

Facilitator Guide

Module 6: Acting on Evidence of Student Learning

SCIENCE

Facilitator Guide

Module 6: Acting on Evidence of Student Learning

Through this module, participants will learn about strategies to take pedagogical action to move student learning forward toward the Learning Goals, characteristics of effective feedback, and ways to promote effective peer and family feedback.

This module includes materials for:

- An approximately one-hour professional learning session, including a PowerPoint presentation and this facilitator guide.
- An approximately one-hour teacher collaboration activity session, including a PowerPoint presentation and a teacher collaboration facilitator guide

Module 6 Learning Goals

Participants will understand:

- Strategies to take pedagogical action based on evidence of student learning
- Characteristics of effective feedback
- How to use formative assessment to strengthen teaching practice

Module Success Criteria

Participants will be able to:

- Reflect on and improve the use of descriptive feedback that moves students toward Learning Goals
- Reflect on teaching practice through the use of formative assessment strategies

Role of the Facilitator

The facilitator's role in this module is to 1) facilitate the professional learning module and 2) facilitate the teacher collaboration activity. Guidance for facilitating the teacher collaboration activity can be found in the *Teacher Collaboration Activity Facilitator Guide*.

- All materials have been prepared for facilitators and further details are available in this document.
- Facilitators should review all materials and make adjustments based on timing, group size, local priorities, local norms, presentation format (in-person or digital learning environments) and facilitator's personal presentation style.
- Facilitator notes (available here and as slides notes for each slide) provide flexible options for content delivery, and activities are designed to support facilitator decisions.
- The facilitator for this module does not have to be an expert on formative assessment. While this facilitator guide is intended to provide the background knowledge and scaffolding necessary for facilitators to lead the sessions in this module, the priority for facilitators should be to support participant sense-making. Therefore, facilitators should not feel pressure to be seen as "experts" on formative assessment.

Table: Agenda

Section	Time
Section 1: Introduction	5 minutes
Section 2: Review: Formative Assessment Process	5 minutes
Section 3: Taking Pedagogical Action	15 minutes
Section 4: Characteristics of Effective Feedback	20 minutes
Section 5: Formative Assessment Process and Teaching Practice	10 minutes
Section 6: Tying it All Together	5 minutes

What you will need:

- Module 6: PowerPoint presentation
- Taking Pedagogical Actions in the Formative Assessment Process handout

Facilitator preparation:

• Preview the slides and read the slide notes carefully.

Section 1: Introduction

Table: Slides 1–3

Slide #	Guidance	Slide Image
1	Title slide	Module 6: Acting on Evidence of Student Learning Science Kentucky Department of Education
2	Introduce the content on the slide by providing the following information. As you have seen in Modules 1–5, understanding where we, as learners, are heading and how we will know if we are successful is essential for teaching and learning and is a key aspect of quality assessment practices. At the end of this presentation, you should understand: • Strategies to take pedagogical action based on evidence of student learning • Characteristics of effective feedback • How to use formative assessment to strengthen teaching practice	Learning Goals Participants will understand: Strategies to take pedagogical action based on evidence of student learning Characteristics of effective feedback How to use formative assessment to strengthen teaching practice

Slide #	Guidance	Slide Image
3	 Introduce the content on the slide by providing the following information. At the end of this learning sequence (including this module and the teacher collaboration activity), you should be able to: Reflect on and improve the use of descriptive feedback that moves students toward Learning Goals Reflect on teaching practice through the use of formative assessment strategies Facilitators may want to note that the terms classroom and classroom setting are used throughout this presentation and can refer to both physical classrooms and distance learning environments. 	Success Criteria Participants will be able to: Reflect on and improve the use of descriptive feedback that moves students toward Learning Goals Reflect on teaching practice through the use of formative assessment strategies

Section 2: Review: Formative Assessment Process

Table: Slides 4-9

Slide #	Guidance	Slide Image
4	Section Introduction slide	Review: Formative Assessment Process
5	Introduce the content on the slide by providing the following information. This definition of formative assessment comes from the Council of Chief State School Officers (CCSSO). If participants engaged in Modules 2, 3, 4 and 5, facilitators may want to acknowledge that they have seen this definition in previous modules. Ask participants to read and reflect on this definition. Next, facilitate a brief discussion in which participants consider this definition in the context of what it says about acting on evidence of student learning in the formative assessment process. Consider using some of the following questions to support the discussion.	Formative Assessment: A Definition Formative assessment is a planned, ongoing process used by all students and teachers during learning and teaching to elicit and use evidence of student learning to improve student understanding of intended disciplinary learning outcomes and support students to become self-directed learners. (CCSSO, 2018)

Slide #	Guidance	Slide Image
	 What words or phrases in this definition address acting on evidence of student learning in the formative assessment process? 	
	 What does this definition, taken as a whole, tell you about acting on evidence of student learning in the formative assessment process? 	
	Some key things to notice might be the following:	
	 This definition flags using evidence to improve student understanding for two purposes, disciplinary learning and becoming self-directed learners. 	
	 The definition emphasizes that formative assessment is planned and ongoing and acting on evidence of learning isn't something that happens primarily by accident or spontaneous inspiration. 	
	 The definition emphasizes that students and teachers both elicit and use evidence of student learning. Acting on evidence is not just for teachers. 	
	For more information on this definition, including the reasoning behind it, refer to this document: https://ccsso.org/resource-library/revising-definition-formative-assessment	

