



Evidence-Based Instructional Practices

Meaningful Feedback and the Kentucky Academic Standards for Mathematics

What are connections between Evidenced-Based Instructional Practice #6: Meaningful Feedback and the *KAS for Mathematics*?

Meaningful feedback is critical to supporting learners in attaining grade-level expectations and the knowledge articulated in the *KAS for Mathematics*. The purpose of giving and receiving feedback is to close the gap between students' current level of understanding and the intended learning outcomes. Within the *KAS for Mathematics*, the standards emphasize procedural skill and fluency, building **from** conceptual understanding **to** application and modeling with mathematics, in order to solve real world problems. This trajectory can be seen within the Coherence/Vertical Alignment component, which indicates a mathematics connection within and across grade levels, thus supporting educators in providing feedback that supports moving learning forward.

Successfully engaging students in mathematical thinking via the Standards for Mathematical Practice (SMPs) is reliant upon effective feedback. Feedback can reinforce success, correct errors, help unravel misconceptions, suggest specific improvements and give advice for future improvement. As mathematical modelers, students are reliant on feedback from the teacher, from peers or based on self-reflection to continually refine their thinking, making new assumptions as needed, generating plausible mathematical arguments and exploring consequences based on the context from which the data arose. As the future is complex and ever-changing, utilizing feedback to prepare students to look at where they are compared to where they want to go, shifting course when needed, has never been more important.

What are planning considerations for the successful implementation of the Evidenced-Based Instructional Practice #6: Meaningful Feedback to ensure that all students have equitable access and opportunity to learn the standards contained in the *KAS for Mathematics*?

One of the most important factors that affects students' perceptions of feedback is the relationship the student has with the teacher. Students must feel safe and respected, otherwise they are already at a disadvantage when provided with feedback.

- Provide learning experiences that require students to listen to the argument of others, decide if they make sense and ask useful questions to clarify or improve the argument.
- Utilize discussion protocols to provide a safe environment for students to share their developing thinking (MP.3).
- Empower students to give and receive constructive feedback.
- Elicit feedback from students on the classroom culture. Encourage students to advocate

for structures that would encourage participation and collaboration.

- Consider:
 - What steps do I take to establish the learning environment for my students? Is there anything I might want to shift about my approach? (See [EBIP 1](#) for additional support.)

Formative feedback is most effective when combined with other key formative assessment practices including clarifying and sharing clear learning goals and success criteria and eliciting evidence of student thinking through lessons, assignments and tasks aligned to those goals (Brookhart, 2017).

- Complete the task ahead of time to anticipate potential errors students may make and prepare questions and instructional moves in advance.
- Consider:
 - Are learning goals written to meet the intent of the *KAS for Mathematics*? Are tasks selected to align with these learning goals?
 - How do I prepare ahead of time to make adjustments based on evidence of student learning gathered during instruction?
 - How might I support students in giving feedback in specific situations? Are there specific strategies I might employ to help students improve their communication skills?
 - How do I embed instructional routines to support students in self-assessing their progress toward the learning goal? Is there anything I might want to shift about my current approach?

Feedback culture is also impacted by the view towards making errors, being stuck or having misconceptions. If part of the classroom culture is to always “get things right,” then anything that needs improvement is considered “wrong.”

- Normalize mistake-making and celebrate intellectual risk-taking using strategies such as [My Favorite No](#).
 - Deconstructing a multiple-choice question might offer students the opportunity to discuss why the incorrect (distractor) answers may have been included and can also be used to highlight common mistakes or misconceptions.
- Consider:
 - How do I offer students the opportunity to make decisions about how to improve as opposed to a way to determine if they are right or wrong based on whether they get a “good” grade or “bad” grade?
 - What is my reaction when a student makes a mistake in my class? Is there anything I might want to shift about my current approach? How might I use student mistakes as an opportunity for learning?

Teachers should deliberately plan lessons that include opportunities for students to use feedback which helps to cultivate a growth-oriented mindset and encourage students to view mistakes as a natural part of the learning process (Chappuis, et al., 2021).

- Develop a shared understanding of and expectation for approaching mathematics with

a [growth mindset](#) and for how that mindset will manifest within student self-talk and their communications with others.

- Provide age-appropriate authentic feedback that invites students to engage in deeper reflection about their own strengths.
- Consider:
 - How do I utilize formative assessment practices in a way that highlights student knowledge rather than deficit knowledge?

What strategies and resources can support the implementation of Evidence-Based Instructional Practice #6: Meaningful Feedback within the *KAS for Mathematics*?

- The KDE's [EBIP #2: Clarifying and Sharing Clear Learning Goals](#)
 - Clarifying and sharing clear learning goals and success criteria is a fundamental requirement for both feedback and learning. This resource provides succinct guidance for educators working to ground instruction in the *KAS for Mathematics*.
- The KDE's [Grade Level Samples: Breaking Down a Standard and Assignment Review Protocol](#) provide guidance on how teachers seeking clarity around a standard might utilize the [Breaking Down a Standard](#) resource and the [Assignment Review Protocols](#).
 - When assignments and tasks are of poor quality and/or do not match the intended learning outcomes in both content and cognitive level, the lesson will not provide appropriate evidence of student thinking and cannot be used to measure progress towards the goal. Annotated samples are made available for each of the resources mentioned above per grade level (K-8) and each conceptual category for high school.
- The KDE's [Engaging the SMPs: Look fors and Question Stems](#) resource provides guidance on what teachers are doing, what students are doing and question stems to use to move student thinking forward.
 - Intentionally integrating opportunities for students to engage with the Standards for Mathematical Practices (SMPs) is critical to facilitating student growth in mathematical maturity and engaging students as partners in the feedback process, collaborating to elevate mathematical expertise throughout the elementary, middle and high school years.
- The KDE's [A Family Guide to Understanding Assessment](#) can support families in having meaningful conversations with students and teachers about supporting learning at home.
 - While questioning acts as an authentic feedback tool for teachers to assess where students are along a learning progression, empowering students and families as questioners helps to accelerate learning and level the playing field for all learners, particularly underachieving students. Written for families, educators might consider sharing this resource prior to family engagement events to equip families as partners in offering to help students move learning forward.