

Creating Field Research Lessons



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Grade Level: for teachers of grades 6-12

Background

The H.J. Andrews Experimental Forest: Where Ecosystems Are Revealed

The HJ Andrews Experimental Forest is located in the Cascades Mountains of Oregon on the Willamette National Forest. Ecosystem scientists have explored basic and applied questions about forests and watersheds there for more than 60 years. These research studies provide opportunities for K-12 teachers to immerse themselves in field research in order to guide their students in similar field research. These guidelines were developed as a check list of sorts for teachers who want to take young high school students outside for field research. These guidelines can help teachers create field research lessons that keep students on task and help them master the content goal of the lesson. These guidelines can be modified for other teachers to use at any grade level.

Guidelines

Lesson setup:

1. Create a content objective and language objective for the lesson.
 - a. Example content objective: Students will be able to identify the steps to the scientific method and use basic measuring skills to create a model.
 - b. Example of language objective: Students will be able to write a hypothesis for their own research project.
2. Draw from students' background knowledge to help them build on what they already know.
 - a. KWL chart (Know, What I want to know, What I learned)
 - b. Pretest
 - c. Class brainstorm using Give and Get student engagement activity. Students come up with a list of three things they know about the topic, and then walk around the room collecting ideas from other students. The student with the longest list shares their list for the class and students can add onto it.
3. Front load vocabulary.
 - a. This can be done in a number of ways (see below), but students need to end up with a graphic organizer they can refer back to for help.
 - i. Showing visuals of vocabulary.
 - ii. Word wall with pictures and examples.
 - iii. Vocabulary list that has students put definitions in their own words with pictures and examples.
 - iv. Word sort, in which students have to group words together based on similarities.
 - v. Concept map, in which students show how vocabulary words relate to each other.
4. Think about student groupings and group jobs.
 - a. Make sure whatever groups/group jobs you give students has already been practiced several

times, so that students know what is expected.

- i. Groupings could consist of table groups, counting off to get into groups of three to four (no bigger). Never let students choose their own group (set this standard from the start of the school year).
 - ii. Group jobs could be facilitator, reporter, recorder, and time keeper. Try to keep the same group jobs throughout the school year, so that students don't get confused.
5. Prepare the site for field research.
 - a. Mark and number where each group should be working.
 - b. Make sure you have the right tools for students to use. If students need to dig a hole, provide sturdy shovels that won't break and prep the ground if it is hard.
 - c. Let custodians know about traps that will be placed around campus, so that don't get thrown away.
6. Design a student worksheet for each student to fill out.
 - a. Make sure instructions and expectations are clear and concise.
 - b. Make sure questions are asked using academic language that is appropriate for students' level.
 - c. Make sure to put some sort of outdoor observation activity on the worksheet for students that are unable/not helping setup the field research site. This will allow students to stay on task at all times while outside.
7. Before implementing a field research lesson make sure classroom management issues are under control.
 - a. Make sure student behavior expectations are clear and hold students accountable for not following expectations.
 - b. If you have lots of behavior issues in your classroom it might be a good idea to bring a volunteer into the classroom for the lesson.
8. Check student medical issues.
 - a. At the beginning of the school year, most schools notify you of any major allergy problems or other student medical issues. If you haven't heard anything, make sure you check with the school nurse.
 - b. Be trained. Get first aid trained and EpiPen trained.
 - c. Bring a first aid kit. If a student needs a Band-Aid and you are the only adult outside with your students, you can't leave the class to go grab help.

Lesson:

1. Use materials created during lesson setup and hold students accountable for finishing them before they can start the field research part of the lesson.
2. Hold students accountable to meeting your behavioral expectations.
3. Before going outside, make sure all students understand your expectations.
4. Notify office/attendance that you will be outside with your students.
5. Group jobs should be clear. Have students raise their hand for each job, so you know who is doing what in each group.
 - a. You can also hand out assigned group jobs to keep specific students on task.
6. When outside mingle around groups and remind specific students what their jobs are. Handle behavior issues immediately, don't ignore them.
 - a. This is where it is really important to know student names (meaning don't try this at the very beginning of the school year).
7. Give students a specific amount of time to complete the task and hold them to that time.
8. When collecting data have an organized and easy way to input class data for the whole class to see.

9. If you get back to the classroom with a few minutes left in class, it is probably not enough time to have students start on their analysis questions. Instead, have students answer and exit ticket question about the study.
10. Give time for students to answer analysis questions during class and turn in during class. Otherwise, if you have freshmen or a low turn in rate you might not get to see what your students learned from the lesson.
 - a. Again, hold students accountable. If they are not completing or turning in work, give them a quiz on the lesson to see what they learned.

After lesson:

1. As a class reflect on how the field research went, so you know what to change for next time.
2. Ask students what their big takeaways were from the lesson.