



## Activity 8 - Preparations for a Field Experience – The Estuary Expedition

### PURPOSE:

To properly prepare students, teachers, and adult assistants for a field experience along the shores of an estuary.

### TIME REQUIRED:

Part of one class period (~20 minutes)

### SUBJECTS:

Science, English, Math

### MATERIALS NEEDED:

Photocopies of *Estuary Field Study Journal* master distributed and assembled; pencils (one set per student); waterproof paper (optional); field equipment list; access to current tide tables and weather predictions; one field plan worksheet per student, “Living on the Estuary” story

### VOCABULARY:

Field site, scientific inquiry, field equipment, data collection, protocol

**Outcomes:** 1) Students will be able to describe the importance of proper preparation for a field study. 2) Students will be able to name at least three essential items they bring to complete the investigation they are planning to undertake. 3) Students will complete a field plan worksheet with accurate, detailed information about their proposed field study.

### **History and Nature of Science**

- How scientists investigate

### **Scientific Inquiry**

- Ask questions to support scientific inquiry
- Design scientific investigation

**Background:** A field trip to the shore or waters of the estuary is one of the most rewarding and powerful ways to understand these complex and productive ecosystems. Field experiences should be treated as high value learning opportunities where a well designed combination of structured and non-structured activities can have a lasting and inspirational impact on students. Researchers recognize the value and the cost of field time where a forgotten or broken piece of equipment or a poorly planned sampling protocol may lead to unacceptable expenses, poor data, and the ultimate failure of the study.

However, students placed in the role of researchers can assist in the preparation for the field experience and gain worthwhile experience and a sense of achievement through careful planning. The field-based activities in this section of the curriculum are designed to be conducted on a single one-day field trip to the shoreline of an estuary. Each of the activities may be extended both in time and depth to include more comprehensive treatment of the subject matter at hand. Additionally, resources and expertise may be available within the community where the field study is taking place. As with any field work, advance planning with the built-in flexibility to take advantage of unforeseen opportunities generally leads to the most satisfying results. Explore the community where your field site is located in advance. Providing



sufficient lead time for agencies, organizations, and individuals to plan to participate will lead to a richer experience for the class on the day of the visit.

**Preparation:** Photocopy the *Estuary Field Study Journal* master pages in this activity and distribute to the students for assembly or have preassembled copies for their use. The master pages are designed to fashion a cover on heavy grade paper stock that will act as a pocket sized journal for recording observations and data. You may put as many blank pages within the journal as you wish or format them with the simple headings provided. We have also included in each of the field studies a series of formatted pages that relate to the activities for that field study. The cover and interior page files are formatted as Adobe PDF files for ease of reproduction. Instructions on how to produce and assemble the *Estuary Field Study Journals* are provided in the Resources folder of this activity.

While data sheets are provided for each activity, clipboards and letter sized sheets of paper can be unwieldy under windy or rainy field conditions. The TIDES Explorer Kits are also designed so that the cover of the kit provides a hard writing surface in the field, provided it is kept dry.

Data can be recorded in the *Estuary Field Study Journal* and later transferred to the data sheet in the classroom. If you prefer to have the students work in teams, you may want to color code the covers for ease of activity planning on the day of your field visit.

The *Estuary Field Study Journals* are intended to provide teachers with a written means of evaluating the student's field work. Making this expectation clear to the students prior to the conduct of the field work is very important. In some cases, where data is being collected, the field journal needs to be written in during the activity. Other parts of the journal can be used immediately after the activity or in the classroom when fewer distractions are present.

### **“Living on the Estuary” reading assignment**

As you prepare for your field trip, you may want to read and discuss chapter 3 of “Living on the Estuary”. Another alternative is to assign this as homework and then have a brief discussion in class as a part of your preparations for the field study. Below are some suggested review questions for discussion.

1. What motivated the volunteers to work with the scientists?
2. How did Will come to terms with the work he did when he was younger and the work he was doing to help the researchers?
3. Why would researchers want to share data with someone who had once farmed the land they were working to restore?
4. In the story, somebody forgets something needed for the research. What could have prevented this from happening? What can you do to prevent this from happening during your field research?
5. What kinds of things went wrong during the field research being conducted by the crew in the story? Were they serious?



