Applying the Learning Cycle Lens to Outdoor Instruction

An instructor can dramatically improve an extended field experience by making the whole experience follow a learning cycle. A “pretty good” individual trail activity can explode into excellence by making it learning cycle-based. If you come across organisms or other interesting finds during a hike, your time spent with each of them can also be a productive mini-learning cycle. There are many opportunities for cycles within cycles. To help you make sense of how to use this tool and plan for teaching, we are providing suggestions for applying the learning cycle phases at three different grain-sizes:

Short: Quick Learning Cycles With Exciting Finds

Invitation: Provide a brief, quick, share-of-the-moment discussion about the experience. As you walk with

everyone involved by asking questions and facilitating sharing.

Exploration: Ask questions to encourage observations, questions, connections, and explanations (e.g., “What do you notice? What does it make you wonder? What does it remind you of? Have you ever seen anything like that?”). Keep everyone involved by asking questions and facilitating sharing.

Concept Invention: Point out some things they might not have noticed. Don’t share everything you know, but only name/ facts/ ideas that help students to understand or describe what they’re seeing and stimulate their curiosity.

Application: Students should have a chance to apply a new piece of information they’ve learned about or experienced (e.g., “Let’s test if that’s how it moves when we set it down.” “Let’s see if it raises those things by its head if we move a finger towards it.” “Let’s gently test and observe the slug’s tentacles to see if two of them really are for touch and two for seeing.” “Let’s see if those things help it move.” “Let’s see if these things help it move.” “Let’s see if the slug uses those things to escape.” “Let’s see if those things help it move.”)

Reflection: Provide a brief pair/share (or whole group discussion) about the experience (e.g., “As you walk with a partner, share interesting observations and questions you have about the organism you just saw.” “Discuss whether you think its yellow color camouflages it or makes it stand out in its surroundings, and use evidence to support your ideas.” “Discuss whether you think the color of the slug’s eyes is a good indicator of its eyesight, and use evidence to support your ideas.” “Discuss whether you think the color of the slug’s eyes is a good indicator of its eyesight, and use evidence to support your ideas.”)

Medium: Individual Trail Activity Learning Cycle

Invitation: If you are about to lead an activity on tracks, spider webs, or whatever else, have students begin noticing something and talking with each other about the topic before you officially begin the activity (e.g., “What do you notice? What does it make you wonder? What does it remind you of? Have you ever seen anything like that?”). Keep everyone involved by asking questions and facilitating sharing.

Exploration: Ask questions to encourage observations, questions, connections, and explanations (e.g., “Let’s see if that’s how it moves when we set it down.” “Let’s see if it raises those things by its head if we move a finger towards it.” “Let’s gently test and observe the slug’s tentacles to see if two of them really are for touch and two for seeing.” “Let’s test a snail’s tentacles to see if two of them really are for touch and two for seeing.”)

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Long: Extended Field Experience (Whole-Hike Learning Cycles)

Invitation: Provide a brief, quick, share-of-the-moment discussion about the experience. As you walk with

everyone involved by asking questions and facilitating sharing.

Exploration: Ask questions to encourage observations, questions, connections, and explanations (e.g., “Let’s see if that’s how it moves when we set it down.” “Let’s see if it raises those things by its head if we move a finger towards it.” “Let’s gently test and observe the slug’s tentacles to see if two of them really are for touch and two for seeing.” “Let’s test a snail’s tentacles to see if two of them really are for touch and two for seeing.”)

Concept Invention: Point out some things they might not have noticed. Don’t share everything you know, but only name/ facts/ ideas that help students to understand or describe what they’re seeing and stimulate their curiosity.

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“Discuss with a partner what kind of evidence animals might leave behind.” “Point out to a partner any spider webs you see along the trail.”

An efficient way to do this while getting to the main activity site is to provide them with prompts so they can talk with a partner while walking along a trail. If it’s an activity about a concept, such as food chain, get students discussing related questions, such as brainstorming what organisms might live here, the possible connections between organisms in the area, which might eat which, etc.

