

## Professional Development Situation: Coaching

### Skill Focus: Reflecting and Processing STEM Experiences

Time Required: 15 minutes

# PLANNING TO REFLECT

Participants will plan a reflection activity with Sink & Float to learn to design opportunities for youth to reflect on their learning.

## Agenda

See the Skill in Action— 5 minutes

- [Time is on Your Side!](#) video-based learning module
- Adding Reflection to Activities— 10 minutes
  - [Sink & Float Activity](#)
  - [Sink & Float Data Table](#)

## Materials

- Computer with internet connection.
- [Time is on Your Side!](#) video-based learning module
- [Sink & Float Activity](#)
- [Sink & Float Data Table](#)
  - If conducting this session virtually, be sure the participant has access to these as well.

## Before the Session

- **Read this coaching guide** to become familiar with the content and allow time to personalize the activities to best suit your presentation style.
  - *Italics indicate text that can be read aloud of emailed to the participant.*
- Send an email to the participant being coached:
  - *Our coaching session is scheduled for DATE at TIME. We will focus on “Reflecting and Processing STEM Experiences”. Please feel free to contact me with your questions or concerns at CONTACT INFORMATION.*
- Gather all materials needed for the coaching session.

## During the Session

### See the Skill in Action (5 min)

- Work through the steps of the [Time is on Your Side!](#) video-based learning module.
  - Talk through the questions in step 1.
  - Watch the video in step 2.
- Reflect on how this video-based learning module offers ways for youth to reflect on their learning.
  - *How could you use “plussing” and the practices for reflection that Jean described with the youth in your program?*
  - *Why is it important to plan for reflection during STEM activities?*

### Adding Reflection to Activities (10 min)

- Read through a STEM activity such as the [Sink & Float Activity](#).
- The participant will work to design a way that youth can reflect on their learning during this activity.
  - **Note:** this activity will not be age-appropriate for all youth, so it may need to be modified or replaced.
- Ask the participant to:
  - *Write a way that you can incorporate reflection in this lesson (or another if not age-appropriate). For example, you might include:*
    - *“Plussing” (also demonstrated in [this video-based learning module](#))*
    - *Having youth write open-ended questions for each other*
    - *Having a whole-group debrief conversation with youth*
    - *Having youth complete “what-I-learned” exit tickets*
- Set a time and date to try out [Sink & Float](#) with the reflection strategy chosen.

## After the Session

- Follow up with your participant to see how they are progressing on incorporating the reflection strategy into their practice. Try to be supportive and helpful, not evaluative.

Want to Earn Credit? Click2Science has teamed up with Better Kid Care to provide continuing education units. Check it out at: <http://extension.psu.edu/youth/betterkidcare/school-agepractitioners/click2science>

## Sink & Float Activity

### Materials Needed

- Can of diet soda
- Can of full-sugar soda
- Can of sparkling water
- Clear tubs (one per group) half-full of water
- Baggies of objects that will sink or float. Consider:
  - Coins
  - Plastic
  - Wood
  - Styrofoam
  - Glass
  - Wrapped candies (like a Tootsie Roll or Starburst)
  - Other things youth have with them
- [The Sink and Float Data Table](#)

### Introduction

- Ask students to think, “Why do objects sink when placed in water? Why do objects float? How can knowing an objects density give us an idea whether it will sink or float?”
- Hold up the two cans of soda – ask students to compare them. (One is “diet” and one is regular.) Then ask them to predict which will sink and which will float in the tub of water.
- Demonstrate with the regular and diet soda by placing them in the tub of water.
- Ask youth to predict what will happen when the sparkling water is placed in the tub. Encourage youth to have this discussion at their tables and to come to a consensus. Do NOT DEMONSTRATE THE SPARKLING WATER YET.

### Investigation

Group youth into groups of four.

Assign each person in the group a role: a recorder, a project manager, a materials manager, and a questioner.

- Recorder should do all of the documentation of the activity.
- Project manager should make sure that everyone is involved.
- Materials manager should make sure the materials are present and well cared-for. They should get a table to write their observations and the tub of water and bag of materials.

- The questioner should ask questions to see what other students are thinking about the activity. The questioner can ask: “what did you see happen? Why do you think that happened? Do you think we should try it again?” The questioner cannot bring their ideas into the conversation, but only elicit the thinking of others.
- Have youth predict what will sink and float by grouping the objects into three categories: “sinkers,” “floaters,” and “not sure.” Have groups come to consensus.
- When the teacher says “go” the students will begin to test their objects. Once the students have tested their objects, they should record their findings. This process will continue until all objects have been tested.
- Debrief each item and ask youth to describe what happened.
  - *Why did you predict that it would sink? Why did you predict it would float? Did anything surprise you? Did some things float for a while and then sink? Did some seem to sink then float?)*

## Conclusion

- Ask youth to describe what they have learned about sinking and floating
  - *What big science ideas did we learn from this activity?*
  - *What do you think is true about water that makes objects sink and float in it?*
  - *What about air? Would these objects sink or float in a bin full of air?*
- Optional: The teacher can share why objects sink or float (Discussing density and volume)
- Ask youth to nominate one person in their group who helped them do a good job at the investigation. Highlight the behaviors that that youth exhibited, “Kept us on track, asked us what we were thinking, had a positive attitude, etc.”
- Hold up the can of sparkling water (which has not yet been demonstrated). Ask the youth to make a final prediction about whether it will sink or float. Then drop it in the bin. (This can also be used as a reminder activity for the next meeting of the program.)

<http://www.click2sciencepd.org/web-lessons/about>

## Sink & Float Data Table

### Our Predictions

Write the objects in each column that sink and float:

Sinkers	Floaters	Not sure

### Our Test Results

Sinkers	Floaters	Not sure