Recording Stars

Alignment to Utah Core Curriculum

Intended Learning Outcomes (ILO’s):
1. Use science process and thinking skills.
2. Manifest scientific attitudes and interests.
3. Understand science concepts and principles.

Enduring understanding:
There are many ways to record and organize data and observations, but all need to be done with detail and accuracy.

Grade Level: 3-5
Activity Length: 60-75 minutes
Process Skills:
- Inference
- Observation
- Recording
- Wondering

Materials Needed:
- At least 10 different objects (use specimens from a teaching toolbox, treasures from nature that the students have brought, or items you have collected with obvious and not-so-obvious details)
- A picture or painting with many parts/details/events that may be unfamiliar to the students. Use one of your favorite artists, check out a poster, or find something online. Great artists to look at are Chagall, Ucello, Miro, Matisse. You could use a poster, an overhead, or image from the internet projected onto a smart board or white board. The Utah Museum of Fine Arts lends prints to educators, and you can ask them for suggestions.
- Paper or science journal for each student
- Markers, colored pencils, crayons, pencils, pens for each student

Background
One of the most important skills for students and scientists alike is learning how to record and share information they are gathering in meaningful and accurate ways. Here are some things to think about to help you facilitate meaningful recording.
**Purpose**- it is important to have a clear purpose for student recording. Do you have a discrete skill you would like students to implement in their recording? Or is your purpose to have students figure out how to organize and record data on their own?

**Super Modeling**- everyone knows Super Models and Recording Stars hang out together. If you have specific skills or expectations about how you would like the students to record, make sure to model it for them. Demonstrate the method, practice the method as a large group, and then let the students try the method by themselves.

**Transfer** – if you want students to organize and record data on their own, remember they already possess discrete skills, but observing and handling specimens is a new and demanding task. Before you start, review ways they can record data:

- **Graphic Organizers**- be it T-charts, Venn Diagrams, Webs, Graphs, Tallies or Trees, all of your students have learned or are learning about graphic organizers. Emphasize that these are useful tools in science as well as math and language arts. Remind them of the importance of labeling the organizer accurately. Discuss when certain charts may be most useful.
- **Descriptive language**- not just for poetry and scary stories! It is important to describe specimens, artifacts, locations and conditions accurately. Descriptive language is key- use it for labeling diagrams and drawings, in graphic organizers, lists, and complete sentences.
- **Drawing**- yes, drawing. A favorite past time of most children is an indispensable recording tool! Drawing helps students focus and observe more closely; it also allows for a lot of information to be recorded rather quickly. Any student can draw, even if they don’t have the language or writing skills necessary for recording in other ways.

**Activity**

**Divide** the students into 5 groups.

**Explain** that you are going to show a picture for one minute. The students are to observe the picture and remember as much detail as they can. If they would like, they can discuss what they are seeing with each other.

**Show** the picture for one minute, then turn the picture around if it is a poster, or turn it off if it is a projected image.

**Write** on the board “What we remember”

**Ask** the students how much detail they can remember about the picture.

**Record** what the students say as they share what they remember about the piece of art.

**Probe** the students about the color, shape, size, placement on the canvas, proximity to other parts.
Show the piece of art again.
Discuss how well they remembered the details. What did they miss? What did they remember? How accurately did they remember things like color, shape, size, placement on the canvas, what was near to the parts they remembered.
Ask them what they could do to better remember the details they observed.
Write down ideas to remember on the board- discuss the importance of writing, drawing, labeling, measuring, including details such as color, shape, size, location, etc.
Explain that one of the most important parts of science is to record observations, questions, inferences and conclusions accurately and with detail. Scientists do this in similar ways by writing, drawing, labeling, measuring, using charts, graphs and diagrams, and descriptive language. Recording is the science skill they are going to be focusing on practicing today.

