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BOOK REVIEW

Robin Averill (ed): Mathematics and Statistics in the Middle Years: Evidence and Practice

NZCER Press, Wellington, New Zealand, 2015, 317 pp., ISBN: 978-1-927231-48-7. NZ$59.95 (Soft Cover)

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The latest, very welcome, addition to the series of books on teaching Mathematics and Statistics published by NZCER in recent years focuses on the 'middle years'—the transition from primary to secondary schooling. This little-understood and often-neglected period in a child's learning journey is especially critical in mathematics and statistics education. It is the time when many children seem to 'lose the plot' with mathematics and statistics, finding the shift from primary school to intermediate and secondary mathematics and statistics difficult. It is also a time when the content of mathematics and statistics takes another step up towards abstraction and more sophisticated reasoning. This change can be seen between Year 6, where around 76 % of students are achieving at or above standard in mathematics and statistics, and Year 7, where around 67 % of students are at or above standard. Currently only around 70 % of our students are working at or above the National Standard by the end of Year 8.

The book is very well structured, with each chapter following a similar format including whakataukī, points to ponder, illustrated activities, examples of student work, links to research and lists of extra resources. The inclusion of student work alongside suggested activities provides authenticity and interest for readers who can engage with the intentions of the activity, the mathematics involved and the students' responses as a rich package of information. The effect is of providing a 'window' into practice, which is especially helpful for novice and student teachers.

This sense of a window on practice is also partly due to the fact that each chapter arises from collaboration between a practising teacher working in a 'middle years' classroom and an academic writer, or in some cases the practising teacher has written the chapter alone. This further enhances the authenticity, usefulness and relevance of the chapters. The teachers who participated in the writing of the

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chapters come from a range of different middle years settings: secondary schools, intermediate schools, full primary schools and kura kaupapa Māori.

There is a notable commitment throughout the book to te reo, tikanga and mātauranga Māori, through the use of whakataukī, bi-lingual labelling of all sections of the chapters, with the Māori text first, and the inclusion of chapters explaining the teaching and learning of transformation geometry and spatial thinking from a te ao Māori perspective. These chapters provide valuable insight into genuine, rich ways to respect children's culture while working with them on mathematics. Without careful explanations such as these that open our eyes to new knowledge and possibilities there is a risk of only superficial links being made to children's lives and experiences.

Aligned with the commitment to bicultural language and practice evident in the book is an explicit commitment to equity. While one might expect a book about teaching mathematics in the middle school years to be centred around key mathematical concepts introduced during that period, such as formal algebra, this book opens with a chapter on equitable mathematics teaching, firmly positioning the book as being about social justice and mathematics as much as it is about mathematical concepts. The four themes presented in the first chapter—respect, developing leadership, community and inclusion—are perhaps not themes that mathematics teachers might first thing of in conjunction with their practice, but they fit very neatly into the increasing emphasis on discourse-based practice in mathematics and into the findings of the Best Evidence Synthesis (Antony and Walshaw 2007) and the Te Kotahitanga project (Bishop and Berryman 2006). Both of these major sources of research-based information for New Zealand teachers highlight the importance of relationships of respect and care for learners and for the subject matter. To improve outcomes for marginalised mathematics learners we need to look at the dynamics of classrooms, who has power, how it is shared, how the language and mode of instruction shapes learning, and how learners can benefit from being empowered to contribute. These themes are taken up in a number of chapters in 'Mathematics and Statistics in the Middle Years', with practical explanations of mixed ability grouping, talk moves, rich mathematical tasks and the orchestration of whole-class discussion in mathematics. The examples from teachers' work are very helpful in these chapters as they allow readers to see how these things might be done in 'real' classrooms, making the aspirational practices concrete and attainable.

'Mathematics and Statistics in the Middle Years' is an ideal resource for use in pre-service teacher education and in schools that are looking to change practice in mathematics and statistics teaching. It captures current thinking about effective mathematics education in a reader-friendly, engaging and Aotearoa-centred way that is of great value to mathematics educators in all sectors.

References

Antony, G., & Walshaw, M. (2007). *Effective practice in mathematics/pāngarau: Best evidence synthesis iteration*. Wellington: Ministry of Education.

Bishop, R., & Berryman, M. (2006). *Culture speaks: Cultural relationships and classroom learning*. Wellington: Huia.