Slide #	Guidance	Slide Image
Slide #	Introduce the content on the slide by providing the following information. This slide takes a closer look at the cycle of assessment in the specific context of formative assessment. Learning Expectations: Establishing Learning Goals and Success Criteria is an essential entry point for the formative assessment process. Learning Goals describe what students will learn in a learning period (like a lesson or unit) and success criteria describe what specifically students will do to demonstrate that they have met the Learning Goals. Students should have a strong understanding both of what they are supposed to learn and how they will know and show when they are successful. Learning Goals and Success Criteria should be aligned to the learning expectations or standards associated with learning progressions. Eliciting Evidence:	Cycle of Formative Assessment Learning Expectations - Learning Goals - Success Criteria - Learning progressions Elicit Evidence - Strategy - Anticipate responses - Embed in teaching and learning - Interpret Evidence - Peer- and self- assessment - assessment - assessment - assessment - patrioris deducts - Act on Evidence - Actionable feedback - Using evidence and patterns - learning
	These Learning Goals and Success Criteria should guide the design of strategies to elicit evidence of student learning, often in a variety of ways over the course of a learning period. This may include a widerange of tasks like populating a graphic organizer and using math manipulatives to represent their thinking, observation, discussion and questioning. Interpreting Evidence: To support you in making decisions about useful, real-time pedagogical action, it helps to anticipate common potential student responses in	
	advance and, based on the learning progression, have pedagogical actions aligned to these responses at the ready. Acting on Evidence:	

Slide #	Guidance	Slide Image
	Formative assessment is ultimately about what comes next for students to move toward their Learning Goals. Students and teachers need to work together so that they all understand their next steps.	
7	Introduce the content on the slide by providing the following information. As discussed in previous modules, self-directed learners need to understand what they are learning and how to get there. Learning Goals and Success Criteria work in tandem to help students understand where they are going with their learning so that they can actively manage their own learning. If a lesson is a journey that students and teachers take together, Learning Goals represent to students the destination of their journey, signaling clearly what they are learning and why it is important. Success Criteria demonstrate to students what it looks like to be successful in achieving the Learning Goals. Success Criteria represent the checkpoints along the route, giving students specific information to understand their progress and make adjustments to move their learning forward.	Mapping Student Learning LEARNING GOALS DESTINATION SUCCESS CRITERIA CHECK POINT
	Learning Goals and Success Criteria are essential tools for students to understand where they are in their learning so that they can become self-directed learners.	
	As we consider how to take pedagogical action based on evidence of student learning, Learning Goals and Success Criteria serve as a critical guide.	
	For more information on Learning Goals and Success Criteria, see Module 3 in this series.	
	Facilitators may want to note for the purposes of this presentation, the word "lesson" may refer to the learning plan for a single class period or could reflect a learning plan that covers several days. It's a coherent set of learning opportunities focused on the same content and goals.	

Slide #	Guidance	Slide Image
8	Introduce the content on the slide by providing the following information. As discussed in previous modules, evidence of student learning informs student and teacher decisions about next steps to move students toward their Learning Goals. A critical element of lesson planning is integrating strategies to gather evidence of student learning during the learning and then having the requisite tools and strategies at your fingertips to interpret and act on the evidence. Taking appropriate pedagogical action is dependent on eliciting meaningful evidence of student learning that is aligned to the Learning Goals and Success Criteria. For more information on eliciting meaningful evidence of student learning, see Module 4 in this series.	Key Considerations for Evidence of Student Learning Intentionally design and implement Make student learning visible Inform students and teachers about next steps Integrate into learning
9	Introduce the content on the slide by providing the following information. In the final module of this series, Acting on Evidence of Student Learning, we will focus on the third question in this cycle, "Where to next?" In the formative assessment process, students and teachers establish answers to the questions, "Where am I going?" and "Where am I now?" But the formative assessment process doesn't stop with understanding where students are in their learning. Formative assessment is ultimately about using that information to answer the question, "Where to next?" so that students can move toward their Learning Goals. You may notice the dashed line that connects "act on evidence" to "elicit evidence of learning." This reflects the iterative nature of formative assessment. After taking pedagogical action, it is important to elicit further evidence to determine if the action taken successfully	Where to next? Start Where To Next? Where Am I Goling? Adapted from Formative Assessment Insights (WestEd) 9

Slide #	Guidance	Slide Image
	moved student learning forward and to inform what comes next to help students progress toward their Learning Goals.	

Section 3: Taking Pedagogical Action

Table: Slides 10-25

Slide #	Guidance	Slide Image
10	Section introduction slide	Taking Pedagogical Action
11	Note to facilitators: Participants may wish to reference the Taking Pedagogical Action in the Formative Assessment Process handout. Introduce the content on the slide by providing the following information. In the formative assessment process, students and teachers interpret meaningful evidence of student learning to get a clear picture of the current status of learning in relationship to the Learning Goals and Success Criteria. This information is used to inform teacher and student actions that respond to the evidence to help students take the next step in their learning. Effective decision making about appropriate and effective pedagogical action requires a strong understanding of student learning progressions.	Pedagogical Action: Where to next? Decisions about pedagogical actions should be: Informed by a detailed knowledge of the student's current level of understanding Grounded in learning progressions Guided by what comes next in the progression of learning Embedded in learning
	Teachers are already using the strategies we will discuss, but our focus today is on deepening teacher capacity to use these strategies intentionally and strategically to move student learning forward. These	

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	individual actions may work in tandem with each other, but they should be deployed to achieve particular learning outcomes in response to a specific learning need. Each individual action is not intended to be used as a blanket teaching or instructional method.	
	Pedagogical action can take a variety of forms and may happen in the moment or in a learning period that follows, but the action should be grounded in where students are in their learning, focused on the next steps in student learning and take place during learning.	
	In the slides that follow, we will discuss some different strategies for pedagogical action.	
12	Introduce the content on the slide by providing the following information.	D 1 1 A
	Walk participants through the information on the slide about <i>telling</i> as a pedagogical action. Facilitators should draw attention to the "When to use it" section, emphasizing that <i>telling</i> should be used strategically only when students are stuck and providing specific information directly will eliminate a barrier and allow students to keep moving forward. <i>Telling</i> is not simply standing in front of a classroom and lecturing and shouldn't be used to get in the way of productive struggle but to keep students from spinning their wheels.	Pedagogical Action: Telling What it is: providing students what they need in the moment (e.g., an unknown word or the steps to complete a task) to help them maintain momentum in the learning process. Use it when: students need specific information that will remove temporary obstacles to learning. Use professional judgement to ensure that telling supports learning and does not get in the way of productive struggle. Taking Pedagogical Action. (n.d.). Retrieved February 27, 2021, from https://caaa.wested.org/vp.

