

## Children's Mathematics: Making Marks, Making Meaning

Maulfry Worthington and Elizabeth Carruthers (2003)

Paul Chapman Publishing



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This fascinating and well researched book gripped me from beginning to end. So many teachers in reception classes are puzzled by the National Numeracy Strategy's advice to delay the teaching of numeral writing until the final term of the reception year. "What shall we do instead?" they ask. "Should the children write anything down at all? "If so, what?" The Strategy encourages children's own methods of recording, but the advice about exactly how to go about that stops here.

In the absence of any firmer guidance, the authors' research found that most teachers (89 per cent in classes with 4-5year olds and 100 per cent in classes with 4-6 year olds) continue to use worksheets for mathematics despite contrary advice from both the *Strategy* and the *Curriculum Guidance for the Foundation Stage*. Perhaps more worryingly still, they found that 72 per cent of voluntary pre-schools use worksheets. They explain that in schools, worksheets are often used as a 'holding device' while the teacher works with other groups, and that children learn little if any maths, while completing them.

Emergent writing is now firmly embedded in schools, and the authors discuss in detail how early writing and early mathematical mark-making are linked. Many teachers will have read Martin Hughes' early work *Children and Number* (1986) with young children {"the tins game"} and begun to try more emergent methods of recording in mathematics. Since then, there has been very little guidance. This book addresses that gap.

The authors describe the different stages in the development of children's mathematical graphics and how we can make sense of them. Examples of the authors' own observations of children are included throughout to illuminate the theories they propose, and this is a real strength of the book, making it readable and readily understood. The chapter entitled 'Case studies from early childhood settings' gives more detailed examples and is particularly interesting.

The authors fully understand the importance of achieving a balance between adult-initiated and child-initiated play, and many teachers will find the chapter on creating environments that support children's mathematical graphics especially useful. Sections on learning theories (including a helpful table summarising

behaviourism, constructivism and sociocultural learning theories and their views of learning mathematics) were perhaps more detailed and theoretical than most teachers would need, but would be of great interest to those who are embarking on further professional study of some kind. The chapter on schemas presented the clearest brief explanation I have read on the theory, but again, might not be of interest to teachers.

This book is based on 12 years' work with young children and it shows. It is authoritative while at the same time easy to read, and would appeal to teachers who want to move their mathematics teaching forward but don't quite know how to go about it. Read this book and throw away your worksheets!

**Dr Pat Brunton & Linda Thornton**