SCIENCE OF LEARNING: TIPS FOR OBSERVING AND COACHING

Prompting Connections to Prior Knowledge

Deans for Impact

This resource from DFI's Learning by Scientific Design Network provides practicing teacher-educators with an overview of a learning science-informed teacher action. To access additional materials, visit deansforimpact.org/resources

Teachers prompt students to call up important prior knowledge and explicitly connect it to new ideas

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Why it's important to narrowly target prior knowledge:

If teachers don't narrowly target what information students activate, students may focus on irrelevant information that will clog up working memory and be less effective in supporting their new learning. Students have lots of prior knowledge at their disposal, but if teachers don't purposefully activate it, students may not know what is most useful in terms of learning the new information.

SUGGESTED NEXT STEP: Support the teacher to identify the most relevant, important prior knowledge related to the lesson's learning goal.

Look for Teachers make schema explicit so students see the deep structure of the concept

Why it's important to make schema explicit:

Because new learning builds on prior knowledge and schema, learning gaps are exacerbated for students who may not encounter informal opportunities to learn about concepts outside of school. By making the organization of ideas visible through the use of instructional routines like concept mapping, teachers can help students make connections between prior knowledge and new learning.

SUGGESTED NEXT STEP: Support the teacher to use instructional routines that help students organize their prior knowledge.

Look for Prompts are structured so ALL learners have a chance to activate prior knowledge

Why it's important to prompt all students to activate prior knowledge:

Students who receive opportunities to make clear connections with prior knowledge will be better able to learn new material. Students who don't will be less able to make sense of new knowledge. The effects of this may compound over time, leading to more inequity for students.

SUGGESTED NEXT STEP: Support the teacher to use instructional routines that prompt all students, not just a few, to activate prior knowledge.

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DFI

Common pitfalls novice teachers fall into

Brain Dump: Teacher uses unstructured, overly broad prompts (e.g. KWL charts, "What do you know about X?") that fail to target specific enough knowledge to ensure students are thinking about the most relevant material.

Superficial Skim: Teacher prompts for only surface-level knowledge without elaboration or use prompts that elicit one-word answers or lists of isolated concepts (This might look like a teacher saying, "What did we learn last class? Penguins! Yes! So in this lesson….").

Taking Hands: Teacher engages only a few students so only some receive opportunities to activate prior knowledge.

Tangential Personal Connections: Teacher focuses on less relevant personal connections that don't help students leverage prior academic knowledge to learn new content.

Instructional routines for novices to try

- **Image Cue:** Use an image to cue connections to vocabulary and concepts from prior knowledge. Elicit writing/discussion to describe how these words or concepts are represented.
- **Subskill Warmup:** Provide a practice opportunity to use a component skill that will be required to engage in the new learning. Explicitly connect and invite students to connect the subskill to the new content. These are most valuable when students need to practice a foundational skill to be ready to apply it easily in a new, more complex skill that they are about to learn.
- **Concept Mapping:** Provide a small set of relevant words or concepts from previous instruction and invite students to organize the words/concepts or map them onto a given structure. This works well when students have familiarity with vocabulary and concepts from previous lessons and and will benefit from visualizing and explaining the relationships between them.