

National Association of Special Education Teachers (NASET)

THE PRACTICAL TEACHER

This Month's Topic:

Inquiry - Based Learning: Special Education Applications

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Abstract

Inquiry is a valuable teaching tool for students and can be implemented in any classroom and is beneficial for special education students. Inquiry-based instruction is beneficial for all students as it increases student engagement, provides a deeper understanding of content knowledge, improves critical thinking skills, and increases collaboration skills. For special education students, inquiry has been proven beneficial as it allows them to use alternative learning styles while reducing the emphasis of memorizing facts. While inquiry has been proven to be beneficial, there are some challenges to consider. These challenges include more planning time needed to create lessons, increased amounts of professional development focusing on the use of inquiry, and creating alternate forms of assessment.

Introduction

The term inquiry can mean many things depending on with whom you talk. What started as hands-on activities can now be considered inquiry in some situations. However, this is not always the case. Because of the confusing nature of the term “inquiry”, it must be defined in order to be understood. The definition of inquiry used in this literature review comes from the national science education standards. In these standards inquiry has two focal points; scientists and students. When concerning scientists, inquiry is defined as, “the diverse ways in which scientists study the natural world and propose explanations based on the evidence derived from their work” (National Research Council, 1996). When applying inquiry to a student population, inquiry is defined as, “the activities of students in which they develop knowledge and understanding of scientific ideas, as well as an understanding of how scientists study the natural world” (National Research Council, 1996).

Types of Inquiry

There are two main types of inquiry: open and guided. Open inquiry is the most challenging type of inquiry. Open inquiry is unstructured; students pose a question and create the investigation on their own. While this type of inquiry is most closely related to what scientists conduct in the field, it is not the best starting point for students or inexperienced teachers (Sadeh & Zion, n.d.; Crawford, 1999). Guided inquiry is easier to implement in a classroom setting. In guided inquiry the teacher poses a question or a challenge for the students to solve. This form of inquiry is structured and supported by a facilitator, generally the classroom teacher. Support can also be provided by an intervention specialist to support students' discoveries.

Benefits of Inquiry-Based Teaching

Inquiry-based teaching is just one of many instructional strategies used to teach students. Inquiry-based learning has been studied for many years and has been found to be beneficial for all students. One benefit of using inquiry in a classroom is this process allows students to develop a deeper understanding of content knowledge by asking students to explain how they arrived at their conclusions (Marshall & Horton, 2011; Van Garderen, Hanuscin, & Lee, 2012). In a study conducted by Minner, Levy, and Century (2010), researchers found that participating in inquiry-based activities improved content knowledge retention rates of students. Other studies have found inquiry-based learning to improve critical thinking, science literacy, and scientific process skills (Ash, 2000; Brickman, Gormally, Armstrong, & Hallar, 2009).

In addition to higher retention rates and deeper understanding of content, inquiry-based learning is beneficial for students because it keeps them engaged in the learning process. Students are engaged in inquiry lessons and activities because they feel responsible for their learning (Minner et al., 2010). Most inquiry activities also require students to work with a partner or a group. This is beneficial because it allows for collaboration between students of many different backgrounds and abilities (Dyasi, 2000; Ormsbee & Finson, 2000).

Inquiry and Special Education

Inquiry is beneficial for special needs students for various reasons. One main reason is the idea that inquiry does not focus as heavily on reading and memorizing facts (Scruggs & Mastropieri, 2007). Inquiry is also useful in a special education setting because it allows tactile and kinesthetic learners to participate using the learning style which is most beneficial to them (Melber, 2004). In addition, inquiry-based instruction allows students to apply their knowledge to real life examples (Scruggs & Mastropieri, 1994).

While inquiry is very beneficial for students with special needs, extra support needs to be given when participating in inquiry-based activities and lessons. Special education students will need more scaffolding than other students (Therrien, Taylor, Hosp, Kaldenberg, & Gorsh, 2011; Villanueva & Hand, 2011). Instructional strategies such as emphasizing main points, using graphic organizers to display connections between content, and using memorization strategies are critical when conducting inquiry-based investigations with special education students (Kaldenberg, Therrien, Watt, Gorsh, & Taylor, 2011).

Challenges of Inquiry-Based Teaching

Inquiry lessons and activities can be very challenging to implement in a classroom for many reasons. First, inquiry activities take time and effort to create. The preparation time for inquiry-based activities is more intensive than a traditional textbook based lesson. In an inclusion setting, especially in elementary grades, special education teachers should work with the general education teachers to plan these activities and scaffold them appropriately for all students. This will provide the extra support students need to foster growth of scientific process skills when they are young. When conducting inquiry activities in a classroom, teachers must learn to give up some control to their students. During inquiry, teachers must function as facilitators. This may

cause a classroom to appear unorganized and out of control (Quigley, Marshall, Deaton, Cook & Padilla, 2011). This environment may seem chaotic, but is necessary for students to become leaders and investigators. To help organize students, jobs could be assigned to each individual (i.e. team leader, data collector, record keeper, etc.). Other challenges to overcome include student motivation and some students may not be ready for the higher level thinking skills required (Brickman et al., 2009; Heppner, Kouttab, & Croasdale, 2006).

Implementing Inquiry

Inquiry-based learning can be implemented in any classroom. The easiest way to begin using inquiry in classrooms is to change the activities currently being used. This can be done by removing background information and data tables, posing questions, providing simple directions and objects not needed for the investigation, and requiring students to support their conclusions with data (Corder & Slykhuis, 2011). In addition to modifying existing activities, new ones may be developed. Some popular inquiry-based activities include: design challenges, product testing, black boxes (determining the contents of the box), taxonomy (grouping objects), discrepant events (students try to figure out what is happening in a situation that does not make sense), and modeling (create models to mimic natural systems) (Meyer, Kubarek-Sandor, Kedvesh, Heitzman, Pan, & Faik, 2012).

Conclusion

Inquiry is a valuable teaching tool for students and can be implemented in any classroom or venue. The benefits of inquiry are: increased student engagement, deeper understanding of content knowledge, improved critical thinking skills, and increased collaboration skills. While inquiry has been proven to be beneficial, there are some challenges to consider. Inquiry-based lessons are more work intensive for teachers to create, teachers must be taught how to use inquiry-based activities, and assessing student knowledge can be more difficult if not designed appropriately. Special education students can participate in inquiry-based activities, but will need more support during inquiry investigations. However, these students have been shown to benefit greatly from inquiry-based instruction.

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About the Author

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