



RESEARCH IN FOCUS:

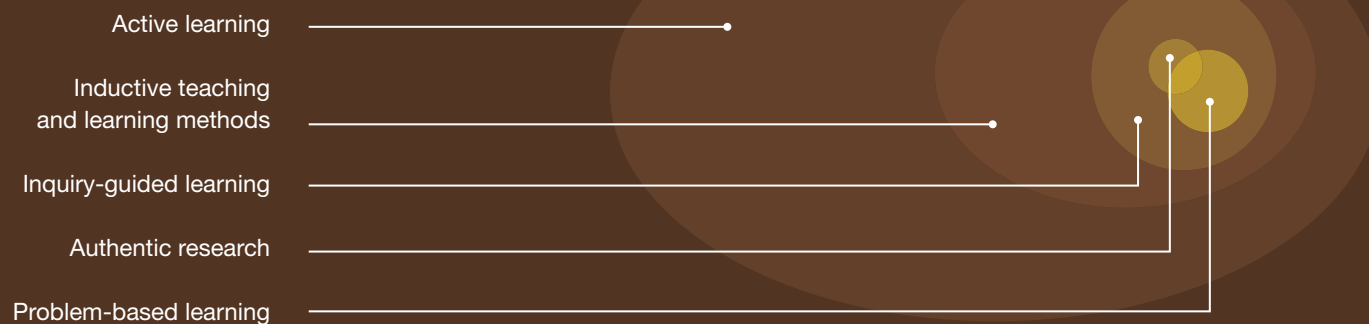
# Inquiry & Discourse

## INTRODUCTION

Inquiry and discourse are closely related, as both are important components of classroom instruction. In the classroom, collaborative group work and activities designed to promote the investigation of open-ended questions can enable students to engage in effective discourse. The role of the teacher then is to put students in situations where they can construct their own knowledge (Kendrick, 2010). Teachers can convey the value of students' words and ideas by organizing instruction dialogically (Juzwik et al., 2012). Dialogic instruction can include the open discussion of at least three students that is guided, not controlled, by the teacher. This dialogue addresses conflicts or substantive questions and can include certain types of group collaboration, such as peer-response groups or project based learning groups (Newmann, King, & Carmichael, 2007; Juzwik et al., 2012; Juzwik, Nystrand, Kelly, & Sherry, 2008; Nystrand, Gamoran, Kachur, & Prendergast, 1997).

## INQUIRY LEARNING IN RELATION TO ACTIVE LEARNING

(Adapted from Lee, 2012)



### WHAT IS INQUIRY & DISCOURSE?

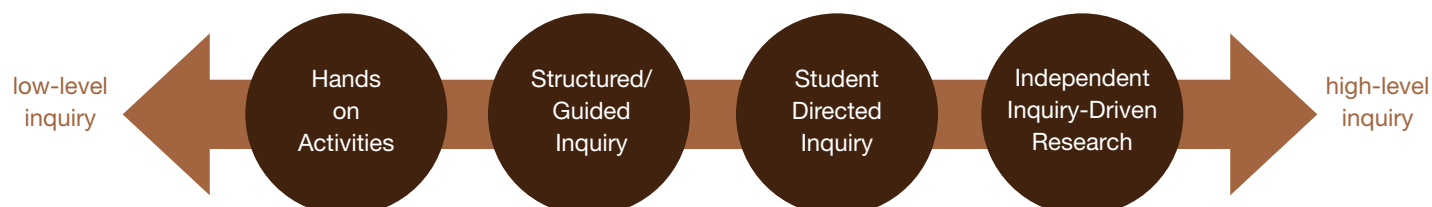
The practice of inquiry in the classroom involves learning through student-centered projects and activities. This process of learning is characterized by students actively engaging in constructing their own knowledge through first-hand, teacher-guided experience, which results in a meaningful understanding of the targeted concepts (Krajcik, Blumengeld, Marx, & Soloway, 1994; Minstrell and van Zee, 2000; National Research Council, 1996; Newmann, Secada, & Wehlage, 1995; Roth and Roychoudhury, 1993; Schwartz, Lederman, & Crawford, 2004). Inquiry instruction may look different based on the context of the discipline, age group, and intent of the lesson. Regardless of context, for student achievement to be authentic, they must be rooted in a specific discipline that involves the vocabulary, facts, concepts, and theories related to that field of knowledge (Newmann, Marks, & Gamoran, 1995). When learning and instruction are guided by disciplined inquiry, the teacher utilizes the student's prior knowledge of the subject, guides the student to achieve in-depth understanding of the concepts, and requires the student to express results and methodology through discourse (Newmann, Bryk, & Nagaoka, 2001). Scaffolding students toward their own independent investigations of essential questions, real life issues, and discovery or development of evidence-based solutions provides an opportunity for the acquisition of new knowledge, abilities, and attitudes (American Association for the Advancement of Science, 1989, 1993; Crawford, 2000; Capps & Crawford, 2013; Lee, 2004, 2012; National Research Council, 1996, 2000; Prince and Felder, 2006). Inquiry teaching is a smaller part of the pedagogical teaching practice known as Active Learning, which promotes active interaction with material to encourage the student to analyze and evaluate the content to derive their own conclusions and create their own connections. Other