Slide #	Guidance	Slide Image
13	Introduce the content on the slide by providing the following information. The examples on this slide offer situations when using the strategy of telling could be effective in eliminating barriers that surface in evidence of student learning. These examples reflect students who may be struggling to develop or use a model or analyze data that is needed to make and support claims because they are unable to access specific prior knowledge necessary to understand information or data. Keep in mind that, as emphasized on the previous slide, using telling as a strategy requires professional judgement to ensure that this action supports student learning. Next, facilitate a brief discussion in which participants brainstorm	Telling in Action: Science Sometimes telling can be helpful when students are confused: • "The rats eat seeds and fruits, but they also eat insects and crawfish." • "Here's a hint: insulin is a hormone that is made up of amino acids." • "This line represents a fault that passes through the area."
14	examples of how they currently use the "telling" strategy in the classroom. If time is a consideration, hold all discussion until slide 25.	
14	Introduce the content on the slide by providing the following information. Walk participants through the information on the slide about <i>directing</i> as a pedagogical action. <i>Directing</i> is a strategy that is useful when students need to know specifically what to do.	Pedagogical Action: Directing What it is: giving a specific instruction to let learners know what they are supposed to do. Use it when: students need to know specifically what to do so they can move forward. Taking Pedagogical Action. (n.d.): Retrieved February 27, 2021, from https://cana.wested.org/wp:

Slide #	Guidance	Slide Image
15	Introduce the content on the slide by providing the following information. The examples on the slide offer situations when providing students with specific directions about what to do next may keep them moving forward toward their Learning Goals. Next, facilitate a brief discussion in which participants brainstorm examples of how they currently use the "directing" strategy in the classroom. If time is a consideration, hold all discussion until slide 25.	Directing in Action: Science Directing can help when students need to know specifically what to do: "Place your container on the scale first, and then tare the scale to read 0." "Be sure to show how the parts of your model interact with each other." "Remember we are only using the highest and lowest magnifications to observe what's on the slide. Start with the lowest magnification."
16	Introduce the content on the slide by providing the following information. Walk participants through the information on the slide about explaining as a pedagogical action. Explaining is similar to telling in that it is providing information directly to students, but this action is focused on helping students develop their own understanding of something so that they can apply it to their learning. In contrast, telling should be used strategically only when students are stuck and providing them with specific information will eliminate a barrier and allow students to keep moving forward. Explaining can be effective when introducing an unfamiliar concept, clearing up misconceptions, describing a process or clarifying the steps of a specific learning strategy (such as note-taking). While explaining is a strategy that provides targeted information that can give students what they need to apply that understanding to their own learning and discovery, it should not provide the information that is necessary in order to make sense of scientific or engineering	Pedagogical Action: Explaining What it is: providing a verbal explanation, tailored to individual student needs and intended to help students develop their own understanding. Use it when: students need to develop an understanding of something so they can apply it to their own learning. Taking Pedagogical Action. (s.d.). Retrieved Fabruary 27, 2021, from https://csaa.wested.org/wp.content/uploads/2020/03/Taking. Pedagogical Action.pdf

Slide #	Guidance	Slide Image
	phenomena; it should only supplement existing knowledge that then must be applied to make sense of phenomena.	
17	Introduce the content on the slide by providing the following information. The examples on the slide offer situations when providing an explanation to students may help them build their understanding so that they can apply it to their own learning. Next, facilitate a brief discussion in which participants brainstorm examples of how they currently use the "explaining" strategy in the classroom. If time is a consideration, hold all discussion until slide 25.	Explaining in Action: Science Explaining to help students build their understanding and apply it to their learning: • "Even though the causes of these two phenomena appear similar, this one is actually caused by the molecules releasing energy rather than by absorbing energy. Can you see how to use that information to revise your model?" • "Striped fur may be an advantage in an environment with lots of plants, but it might be a disadvantage in another with bare soil. That's one way geographical location can lead to speciation. Can you think of any others?"
18	Introduce the content on the slide by providing the following information. Walk participants through the information on the slide about prompting as a pedagogical action. Facilitators should note that prompting is most effective when the teacher has a clear picture of the current status of the individual student's learning. Prompting should not take the learning away from the student but should be used in a way that allows the student to successfully bridge to new learning.	Pedagogical Action: Prompting What it is: providing students with a verbal cue that helps them draw on prior knowledge. Prompting sometimes takes the form of a reminder, a strong hint, a clue, or a question, and it should always be followed by adequate wait time. Use it when: students need help to access and apply prior learning as a bridge to new learning. Taking Pedagogical Action. (n.d.). Retrieved February 27, 2021, from https://cana.wested.org/voj.

Slide #	Guidance	Slide Image
19	Introduce the content on the slide by providing the following information. The examples on the slide offer situations when providing students with prompts to activate prior knowledge and apply it can help them move forward in their learning. Prompting may take the form of a strong hint, a clue or question, and it should always be followed by adequate wait time. Next, facilitate a brief discussion in which participants brainstorm examples of how they currently use the "prompting" strategy in the classroom. If time is a consideration, hold all discussion until slide 25.	Prompting in Action: Science Prompting when students need help to access and use prior knowledge: "Think of the way energy flows in a food chain." "Remember the model we made to show how we could calculate the energy of the missing component? We can do the same type of thing here." "In our model of the solar system, we saw that the moon revolved around Earth as Earth rotated on its axis. How long does it take the moon to make one revolution? And for Earth to make one rotation? So, which do you think is more responsible for what we see on Earth – that is, the moon's apparent motion across the sky each day?
20	Introduce the content on the slide by providing the following information. Walk participants through the information on the slide about <i>modeling</i> as a pedagogical action. <i>Modeling</i> is a good strategy to support students to understand how to do something so they can apply it to their own practice.	Pedagogical Action: Modeling What it is: making learning "visible" by verbalizing (i.e., explicitly narrating their thinking) or showing reasoning (i.e., writing or demonstrating). Use it when: students need to see what a process, strategy, or a specific skill can look like in practice so they understand how they can apply it in their own learning. Taking Pedagogical Action. (n.d.). Retrieved February 27, 2021, from https://cana.wested.org/wp.

