HOW TO USE VIDEOS FOR BUILDING REFLECTIVE PRACTICE

A dynamic teaching staff is a learning community with ongoing discussion about different teaching approaches and how they affect students. An outdoor science program can be an amazing laboratory for developing the "art of instruction" where instructors can push themselves and each other, to focus on developing teaching skills, to consistently try out new student activities and strategies, and to continually reflect on teaching and learning. Field instructors often get to lead the same activities with different groups of students. These can be great opportunities to grow and refine their teaching skills, if they have structured time to focus on different aspects of instruction, to discuss challenges, and to get appropriate feedback. Professional learning becomes an ongoing process that is never completed, since there's always something new to learn. Establishing a reflective learning culture among your staff provides a foundation for productive growth and change within your program. Establishing reflective structures, like watching instructional videos together and discussing them, can help nurture a culture of reflection and growth among staff, which in turn can encourage instructors to try new things, expand their skills, and talk about it with each other.

> "The more reflective you are, the more effective you are."
> *Pete Hall and Alisa Simeral, authors of Teach Reflect Learn*

Group Agreements. Before diving into these kinds of conversations about teaching, it's important to have established a set of group discussion agreements, to help keep discussion productive, inclusive, and respectful. If you haven't already established expectations for group conversations (sometimes referred to as norms), you'll need to introduce some general guidelines and their purpose (see the resources listed below). Alternatively, you can spend time beforehand creating these agreements as a group, in order to build buy-in with your staff members. These kinds of discussion guidelines can be similar to, but distinct from, the expectations that instructors establish for conducting science discussions with their students.

- Anti-Oppressive Facilitation for Democratic Process: Making Meetings Awesome for Everyone. Anti-Oppression Resource and Training Alliance (2017). Accessed online: http://aorta.coop/portfolio_page/anti-oppressive-facilitation/
- Garmston, R, and Wellman, B. (2009), The Adaptive School: A Sourcebook for Developing Collaborative Groups, 2nd edition. Accessed online: http://www.thinkingcollaborative.com/norms-collaboration-toolkit/
- National School Reform Faculty: A-Z protocols. Accessed online: https://www.nsrfharmony.org/free-resources/protocols/a-z

Agreements vs Norms: Many books, programs, and schools use the term "discussion norms" to describe group agreements. We intentionally chose not to use the term "norms" because it can send a message that there is one "normal" or accepted way to participate in discussions. This can lead to a marginalization of students of color, because the "normal culture is typically white, if it is unspoken" (Solomon, et al., 2005). Group Agreements can be a way to shift the culture to be more inclusive, deliberately highlighting different ways of being and acting as acceptable, and placing value on hearing and integrating different perspectives. If "Group Agreements" will be a challenging term for your students to understand and apply, you could also refer to them as "practices" or "ground rules."

There are two types of BEETLES videos you can use with your staff: student activity how-to videos, and discussion strategy videos.

> "At every moment…teachers make hundreds of instructional decisions—some instinctively, some based on planning, and some 'just because.' We wanted teachers to make intentional decisions as reflective practitioners."
>
> *DiRanna et al. Assessment Centered Teaching: A Reflective Practice*

Student Activity How-To Videos: The most important tool instructors can use to learn a BEETLES student activity is the activity write-up. The how-to videos supplement the write-ups by giving an idea of what the activity looks like, how the instructor leads it with students, and how students may respond during the activity. The videos also give brief examples of student-centered and nature-driven instruction, which can be valuable for staff to observe and ultimately strive for.

Using one of these videos for reflective teaching with your staff involves:

- watching a student activity video together
- discussing strategies they observe
- anticipating challenges in teaching the activity
- reading the write-up and planning to teach

Then instructors follow the steps in the reflective teaching cycle:

- read the write-up and decide on how to lead the activity
- teach the activity with students
- collect data on how it went (such as written observations)
- reflect and discuss with others at a scheduled staff follow-up meeting
- adjust their teaching
- then teach it again

For each BEETLES student activity video, there is a guide for a program leader to use to help structure the meeting, lead the discussion, and encourage implementation of the new activity, with reflection afterward. Each video works well to help instructors learn how to present the activity, but the *Case of the Disappearing Log* is probably best at featuring student footage.

