Happy Birthday: An Assessment Tool That Helps Teachers Understand and Promote Young Children's Math Learning

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The mathematical performance of American children is weaker than it should be. Research has found that children from other countries (e.g., China, Japan, and Korea) outperform their American counterparts in mathematics achievement, perhaps as early as kindergarten (Stevenson, Lee, & Stigler, 1986), and certainly during the early school years (Mullis et al., 1997) and beyond (Mullis et al., 2000; National Assessment of Educational Progress, 2003). In response to these findings the National Research Council (NRC) has called for the development of rich mathematics education during the early years, especially for low-income children at risk of school failure (Bowman, Donovan, & Burns, 2001). Similarly, the National Council of Teachers of Mathematics (NCTM) and the National Association for the Education of Young Children (NAEYC) have issued a joint position statement urging the adoption of developmentally appropriate and challenging early mathematics education (Clements, Copple, & Hyson, 2002). Research shows that preschool mathematical performance is predictive of mathematical achievement in school (e.g., Jimerson, Egeland, & Teo, 1999; Shaw, Nelsen, & Shen, 2001; Stevenson & Newman, 1986; Young-Loveridge, 1989) and that the quality and quantity of children’s informal experiences and knowledge provide a key foundation for mathematical achievement in school (Kilpatrick et al., 2001, chapter 5; Reynolds & Ou, 2003).

The Early Mathematics Assessment System (EMAS) is a computer based application that helps teachers evaluate young children’s (3 – 5 year olds) mathematical skills and knowledge. The EMAS has several key features. It measures a broad range of mathematical content, assessing number, operations, shape, pattern, and space. It also measures a broad range of mathematical proficiency, including performance; cognitive processes underlying performance; and comprehension and use of mathematical language. The EMAS is research-based, drawing on modern cognitive science, developmental and educational research. The blending of these features coupled with the development of tasks in a birthday party context has resulted in an engaging set of activities that truly capture young children’s abilities.

The purpose of this research is to discuss the EMAS in the following ways:

1) Describe the development of the EMAS.
2) Examine the reliability and validity.
3) Demonstrate the computerized version of the assessment.
4) Demonstrate the Professional Develop website.