Slide #	Guidance	Slide Image
21	Introduce the content on the slide by providing the following information. The examples on the slide offer situations when showing students what it looks like to apply a skill or process will help them move forward in their learning. Next, facilitate a brief discussion in which participants brainstorm examples of how they currently use the "modeling" strategy in the classroom. If time is a consideration, hold all discussion until slide 25. An example of modeling in science, "I know that light travels in straight lines between objects and that light goes from a source to an observer. I want the arrow to show how light travels, so my model should show an arrow coming from the light bulb to the person's eye. But what about the red ball? Hmm. If light went from the bulb to the eye to the red ball, then the light from the red ball is not getting to the person's eye so they can see it. So, the light must go from the bulb to the red ball to the person's eye. Yes, that makes more sense."	Modeling in Action: Science Modeling helps students visualize what it looks like to apply something to their learning: • "This graph shows that more oxygen is released by plants when CO₂ levels are higher, and that more oxygen is released at higher temperatures than at lower temperatures. Let's see, plants release oxygen during photosynthesis, so they must be doing it faster under these conditions. That means that I can use this data to make the claim that plants will likely undergo photosynthesis at a faster rate when both temperature and CO₂ levels are slightly higher than they are now." 21
22	Introduce the content on the slide by providing the following information. Walk participants through the information on the slide about questioning as a pedagogical action. Facilitators should note that questioning as an effective strategy involves probing questions and exploration of ideas to uncover student thinking, not simply asking a question and moving on. Next, facilitate a brief discussion in which participants brainstorm examples of how they currently use the "questioning" strategy in the classroom. If time is a consideration, hold all discussion until slide 25.	Pedagogical Action: Questioning What it is: asking well-designed and deliberate questions, including follow-up questions, to probe answers to provide information about current understanding and to help students uncover answers for themselves about their own learning and next steps. Use it when: students need an opportunity to share and develop their understanding through discussion and exploration. Taking Pedagogical Action. (n.4.). Retrieved February 27, 2021, from https://caaa.wested.org/wp.

Slide #	Guidance	Slide Image
23	Introduce the content on the slide by providing the following information. The examples on the slide offer situations when questioning may help surface student learning and keep students moving forward toward their Learning Goals. Next, facilitate a brief discussion in which participants brainstorm examples of how they currently use the "questioning" strategy in the classroom. If time is a consideration, hold all discussion until slide 25.	Questioning in Action: Science Questioning to surface student thinking: • "Can you explain how you know whether there is a direct correlation or causation among each of these variables and the carrying capacity?" • "What claim are you trying to make and what data do you need to gather to support that claim?" • "Can you tell me the reason why you selected these two data points? Is there something special about them?"
24	Introduce the content on the slide by providing the following information. Walk participants through the information presented on the slide about feedback as a pedagogical action. Tell participants that feedback, both teacher-directed feedback and student feedback, is such a central element of the formative assessment process that we will explore this pedagogical action in greater depth later in the presentation.	Pedagogical Action: Feedback What it is: providing students with information about their learning that allows them to reflect on and plan next steps. Feedback should not be focused on whether students are right or wrong, instead, feedback should offer hints, cues, or suggestions rather than total solutions, in order to assist students in building a repertoire of learning strategies. Use it when: students need specific information about what they did well and what they can do to improve, in order to help them move their learning forward toward their Learning Goals.

Slide #	Guidance	Slide Image
25	Note to facilitators: Participants may wish to reference the Taking Pedagogical Action in the Formative Assessment Process handout. Facilitate a discussion in which participants reflect on the strategies for pedagogical action presented on the previous slides in the context of their own practice. Note that we will be discussing feedback in depth in the next section of this module. Facilitators may want to consider using some of the following questions to support the discussion: • Which strategies do you rely on most? • How do you decide which strategy to use in specific instances? • Which strategies are well-suited to the content and the students you teach? • Which strategies would you like to try to engage in more? • What challenges do you find with any of these strategies? • How have you engaged in these different pedagogical actions in a remote context? • Which of these pedagogical actions are well-suited for a remote learning context, and which are more challenging in a remote learning context?	Reflecting on Pedagogical Action Consider the different strategies we just discussed in the context of your own practice: • Telling • Directing • Explaining • Prompting • Feedback • Prompting

Section 4: Characteristics of Effective Feedback

Table: Slides 26-41

Slide #	Guidance	Slide Image
26	Section introduction slide	Characteristics of Effective Feedback
27	Introduce the content on the slide by providing the following information. In the formative assessment process, feedback is designed to empower students to make decisions about where to go next in their progress toward their Learning Goals. This requires thoughtful feedback that: • Relates to student Learning Goals and Success Criteria • Is actionable • Is specific to the learner • Helps students manage their own learning We will explore each of these attributes of meaningful feedback in the following slides.	Effective Feedback Relates to student Learning Goals and Success Criteria Actionable for the student Specific to the learner Helps students manage their own progress toward Learning Goals

Slide #	Guidance	Slide Image
28	Introduce the content on the slide by providing the following information. The primary purpose of feedback in the formative assessment process is to help students understand where they are in their learning relative to where they are going. This means that in order to engage fully in applying feedback to their learning, students must have a clear understanding of their Learning Goals and Success Criteria. It also requires the teacher to have a strong understanding of the learning pathway that leads students toward the Learning Goals and Success Criteria so that they can offer feedback that clarifies next steps in learning for the students.	Related to Learning Goals and Success Criteria Students: clarity about Learning Goals and Success Criteria Teacher: understanding of the progression of learning that leads toward Learning Goals and Success Criteria
29	Introduce the content on the slide by providing the following information. Ask participants to read the Learning Goal and question posed on the slide. The Learning Goal listed is taken from the example given in Modules 3, 4 and 5. Then ask them to consider which feedback examples presented on the slide are more related to learning goals and which are less related to learning goals. Next, give participants the opportunity to discuss which feedback examples are more aligned to the Learning Goal. • What feedback is more likely to help a student move toward this learning goal?	Feedback: Related to Learning Goals Learning Goal: Today we are learning to use the properties of materials in order to place them into different groups. Which feedback is more likely to help support a student in using the properties of materials to place them into groups? "What are some properties of different materials? How can we test the objects for those?" "Try putting all of the wooden objects together in a group and all of the metal objects together in a group." "Does the property change if I cut the object in half? So, is that a property of the object or the material it's made from?" "How did you know whether to put these objects in the same group? What evidence did you use?" "How can you use the evidence you gathered to make a claim about each

