

Learning From Notable Scientists' Field Notebooks

Educator: Josephine Archibald, Instructor, Civil & Environmental Engineering

Context: In-class; ENSC 1500: Environmental Methods

Keywords: field notebooks

Student Activity Time: 15-20 minutes

In the beginning of the term, an educator used field notebooks from notable scientists to prepare students to maintain useful field notebooks.

Introducing the Reflection Activity

Oftentimes, the best way to learn is by following the example of others. An educator offered the field notebooks of notable, historical scientists in order to prompt students to reflect on best practices for keeping notes in a field notebook. The purpose of this activity was to assist students in identifying good habits to create a useful field notebook.

The Environmental Methods course is centered on 3 full-day field trips to observe and take field notes. The samples collected would be the basis for data and analysis throughout the term. Since the field notebook was a critical component and tool for the course, the educator used a class session to focus on the field notebooks. After explaining the purpose and role of field notebooks in the course, the educator distributed a segment of the lab notebooks of well-known scientists to each student. The educator separated students into groups of 3-5 and gave them about 10 minutes to review the field notes, make any observations about the notes, format, content, and any other noticeable features. The educator then facilitated a class discussion so that students could hear other groups' observations about the field notes.

This activity supported students' awareness of the many ways to collect field notes. The educator also used the example field notes to point out items that were expected or important to document in field notebooks for the class, thereby helping students to prepare to for success in the course.

Recreating the Reflection Activity

	Description
1	Teach the concept at hand in class.
2	Ask students to respond to the three question prompts in writing.
3	Collect student responses and analyze.
4	Use the student responses in the next class session.

In the words of the Educator: Tips and Inspiration

Remind students to include their initial thoughts. The activity gives me a solid example to depend on when I am reminding students to include their thoughts in addition to what they are scientifically observing in their field notebooks. The open-ended nature of this assignment helps students to realize that what and how they are thinking about what they observe in the field is just as important as collecting the data itself.

Find lab notebooks that are useful for your field. A lot of the examples that I've used are from an assortment of disciplines, and most of them are lab notebooks instead of field notebooks. In the future, I'd like to have more field notes since it would align with my class. At the same time, it's fun to see the diversity of styles across the disciplines and individual scientists. It is also important to have a sense of what you want students to notice so that you can choose the notebook excerpts for this activity. You can't expect these sample notebooks to conform to all of the things that you want your students to do in their field notebooks, but careful selection can help highlight your message. It gives you a way to discuss the things that you really want in the students' lab notebooks that makes some sense to them since they had to dissect someone else's notebook.

What was the inspiration for the reflection activity? I wanted to find some good examples of field notebooks and I found this exercise from California State University, Chico's Physics department, "Getting Started with Notebooks" activity. They had Charles Darwin, Alexander Bell, and other well-known scientists' lab notebooks. It gives students a chance to see that these familiar scientists are writing out their thought processes, along with their observations. The excerpts are from their seminal breakthroughs, so the chance to see a Nobel Laureate's thinking to reach those achievements is fascinating and very useful for students.