

A Meta-Analysis on Teaching Mathematics  
to Students with Significant Cognitive Disabilities

Abstract

A comprehensive literature review and meta-analysis was conducted on teaching mathematics to individuals with significant cognitive disabilities to identify evidence-based practices. Guidelines from Horner et al. (2005), Gersten et al. (2005), and components of mathematics compiled by the National Council of Teachers of Mathematics (NCTM) were used to identify high quality evidence-based mathematics research published between 1975 and 2005. Sixty-five articles yielding 54 single-subject and 14 group studies were identified for an overall total of 68 experiments. Evidence was found that students with significant disabilities could learn mathematics based on an overall strong effect size. The median Percent Nonoverlapping Data Points of the 54 single subject studies was 92.15, with a mean of 82.51 and a standard deviation of 25.79. The median Cohen's  $d$  effect size of the 14 group studies was .79, with a mean of 2.18 and a standard deviation of 2.90. Articles also were found that addressed all five NCTM components of mathematics, but most addressed numbers and computation or measurement. Within the computation studies identified, most focused on counting, calculation, or number matching. For the measurement studies, nearly all focused on money skills. Only 6 algebra, 3 geometry, and 2 data analyses studies were found. Of the 54 single-subject design studies, 19 of them were classified as having "all" quality indicators for research design; 13 representing the NCTM Measurement standard and 6 representing the Numbers and Operations standard. From these studies, strong evidence was found for using systematic instruction to teach mathematics skills and for using in vivo settings.