Mathematics Education Research Group of Australasia

Research in Mathematics Education in Australasia

2004-2007

Editors: Helen Forgasz, Anastasios Barkatsas, Alan Bishop, Barbara Clarke, Stephen Keast, Wee Tiong Seah, Peter Sullivan

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RESEARCH IN MATHEMATICS EDUCATION IN AUSTRALASIA 2004-2007
NEW DIRECTIONS IN MATHEMATICS AND SCIENCE EDUCATION
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Scope
Mathematics and science education are in a state of change. Received models of teaching, curriculum, and researching in the two fields are adopting and developing new ways of thinking about how people of all ages know, learn, and develop. The recent literature in both fields includes contributions focusing on issues and using theoretical frames that were unthinkable a decade ago. For example, we see an increase in the use of conceptual and methodological tools from anthropology and semiotics to understand how different forms of knowledge are interconnected, how students learn, how textbooks are written, etcetera. Science and mathematics educators also have turned to issues such as identity and emotion as salient to the way in which people of all ages display and develop knowledge and skills. And they use dialectical or phenomenological approaches to answer ever arising questions about learning and development in science and mathematics.

The purpose of this series is to encourage the publication of books that are close to the cutting edge of both fields. The series aims at becoming a leader in providing refreshing and bold new work—rather than out-of-date reproductions of past states of the art—shaping both fields more than reproducing them, thereby closing the traditional gap that exists between journal articles and books in terms of their salience about what is new. The series is intended not only to foster books concerned with knowing, learning, and teaching in school but also with doing and learning mathematics and science across the whole lifespan (e.g., science in kindergarten; mathematics at work); and it is to be a vehicle for publishing books that fall between the two domains—such as when scientists learn about graphs and graphing as part of their work.
Research in Mathematics Education in Australasia 2004-2007

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INTRODUCTION: REVIEW OF MATHEMATICS EDUCATION RESEARCH IN AUSTRALASIA 2004-2007

HISTORICAL CONTEXT

The series of four-yearly reviews of research in mathematics education in Australasia produced by the Mathematics Education Research Group of Australasia (MERGA) had its beginning in 1984, when the then MERGA Executive commissioned the publication of *Summary of research in mathematics education in Australia* (Briggs, 1984) to coincide with Australia’s hosting of the fifth quadrennial International Congress on Mathematical Education (ICME).

Over the years, the visionary idea which culminated in the publication of the first review took on a life of its own, renewing itself every four years. In 1992, the scope of the research reviewed extended beyond Australia to encompass all of Australasia; this reflected the expanding membership of MERGA. In 2008, the present review of Australasian research is, for the first time, published by an international academic publisher – SENSE – enabling the recognised, outstanding mathematics education research from Australasia to reach a broader international audience.

The series of MERGA four-yearly reviews has been unique in the sense that it has allowed Australasian mathematics education researchers to take stock of Australasian research in the field over the preceding four years. This provides an intellectual and academic breather from the hustle and bustle of the regime of regularly-published journal articles and papers for annual conferences, including MERGA. This is by no means inward-looking. In fact, in celebrating what has been researched in Australasia and by Australasians, work conducted by colleagues in an international context, either through collaborative research efforts or through their physical presence out of Australasia, is also documented in the review series.

The dates of publication and the editors of the MERGA series of four-yearly reviews to date are summarised in Table 1. With the publication of this, the seventh four-yearly review, the commitment of the series to promote and publicise Australasian mathematics education research is affirmed. To clarify to authors what should be included in their chapters, the following definition of what comprises Australasian mathematics education research was provided:

The editors have defined “Australasian research” as research conducted in Australasia, about the Australasian context, or by Australasians. Australasia
comprises: Australia, New Zealand, PNG, and the Pacific Islands closely allied to Australia and/or New Zealand. Australasian research published in Australasia and in international publications should be included in the review.