Explain that there are some things that scientists record to make sure their information is accurate.
Write on the board the information the students should start with when recording scientific data:
- Name of Scientist/Student
- Date
- Time of day
- Location

Have the students record information on their paper or in their journals.
Distribute 2 objects to each of the groups while they are recording the date, time of day, etc.

Model and Practice
Explain that it is important to be as accurate as possible in recording what you see. Students will warm up their brain and hand, and start training them to work together by doing a blind contour drawing. In this type of drawing students must only look at the object, never their paper. Their pencil or pen should stay in contact with the paper at all times. They should try and have their hand follow the shapes and directions that they see in the object that they are drawing.

Model a blind contour drawing for the students. Hold an object in front of you and draw on the board behind. Discuss what you are observing and drawing so the students have a sense of following the lines and shapes with their pencils that they are observing with their eyes.

Tell the students to select one of the objects at their table. They will have one minute to practice the blind contour drawing with the object.
Explain now they will have five minutes to draw the same object. They can look at their papers while they are drawing but they still need to follow the contours or lines of the object, and should look for details.

Ask the students to look at their drawings and the object and identify at least two details that are missing. They can discuss with others the details they have noticed.
Tell the students they will have 3-5 more minutes to add the details to their drawings.

Explain that part of recording accurately is recording color.
Model adding color. You can do this in many ways- first determine if you want to have students add color to the whole drawing, or if you want them to just add color to part of the drawing. Then you can use- colored pencils, crayons, paint, markers. There are many ways to use these tools, but it is really fun to “paint” with markers and pens. To paint with a marker or pen you just need to outline the drawing with the color of the object, then take a little water with a brush or your finger and gently wipe it over the mark, the color will bleed into the drawing with nice effect. The same will happen of you apply water to a pen that will run (gel roller pens are best for this).

Distribute the tools you want the students to use for this portion of the activity and allow the students a few minutes to add color to their drawings.

Explain that now the students are going to label their drawings. When they label they should record:
- descriptive words to draw attention to specific details
- details that they can not record through drawing (smell, sound, texture, etc)
- inferences (guesses) they have about an object
- descriptions of what the object reminds them of
- measurements they take (weight, length, height)

Model labeling a picture. Write down a wonder, observations, an inference, a measurement. Discuss with your students the standard you will use for measurement.

Distribute any tools you will have your students use for measuring.
Give students time to measure and label.

Explain that there are many other ways scientists record, they use charts, graphs, maps and diagrams. You are going to practice just one more. You are going to use a Venn Diagram. It is a really good tool for comparing similarities and differences between two objects or two groups of objects.

Model how to draw and use a Venn Diagram. You can pick two objects that have really distinct similarities and differences and have the class help you identify what is the same and different about each object. Record their ideas on the board.
Give students time to discuss what is similar and what is different about the two items at their table and create a Venn Diagram based on their discussion.
Discuss
Give students time to share and ask questions with the class or in small groups- reconfigure the five groups so that at least one representative from the first groups are part of the new group. Then have the students share what they recorded about the objects at their table.

Learning Extensions

Outdoors
Start a nature journal. Take students outside and have them practice their recording skills. Explain that there is additional information that is important to include in their journals when working outside: temperature, weather, location of sun in the sky or on the horizon, the phase of the moon and its location in the sky (if visible), if there is wind- the direction that the wind is coming from, as well as any noises or sounds that the students hear (this includes man made sounds).

Indoors
Use the drawing and observations as a springboard for naturalist poetry or fiction or non-fiction writing.

Formative Assessment Strategies

1. When the students are recording, walk around the class and notice what sort of labeling and inferences the students are making. This will give you insight into their background knowledge about certain objects as well as their use of science vocabulary. It will also give you insight into how they make inferences- are they based on their observations or are they wild guesses? This will help you know how to best support them in making inferences.

2. When students are discussing and collaborating, walk around and observe how they interact, who is leading discussions, who is participating in discussions, who is being an active listener. This will help you understand how group students or address student collaboration so that all students are best able to participate and share their ideas.