

SUPPORTING INSTRUCTIONAL IMPROVEMENT AND ENCOURAGING REFLECTIVE TEACHING

Developing teaching skills requires ongoing reflection and practice. Teaching students effectively in outdoor science programs requires a complex set of skills that must be applied in thoughtful and flexible ways to meet the needs of a variety of learners. Whether instructors come to your program with multiple years of teaching experience or have never taught students in an outdoor setting, there is always room to grow in making instructional choices. Through active reflection on teaching practices, teaching can become a nuanced form of artistry that develops and deepens throughout an instructor's career. Of course, before focusing on becoming an accomplished teacher, an instructor must first master basic management skills and become familiar with student activities and program expectations. Once these basic skills are in place and instructors are familiar with the program, then they can be introduced to a process for reflecting on and fine-tuning their teaching strategies. In this way, improving teaching and learning for students can take priority and your staff can become a true learning community.

Take advantage of opportunities to repeat and improve activities. Field instructors at residential outdoor science schools have the benefits and challenges of teaching a constant influx of new students, often on a daily or weekly basis. As a result, it's pretty common for an instructor to lead the same activity or program multiple times over the course of a season. Once an instructor is fully acquainted with the logistics of an activity, this should not be an excuse to stop trying to improve on instruction. Groups of students differ greatly, and even an experienced instructor leading a familiar activity must be aware of and responsive to the group in front of them. The goal is to have both seasoned staff and newer instructors fully engaged with learning about their students and making thoughtful decisions about instruction.

To encourage a culture of reflection and instructional improvement among staff:

1. Offer appropriate and timely professional learning sessions.

The BEETLES project offers extensive professional learning materials and resources, and suggests a progression for supporting less experienced field instructors as they build understanding of practice and theory for teaching (**see BEETLES Resources for Program Leaders**). Even instructors who are extremely reflective about their practice can struggle to improve their teaching strategies without support from research-based professional learning materials. Experiences with pedagogy, theory, and model student activities can infuse instructors with new ideas and offer direction towards developing their teaching skills. The order in which learning materials are presented to instructors should also be considered carefully. Initially, those newer to the field of outdoor science education can be consumed with the basics of instruction, group management, and the logistics of teaching outside. Educational theory can be a challenge to comprehend in the abstract, before instructors have had experience with the effective teaching practices that exemplify research-based pedagogy. Newer instructors may be better served to begin by leading exploration-based student activities (**see BEETLES Resources for Field Instructors**), and later being exposed to the more complex, pedagogy-focused professional learning sessions. Student activities and professional learning sessions focused on developing understanding of science content, should be presented once instructors have a solid understanding of the pedagogy and have practiced using effective teaching strategies in the field.

2. Create and maintain space for reflection.

Every experience with students can be a learning opportunity for an instructor, however, instructors who engage in systematic reflection will be more apt to recognize these opportunities and make adjustments to help achieve their goals for students. One way to encourage this kind of reflection is for programs to establish regular times for instructors to engage in reflection. Means of reflection can include short journal writing opportunities at the end of each teaching day, organized time for conversations among small groups of instructors throughout the week, or individ-

ual and group goal-setting at the beginning and end of a program season. Some programs organize staff meetings around discussions focused on questions they have about specific teaching practices emphasized in professional learning sessions (see **BEETLES Following Up on PL Sessions**). The list of questions included in **BEETLES Coaching Tools** can also be used by instructors on a daily basis to guide their own reflection.

3. Provide instructors with multiple opportunities for observation and coaching.

BEETLES offers resources for conducting learning-focused coaching, a process that involves goal setting and reflection in a pre-lesson conference, a lesson observation, and a post-lesson conference. Resources for coaching include an observation template with a detailed explanation of learning-focused coaching, and questions for use in pre- and post-conferences. This process is intended to encourage reflection, and is not designed for evaluation purposes. More specifically, the role of the coach is not to judge practice, but to gather evidence that can be used to improve instruction.