Table 1. MERGA 4-yearly reviews: dates of publication and editors

<table>
<thead>
<tr>
<th>Year of publication</th>
<th>Editors</th>
</tr>
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<tbody>
<tr>
<td>1984</td>
<td>Jack Briggs</td>
</tr>
<tr>
<td>1988</td>
<td>Dudley Blane, Gilah Leder</td>
</tr>
<tr>
<td>1992</td>
<td>Bill Atweh, Jane Watson</td>
</tr>
<tr>
<td>1996</td>
<td>Bill Atweh, Kay Owens, Peter Sullivan</td>
</tr>
<tr>
<td>2000</td>
<td>Kay Owens, Judy Mousley</td>
</tr>
<tr>
<td>2004</td>
<td>Bob Perry, Glenda Anthony, Carmel Diezmann</td>
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Some of the themes included in the MERGA four-yearly reviews have been repeated over successive volumes (e.g., gender and mathematics has appeared in every review since 1984), while others have been introduced or disappeared over the years. The themes found in the various reviews reflect the ways in which mathematics education research has developed and matured in Australasia, and the foci of research interest during particular four-yearly time periods.

CHAPTER IDENTIFICATION PROCESS AND STRUCTURE OF THE BOOK

An open request was sent to members of MERGA inviting expressions of interest to contribute chapters in which a theme or area of the research literature was reviewed. Broad sections were identified including: a focus on teachers as learners; teachers’ contemporary practices; what is learnt and how (K-12); non-cognitive dimensions of learning; special learners; and history, policy, and curriculum. Team contributions were encouraged. The purpose of the review is to showcase the research efforts of MERGA members and there is a sense in which the process of soliciting chapters itself reflects the research emphases and priorities of the community. One of the challenges of reviewing the complex body of work that comprises ‘mathematics education research’ is the necessary categorisation or division that must take place, that is, how do you slice the pie? While there was an effort to be comprehensive, this was counter-balanced by the preferences set by the authors through the themes put forward, and the subsequent chapters submitted.

Prospective authors were asked to submit an abstract describing the area of interest and samples of the literature to be reviewed. Once the submissions were received, the editors determined potential overlaps and gaps. In some cases a revised chapter with joint authorship was suggested, or a slight refocus to provide a more coherent and comprehensive presentation across all chapters.

While the present review of Australasian mathematics education research includes a number of chapters with similar themes to those found in the most recent MERGA four-yearly review (Perry, Anthony, & Diezmann, 2004 – see
INTRODUCTION: MERGA RESEARCH REVIEW

Diezmann, Anthony, & Perry in this volume for more detail on the content of that review), prospective authors did not put forward suggestions for separate chapters with traditional mathematics content. This, in part, reflects a shift in both research funding opportunities and emphases on levels of education, such as early childhood, and subsequently on the learning of specific mathematics content within these contexts. Thus, in this review, the research on content is predominantly found within the chapters focussing on specific grade levels (e.g., early years, middle years).

Surprisingly, an invitation had to be issued for an additional chapter with a focus on research in technology use in mathematics to be written. The reference list from that chapter (see Thomas & Chinnappan in this volume) indicates the extent of the research in this area and the importance of its inclusion. It was intended that a chapter be included that focused on exceptional students, including gifted students and those with special needs. The prospective authors of the chapter subsequently withdrew, citing limited published research in the area during the period, an issue identified by Perry et al. (2004) in the most recent MERGA 4-yearly review of the Australasian mathematics education literature. The area of exceptional children and mathematics learning would appear to represent a gap in the emphasis on this dimension of research in Australasia; it was not an oversight in the process for identifying research to be included in this review. A proposed chapter on history, policy, and curriculum suffered a similar fate.

The authors of the previous MERGA 4-yearly review (Perry et al., 2004) were invited to write a chapter reflecting on the four year period, 2000-2003 in which the research reported in their review took place. They were asked to do this to set the scene for the reader with respect for the work reported in the present volume. Ken Clements, a founding member of MERGA and long-time observer of Australasian mathematics education, was invited to write a final chapter to highlight aspects from specific chapters included in the current review, to provide an overview and synthesis of the research presented, and to identify future research directions.

Further to the discussion above of the specific research themes privileged through the chapter foci identified and included in this volume, it is important for readers to recognise that there are some idiosyncrasies associated with the conduct of research programs in Australasia. Unlike in some international locations where there are substantial programs addressing specific aspects of content such as fractions or algebra, for example, in Australasia there are often fewer studies addressing specific content areas. This may create an impression that Australasian research in mathematics education is somewhat eclectic. Also contributing to this view is an interest in the social dimensions of education, such as teacher learning or student disadvantage, with some content focussed studies undertaken under such umbrellas. These emphases do not, however, detract from the quality of the research within specific, traditional, mathematics content areas. Readers are reminded that they may need to search across the various chapters for discussions of research within particular mathematical education research fields and content domains of interest.
POLICY AND RESEARCH CONTEXT

One of the characteristics of mathematics education research in the Australasian context has been that many of the studies are unfunded or, if funded, the funding is relatively small. The shortage of funding for sophisticated equipment and additional research assistance can limit the scale of many research studies, and this is reflected in a number of the reports of the research summarised in the following chapters. Also reported here is outstanding research conducted by graduate students. Such studies are generally small scale, both in sample size and in duration. In whichever category the research might be found, neither the scale nor the available financial or resource support limits the rigor with which the research was conducted. This is clearly reflected in all of the chapters included in this review of the Australasian mathematics education literature for the years 2004-2007.

