Early Childhood Invited Symposium
Assessment in Early Childhood Mathematics and Science

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There has been a longstanding concern over student achievement in America not only in relation to performance on international tests, but also in relation to state and national standards. While language and literacy skills have been a constant focus of these concerns, the past decade has seen an increased concern over student achievement in mathematics and science. These concerns are reflected in initiatives such as the addition of mathematics, and more recently science, to mandated state achievement tests, the development of common core standards, and comprehensive reports from the national research council on mathematics and science education (NRC, 2007, 2009).

Early childhood has been a continuing focus of addressing these concerns, including the even larger disparities evident in students from low-income and minority backgrounds. Interventions aimed at the preschool age have been developed over time paralleling the initial concerns over language and literacy performance, then mathematics and now science. The Institute of Education Sciences’ Early Childhood research portfolio also reflects this changing emphasis. The majority of initial early childhood research grants funded by IES were on language and literacy. More recently, however, mathematics and now science are becoming a larger component of IES’s Early Childhood portfolio of funded research grants.

The ability to evaluate the effectiveness of early childhood mathematics and science interventions in improving young children’s mathematics and science achievement is dependent upon the availability of reliable and valid assessments of preschool children’s mathematics and science ability. The development of such instruments, if done properly, is a time consuming process. As language and literacy, then mathematics and now science have been targeted as critical areas of early intervention, the initial lack of reliable and valid instruments to evaluate these targeted interventions have been identified as critical and missing components (Brenneman et al., in press; Snow & Van Hemel, 2009).

This invited symposium highlights the current state of instruments to directly assess young children’s mathematics and science ability. Paralleling the earlier emphasis on mathematics and the more recent focus on science, three of the four presentations are assessments of early mathematics ability and one presentation is on the assessment of early science ability. All four projects have involved multiple years of development work, made possible by federal grant funding agencies that have understood and supported the cost and time needed for such work.

Following the four presentations, Mark Wilson, a nationally recognized leader in measurement and assessment, will provide commentary.

References


