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Questioning Strategies

Background Research

Frontier and Rickabaugh (2014) explained that an effective teacher helps students learn at a rate that is three times higher than an ineffective teacher. What makes a teacher effective? Their ability to choose the right instructional strategy, at the right time, for the right student (Frontier & Rickabaugh, 2014).

Visual Learning for Science grades K-12: What Works Best to Optimize Student Learning (Almarode, Fisher, Frey, & Hattie, 2018) expands on this right strategy, right time, right student concept by describing that student learning occurs in three phases: surface learning, deep learning, and transfer learning.

- Surface learning - the initial student learning within a particular concept.
- Deep learning - students to recognize the relationships between different concepts and engages students more actively in the collection of data and evidence.
- Transfer learning - students apply their surface and deep learning to new contexts.

Let's just skip to deep and transfer learning, because that's what we really want, right? No. The authors are careful to point out that surface learning must occur before deep learning. And, that deep learning, by its nature, is what facilitates students' ability to transfer their learning to new contexts.

Our responsibility, as teachers, is to know where students are in the process and to provide them with the appropriate instruction needed to facilitate their ongoing cognitive growth.

So, how does questioning fit into all of this?

In *Visible Learning for Teachers: Maximizing Impact on Learning*, John Hattie explains that an intervention, or instructional strategy, can be measured for strength by looking at its effect size. An effect size of .40 implies average student achievement gains. Then, any instructional strategy with an effect size greater than .40 would result in higher than average student gains. The most high-impact strategies have an effect size of .80 or greater! Remember, though, that we have to choose the right instructional strategy at the right time! Here are some of the effect sizes for questioning practices, as they relate to surface/deep/transfer learning.

Surface Learning		**Deep Learning**		**Transfer Learning**	
Strategy	**Effect Size**	**Strategy**	**Effect Size**	**Strategy**	**Effect Size**
Leveraging Prior Knowledge	0.65	Questioning	0.48	Formal Discussions (Debates)	0.82
Integrating Prior Knowledge	0.93	Self Questioning	0.55	Identifying Similarities and Differences	1.32
		Class Discussion	0.82		

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How does NISE enhance "Questioning"?

A culture of questioning and discourse in the classroom must be carefully cultivated through teachers' use of strategy. As we read above, not all questioning strategies provide the same cognitive gains! Teachers must choose their strategies, but they must also facilitate those strategies in a manner that promotes conceptual understanding (surface), depth of learning (deep), and application of learning in new ways (transfer). At NISE, we believe questioning strategies can be further refined by teacher's purposeful use of the following:

1. Processing time
2. Levels of cognition
3. Equity of student response
4. Follow-up to student response

NISE further defines each of the practices, Indicators, listed above by describing what they look like at different levels of classroom implementation. These descriptions are provided on the next two pages.

References

Almarode, J., Fisher, D., Frey, N. & Hattie, J. (2018). *Visible learning for science: What works best to optimize student learning.* Thousand Oaks, CA: Sage.

Frontier, T., & Rickabaugh, J. (2014). *Five levers to improve learning: How to prioritize for powerful results in your school*. Alexandria, VA: ASCD.

Hattie, J. (2012). *Visible learning for teachers: Maximizing impact on learning*. New York, NY: Routledge.

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Levels of Implementation - From the STEM Teacher Action Protocol

17	INDICATOR	Processing Time Provided

The degree to which processing time is provided for students to engage in interactions with higher cognitive demand and to develop responses reflecting a deeper understanding.

- ☐ **4. ROLE MODEL** The students provide themselves and others adequate processing time to allow for interaction and deeper understanding, especially in response to higher cognitive demand content.
- ☐ **3. PROFICIENT** The teacher provides processing time to foster interactions between students that often require higher cognitive demand and generate responses that reflect a deeper understanding.
- ☐ **2. GAINING SKILL** The teacher guides students in using the processing time provided to interact with each other and to reflect their understanding.
- ☐ **1. NOVICE** The teacher calls on students immediately and does not provide adequate processing time for students to reflect understanding.

18	INDICATOR	Levels of Cognition

The degree to which the teacher uses questions at different levels of cognition to reveal student understanding.

- ☐ **4. ROLE MODEL** The teacher has built an environment in which students can engage with each other by asking questions at all appropriate levels of cognition.
- ☐ **3. PROFICIENT** The teacher asks questions in a way that scaffolds appropriately to reveal understanding based on the individual needs of different students.
- ☐ **2. GAINING SKILL** The teacher's questions reveal student understanding at more than just the lowest levels of cognition including comparisons, applications, summarizing, paraphrasing, etc.
- ☐ **1. NOVICE** The teacher's questions only reveal student understanding at low levels of cognition including recall and remember type questions.

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19	INDICATOR	Equity of Responses

The degree to which students all express their thinking by responding to questions.

- ☐ **4. ROLE MODEL** Students mirror the teacher's effective questioning techniques to enable everyone to express their thinking.
- ☐ **3. PROFICIENT** The teacher's questioning techniques results in responses from approximately 80% of students.
- ☐ **2. GAINING SKILL** The teacher's questioning techniques result in responses from approximately 50% of students.
- ☐ **1. NOVICE** The teacher's questioning techniques generate responses from only a few or no students.

20	INDICATOR	Follow-Up to Student Response

The degree to which the teacher uses strategies to follow up on student responses to promote continuing dialogue, extend ideas, and reveal depth of understanding.

- ☐ **4. ROLE MODEL** Students mirror the teacher's strategies for follow-up responses to promote continuing dialogue, extend their ideas, and reveal their depth of understanding.
- ☐ **3. PROFICIENT** The teacher collaborates in student interactions to model follow-up responses if needed and to promote continuing dialogue among students.
- ☐ **2. GAINING SKILL** The teacher provides follow-up responses to students by scaffolding the question when necessary, asking additional questions, and probing for deeper student understanding.
- ☐ **1. NOVICE** The teacher accepts "I don't know" as a response, provides answers when there is no response, rephrases incorrect responses, or accepts correct responses without follow-up.