Within the policy context in which the researchers have undertaken their studies, there have been some interesting shifts over the past four years. It is not easy to document all of these. However, considering the field generally, the editors share certain perceptions.

In the period 2004-2007, the national governments in New Zealand and Australia spearheaded the development of accountability measures for research funding and research activity. It should be noted that the New Zealand government has implemented many of the measures described at a faster pace than has the Australian government, but similar directions and outcomes are anticipated. With these developments necessarily comes an increase in bureaucratisation – more forms to complete, more adoption of standardised terminology, for example, more use of sanctioned definitions of “research” etc. The related shifts in the policy context of research in terms of the dichotomies and complementarities can be characterised as described below.

1. **A decrease in creative and idiosyncratic research v. an increase in programmatic research.**

   In a healthy national research-supportive environment one would expect that both kinds of research would receive adequate funding and similar emphasis – programmatic research may produce useful data, but creative research is also needed, particularly in a field like mathematics education where the context and conditions are changing with increased rapidity. Developing creative research is always much more difficult but is equally necessary.

2. **A decrease in individual research v. an increase in group or team research.**

   Both for purposes of funding, and also because of governmental pressures to define research groupings within universities, the pressure is on to reduce the significance of individual research. There are of course good reasons for encouraging group or
team research, particularly in a mixed discipline field such as mathematics education. However PhD research, one of the main sources of research ideas, is emphasised as a largely individual matter, and whilst research training is a strong part of a PhD program, it is still possible, and we would think highly desirable, to be developing a next generation of individual, and creative, researchers.

3. A decrease in funding for basic research v. an increase in funding for practice-oriented projects.

With a growing concern about the teacher shortages in mathematics, together with a (dubious) perception that standards of mathematics learning in schools are lower than governments would wish, has come an increase in funding for in-service and practice-oriented projects, such as the Australian School Innovation in Science, Technology and Mathematics (ASISTM) project. A related development can be seen in New Zealand where in-service initiatives are more closely linked to research and where there is an increased expectation that any findings will be published in research contexts. One example comes from the annual publication on developments with the national Numeracy Development Project, which are now called Findings from the New Zealand Numeracy Development Projects. Whilst this overall shift is no bad thing, and many researchers are assisting with these programs, it is still the case that imaginative, basic research needs continuing support. In-service, practice-based work is not research, and whilst in-service is aimed at the immediate teaching context, research has inevitably a longer term perspective.

4. A decreasing concern with the quantity of research v. an increasing concern with the quality of research.

This has been formalised nationally in New Zealand where the Performance-Based Research Fund (PBRF) regime was trialled in 2003, and the first full 6-year cycle was completed in 2006. In Australia also there has been much preparation for the introduction of a Research Quality Framework system, which has now been put on hold by the newly elected national government. It is however likely that it will return in some form in the future. Whilst these moves have brought many concerns about ways to judge research quality, on a more positive note, there may well be useful lessons to be learnt about weaknesses of peer evaluation of research and about worthwhile criteria for judging quality. Within universities, academics have been used to accumulating their research references and credentials, almost with the ‘publish or perish’ maxim implying that more is better. Now we see a greater concern for judging one’s own ‘best outputs’, the ‘impact’ of one’s research and the development of similar qualitative criteria. No bad thing, one may say.

We believe that growth, not a decline, is likely to be seen in these shifts over the next four years, and it will be interesting indeed to speculate on how this will affect the research outcomes over the next four years.
FINAL COMMENTS

We hope that in reading this review, insights into the range of research undertaken in Australasia in the period 2004-2007 will be gained. The process of summarising, reviewing, and critiquing research over an extended period provides the potential for building informed, cohesive, and focused future research agendas. This is particularly important in a context where individual researchers are trying to work across institutions or with international colleagues, and when students are often isolated from a substantive research community. Such a process can highlight the gaps that exist in the foci and extent of the research undertaken, and thus what has been highlighted in the various chapters in this volume. We encourage readers to examine critically the research presented, recognise the constraints under which the researchers have worked, and ensure that these issues are taken into consideration in planning future research projects in which needs, not tradition or external demands, are guiding principles.

