

# Create a Science LearningCheck™ Activity

## Concepts

- Assessment of a classroom demonstration
- Sending data and information

## Materials

- Salinity Demo Package File (salinitydemo.tip)
- 2 500-mL. Erlenmeyer Flasks
- 10 Note cards
- 1 bottle of food coloring
- Salt
- 1 plastic tub
- Water to fill the flasks

## Overview

Science teachers often use demonstrations in introducing new topics. In this demonstration, three different placements of two Erlenmeyer flasks will allow participants to observe what happens when (a) fresh water is placed on top of salt water, (b) salt water is placed on top of fresh water and (c) fresh and salt water are placed side by side. This activity shows

- creation of a LearningCheck™ assessment
- sending, collecting, and analyzing the assessment
- sending lists
- sending a StudyCard™ stack (and APP)

## Procedure

### Part 1

1. For part one of the demonstration, fill the first Erlenmeyer to the very top (overflow) with fresh water.
2. Fill the second Erlenmeyer to the very top (overflow) with water.
3. Add a generous helping of salt (2 tablespoons) and three drops of blue food coloring.
4. Use a dry note card to cover the top of the first Erlenmeyer flask.
5. Place the second Erlenmeyer into the plastic tub and place the first Erlenmeyer with the note card on top into an inverted position onto the second flask in the tub (Figure 1).
6. Carefully remove the note card while holding the two Erlenmeyer flasks together and observe what happens.

### Part 2

1. For part two, perform the experiment once again, but this time, place the Erlenmeyer with the fresh water upright in the dish tub and put the note card over the second Erlenmeyer with the salt and food coloring in it (Figure 2).

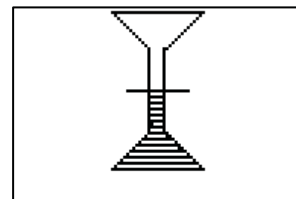


Figure 1

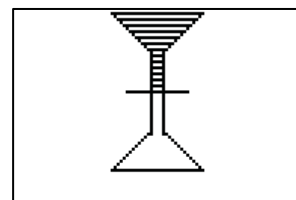


Figure 2

- Now invert the second Erlenmeyer over the first and remove the note card. Observe what happens.

### Part 3

- For part three, rinse and refill the Erlenmeyer flasks.
- Place the fresh water Erlenmeyer on top of the salt water one, and turn both flasks sideways (Figure 3). Remove the note card and observe what happens.

## Creating LearningCheck™ Questions

You have just seen the demonstration with salt water and fresh water. You may want to start the assessment with a summary of the demonstration.

- Write a short information section summarizing the demonstration that your students have just seen.
  - An example is shown Figure 4. See the Entering Information section of the Exploring TI-Navigator™ document, if you need specific instructions.
- Next, you want to ask your students a series of questions to access their understanding of the demonstration.
  - You may want to start with some straightforward questions to check that the students have understood the setup of the demonstration, such as “What was the color of the salt water?”
  - Another approach would be to do this as a guided discovery activity. In this case, your initial questions might be to have the students tell what they saw happening.
- Write a multiple-choice question appropriate for this demonstration.
  - An example is shown in Figure 5. See the Entering Multiple Choice Questions section of the Exploring TI-Navigator™ document.
- Write a true-false question appropriate for this a demonstration. See Figure 6.

