

# EXPLORING THE MATHEMATICAL KNOWLEDGE OF GRADE 1 AND GRADE 2 CHILDREN WHO ARE VULNERABLE IN LEARNING MATHEMATICS

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As part of the Early Numeracy Research Project (Clarke, Cheeseman, Gervasoni, Gronn, Horne, McDonough, Montgomery, Roche, Sullivan, Clarke, & Rowley, 2002), clinical interviews were used to determine the mathematical knowledge constructed by Australian children in the first three years of schooling. This knowledge was linked to a research-based framework of growth points in four number domains (Counting, Place Value, Addition and Subtraction, and Multiplication and Division), and this framework provided a means of identifying children who were vulnerable in learning mathematics.

In 2000, 576 of 1497 Grade 1 children and 659 of 1538 Grade 2 children were identified as vulnerable in at least one of the four number domains. The diversity of domains and combinations of domains in which children were vulnerable is striking. This is demonstrated by the diagrams on the poster. Clearly, children who are vulnerable in learning school mathematics have diverse learning needs that call for particular instructional responses from teachers. It is likely that teachers need to make individual decisions about the instructional approach for each child. The results indicate that there is no single 'formula' for describing children who are vulnerable in learning school mathematics, or for describing the instructional needs of this diverse group of students. Further, the diversity of children's mathematical knowledge in the four domains suggests that knowledge in any one domain is not necessarily prerequisite for knowledge construction in another domain. This finding has implications for the way in which the school mathematics curriculum is introduced to children. It seems likely that children may benefit from concurrent learning opportunities in all number domains, and that experiences in one domain should not be delayed until a level of mathematical knowledge is constructed in another domain.

## REFERENCE

Clarke, D., Cheeseman, J., Gervasoni, A., Gronn, D., Horne, M., McDonough, A., Montgomery, P., Roche, A., Sullivan, P., Clarke, B., & Rowley, G. (2002). *Early Numeracy Research Project Final Report*. Melbourne: Australian Catholic University.