Finally we commend the research efforts of our colleagues, the high quality of their published research, and their willingness to author chapters in this volume, continuing a long and important tradition established by MERGA of sharing and critiquing Australasian mathematics education research.

ACKNOWLEDGMENTS

The editors wish to acknowledge the financial support of MERGA in the production of this volume. We thank Anne Bult for her assistance in working with the Sense template and her careful proofreading of each of the chapters. We are also most grateful to reviewers for their constructive comments that contributed to the final quality of each chapter included in the book.

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INTRODUCTION: MERGA RESEARCH REVIEW

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REFLECTIONS ON THE MERGA RESEARCH REVIEW
2000-2003

INTRODUCTION

The tradition of 4-yearly reviews of Australasian research in mathematics education commenced in 1984 when MERGA commissioned its first review (Briggs, 1984) to coincide with the 4th International Congress for Mathematical Education [ICME-4] held in Adelaide, South Australia and has continued every four years from that time.

The review previous to the present volume was published in 2004 and was edited by the three authors of this chapter (Perry, Anthony, & Diezmann, 2004). Authors were brought together to synthesise and critique Australasian mathematics education research in the period 2000-2003. As part of the critique, chapter authors were asked to reflect not only on the current highlights in research in their areas but also to look forward and bravely predict what they saw as the most significant areas of future research. In this chapter we reflect on the 2000-2003 review and the directions it foreshadowed in order to provide a context for the present review.

To a large extent, the research themes identified in the original MERGA review – curriculum, attitudes to mathematics, learning and teaching of mathematics, problem solving, learning and cognitive development, calculators and computers, tertiary and teacher education in mathematics, and gender in mathematics education – have continued throughout the series of six reviews up until 2004. As might be expected, themes have been added from time to time and the emphases have changed.

In the final chapter of the 2004 MERGA review, Jones (2004) reprised his original contribution to the first review (Jones, 1984) and asked in what areas of mathematics education research has Australasian work had significant impact. Through a careful critique of the Australasian mathematics education research in six reviews up to the one published in 2004, Jones selected six themes in which Australasian mathematics education research has made “an impact in the international mathematics education research community during the last 20 years” (Jones, p. 343): cognitive aspects of mathematical learning, gender and mathematics, language and mathematics, socio-cultural aspects of mathematics teaching and learning, early childhood education, and teacher education and the teaching of mathematics.

While Australasian mathematics education researchers publish and present their findings in the same forums as their colleagues from other regions of the world, there is no doubt that the synthesis and critique of their research in the 4-yearly MERGA reviews have greatly increased the impact of their work, not only in the region but also internationally.
THE 2000-2003 MERGA 4-YEARLY REVIEW

The chapter headings in the 2000-2003 review were as follows:
- Social justice and sociocultural perspectives in mathematics education
- Gender and mathematics
- Exceptional students in mathematics
- Problem solving in learning and teaching mathematics
- Learning to teach mathematics
- University mathematics learning and teaching
- Number learning in the primary years
- Statistics education
- Learning and teaching algebra
- Calculators and computer algebra systems
- Computers, multi-media and the internet in mathematics education
- Research trends in mathematics education
- Affective issues in mathematics education
- Mathematics in early childhood education
- The impact of 20 years of research

While Atweh, Meaney, McMurchy-Pilkington, Neyland, and Trinick (2004) noted that there was “a healthy growth in issues as well as theoretical development in sociocultural research in mathematics education” (p. 45), in his final chapter of the MERGA 2000-2003 review, Jones (2004, p. 371) noted his belief “that research dealing with sociocultural aspects of mathematics education will assume far greater importance in the next two decades”. He continued by suggesting:

that mathematics education research in the next 20 years will take a more multifaceted yet integrated approach to learning and teaching; one that uses multiple lenses to look at teachers and learners from cultural, social, political and psychological perspectives. In essence, the research problematique will unite objects of research like equity, access, and context with extant objects like learning and teaching. (p. 372)

Effectively, Jones was predicting an increasing emphasis on socio-cultural dimensions within the framework of the teaching and learning of mathematics curriculum.

