The Story

DEI's project with your students was based on the following hypothesis:

How does the place where juvenile clams, *Mya arenaria*, live on a flat (upper, mid, and lower tidal zone) affect how they grow and survive?

In summary, to test the hypothesis, this is what we did.

The field-based experiment consisted of four main parts:

- preparation of materials;
- planting/deploying the experiment;
- harvest/termination of field component; and,
- analysis.

Students prepared and placed the experimental units containing juvenile clams (ca. ½-inch, or 12 mm, in shell length) into the soft-bottom environment at high, middle, and low tidal zones. Approximately three months later, the units were excavated and their contents were inspected for living and dead clam individuals. An accurate count of surviving clams and a measure of each shell (for growth rate) was taken to collect data to answer the essential question/hypothesis.

Prior to having the students try to analyze the data, Dr. Beal or another DEI staff member will meet with the Instructors who participated in the project to go over the data and offer suggestions for depicting it in numerical ways and other ways.

After completion of the Clam Project with your students, there are key concepts for discussion using the data. Dr. Beal has organized the data for you in the format of circles representing the blocks where the clams were placed, and using crossed lines over the circles to represent the netted containers. As the students look at the graphs of protected and unprotected containers, try to have them focus on the following:

1. Do clams grow any better in netted (protected) vs. unnetted (unprotected) containers?

2. Do clams survive any better in netted (protected) vs. unnetted (unprotected) containers?

3. Do clams grow any better at the high vs. the mid vs. the low tidal zones?

4. Do clams survive any better at the high vs. the mid vs. the low tidal zones?

Depending on the age of your students, try to represent the answers to the questions. What may have caused a container to be empty of live clams? A green crab? A moon

snail? Some other environmental occurrence? Some students found evidence of crushed shells which implied a green crab. Some students found perfectly round countersunk holes in the tiny shells which is the signature of the moon snail. Green crabs, moon snails, and sandworms were found in some netted and unnetted containers. Many of those containers had low survival rates. The students learned about the Hatchery Mark, and used it to measure their clams' initial lengths.

ASK THEM, NO ONE KNOWS BETTER THAN THEY DO, WHAT THEY MAY HAVE OBSERVED AND LEARNED FROM THE PROJECT.

The page of "circle" results Dr. Beal prepared for you does not give specific answers to what happened in the pot regarding survival. The information presented only gives a percentage. For example, if 5 clams out of 12 survived in a particular pot (41.7%), you don't know whether the rest of the clams were 1) missing; 2) dead with crushed shells; 3) dead with drilled shells; 4) dead with undamaged shells; or, 5) a combination of these categories.

Should you or your students want additional information about the fate of the clams in any particular unit, please e-mail Dr. Beal (bbeal@maine.edu) and he can help you with these questions. This information was recorded on each data sheet, and the data sheets are easily accessed.

Hopefully, this brief synopsis will help you with your students.