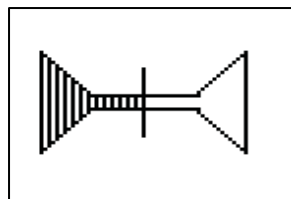


Figure 3

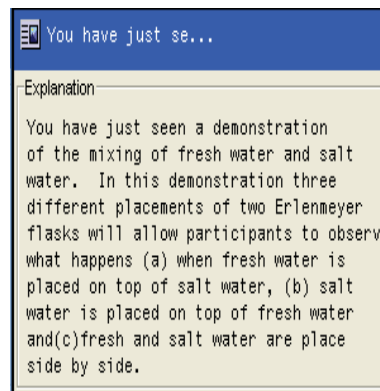


Figure 4

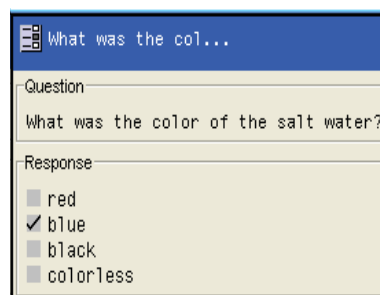


Figure 5

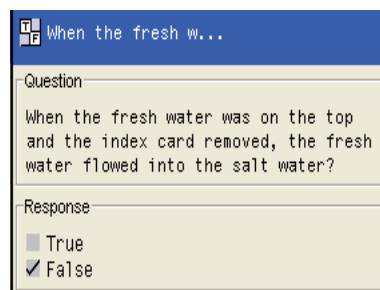


Figure 6

5. Write a fill-in-the-blank question. See Figure 7.
6. As you move through the assessment, you may want to have questions asking students to interpret what they saw and have them make predictions about how to apply what they have learned from this demonstration. Some sample questions are given below.
  - When the salt water was on the top and the index card was removed, explain what happened.
  - In an estuary, account for the distribution of marine life with depth.
7. Write an open response question. See Figure 8.
8. Highlight *Document 1* in the upper left-hand corner of the LearningCheck™ Creator window.
9. Select *File>Edit* from the Menu bar.
10. Rename *Document 1* to *Demoquestions*. See Figure 9.
11. Save the files as *demoquestions.edc*.

### Sending the Assessment to Students

1. Connect your calculator to the computer with a USB GraphLink™ cable.
2. Click the Send to Class icon in the LearningCheck™ Creator toolbar to send the assessment to your calculator.
3. Close the Sending to Class window once Done appears.
4. Use the *LearningChk* APP to complete the Demoquestions assessment on a ‘student’ calculator.

### Collecting and Analyzing the Assessment

1. Open Class Analysis (click Class Analysis icon in the frame on the left).
2. Click the *Choose an Assignment for Analysis* icon (fourth from the left on the top of the Class Analysis menu bar) and select *Demoquestions*.
3. Click the *Collect from Class* icon.
4. Look over the scores.
5. Click on the *Slide Show* icon to view the answers.

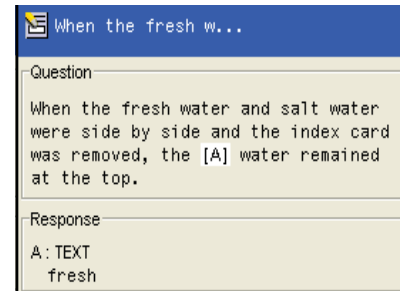


Figure 7

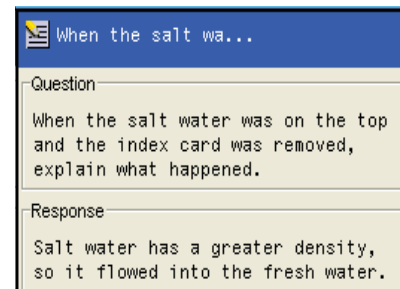


Figure 8

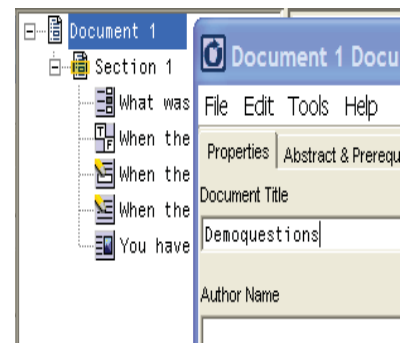
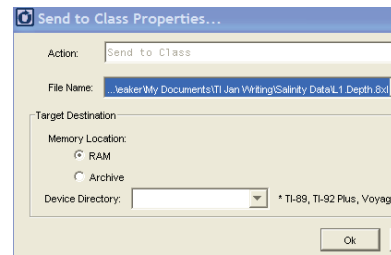


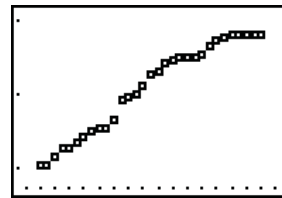
Figure 9

## Sending Lists

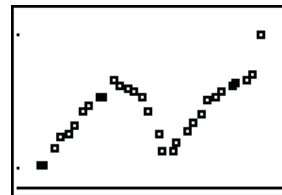
1. Click the *Add New File to Transfer List* icon in the Class Connect toolbar.
  - The message Add to Transfer List will appear.
2. Browse to select the L1.Depth data file (or any other calculator lists that you have saved on your computer).
3. Press Continue, and check the RAM box in the Send to Class Properties box. See Figure 10.
4. Click Ok.
5. Repeat for the data files L2.Salinity, L3.Time, and L4.Salinity.
6. Click the *Start Transfer* icon to send these four lists to the student calculators.
7. Create Stat Plots with these data files. These data files will show the salinity water depth and time profiles in an estuary. See Figures 11 and 12.



**Figure 10**



**Figure 11**



**Figure 12**