should attract bats. If bats are attracted to the Oxbow, the population of mosquitoes will be reduced, making the area more attractive to tourists.

Water Quality and the Oxbow

The Rouge River Oxbow Restoration Project is located at the Henry Ford Museum and Greenfield Village. Until recently, the water quality of the Rouge River had degraded significantly as a result of pollutant loadings from various sources. In general, what we studied was the water quality of the Oxbow. We collected our data on the west bank of the Oxbow in early December 2007. To collect our data, we used

a water scooper that carried about one liter of water. We performed the following tests: pH test, turbidity test, and dissolved oxygen test. Through our research we found that there is a high oxygen level in the water of the Oxbow and that sediment levels are higher than more clear-flowing streams. We concluded that the level of oxygen in the water is good.

Abstract Graphic Organizer

Student name(s): _____

Name of the paper:

What is the problem and what is the question being answered by the research? (3-4 sentences)	
What method or methods were used? (3-4 sentences)	
What was discovered? (3-4 sentences)	
What is the significance of the findings? (3-4 sentences)	