Improving Early Math Outcomes for Students with Disabilities through Intensive Intervention

Students with disabilities (SWD) lag behind their peers without disabilities in mathematics. For example, in the 2013 NAEP mathematics assessment, 45 percent of Grade 4 students with disabilities who participated in the assessment scored below basic level compared to 14 percent of students without disabilities. This achievement gap of 31 percent is larger than ethnicity-based achievement gaps in the same NAEP data (e.g., White vs. Black or White vs. Hispanic). This gap is even worse in 8th grade, with 65 percent of SWD performing below basic compared to 21 percent of their peers without disabilities. Identifying proven instructional practices and strategies to close this persistent achievement gap is a challenge facing nearly every school district in the U.S.

Researchers have demonstrated that many elementary school students showing low performance in academic areas could demonstrate positive growth when provided with intensive intervention (e.g., Bryant et al., 2011; O’Connor et al., 2005; Vellutino et al., 1996). Schools have taken different approaches to intervening with students who struggle academically, with a variety of Response to Intervention (RTI) approaches being implemented. RTI is conceptualized as a multi-tiered systems approach that encompasses general and special education, provides increasingly intensive levels of research-based instruction or intervention at each tier, and includes screening and frequent monitoring of student growth to determine whether students are progressing or require instructional modifications. RTI approaches often differ in setting, size of the instructional group, frequency of intervention, session length, program duration, instructional strategies, and content (e.g., Fuchs et al., 2008; Harn et al., 2008). These kinds of questions consistently challenge school districts to make the best use of available resources to remediate low performing students. The presenters in this symposium each worked closely with partner school districts to implement and study the efficacy of intensive interventions for improving early mathematics outcomes.

The purpose of this symposium is to examine the role of intensive intervention in reducing achievement gaps for SWD in grades preK-4. Panelists will each present their work within an RTI framework that provides intensified and differentiated instruction in critical areas of mathematical understanding. The first presentation focuses on an efficacy trial of a preschool program alone and in combination with attention training, for improving the mathematical knowledge of preschool children who are especially low performers in mathematics. The second presentation will discuss results from a randomized control trial (RCT) study examining the impact of a Tier 2 kindergarten whole number intervention in which group size was manipulated to examine the role of instructional intensity on student outcomes. The third presentation will present results from a RCT of an individualized mathematics gaming intervention targeting whole numbers for first grade students. The final presenter shares data from three consecutive RCTs comparing specialized fractions instruction in 4th grade to inclusive fractions instruction on a variety of math outcomes including NAEP release items.
References


