



Using Anchored Instruction to Teach Math

What is the evidence base?

This is an evidence-based practice for **students with disabilities** based on three methodologically sound group experimental studies with random assignment across 523 participants with disabilities.

This is an evidence-based practice for **students with intellectual disabilities** based on two methodologically sound group experimental studies with random assignment across 138 participants with intellectual disabilities.

This is an evidence-based practice for **students with other health impairment** based on two methodologically sound group experimental studies with random assignment across 174 participants with other health impairments.

This is an evidence-based practice for **students with learning disabilities** based on three methodologically sound group experimental studies with random assignment across 127 participants with learning disabilities.

This is a research-based practice for **students with autism spectrum disorders** based on two methodologically sound group experimental studies with random assignment across 31 participants with autism spectrum disorders.

This is a research-based practice for **students with emotional/behavior disorders** based on three methodologically sound group experimental studies with random assignment across 36 participants with emotional/behavior disorders.

This is a research-based practice for **students with speech/language disorders** based on one methodologically sound group experimental studies with random assignment across one participant with speech/language disorder.

This is a research-based practice for **students with attention-deficit hyperactivity disorder** based on one methodologically sound group experimental studies with random assignment across 6 participants with attention-deficit hyperactivity disorder.

Where is the best place to find out how to do this practice?

The best place to find out how to implement anchored instruction is through the following research to practice lesson plan starters:

- [Mathematical Problem Solving \(Bottge et al., 2002\)](#)

With who was it implemented?

- Students with
 - Learning disabilities (3 studies, n=127)
 - Other health impairment (2 studies, n=174)
 - Mild intellectual disability (2 studies, n=138)
 - Speech and language impairments (1 study, n=1)
 - Attention Deficit Hyperactivity Disorder (ADHD; 1 study, n=6)
 - With autism spectrum disorders (2 studies, n=31)
 - Emotional/behavioral disability (3 students, n=36)
 - Other (1 study, n=10)
- Grades ranged from 6th – 8th
- Males (n=361), females (n=162)
- Ethnicity
 - Caucasian (n=381)
 - African American (n=98)
 - Latino/Hispanic (n=20)
 - Native American (n=8)
 - Asian American (n=6)
 - Biracial and Other (n=6)
 - Unspecified (n=1)
 - Not reported (n=3)

What is the practice?

Anchored instruction has been defined as instruction “that situates, or ‘anchors,’ problems in authentic contexts...that students find meaningful” (Bottge et al., 2004, p. 2). Other related terms may include enhanced anchored instruction. Anchored instruction always includes instruction via activities and/or problems that reflect applications of the learning objective that are relevant to the students.

In the studies used to establish the evidence base for using anchored instruction to teach math, targeted skills included:

- Fractions computation skills and problem-solving (Bottge et al., 2014; Bottge et al., 2015; Bottge, Stephens, Rueda, LaRoque, & Grant, 2010).

Where has it been implemented?

- Co-taught general education classrooms (1 study)
- Self-contained special education settings (1 study)
- Special education resource rooms (1 study)

How does this practice relate to Common Core Standards?

- Math, Grade 6, The Number System
 - CCSS.Math.Content.6.NS.A.1 Interpret and compute quotients of fractions and solve word problems involving division of fractions by fractions (e.g., using visual fraction models and equations to represent the problem).
 - CCSS.Math.Content.6.NS.C.8 Solve real-world and mathematical problems by graphing points in all four quadrants of the coordinate plane. Include use of coordinates and absolute value to find distances between points with the same first coordinate or the same second coordinate.

How does this practice relate to the Common Career Technical Core?

- Engineering & Technology Career Pathway
 - Use STEM concepts and processes to solve problems involving design and/or production.
 - Apply the knowledge learned in STEM to solve problems.
- Science & Mathematics Career Pathway
 - Apply science and mathematics concepts to the development of plans, processes, and projects that address real-world problems.
 - Apply critical thinking skills to review information, explain statistical analysis, and to translate, interpret and summarize research and statistical data.

References used to establish this evidence base:

Bottge, B. A., Ma, X., Gassaway, L., Toland, M. D., Butler, M., & Cho, S. J. (2014). Effects of blended instructional models on math performance. *Exceptional Children, 80*, 423-437. doi: 10.1177/0014402914527240

Bottge, B. A., Stephens, A. C., Rueda, E., LaRoque, P. T., & Grant, T. S. (2010). Anchoring problem-solving and computation instruction in context-rich learning environments. *Exceptional Children, 76*, 417-437. doi: 10.1177/001440291007600403

Bottge, B. A., Toland, M. D., Gassaway, L., Butler, M., Choos, S., Griffen, A. K., & Ma, X. (2015). Impact of enhanced anchored instruction in inclusive math classrooms. *Exceptional Children, 81*, 158-175. doi: 10.1177/0014402914551742

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