

Intervention

A Position of the National Council of Teachers of Mathematics

Question

What are the roles of intervention in mathematics teaching to support individual students in meeting grade-level goals?

NCTM Position

Without identifying specific interventions, we endorse the use of increasingly intensive and effective instructional interventions for students who struggle in mathematics. Teachers must use a variety of formative assessments to target strategic instructional techniques that are tailored to meet individual students' needs. When implementing appropriate interventions for all mathematics learners, teachers must possess strong backgrounds in mathematical content knowledge for teaching, pedagogical content knowledge, and a wide range of instructional strategies.

Early and appropriate identification is important for students at all levels of achievement. Any student may require intervention as he or she works with mathematics. Even students who excel in one topic may require the support of intervention in others. When students are struggling, teachers should use various assessments to identify areas of need, and they should use the data that they obtain to choose interventions that can move the students in targeted and structured ways to greater success with important mathematical ideas.

Interventions have many models and are flexible in nature. They can be carried out in the classroom as well as in tutoring or tiered support sessions. Regardless of the model, intervention should focus on supporting students' understanding through explicit instruction based on diagnostic assessments. Intervention should strengthen conceptual and procedural knowledge to close an existing gap so that students can move smoothly to and make connections with other mathematics. The long-term goal of intervention should be to help students gain independent strategies and take responsibility for their own learning. This approach to intervention leads to an emphasis on bigger ideas in mathematics and their applications so that important skills do not become trivial, isolated, or fragmented.

Every intervention model relies on teachers' knowledge of mathematics content and evidence-based teaching strategies, ensuring that those who deliver interventions can take advantage of students' prior mathematics knowledge. A teacher who uses multiple models and ways of sequencing or structuring topics can present rich adaptations of the mathematics content to support students' needs effectively.

Decisions about the duration and type of intervention are often based on the results of progress monitoring and formative and summative assessments. Any assessment instrument or process should identify conceptual and procedural strengths and weaknesses so that decisions on intervention strategies build on what the student knows and does well. Assessments, including diagnostic interviews, can capture information relevant to conceptual and skill development to determine the pace, structure, and length of interventions.

All teachers of mathematics, especially those who work with students with disabilities, need to have certification and training in mathematics to lead effective instruction. This training should include mathematics content and mathematics methods courses to ensure that teachers are able to implement effective instructional practices with fidelity.