The following are links to the BEETLES Student Activity How-to videos and guides that are available:

Case of the Disappearing Log
http://beetlesproject.org/resources/for-field-instructors/case-disappearing-log/

Bark Beetle Exploration
http://beetlesproject.org/resources/for-field-instructors/bark-beetles-2/

Decomposition Mission
http://beetlesproject.org/resources/for-field-instructors/decomposition-mission/

Discovery Swap
http://beetlesproject.org/resources/for-field-instructors/discovery-swap-2/

I Notice, I Wonder It Reminds Me Of
http://beetlesproject.org/resources/for-field-instructors/notice-wonder-reminds/

NSI: Nature Scene Investigators
http://beetlesproject.org/resources/for-field-instructors/nsi-nature-scene-investigators-2/

What Scientists Do
http://beetlesproject.org/resources/for-field-instructors/what-scientists-do-2/

(NOTE: The *Hand Lens Introduction* student activity video does not have a video discussion guide, because it's just the simple introduction of a tool.)

Discussion Strategy Videos: Maybe the most important and challenging skill for instructors to develop is how to lead effective discussions–which is why BEETLES has created a total of six discussion strategy videos. Using one of these videos for reflective teaching with your staff involves:

- watching a discussion strategy video together
- discussing strategies they observe
- planning for how to deal with possible challenges in implementing these techniques

Then instructors follow the steps in the reflective teaching cycle:

- set goals for discussion strategies to try out
- use them when teaching students
- collect data on how it went (such as written observations)
- reflect and discuss with others at a scheduled staff follow-up meeting
- adjust goals and teaching
- then teach again, and continue with the cycle

There's a general guide for program leaders to plan and lead these discussions, called "Discussion Strategies Video Guide." For each of the 6 BEETLES discussion strategy videos, there is a handout specific to the strategy discussed in the video that includes important takeaways, along with some suggested discussion prompts. We also list other handouts from BEETLES professional learning documents that can help support instructors in implementing the discussion strategies highlighted in the video.

The following are links to the BEETLES Discussion Strategy videos and guides that are available:

Building a Culture of Science Talk and Curiosity
https://www.youtube.com/watch?v=OcsePIU0cnQ