interrelated and sometimes overlapping teaching approaches include Inductive Teaching, Authentic Research, and Problem-Based Learning (see figure above).

Inquiry can be described as a continuum (see figure below), beginning with traditional hands-on inquiry activities, which are usually determined and led by the teacher (Bonnstetter, 1998); and progressing to a structured or guided form of inquiry, then eventually to a student-directed inquiry, in which students are given more freedom and more choice in their learning experience. The highest level of inquiry is independent, student-research inquiry in which students begin with a question of their choosing and investigate, directing themselves toward a conclusion. No matter what level of inquiry is implemented, all inquiry generally falls into one of four modes of inquiry: Identifying, Pursuing, Producing, or Authoring (Lee, 2012). These modes are progressive in nature and begin with the student(s) identifying existing knowledge, then pursuing it, and finally, moving to a more student-framed mode of inquiry where students build knowledge through producing and authoring new ideas and concepts.

Inquiry instruction of any kind should be built around collaborative discourse. Collaborative discourse brings participants together (be they teachers, students, parents, administrators, or other stakeholders) in intentional conversations within a high-trust community to share and regularly evaluate their practices (Nelson, Deuel, Slavit, & Kennedy, 2010; Gallimore, Ermeling, Saunders, & Goldenberg, 2009; Møller, 2009; Vogus, Rothman, Sutcliffe, and Weick, 2014; Anderson, Leithwood, & Strauss, 2010; Senge, Cambron-McCabe, Lucas, Smith, and Dutton, 2012; Ugwuadu, 2013; Juzwik et al., 2012; Servage, 2009; Schlechty, 2011; Fairhurst and Grant, 2010). Substantive conversation in an inquiry setting

### INQUIRY CONTINUUM



involves sustained conversational exchanges about discipline-specific content that take place between the teacher and the students and the students and their peers. This content should provide students with the opportunity to construct knowledge through an improved, shared understanding of the concept and its meaning (Newmann et al., 2007). Allowing students to discuss and debrief information in a content-specific setting provides them with the opportunity to increase and apply their conceptual understanding through the use of academic vocabulary.

## INQUIRY IN THE CLASSROOM

“*In order to implement inquiry in the classroom, the instructor must make a shift in thinking about their role in classroom instruction.*”

Teachers practicing inquiry and discourse in the classroom must shift from acting as curators or gatekeepers of knowledge to identifying themselves as facilitators who collaborate with students, guiding them as they inquire about, discover, and construct their own knowledge (Lee, 2004, 2011). This shift in the educator’s role can be difficult, as it requires teachers to release some control of the classroom and give it to the students so they may gain autonomy in their learning. The instructor should continue to guide the autonomous students, however, by providing opportunities for them to actively engage in constructing their own knowledge through first-hand experiences such as student-centered projects and activities, student-directed research, and/or problem-based learning (Krajcik et al., 1994; Minstrell & van Zee, 2000; National Research Council, 1996; Roth & Roychoudhury, 1993; Schwartz et al., 2004).

