

DISCIPLINED INQUIRY

Tell me and I forget. Show me and I remember. Involve me and I understand. ~Chinese Proverb

Have you ever thought about how you learn something new? Let's say you need to assemble a child's bike. You could read the instruction manual. You could watch a how-to YouTube video. Or you could dive in headfirst and try figuring it out on your own! If you choose the latter method, you'll likely make some mistakes along the way (and you may need to consult that manual for help), but you might also discover that, by the time the bike is assembled, you have a better understanding of how bikes work!

Let's take a deeper dive into disciplined inquiry and some of the ways that teachers, according to research, can encourage this type of learning. Disciplined inquiry is sometimes associated with what you may call "discovery learning." Disciplined Inquiry is organized around deepening knowledge through meaningful questions and supporting substantive conversations.

Deepening Knowledge Through Meaningful Questions

Deep knowledge concerns the core ideas of a topic or discipline and occurs when students make clear distinctions, develop arguments, formulate meaningful questions, solve problems, construct explanations, and otherwise work with complex understandings. Deep knowledge is accomplished by investigating connections between topics, focusing on depth instead of breadth, as students recognize relationships between ideas. Deep knowledge is demonstrated when students can articulate and demonstrate a complex understanding of the content to others (McTighe & Wiggins, 2013; Newmann & Wehlage, 1993).



While students are actively engaged in problem-solving, their inquiry must maintain an emphasis on the core ideas—that is, those that revolve around depth, not breadth, focusing on major ideas but not every single small detail. Kukral and Spector (2012) stressed the need to “zero in on the academic content, students’ relationship to that content, and teachers’ knowledge and skill.” They warn against focusing on policy changes and test prep, noting that these won’t lead to students “learning at high levels in order to succeed in our exponentially changing world.”

Similarly, Bowen (2017), commenting on Wiggins and McTighe’s (2006) *Understanding by Design*, noted in favor of “backward design” that student outputs are more important than activities and instruction. Bowen writes, “it can be stated that teachers often focus more on teaching rather than learning. This perspective can lead to the misconception that learning is the activity when, in fact, learning is derived from a careful consideration of the meaning of the activity.” An emphasis on the central idea keeps the inquiry dedicated to achieving that goal.

One might describe complex understanding as greater than the sum of its parts. Or, as Newmann, Marks, and Gamoran put it, “In-depth understanding requires more than knowing lots of details about a topic. Understanding occurs as one looks for, tests, and creates relationships among pieces of knowledge that can illuminate a given problem or issue” (1996). Complex understanding contributes to deep learning and is developed through disciplined inquiry “as one looks for, imagines, proposes, and tests relationships among key facts, events, concepts, rules, and claims in order to clarify a specific problem or issue” (Newman, Bryk, & Nagaoka, 2001).

Authentic learning—exploring meaningful concepts, their relationships, and real-world context—is inherent to disciplined inquiry and complex understanding. Rule (2006) noted that rich problems adhere to principles such as “personal meaningfulness to students; construction, refinement, or extension of a model; self-evaluation; documentation of mathematical thinking; useful prototype for other structurally similar problems; and generalization to a broader range of situations.” Not surprisingly, these traits are similar to the traits of good essential questions.

Meaningful (or essential) questions frame a unit of study as a problem to be solved. A good essential question is key to the design of “inquiry based learning that requires student contributions, creativity, and applications” (Wilhelm, 2012). As the term “essential” implies, the question should be vital and foundational to the learning. But it should also be open-ended, provoke thought, require higher-order thinking, and be relevant to students. It should also connect students’ experiences (that is, their prior knowledge) to real-world problems (Wilhelm, 2012; McTighe & Wiggins, 2013).

McTighe and Wiggins (2013) noted that essential questions “are not answerable with finality in a

single lesson or a brief sentence—and that’s the point,” and that these questions “aim to stimulate thought, to provoke inquiry, and to spark more questions, including thoughtful student questions, not just pat answers.” These researchers went on to define the characteristics of a good essential question that would engage learners in “uncovering the depth and richness of a topic that might otherwise be obscured by simply covering it.”

When a good essential question succeeds by creating more questions, an “inquiry evolution” (Lillydahl, 2015) takes place. Lillydahl contends that a new essential question can be used at the end of a unit as well, as a means of assessment and to exhibit the progression of analysis the disciplined inquiry creates.

Substantive Conversations

A typical school day may only provide a few minutes at most for students to talk about what they are learning (Gibbs, 2006). On the other hand, student conversations, supported by cooperative learning structures, have a reputation for developing skills in learners that are relevant to success in today’s society. Social skills, problem-solving skills, cultural competency, and increased self-efficacy are all supported when students work together in the classroom (Chui, 2008; Johnson & Johnson, 2009; Nemeth-Wachtler, 1983; Sharan, 2010; Huber & Snider, 2006).

Researchers have noticed that student understanding of complex issues changes as the conversation is happening. When students discuss their learning, their learning is made visible to themselves which aids the development of metacognitive skills. Students are able to come to know what it is that they know better as they talk through it (Chiu, 2008; Resnick, Michaels, & Connor, 2010). This visible learning is also valuable for the instructor who can see what students’ prior understandings are,

their misconceptions, and how their knowledge is changing over the course of a lesson.

“Sharing out” isn’t just about participating; it actually stimulates learning. Windschitl, Thompson, and Braaten (2018) noted that joining in on the conversation requires students to activate prior knowledge, process what others have said, think through possible and appropriate responses given the classroom dialogue, then make adjustments, and say them out loud—all in real-time! Contributing to the conversation requires reasoning, giving structure to concepts, and doing so allows the speaker to assess and correct logic gaps, resulting in deeper learning.

“Taking a turn within a conversation requires that you activate prior knowledge about what’s being said by others, organize possible responses that will fit the flow of the dialogue as well as the nature of your audience, and then verbalize your own ideas while monitoring and adjusting in real time what you are saying. This stimulates learning because translating ideas into words is not simply the ‘reporting out’ of what is

fully formed in one’s head. Under the right circumstances it involves reasoning processes that give structure to loosely formed concepts and makes gaps in logic more evident for those doing the talking” (p. 39-40).

There are a number of academic benefits for students and teachers which can be accomplished purely by giving time and space in the classroom for students to have conversations. When student conversation is an integrated part of the learning, students get practice working with one another, they get practice being accountable to others, listening, sharing their ideas in ways that others can understand, and working together to make decisions (Gillies, 2016; Resnick, Michaels, & Connor, 2010; Gibbs, 2006). The learning that results from student conversations increases student motivation, self-esteem, and problem-solving outcomes. For teachers, giving students a space to speak gives insight into how students are organizing their thoughts and can serve as formative assessments of what students are learning over the course of a lesson.

Excerpted from K20 infographic. <https://learn.k20center.ou.edu/professional-learning/1147/infographic.pdf?rev=5460>

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