Diversity, Equity and Inclusion
https://www.youtube.com/watch?v=Szo0zn8Xn8k

Supporting English Language Learners
https://www.youtube.com/watch?v=EJudbws3HPA

Building Discussion Skills
https://www.youtube.com/watch?v=90vEVMVsmxI

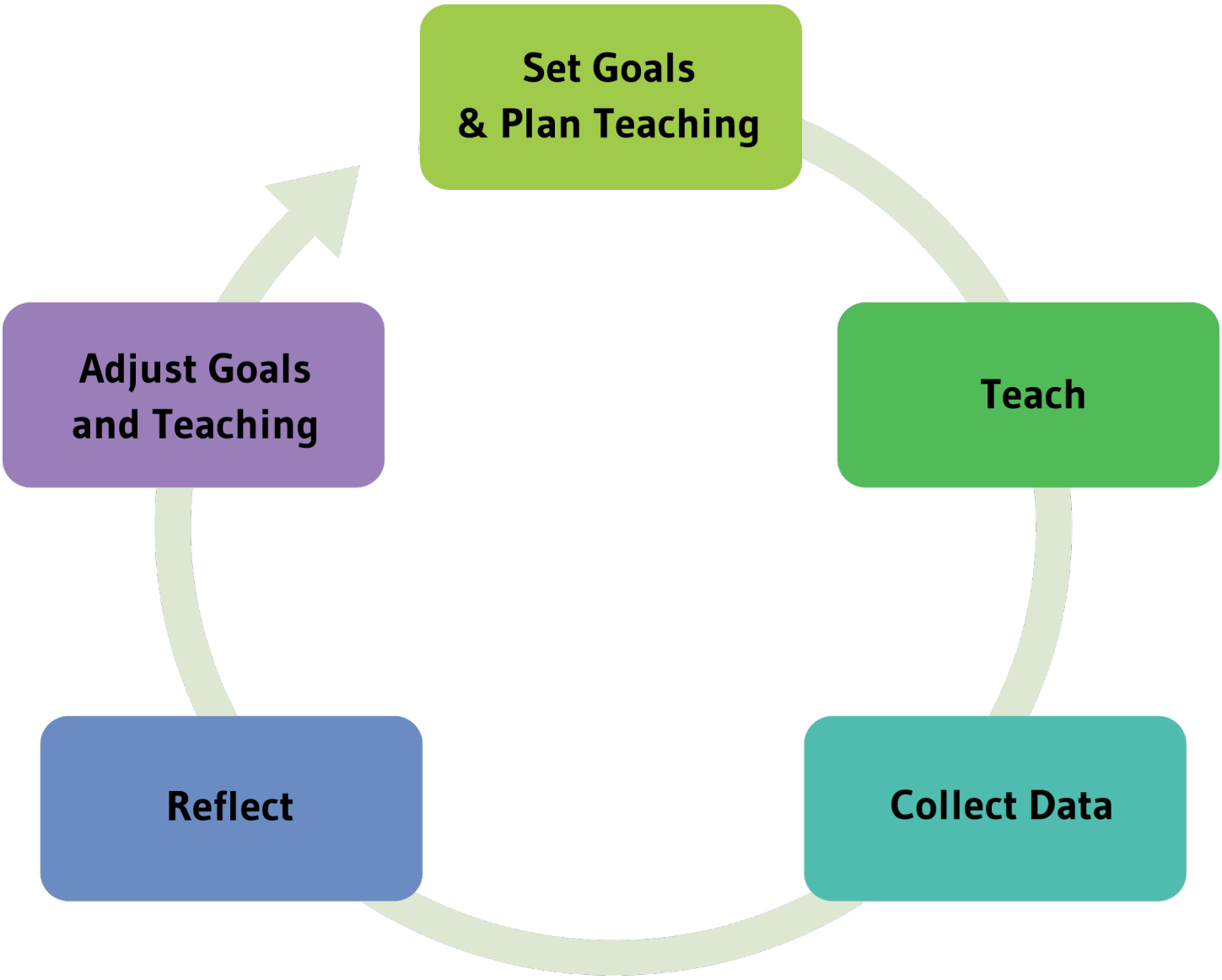
Responding to Students
https://www.youtube.com/watch?v=S4KJ-DpkJR4

Constructing Explanations and Engaging in Argumentation
https://www.youtube.com/watch?v=WfkCVpm4Ljg

For all videos, print or make a copy of the Reflective Teaching Diagram found on page 4 to use with your instructors during video discussions.

REFLECTIVE TEACHING DIAGRAM

Research has found that thinking about teaching as a cycle that involves planning for instruction, teaching lessons, collecting evidence, reflecting, and making adjustments with the goal of improving learning, can all help instructors make the subtle shifts to continually improve their practice over time. You can use this diagram to help visualize the steps in a reflective teaching cycle and then think about how to engage in this type of iterative process.



BACKGROUND INFORMATION FOR PRESENTERS

Building a Culture of Reflection

An outdoor science program can be an amazing laboratory for developing the "art of instruction" where instructors push themselves and each other, focus on developing teaching skills, consistently try out new student activities, and continually reflect on teaching and learning. In this kind of setting, becoming a good instructor involves more than just learning a "shtick" and being able to consistently present it in an entertaining way. When a teaching staff has a healthy reflective-learning culture in place, you can feel it. It's exciting and stimulating to be part of a community trying out new approaches and discussing successes and challenges with peers. Program leaders who support this kind of reflective culture help young field instructors develop into thoughtful educators who go on to have rewarding careers in science, education, and beyond, and who continue to affect the world in meaningful ways. Establishing a reflective-learning culture provides a foundation for growth and change within your program. Research on teacher learning argues strongly for including reflective practice for both new and veteran teachers. Plus, it just makes sense that instructors who actively think about the effectiveness of their teaching, discuss these issues with colleagues, and develop strategies to improve will make more progress than those who aren't given these opportunities and structures for collaboration and ongoing support.