**Activity Description:** Distribute the *Estuary Field Study Journal* copies to the class (or have them assemble their own copy – see assembly instructions in the Resources folder for this activity.) and ask students to fill out the information on the cover of their personal journal for the field experience they will be participating in. Discuss the importance of proper planning to the success of field studies. Ask for examples of scientific field studies (use a broad definition including ocean, space, and remote areas of the world) where poor planning has led to problems for the scientists.

Ask the students to share and record what they would like to learn from the study they will be conducting in the field. Engage them in describing what they think the experience will be like. You may wish to have them write this down and then have them review what they have written after they have gone on the field experience to see if their expectations matched reality.

Discuss in detail the kind of data that the class will be collecting and review any procedures or protocols (organized, repeatable steps in a process of collecting data) so that the students fully understand what is expected of them. Emphasize the importance of accuracy and precision when conducting a procedure and collecting data. Highlighting how apparent gaps will be when data is presented in chart form is sometimes an effective means of motivating students to do their part. If the class works well in teams, establishing teams of two or three in the classroom during the planning phase may lead to a better outcome.

Specific assignments for documenting a field study are useful and with the wide availability of digital technology, several options for augmenting the information gathered from a field study are possible.

The following assigned roles are some possibilities;

- Photographers – Specific assignments such as documenting specimens observed or collected, documenting a procedure, photographing the environmental setting, and collecting specific, well documented location photos for use in studies of a particular area over time. If images are going to be assembled for a PowerPoint presentation, a specific list of images needed may be useful. Brainstorming this before the field study and dividing up the responsibilities for particular shots will help to structure the work.
- Videographer – Specific assignments based on the tasks previously listed are valuable in order to reduce or eliminate inappropriate conduct. Asking a team of students to develop a “shot script” with ideas for interviews is one means of directing the focus of the videography and capturing useful imagery.
- Audio recordings – Conducting interviews with students doing the work can be an interesting way to document what is happening and what the students find important. An audio only format may reduce the potential for inappropriate conduct. Environmental sounds may also be used as soundtrack for a PowerPoint show about the field study.
- Data Compilers – These students have the responsibility for collecting all data from the individual teams on a master spreadsheet and then developing charts and graphs from the data.

Documenting and assessing the success of the field study in terms of graphic presentations of data and final reports is emphasized in the TIDES field activities and examples are provided with templates. The reports do not need to be complex to be meaningful, although the basis for any worthwhile study is the close relationship between the questions being explored and the methods being used to investigate the question. Care in the planning and execution of the study will be apparent in the final products.



**Post activity analysis:** The *Estuary Field Study Journal* is one method of recording the student's field experience. Asking the students to assemble these journals and then collecting them prior to the field trip and assessing the quality of the student's work is one means of judging preparedness.

The primary purpose of this activity is to prepare the class for a well planned, positive field experience. The *Field Study Worksheet* included in the Resources folder for this activity is another means of evaluating how well the students have planned for the field study, although what they write and what they actually bring may not always be the same!

Finally, assessing overall class participation in the discussion and preparation for the field experience can be useful in identifying what areas the students would like to focus their efforts, and which areas will need more structure or reinforcement.

**Follow up ideas:** Ask the students to conduct a personal post-field trip evaluation by recording their thoughts about what went well and what did not go well on the *Field Study Worksheet* on the second page. Holding a class discussion on this topic before the students record their thoughts may stimulate more constructive ideas for improving future trips.

Presentations are incorporated into Activity 14 – Conserve, Protect, Restore and are a useful means of providing information to the community about the work the students are doing. Presenting to other students is another way for the class to demonstrate what they have learned. If such a presentation is a planned outcome, making the class aware of this at the beginning of planning for the field study will contribute to a better final product. Since most scientists are required to publish and present their work during their careers, written and verbal presentations are an excellent means of familiarizing students with this aspect of field studies.