The Three “I”s

Description

Managing landscapes for the abundance of wildlife is important for creating resilient ecosystems and sustaining a variety of cultural traditions. The biodiversity of Clear Lake reflects the multiple different habitat types found in the region. From oak woodlands, riparian zones, wetlands, and more, the biodiversity of each site can be explored through careful observation. Educators can introduce the concept of biodiversity by completing or walking through a biodiversity worksheet with students. Then, have students practice asking a series of prompts that they can use with any activity to generate scientific questions. Students can share what it is they already know about local biodiversity, and build their questions off of prior knowledge. Go through student questions to determine what they want to learn about biodiversity, and explore ways they can answer their own questions.

Objectives

Student Objectives	Understand why biodiversity is important and ask questions about local wildlife.	YCCS Core Activity: Develop Expertise
Educator Objectives	Develop student questions and guide students to data and resources.	YCCS Key Educator Practice: Attend to the unexpected

Key Vocabulary

Biodiversity, ecosystem, resilience, food chain, food web, organism, reciprocity, observation, testable question, researchable question

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Instructions

Time

1 hour, 30 minutes

Materials

- Pencils

This activity was adapted from the BEETLES Project, I Notice, I Wonder, It Reminds Me Of activity. See Module 1 References.

- Sticky notes
- Flip chart paper with tape labeled “Testable” and “Researchable”; or portable whiteboard
- Marker or white board marker
- Printed copies of pages 1-2 of the biodiversity worksheet, enough for each pair of students
- Printed copies of pages 3-5 of the biodiversity worksheet
- String

Getting Ready

- Choose an area with few hazards, set and identify boundaries, and thoroughly warn students about any local hazards. For safety reasons, avoid poison oak, tall grass, down logs if possible. Prep your students in the environment for exploration using the BEETLES Project Ecosystem Literacies and Exploration Guide.
- Create one set of cards from the organisms on pages 3-5 of the biodiversity worksheet.

Facilitation

Part One

All living things are reliant on each other, and having greater biodiversity helps the ecosystem stay resilient to change. Ask for four volunteers to each hold up the sun, plankton, hitch, and osprey cards from page 3 of the biodiversity worksheet. Ask all students, “who eats what?” Help them answer this question and have the volunteers order themselves in the food chain on page 1 of the biodiversity worksheet. Once they’re in order, pass the string down and create a food chain. Pass out the printed worksheet from pages 1-2 of the biodiversity worksheet. You may also omit printing the worksheet and simply use the questions from the worksheet for group discussion. Walk through each question on page 1 together. Repeat the same process for the food web on page 2. Have students notice how much more interconnected the organisms are in the web versus the chain.

A food web is more biodiverse than a food chain. When there is a change, it can more easily absorb the changes an ecosystem inevitably faces. Transition students by letting them know they will now practice looking closely at the biodiversity around them.

Part Two

On your white board, write out this quote: “Paying attention is a form of reciprocity with the living world, receiving the gifts with open eyes and open heart.”— Robin Wall Kimmerer. Have students turn to the person next to them and discuss what they think this means. Explain that reciprocity means one person gives something to one person and that person gives something back in

return. Ask students if they know anyone else, real or fictional, who is really good at paying attention, and have them explain why that person was good at paying attention.

Students will practice noticing what's around them using a tool, the three "I"s. Introduce the tool after setting boundaries for students to spend 30 seconds safely searching for their own object in nature. Once they have their object, students should look at their objects and say out loud all the things they notice to a partner by saying, "I notice….." These are observations that they make using their senses - provide a few examples. They have 1 minute, 30 seconds per person, to say out loud all the things they notice. After a minute, stop and take a few observations from students. The second I is "I wonder…." Repeat the same process. The third I is "It reminds me of…." Repeat the same process.

Reflection

Once you have gone through the three I's, hand out a small stack of sticky notes to each pair. Allow 2 minutes for pairs to reflect on the statements made during "I wonder…" and write down at least one question per person that they want to know more about, using one sticky note per question. While students are writing, prepare the white board or flip chart with the categories "testable," "researchable," and "not testable." After the 2 minutes, explain the three categories. Ask students to reflect with their partner for 3 minutes which of the categories their question falls under. After the 3 minutes, allow students to place their sticky notes where they think it goes.

Now with the entire list of questions that are from the class, have students discuss with their partner which question they would choose to test or research. Testable questions are ones that can be answered by designing and conducting an experiment. A researchable question is one that can be investigated by exploring information already available. Draw students' attention to the entire list of questions they generated. Explain that their questions are important for understanding the different organisms, which we call biodiversity, in the Clear Lake region.

For the testable questions, go through them with the whole group and further sort them by the categories: testable right now through further observations and testable through longer investigations. Have student pairs choose one of the testable questions and make a plan for how they can find the answer to that question. Have student pairs present to the whole group what they plan to do to find the answer to their questions. Reiterate to students that their questions help us to more deeply understand the biodiversity of where we live. These questions can remain hanging up throughout the day or the module and be referenced periodically to check in with students: did we find out more? Did we discover a new tool that might help us?

This activity was adapted from the BEETLES Project, I Notice, I Wonder, It Reminds Me Of activity. See Module 1 References.

Optional Post-Activity

Keep the student questions from the sticky notes. Have students pick which of these questions they want to investigate further as an assignment to take home and review for another class session. They can modify their questions if needed.

Additional Uses and Modifications

In part one of the facilitation, use the native species cards from the species list (page 16-29) and have students work together to create their own food web and/or food chain that they can present to the class.

Youth-Driven Pathway Facilitation

For educators facilitating the youth-driven pathway, use this modified activity to help youth explore what's already known about the environmental issue they are focusing on and what information is still needed. The goal is for youth to identify opportunities for further investigation and data/story collection that can guide the course of the next activities in the sequence.

Instead of doing Parts One and Two of the above activity, use the following approach adapted from "Activity 4.3: Developing a Research Question" on p. 127 of Stepping Stone 4 in the Community Futures, Community Lore Stepping Stones Toolkit for youth participatory action research (YPAR) from the UC Davis Center for Regional Change and School of Education.

Set up two different sheets of flip chart paper for youth to write on. At the top of the first sheet write: "What do we already know about _____ ?" (Fill in the blank with the environmental issue that your group is focusing on). At the top of the second sheet write: "What do we want to know about _____ ? If we could ask other youth or adults/elders anything about this topic, what would we want to ask them?" (Again, fill in the blank with the environmental issue that your group is focusing on). To help youth generate ideas for the first sheet, encourage them to add thoughts from their own lived experience and knowledge (such as things they generated in the Real vs. Ideal activity). They should also add anything they learned about their issue from the publicly-available data they explored in either the Digging into Data, Water Quality Data Investigation, Data Talks, or Using Fire Data activity. To help youth generate ideas for the second sheet, have them review what's on the first sheet and thing about what is missing and what they are still curious about regarding their issue.

After youth have generated ideas on both sheets of flip chart paper, you can use a modified version of the Reflection section above to further explore the ideas on the second flip chart. Now that they have a list of items and questions they would still like to know about their issue, they can label them as "testable," "researchable," or "not testable" and further explore them following the instructions above.

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Through this activity, your youth team has generated a set of potential research interests/questions that they can continue to explore throughout the remaining activities in the youth-driven pathway series. You should hold onto these ideas and revisit them to guide the discussions in future activities, such as when youth are generating questions for community interviews.

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