### Inquiry in Math

Inquiry in the math classroom allows students the space to find their own way of understanding and relating to the material. Rather than simply being shown an equation or proof and asked to practice it, the student constructs an understanding of the material through hands-on learning. In a geometry class, this might look like students engaging in a series of problem-based questions that help them develop the formulas for the volume of prisms and pyramids. In an algebra class, an inquiry lesson may guide students through a series of problems that help them observe the patterns and connections between the variables in a parent graph or equation and how the patterns transform when the variables are changed.

### Inquiry in English Language Arts

Inquiry-based learning in the English classroom allows for multiple interpretations of a text and emphasizes the logical development of an argument. By prompting the class with a problem or ambiguous concept, students can analyze a specific text or investigate multiple sources of information to develop and argue a claim based upon textual evidence. Examining a text or multiple texts with a specific inquiry question allows students to actively build knowledge and use it to create their own writing.

### Inquiry in Social Studies

Inquiry in a social studies class allows students to examine multiple sources to gain a more in-depth analysis of the problems, triumphs, and challenges of the era they are studying. It helps students to better understand the context of events that happened at that time and how people met those challenges in addition to opening the door to more complex, timeless questions that have contemporary implications.

For example, a U.S. history textbook explains how Native American tribes were uprooted because of the Indian Removal Act of 1838. Rather than strictly memorizing dates, an inquiry-based social studies class might delve into the context and effects of the act and ask students more probing, real-world questions:

- Can people of different cultures coexist?
- Can laws help some people while harming others?
- What happens or should happen when a cultural subgroup does not wish to conform to the norms of society?
- Why did some people support the Indian Removal Act while others favored assimilation?

Inquiry of a historical event generates a thorough analysis and a deeper understanding of both the event and other people’s experiences and opinions of the event.

### Inquiry in Science

Inquiry in a science class allows students the opportunity to explore a concept before defining it. This gives students a common experience with the concept, which can be used as a foundation to build conceptual understanding. This can be done through inquiry lab investigations, problem or project based investigations, and independent student research in a relevant topic. Students learn science through engaging with the topic in an authentic context, similar to how science is practiced in the real world. By practicing a concept that hasn’t been pre-defined for them, students can define the concept themselves by observing it in action in a real-world context. This type of learning has students engage with and apply scientific laws and theories while emphasizing observable, crosscutting concepts, such as recognizing cause and effect in an experiment and patterns in the results. This results in a deeper, longer-lasting, and more personal understanding of science.

## INQUIRY, STUDENT ACHIEVEMENT, AND COLLEGE GOING CULTURE.

The use of inquiry teaching helps also students develop specific skills, such as the ability to ask good questions, analyze and interpret evidence, and the ability to justify quality solutions and answers. When compared to traditional teaching approaches (such as lecturing or bookwork), active learning approaches (such as inquiry) have been shown to increase student achievement on examinations as much as 55% (Freeman, et al., 2014). Implementing inquiry in the classroom promotes and develops abilities and attitudes that are highly valued in both higher education and the professional world (Lee, 2004, 2012; Prince & Felder, 2006), promoting skills that equip students for the varied demands of everyday life in college and in the workplace

## INQUIRY AND TEACHING COMMUNITIES

Inquiry and discourse take place at the educator level when the staff identifies issues related to students, teaching, and learning. Griffin referred to these activities as inquiry stating, “As principals and teachers inquire together they create community,” (as cited in Sergiovanni, 1994, p. 154). Inquiry helps educators overcome chasms caused by various specializations in grade level and subject matter. This type of professional inquiry forces collaborative discourse among teachers about what is important to classroom instruction and student achievement. Inquiry promotes understanding and appreciation for the work of others and assists principals and teachers in creating the ties that bind colleagues together as a special group working toward a shared set of ideals. Inquiry, in other words, helps principals and teachers become a community of learners.

## IMPLICATIONS

From a cognitive perspective, knowledge is linked to the context in which it is constructed. Therefore, inquiry-learning experiences can provide an effective context for collaborative discourse and reflection from which learners can develop more complete conceptual frameworks (Carey & Smith, 1993; National Research Council, 1996; Roth & Lucas, 1997; Ryder, Leach & Driver, 1999; Schwartz, Lederman & Crawford, 2004).

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