Science Unit Internalization Protocol

Unit internalization is a core process of intellectual preparation that provides a structure for developing teacher understanding of how unit/module performance expectations, tasks and assessments operate within the overall arc of learning. The steps and questions below support "intellectual preparation" for teaching a unit/module from a high-quality instructional resource (HQIR). By starting with unit/module internalization, teachers understand how lessons fit into the big picture prior to using the Science Lesson Internalization Protocol.

Set aside 60-90 minutes for this unit-level protocol, working in collaboration with other teachers during professional learning time. **This protocol includes more steps and questions than can be fully considered during that time; therefore, consider prioritizing those most aligned to district/school goals and professional learning focuses for the current stage of implementation (launch, early or ongoing).** For example, educators could choose to focus only on the "Understand" section of the protocol during launch and early implementation to build initial understanding of the resource. A note-catcher has been provided as a tool to capture thinking.

While this protocol can be used with any high-quality instructional resource (HQIR), check with the vendor for specific protocols for use with your district- or school-selected instructional resource.

UNDERSTAND: Internalize the Unit Structure and Do the Science

1. **Read any overview or narrative for the unit/module to understand the "big picture" of the learning.** Doing this as independent "prework" and then beginning with a calibrating conversation can help maximize collaborative time.

2. **Analyze how standards are embedded within the unit/module.**
   - For support with any elements below, reference the *Kentucky Academic Standards (KAS) for Science*.
     - **Performance Expectations:** Within the unit, identify how the performance expectations (PEs) are bundled and which are targeted for assessment.
     - **Disciplinary Core Ideas**: What are the fundamental ideas necessary for understanding in this unit?
     - **Science and Engineering Practices:** Which practices leverage grade-appropriate elements of the Science and Engineering Practices (SEPs) to deepen students' understanding of how grade-appropriate Disciplinary Core Idea(s) (DCI) are developed throughout the lesson?
     - **Crosscutting Concepts:** Which elements of the Crosscutting Concepts (CCC) support students' sense-making and reasoning as they make connections within and across scientific disciplines?
     - **Unit Learning Progression:** How do this unit's/module's standards fit within the course's scope and sequence? How do the assessed PEs in this unit connect to each other and to the anchoring phenomena and/or engineering design problem?
     - **Vertical Progression:** How do the assessed PEs build off previous grade level PEs? How will they prepare students for work in future grades? Reference the NGSS Appendices to access relevant progressions.

3. **Do the Science:** The end-of-unit/-module assessment can be completed prior to the PLC meeting in preparation for discussing questions below.
   - What performance expectation(s) and dimensions (SEP, CCC, and/or DCI) is each item assessing?

- Based on the sequence of assessments within the HQIR, identify the embedded tasks that will be used as common formatives for student work analysis within PLCs.
- How will you collaboratively coordinate the flow of support students receive in Tier 1 and Tier 2 during the module/unit aligned to the HQIR's sequence of assessments/embedded tasks?

4. **Skim the lessons to gain an overall sense of the unit's/module's progression.**
   - How do the lessons continue to be driven by the unit's anchoring phenomenon and/or engineering design problem?
   - How do performance expectations progress within the unit to prepare students for the end-of-unit assessment?
   - Which key lessons will be used for lesson internalization within PLCs for this unit (e.g., lessons featuring complex tasks or instructional strategy/routine the PLC wants to practice or refine)?

5. **Connect instructional practices to standards.**
   - How do key instructional practices and routines (driving question boards, facilitating scientific discourse, eliciting and using evidence of student thinking, etc.) help students move toward mastery?
   - How will rubrics and models of exemplary work be used to support student learning?

TAKE STOCK: Analyze Student Learning Data

6. **Review relevant data (e.g., HQIR pre-assessment, student work samples) to determine student readiness levels and inform which students should receive additional support to access Tier 1 learning in the upcoming unit.**
   - What potential misconceptions and gaps in student learning do you see?
     - What guidance and resources do the HQIR provide to address those misconceptions and gaps?
     - How will Tier 2 be utilized to provide aligned support for upcoming learning in Tier 1?

TAKE ACTION: Make Adjustments to Unit

7. **Develop a plan for what you will need to do to set yourself and your students up for success in this unit/module.** (*When considering an adjustment, the Adjusting High-Quality Instructional Resources Tool offers guidance to support doing so effectively.)*
   - What student interests, strengths, and dispositions in your classroom do you want to build upon in this unit/module?
   - How will you plan for opportunities for students of all backgrounds and readiness levels to engage in productive struggle as they move toward achieving mastery? Which HQIR-embedded supports will you use to ensure all students can be successful (those needing additional supports and those ready for enrichment and/or extension)? What additional supports are available as needed?
   - Note lessons for which you anticipate increasing and/or reducing allotted time. How many instructional days will the unit/module now take? How will you utilize "buffer time," which often occurs between units/modules, to address unmet student learning needs? How will you account for any adjustments necessary to stay within the locally determined pacing window?
   - Referring to your district's instructional vision and curriculum document, which instructional priorities could further support/enhance learning and the student experience (elements of project-based learning, inquiry-based learning, portrait of a learner competencies, cooperative learning, cognitive strategies, standards-based grading, etc.)?

- How will you gather and analyze student feedback on their learning experience?

Unit Reflection: Upon completion of the unit/module, this Science Unit Reflection Protocol can be used to guide debriefing of successes, challenges and areas of possible improvement to inform how the unit/module is taught the following year.