Slide #	Guidance	Slide Image
30	Introduce the content on the slide by providing the following information. Possible examples of feedback that is less helpful and more helpful in moving students toward their Learning Goals are included on this slide. Participants may have other examples that they feel are well aligned to Learning Goals and Success Criteria. Facilitators may want to state explicitly that the point is not that feedback must never attend to any learning beyond the stated Learning Goals and Success Criteria for the lesson. Instead, the point is that teachers should be strategic about their feedback, focusing on the most important aspects of student learning. Next, facilitate a short discussion where participants think about how they target their feedback to student Learning Goals. Facilitators may consider using some of the following questions to support the discussion: • How do you prioritize what to focus on when giving feedback to	Examples: Learning Goals Learning Goal: Today we are learning to use the properties of materials in order to place them into different groups. Which feedback is more likely to help support a student in using the properties of materials to place them into groups? Less Related to Learning Goals * "Try putting all of the wooden objects together in a group and all of the metal objects together in a group." * "How can you use the evidence you gathered to make a claim about each object?" * "Bow did you know whether to put these objects in the same group? What evidence did you use?" * "What are some properties of different materials? How can we test the objects for those?" * "Does the property change if I cut the object or the material it's made from?" * "How did you know whether to put these objects in the same group? What evidence did you use?"
	 students? How do the Learning Goals and Success Criteria inform your feedback? Are there general areas of feedback you always focus on regardless of the Learning Goals? What do you notice about how your students relate your 	
	feedback to their Learning Goals?	

Slide #	Guidance	Slide Image
31	Introduce the content on the slide by providing the following information. Feedback is effective if it creates a shift in student thinking that allows them to move their own learning forward.	Actionable • Clarifies for the student where their
	 Provide clear, descriptive language that can signal to students where they currently are in their learning and what they can do to make progress toward the Learning Goals. 	Clarines for the student where their learning is in relation to the Learning Goal Communicates strengths and next steps Is followed by time for supported reflection and application
	 Feedback should focus on what students are doing well and how they can improve. Feedback is most actionable when students can apply it not only to their current learning but to develop an understanding of how to apply it to new contexts as well. 	© X ⊜⊝ ♦
	 Students need time during their learning to process feedback, ask clarifying questions and apply or plan to apply it to their next steps in learning. Without structured opportunities to make sense of feedback and translate it to their learning, feedback will not support students in meeting their Learning Goals. 	
	 Summative comments and corrections may provide students with the information needed to understand where they are in relation to the Learning Goals and specifically what to do next to improve, provided they allow time for supported reflection and application. Often, a letter grade does not offer students the opportunity to reflect and respond in a way that allows them to take the next steps to reach their intended learning outcome. 	

Slide #	Guidance	Slide Image
32	Introduce the content on the slide by providing the following information. Ask participants to read the question on the slide or read it to them. Then ask them to consider which of the feedback examples presented on the slide are more likely to help a student improve their learning and which are less likely to help a student improve their learning. Next, give participants the opportunity to discuss which of the feedback examples on the slide provide actionable information for students. • Which feedback is more actionable for a student?	What is actionable? What feedback is more likely to help a student improve their learning? "Think about whether this property would change if I cut the object in half." "That is not a property of a material; it's a property of the object." "I like how you sorted these objects into groups. Please do more like these." "I appreciate that you did more tests to gather evidence of properties, but you tested the same property twice." "Do you see some patterns in the properties of these materials that would help you sort into more groups?" "Rather than two tests for the same property, can you think of another property and a way to test it?"
33	Introduce the content on the slide by providing the following information. Ask participants to read the examples on the slide or read it to them. Participants may have other examples that they feel are more actionable for students. These examples are merely intended to support discussion and prompt participant thinking. Next, facilitate a short discussion where participants think about how they can ensure their feedback actionable for students. Facilitators may want to consider using some of the following questions to support the discussion: • When have you noticed that students have trouble applying feedback? • How do you know if your feedback feels actionable to your students?	Actionable Feedback Examples What feedback is more likely to help a student improve their learning? Less Actionable • "That is not a property of the object." • "I like how you sorted these objects into groups. Please do more like these." • "I appreciate that you did more tests to gather evidence of properties, but you tested the same property twice." • "Rather than two tests for the same property, can you think of another property and a way to test it?"

Slide #	Guidance	Slide Image
34	Introduce the content on the slide by providing the following information. There is no one-size-fits-all when it comes to feedback. Students are individuals and are in different places in their learning; they bring different assets, experiences and prior knowledge, and they have different communication styles. Effective feedback considers the needs of the specific learner and what will help them make progress in their learning. Consider: • What prior knowledge, personal experience, language and cultural strengths does this student have that can serve as a bridge to my feedback? • How can I offer feedback in ways that will keep this student motivated? • What volume of feedback will this student be best able to process and apply? • How will I know if my feedback makes sense to the student?	Specific to the Learner Effective feedback considers the learning needs of the individual student: • What prior knowledge, personal experience, language and cultural strengths does this student have that can serve as a bridge to my feedback? • How can I offer feedback in ways that will keep this student motivated? • What volume of feedback will this student be best able to process and apply? • How will I know if my feedback makes sense to the student?
35	Introduce the content on the slide by providing the following information. Ask participants to read the examples on the slide or read it to them. Then ask them to consider which of the feedback examples presented on the slide are more specific to the learner and which are less specific to the learner. Facilitators may want to acknowledge that the general examples on this slide may not fully capture the work of targeting feedback to actual students in a classroom but are intended to help support thinking about what that process looks like.	What is specific to the learner? What feedback below takes into consideration the learning needs of individual students? "Think about the puddles we saw on the playground last week. Remember how they were gone by lunch time? Which process in the water cycle do you think caused the puddles to disappear?" "We reviewed the water cycle at the beginning of class yesterday. Do you remember what happens to water in the first step?" "Can you explain how human activity is affected by this new policy and what environmental impact it is likely to have? "What are some steps that different communities are already taking to reduce the environmental impact caused by this type of human activity?"

