

LESSON PLAN 17

Title: CORE SAMPLES

Content Area Subjects:

- Career and Educational Development, Science, Health and Physical Education, History, ELA, Math, Social Studies

Grade level(s): Grades 3-12+

Standard(s):

Maine Learning Results

- Career and Educational Development. Interpersonal Skills (A3.pre-k to diploma.a,c)
- ELA. Informational texts (A3.3.c); (A3.3.e); (A3.6.e); A3.9-diploma.b); Research (C1.3-5.a,c,d)(C1.6-8.g); (C1.9-diploma.a,c); Listening (E1.3-diploma.c); (E1. 9-diploma.a); Speaking (E2.3-8.d); (E2. 9-diploma.a)
- Health and Physical Education. Cooperative Skills (I1.pre-k to diploma.a-d); Responsible Behavior (I2.pre-k to diploma)
- Math. Data (B1.4-8.a,b); (B1.9-diploma); Measurement and Approximation (B1.4-diploma.a,b); (B1.9-diploma.a,b,c); (B2.3-6); (B2.7.1a, 1b); (B2.8-diploma.3)
- Science. Scientific Inquiry and Technological Design (B1.3-diploma.a); (B1.3-diploma.b); (B1.3-diploma.c); (B1.3-diploma.d); (C1.3-diploma.a)
- Social Studies. Taking Action Using Social Studies Knowledge and skills (A3.3-diploma)

Common Core:

- ELA. (V.3-12.6); (SL.3-12.1c); (SL.3-5.1); (L.3.5b);(L.3.5b)
- Science and Technology. (R.6-12.4); (R.7-12.4)

STEM Skills

Brief Description: The students will take a field trip to the marine habitat to learn how to take core samples of the mud or sand to determine the species that live there.

Adaptations for grade level/abilities:

The Instructor could adapt portions of this lesson for lower grades, but they may need help if the substrate is dense. For the computer portion at the end, teachers could partner students of varying ability levels or skill levels)

Objectives/Goals: After completing this lesson, the students will be able to:

- demonstrate knowledge of the use of core samples to survey the species that exist in a particular area.
- use math skills to calculate percentages and averages
- cooperate with a partner and a group for a common goal
- observe several species in their natural environment

Time needed: 1 ½ hour or one class period or in the field;

1 hour or one class period in the classroom

The lesson can be adjusted to the available time and used in conjunction with Lesson 18 Quadrat count if a longer time frame is available this lesson needs to be done at low tide so students can get to the mid and low intertidal. Depending on the abilities of the group, taking samples/completing quadrat counts can be made as realistic as the Instructor wishes. An entire area could be sampled/counted or an illustration of the practice could be accomplished.

Keywords: core sample

Materials Needed:

coffee cans with one end removed

sieving/screening boxes (Similar to the ones DEI used in the clam project to clean clam containers-arrangements may be made to borrow some sieving/screening boxes)

small notebooks (something to write or sketch what was found) and pencils

camera to take photos of species found

boots and play clothes

computers with internet connection (other resources may be available)

Background Information:

Prior to a field trip of this nature, a basic knowledge of the species that might be found in the area would be extremely helpful to the Instructor or the assistance of a person who has that knowledge. (DEI may be able to help provide an assistant to accompany the group if schedules will allow)

The Procedure:

Introduction: The Instructor will say, "Today we are going to take core samples to find out what exists in the substrate at (a particular marine habitat that has been preselected). There are many reasons for taking core samples. Examples would be to take samples in an area to find out what species exist, to check an area for the presence of an invasive species, or to ascertain the recovery of an area, which may have been reseeded with clams to check on the status of the clams' growth and survival.

Key Questions

How is a coffee can used to take a sample?

What part does the screening box play?

What precautions must we take while we take samples?

Main Activity The Instructor and the students will travel to the field area and take core samples as directed. Students will press and twist coffee cans into the mud/sand, reaching their hands down into the substrate to cover the sample so that it will not fall out of the can. The students will then empty the contents of the can into the sieving/screening box. The students will walk to the low tide and rinse out the substrate leaving the larger bits of shells, rocks, and organisms that do not rinse out. The Instructor will help the students to identify the organisms left in the screening box. If an organism cannot be identified, it could be sketched or a photo taken for later identification.

Conclusion

Upon returning to the classroom, the students could compile a list of the species they discovered and use their computers or other resources to find out more about those species.

Assessment/Follow-Up/Enrichment Activities:

The Instructor could lead a discussion about this method of taking marine samples, and connect using this technique in the clam project, if the class participated. Taking core samples could be a way to check to see what clams have survived/grown or not, in a particular area.