Exploration: Exploration is perhaps the most important phase of an activity.

It’s when students develop their curiosity (and a positive relationship with nature). Give enough structure, guidance, and equipment so they are on task, know how to find organisms, and can investigate the environment safely. It helps to provide some autonomy from the instructor by having them work in pairs or teams. Make sure to model enthusiastic exploration yourself, and encourage any other adults present to do so too—particularly focusing on students who may be struggling.

Encourage them to think aloud while they explore. These skills are something new that they can work on during the activity. Encourage them to think aloud while they explore. These skills are something new that they can work on during the activity.

Reflection: Try to get students to go beyond simply repeating back facts they have heard—“I learned that raccoons...” Instead ask questions such as: “What are some skills you used during the activity?” “Describe a new way of thinking about this that you learned.” “What other questions do you still have?”

Application: If students have discussed a new idea, been turned on to an organism or community, or have learned a new skill, now give them opportunities to apply these things for themselves. Encourage them to continue making new connections throughout their outdoor experience (e.g., “Find a different organism, and compare it with the one we found earlier.” “Now that you have looked at the adaptations of an animal, do the same with a plant.” “We noticed those fungi were growing on wood, so pay attention as we hike to the surfaces that different fungi are growing on.” “Let’s compare the organisms in a grassland with those we found in the forest.”)

Encourage them to notice patterns and cross-cutting ideas that help them make sense of concepts and ideas.

Note: Underneath formative or summative feedback on their work and their understanding of the experiences they engage in, students can develop their own understanding of the concepts and ideas that they work with.

Concept Invention: Make sure the activity begins with invitation and exploration before you share or discuss science concepts with students.

Try to encourage students to struggle with ideas and build on their understanding. Remember to primarily focus on helping students invent concepts for themselves.

Ask questions such as, “What did you notice?” “What questions do you have?” “What are some possible explanations for that?” “Can you explain what makes you think that?” Try to help them make connections to what they already know.

Encourage them to notice patterns and cross-cutting ideas that help them make sense of concepts and ideas.

A series of thoughtful Walk & Talk questions, a guided Solo Sit, or some journal writing time can be effective reflections. Also, try to provide opportunities for students to share their reflections with the whole group.

Extended Field Experience (Whole hike) Learning Cycle

Invitation: Provide engagement in the topic, help students access their prior knowledge, and encourage an inquiry mind-set. Other possible goals are to help them learn each other’s names, to reduce anxiety about the outdoors, and to become engaged, to help all students feel included, and to encourage them to think about the content.

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Instead, focus on activities/routines that are mostly exploration and inquiry-based. They will then be more open to learning and discussing concepts later in the experience. This is a great time for activities that lead to "Inquiry Fever."

**Concept Invention:** This is a good time for a focus on activities or questions that introduce content related to your theme.

In order to ensure that students are making meaning of the topic, make sure each full-on concept invention activity contains its own learning cycle within the larger cycle.

**Application:** This is the time for students to actively try to apply the big ideas of your field experience in some way. For example: "Choose an organism, make observations, and try to figure out which body structures and behaviors are adaptations. Then be prepared to share your findings with your classmates and the rest of the group." Students sharing their reflections with the group can be effective reflections, depending on the mood and flavor of the group. Some examples include:

- **Walk & Talk:** A series of thought-provoking questions, a guided tour, or journal writing time can be effective. For example: "What are some things you got better at during the field experience/hike?" "What are some discoveries you and your classmates made?" "Describe a new way of thinking about this and what made them change?"

- **Solo Sit:** Application of thinking and discussing concepts later in the experience. This is a great time for activities that lead to "Inquiry Fever." Instead, focus on activities/routines that are mostly exploration and inquiry-based. They will then be more open to learning and discussing concepts later in the experience.

Reflection: A series of thought-provoking questions, a guided tour, or journal writing time can be effective reflections, depending on the mood and flavor of the group. Some examples include:

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