Slide #	Guidance	Slide Image
	Next, give participants the opportunity to discuss which of the feedback examples on the slide might be more specific to a learner.	
	 Which feedback may be more specific or targeted toward a learner? 	
36	Introduce the content on the slide by providing the following information. Ask participants to read the examples on the slide or read it to them. Participants may have other examples that are targeted to their own learners. These are just examples to help prompt participant thinking about what feedback will work for their own students. Next, facilitate a short discussion where participants think about how they can make their feedback targeted to specific learners. Facilitators may want to consider using some of the following questions to support the discussion: How do you determine what kind of feedback would work best for specific students? How have you used your knowledge of your students to frame your feedback? When have you noticed that your feedback has helped students stay engaged and motivated? When have you noticed that your feedback didn't resonate with your students?	Specific to the Learner Examples What feedback is more likely to help a student identify relevant evidence to support a claim? Less Specific to Learner "We reviewed the water cycle at the beginning of class yesterday. Do you remember what happens to water in the first step?" "Can you explain how human activity is affected by this new policy and what environmental impact it is likely to have? "What are some steps that different communities are already taking to reduce the environmental impact caused by this type of human activity?" 36
	How can you ensure feedback is specific to the learner in the future?	

Slide #	Guidance	Slide Image
37	 Introduce the content on the slide by providing the following information. Feedback is effective when it helps students build their own capacity as self-directed learners. This demands feedback that doesn't do the work for students but helps them clarify where they are in their own learning as well as understand and plan for actions they can take to move ahead in their learning. When students share evidence of their learning that shows they are on track, they still need descriptive information to understand what they are doing well so that they can build on that success. Telling students things like, "good job," or "great work," doesn't position students to understand what they did well and apply it to new contexts in the future. 	Managing Learning Progress: Applying Feedback Feedback is only useful if students apply it to their own learning. Avoid feedback that does the work for students; feedback shouldn't be more work for the giver than for the recipient. Allocate class time for students to clarify and apply feedback. Make time, as a teacher, to review work and monitor progress toward learning goals. Let students tell you if feedback was effective and provide additional feedback, as necessary.
	Teachers also need to make time to review student work and monitor student progress toward Learning Goals in order to focus and prepare to give meaningful feedback that will allow students to manage their learning.	
	 Student voice should be used to evaluate the effectiveness of and make improvements to feedback. Questions like, "Are you clear on what you need to do next?" or "Can you tell me what you are going to do next?" can help the teacher determine if feedback was effective and intervene if it wasn't. It can also inform the teacher's overall practice, helping develop a sense of the kind of feedback that is most effective for specific students and in general. 	
	Additionally, A Family's Guide to Understanding Student Assessment was developed to help families understand how assessment can support student learning. This guide includes questions that families can ask students and their teachers to help families support learning at home.	

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Slide #	Guidance	Slide Image
	This guide can be found at this website: https://education.ky.gov/curriculum/standards/kyacadstand/Document-s/A Family's Guide to Student Assessment.pdf	
38	Introduce the content on the slide by providing the following information. Self-directed learners know how to take feedback and generalize it to novel learning contexts. Teachers can help students become self-directed learners by helping them develop the metacognitive skills that allow them to get better and know how to use feedback. This can take the form of providing not only time but also scaffolds to help them unpack feedback and plan their next steps in learning. It can involve providing structured support for students to think about how they could use the feedback in different situations, like upcoming activities or in other subject areas.	Managing Learning Progress: Self-Directed Learners Applying feedback can help students develop the skills of self-directed learning • Provide structured opportunities that help students develop the metacognitive skills of using feedback to set goals and plan next steps. • Help students understand broader implications of feedback so that they can apply it to new contexts.
39	Introduce the content on the slide by providing the following information. Ask participants to read the examples on the slide or read it to them. Then ask them to consider which of the feedback examples presented on the slide are more helpful for managing learning and which are less helpful for managing learning. Next, give participants the opportunity to discuss which of the feedback examples on the slide may better support students to manage their own learning. • Which feedback may be better suited to helping students apply feedback to manage their own learning?	What is feedback that supports managing learning? What feedback below could best help students manage their own learning? "Great Job identifying a problem in your investigation. Can you tell me what steps you are going to do next?" "Be more specific with data. Restate to say that Graph 4 shows that enzyme activity increases with temperature." "You need to fix the problem you identified in your investigation and rerun the trials." "Be more specific with the data. Tell what the data in Graph 4 shows—describe the specific evidence that helps support your claim."