Working towards a common goal. Establishing a somewhat formalized "professional learning community" can encourage instructors to adopt new approaches to teaching and learning. The central idea is that every member of the community is working towards a common goal of figuring out the best teaching approaches and strategies to reach the audience for the program—and there is a regular structure in place to help everyone work together. A professional learning community must establish a clear goal, like "creating the best possible learning experiences for our students." Programs that actively cultivate openness and growth among staff explicitly state that they have a goal of having staff explore various strategies to improve instruction. They also provide meeting time for staff to share examples of student work or debrief how a new activity went in order to learn what works best. Professional learning communities use specific discussion protocols that structure conversations to ensure an attitude of learning from practice rather than evaluating performance. When all staff are focused on achieving common goals, and when program leaders are equally focused on providing necessary support to instructors through coaching and mentoring, a learning community can form that leads to improved performance and increased job satisfaction.

Encouraging a growth mindset among instructors. An essential characteristic of a professional learning community is that members adopt a growth mindset. This means they understand that the abilities of individual learners (their students and themselves) can change and are not fixed or primarily due to innate talent. For example, an instructor who leads an unsuccessful discussion might then decide to not try leading discussions again because they feel they're not good at it and it's easier to stick with something they have more experience with, or they are convinced that their students can't do it. An instructor with a growth mindset is more likely to think about what didn't work, look into the sorts of abilities they can develop to overcome that issue next time, and try again (and again, and again…). When instructors and program leaders truly believe teaching abilities can grow (and that we all have room to grow!), they're more willing to make adjustments to their instructional practices and try out new strategies and approaches. Program leaders who nurture a growth mindset create an environment of receptivity that helps instructors build and improve their teaching skills.

Creating structures for coaching and mentoring staff. Studies of professional learning models report that a critical aspect of improving teaching practices is receiving timely feedback from more experienced educators and peers. Observing an instructor and engaging with them in discussion about teaching strategies and approaches can be a very effective way to improve specific teaching practices. BEETLES Reflective Teaching Tools (http://beetlesproject.org/resources/reflective-teaching-tools/) assist program leaders to observe students, then provide feedback that can help instructors meet their goals and make adjustments to teaching.

Field instructors often have opportunities to lead the same activities with different groups of students, and, when given appropriate feedback, they can effectively fine-tune their teaching skills. Providing reflective time during staff meetings,

creating paid opportunities for staff to get together and discuss their teaching, and organizing a structure for peer-coaching (among other things) all support continual improvement and allow instructors to learn from each other's experiences.

Differentiating between evaluation and coaching. It's important to distinguish performance evaluation efforts from coaching. Evaluation efforts are mostly about informing the program or individual about how well they're meeting specific goals and expectations. Coaching, on the other hand, usually is about improving practice.

- **Evaluation:** When observing instructors for evaluation purposes, the criteria for success should be clearly communicated well in advance and can take the form of a checklist of teaching or student behaviors. The evaluative feedback provided is meant to let the instructors know how well they're meeting expectations.
- **Coaching:** Coaching or mentoring focuses on observations rather than evaluations or interpretations. The coach asks the instructor to choose a particular teaching strategy or technique they'd like to work on by receiving observational feedback about what actually happened. Program leaders have emphasized that instructors are much more open to feedback about their teaching when it feels like a collaborative discussion and when they have permission to try new, challenging things that they might not succeed at the first time. Coaches can support instructors to make their own thoughtful adjustments and improvements. Negative or positive evaluative feedback during this kind of learning process can actually undermine instructors' success.

References

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Solomon, R. P., Portelli, J. P., Daniel, B. J., & Campbell, A. (2005). The discourse of denial: How white teacher candidates construct race, racism and 'white privilege'. Race ethnicity and education, 8(2), 147-169.