Slide #	Guidance	Slide Image
40	Introduce the content on the slide by providing the following information. Ask participants to read the examples on the slide or read it to them. Participants may have other examples that they feel would better support their own students to manage their own learning. These examples are intended to help prompt participant thinking about feedback practices in their own classrooms. Next, facilitate a short discussion where participants think about how they can make their feedback actionable for students. Facilitators may want to consider using some of the following questions to support the discussion: • How have you supported your students to clarify and apply feedback? • How do you support students to use feedback to set goals? • Are there situations in which you have struggled to provide feedback that illustrates what to do next without doing the work for students? • When have you noticed that students were able to apply feedback in new contexts? What helped them to do that?	Managing Learning Examples What feedback below could best help students manage their own learning? Less Helpful for Managing Learning "Be more specific with data. Restate to say that Graph 4 shows that enzyme activity increases with temperature." "You need to fix the problem you identified in your investigation and rerun the trials." "Great job identifying a problem in your investigation. Can you tell me what steps you are going to do next?" "40

Slide #	Guidance	Slide Image
41	 Introduce the content on the slide by providing the following information. Feedback is most effective when it is given during teaching and learning so that students can integrate it into their progress toward their Learning Goals. Therefore, teachers need to plan ahead to give students effective feedback. This means building in specific times and strategies for feedback in the lesson design as well as noticing opportunities for in-the-moment feedback during the lesson. It also means building in time for students to process feedback, ask questions that clarify the meaning of the feedback and apply, or plan to apply, feedback to their own learning. Planning for feedback means being thoughtful and strategic about the specific feedback that will support students to manage their next steps in learning. On an earlier slide, we discussed ensuring that feedback is also appropriate for the specific learner, but different feedback is also appropriate at different points in a lesson. For example, towards the start of a lesson, when students are beginning a learning task, early feedback may be appropriate to head off an initial misconception. Later in the lesson, feedback that pushes students to reflect on the effectiveness of their learning strategies might be appropriate. 	Plan Ahead for Effective Feedback (1) Build time for In-process feedback (including time for students to process and apply) into the lesson Match the feedback to the learning purpose at each stage in the lesson

Slide #	Guidance	Slide Image
42	Introduce the content on the slide by providing the following information. • Teachers often need to review evidence of student learning in between class periods. However, for the feedback to support students to manage their own learning toward the Learning Goals, the feedback must be timely. There are several strategies that teachers can employ to ensure that feedback is tightly focused to the specific learning areas of the lesson. This slide presents some examples, but participants may have more strategies of their own to share. Additionally, A Family's Guide to Understanding Student Assessment was developed to help families understand how assessment can support student learning. This guide includes questions that families can ask students and their teachers to help families support learning at home. This guide can be found at this website: https://education.ky.gov/curriculum/standards/kyacadstand/Document s/A Family's Guide to Student Assessment.pdf Next, facilitate a conversation in which participants reflect on how they plan for effective feedback in their classroom. Facilitators may consider using some of the following questions to support the discussion: • How do you address feedback in your lesson planning? • What strategies do you use to ensure that students have an opportunity to process and apply feedback? • What strategies do you use to help you provide effective, targeted and timely feedback for work you review outside of class time? • What strategies have you employed to provide effective feedback in a remote learning context?	Plan Ahead for Effective Feedback (2) • Use strategies to support timely feedback on work reviewed between class periods: • Target response to the specific focus of the Learning Goals and Success Criteria • Annotate student work with symbols aligned to descriptive feedback for specific focus areas • Use simple feedback organizers focused on specific focus areas

Slide #	Guidance	Slide Image
	How do you plan for feedback at different points in a lesson?	
	Adapted from: Six Insights About Feedback, WestEd Formative Assessment Insights (https://wested.box.com/s/fwiy1abigrllotguxprywoqy48hy58cd)	

Section 5: Formative Assessment Process and Teaching Practice

Table: Slides 43-48

Slide #	Guidance	Slide Image
43	Sometimes the value of the formative assessment process for teachers and teaching practice gets lost—professional learning communities (PLCs) can create dedicated time for colleagues to collaboratively identify common learning goals, develop assessments linked to those goals, conduct the assessments across student subgroups and process the results together to determine next steps. A critical element in planning for future learning opportunities for students is the integration of strategies to gather evidence of student learning <i>during</i> the learning, and then having the essential tools and strategies at your fingertips to interpret and act on that evidence (WestEd, 2020). When teachers begin to see that students are making progress as a result of the pedagogical actions they are taking in their classrooms and the strategic decisions made within PLCs, they are more apt to believe that all students can learn (Bailey & Jakicic, 2012) and begin to see value in the formative assessment process.	Formative Assessment Process and Teaching Practice
44	Read to participants the Cowie and Bell definition of formative assessment or ask participants to read it to themselves. Next, facilitate a discussion that prepares participants to explore how noticing learning can help them not only respond to the needs of specific learners in their classrooms but also improve their teaching practice. Facilitators may want to consider using some of the following questions to support the discussion: • What does it mean to notice, recognize and respond to learning? • How might noticing and recognizing learning be different than ways you might observe what happens in a classroom?	Formative Assessment and Noticing Learning Cowie and Bell (1999) describe formative assessment as "the process of noticing, recognizing, and responding to student learning in order to enhance that learning, during the learning."

Slide #	Guidance	Slide Image
	What kind of information might you gain through noticing, recognizing and responding to learning? How do you currently reflect on student learning and plan to	
	 How do you currently reflect on student learning and plan to apply new ideas to your practice? 	
45	Introduce the content on the slide by providing the following information.	Reflecting on Practice
	In this section, we focus on three different areas of teaching practice that can be improved through the attention to learning that is at the heart of the formative assessment process.	How can you focus your noticing to improve teaching practice?
	Focused attention to learning can help improve teaching practice related to: • How students learn in the discipline	Supporting Supporting Students Disciplinary Learning as Learners Creating Classroom Culture to Support Learning
	 How to meet the needs of specific learners you teach How to build a classroom environment that fosters learning for all students 	◆ /* ⑤ ○ ◆
	But using observations about student learning to improve practice requires more than just noting learning when it happens. Teachers must reflect on what happened with learning and why, and then use that information to make and try out changes in practice. This kind of iterative, reflective practice can be supported by PLCs that are anchored in inquiry about teaching practice. But, even without formal structures like PLCs, teachers can invest time in reflection on their practice by themselves and with colleagues in order to adjust their practice based on what they notice.	
	In the next few slides, we will explore these areas and the kinds of observations about learning that can help inform teaching practice.	

Slide #	Guidance	Slide Image
46	Introduce the content on the slide by providing the following information. Noticing disciplinary learning and using it to improve practice requires teachers to anchor their observations in their knowledge of the discipline and how students learn to become scientists. Noticing disciplinary learning can shed light on questions about: • How students learn to think and reason scientifically • What learning progressions for specific skills might look like for diverse learners, and what strategies can help support students to keep moving forward along that progression • How students interact with the local curriculum aligned to the Kentucky Academic Standards, instructional resources and materials, and what adjustments teachers can make to support student learning • What teachers can do differently to help students meet their disciplinary Learning Goals and become self-directed learners who are scientifically literate. Next, facilitate a short discussion in which participants share what they have noticed about disciplinary learning and how they have used it to improve their practice. Facilitators may want to consider using some of the following questions to support the discussion: • What observations about learning have helped you expand your understanding of student learning progressions? • How have your observations about local curriculum, resources and materials changed the way you use them with students? • What have you noticed about learning that has changed the way you teach?	How can you use what you notice about learning to improve your practice? How students learn to think and reason scientifically What student learning progressions look like How standards, local curriculum, and instructional resources impact student learning How teacher actions and practices impact disciplinary learning

Slide #	Guidance	Slide Image
	 What teacher actions and practices have you tried based on things you have noticed about student learning? 	
47	Introduce the content on the slide by providing the following information. Noticing student learning and using what is noticed to improve the capacity to meet the learning needs of students requires teachers to focus on and respond to both how the specific students in their class learn as well as teacher actions and practices that best support learning about students as learners. Noticing learning and reflecting on what it says about meeting the needs of individual learners can help inform practice related to:	Noticing Students as Learners What can you notice that helps you support specific student learners? • Student identities, experiences and funds of knowledge • Student needs and preferences • Teacher actions and practices support learning about, connecting with, and responding to students' full identities
	 Connecting with the strengths, identities and experiences of specific students and using it to inform teaching of those students in future instruction. Understanding the needs and preferences of individual students and planning instruction that takes those things into account. While needs may be specific accommodations outlined in an IEP or 504 plan, needs can also be other supports and scaffolds that teachers and families have identified that will allow students to be successful in their learning (e.g., a student may have trouble staying in their seat for the duration of class, but if they can move around, they can better attend to their learning). Student preferences relate to how students learn and share their learning best (e.g., some students may prefer to share their ideas verbally, while others would prefer to take some time and write things down). Reflecting on practices that invite students to bring their identities, experiences and funds of knowledge into learning and 	

Slide #	Guidance	Slide Image
	how to use that information to engage students and support their learning.	
	 Reflecting on strategies to understand student needs and preferences and identifying pedagogical actions that can be most effective for different types of learners. 	
	Next, facilitate a short discussion in which participants share what they have noticed about understanding and responding to students as learners and how they have used it to improve their practice.	
	Facilitators may want to consider using some of the following questions to support the discussion:	
	 What kinds of observations about learning have helped you understand the learners in your class better? 	
	 How do you use what you know about your students to improve your practice? 	
	 What teacher actions and practices have helped you learn about your students and respond to what you learn in your teaching? 	
48	Introduce the content on the slide by providing the following information.	Noticing Classroom Culture
	Module 2 of this series includes an exploration of the essential role that classroom culture plays in learning and the role of classroom culture as a foundation for effective formative assessment practice. Building and improving a classroom culture that sustains learning is an important aspect of teaching practice. By noticing factors that support and inhibit learning, teachers can investigate and respond to questions about the extent to which teachers are engaging in actions and practices that do the following:	What do you notice about student learning that can help strengthen the community of learning in your classroom? • Supportive, respectful environment • Student ownership and self-directed learning • Engagement and motivation • Shared responsibility for learning • Teacher actions and practices that support a healthy community of learners
	 Create a safe environment in which students can share their ideas, take risks and learn from mistakes 	

Slide #	Guidance	Slide Image
	 Support students in setting goals and identifying next steps, taking ownership of their learning and in becoming self-directed learners 	
	 Foster student engagement in and motivation about learning 	
	 Signal a shared responsibility for learning that can support meaningful collaboration that is essential for peer- and self- assessment 	
	Next, facilitate a short discussion in which participants share what they have noticed about learning and classroom culture and how they have used those observations to improve their practice.	
	Facilitators may want to consider using some of the following questions to support the discussion:	
	 When have you noticed that aspects of your classroom culture have supported student engagement and learning? 	
	 When have you noticed that your classroom culture isn't supporting learning, and what changes did you make? 	
	 What do you look for in learning to give you information about how your classroom culture is influencing student learning? 	
	 What kinds of observations about learning have informed your classroom culture? 	
	 What teacher actions and practices have you changed in order to create a community of learners? 	

Slide #	Guidance	Slide Image
49	Now, facilitate a discussion in which participants reflect on how to not only notice learning but how to use it to improve their practices. When facilitators know that participants are engaged in a PLC, they can directly connect the discussion to how the PLC can provide structure to put noticing about learning into practice. If participants are not generally involved in PLCs, facilitators can focus the discussion on informal ways that teachers can build in opportunities for individual reflection and collaborative sense-making with peers.	Putting Noticing Into Practice How do you currently reflect on what you notice about student learning and apply it to your practice? How do you collaborate with colleagues and make sense of and respond to your observations about student learning? What structures, routines and practices could support you to put what you notice into practice?

Section 6: Tying It All Together

Table: Slides 49-51

Slide #	Guidance	Slide Image
50	Section introduction slide	Tying It All Together
51	Facilitate a discussion that allows participants to reflect on their own practices for gathering evidence of student learning. Facilitators can use the questions on the slide or may wish to include their own questions.	Reflection: 3-2-1 • What are three things you learned about acting on evidence of student learning? • What are two questions you still have about acting on evidence of student learning? • What is one action you will take in your teaching practice based on the information you learned from this module?

Slide #	Guidance	Slide Image
52	Please have participants fill out the survey to provide feedback. This survey must be filled out in order to receive EILA credit. https://docs.google.com/forms/d/ e/1FAIpQLSc2PKmsmlcjvyxaRiVIgF74HzVO_2C7uiwvjFlh r2yTabNChw/viewform	Our Children, Our Commonwealth Education