What was being researched?

A feature of the 2000-2003 review was a chapter on research trends (Walshaw & Anthony, 2004) involving an analysis of papers published in MERGA conference proceedings. In order to profile the research interests, methodologies and contexts of research that MERGA members participated in over the review period, questions were asked about which content areas and issues were of interest to researchers in Australasia, who was being researched and within what context, and how the research was being conducted. In addressing the content of research the authors noted the trend for research studies to “incorporate a range of wider
interests [than mathematics content] such as the social and cultural milieu of learning, professional development, and program evaluation” (p. 6). Only 50% of papers featured a distinctly mathematical focus, and of these, research involving studies of rational number and numeracy were by far the most common. During the review period, much of the research on number appeared to be both informing (e.g., Jacob & Willis, 2003) and informed (e.g., Mitchelmore & White, 2003) by the development and implementation of large-scale systemic numeracy projects. When looking at educational issues that were of interest for the first part of the 21st century, a focus on cognition – including learner effects, visualization, problem solving and thinking practices associated with mathematical content – was prominent.

Chapter authors of the 2000-2003 review all identified areas that remained under-researched and under-theorised. Wood (2004) noted that research in the tertiary environment tended to focus on the problem student, rarely interrogating the lecturers’ own practice and beliefs; Pfannkuch and Watson (2004) highlighted the need for studies to address adult statistical literacy; and Diezmann, Faragher, Lowrie, Bicknell, and Putt (2004) were concerned with the scarcity of research with exceptional students. An over-riding concern expressed by Jones (2004) was that despite advances in our research capability and increased awareness of socio-cultural issues, there remained an interminable challenge “to provide equitable mathematical access to all children irrespective of culture, ethnicity, gender, economic and social position” (p. 371). Atweh et al. (2004) called for the need to move from the identification of factors of disadvantage to consideration of solutions to the problems. Adopting a similar position, Schuck and Grootenboer (2004) in their chapter on affective issues argued that there was a need “to engage in research studies which offer substantive interventions which enhance attitudes, and interrupt those beliefs and values that do not promote effective mathematical teaching and learning” (p. 69).

In the 2000-2003 review period approximately 16% of papers focused on effective pedagogy and professional development. Walshaw and Anthony (2004) noted that interest in professional development rose from the low level of 1% in 2000 to 7% in 2003. Considering the current climate of research accountability – with calls for research to inform practice, and for professional development to measurably impact on learning (Timperley, Wilson, Barrar, & Fung, 2007) – there are signs of an increased research focus on professional development. Whilst some research reflects an ongoing interest in sustaining large scale primary school based numeracy initiatives that began in the previous MERGA review period (e.g., Knight, 2005), significantly, the focus appears to be widening to include reforms within the secondary sector (e.g., Goos, Dole, & Makar, 2007). It is expected that these trends will be reflected in the four-yearly review period covered by the current MERGA review.

While Australasian researchers have made significant international contributions to assessment practices – “exhorting educators to exploit assessment as a powerful means of developing mathematical competence rather than as an end in itself” (Jones, 2004, p. 367) – research focused on assessment, according to Walshaw and
Anthony’s (2004) analysis, declined over the previous review period. Given the increased calls for teachers to use student achievement data to inform their instruction, significant changes in national assessment practices within Australasia, and increased recognition of the role of formative assessment in learning, will the trend for a paucity of research on assessment persist?

What tools and designs were being used?

The field of mathematics education research continues to change over time. In the 2000-2003 review period Walshaw and Anthony (2004) noted that a small number of research papers provided exemplars of innovative tools for data collection and frameworks for data analysis. New forms of research are important; they offer ways to “draw attention to previously unseen aspects of practice” (Klein, 2002, p. 395). The movement of theoretical perspectives from the traditional theories and constructs of psychology to a greater application of theories from sociological perspectives, as noted by Anthony (2004), continues to be evident. While papers that proposed a framework based on the adaptation of differing theoretical perspectives were the exception in the previous review, the exploration of multiple theoretical perspectives as a way of understanding research would be invaluable, as theoretical “choice necessarily influences what is looked for and noticed” (Beswick, Watson, & De Geest, 2007, p. 121).

A range of data generation strategies were noted in the 2000-2003 review. It is expected that research – such as Wilson’s (2007) use of bibliotherapy to provide a new approach to eliciting and understanding the affective response of pre-service teachers, Chick, Pham, and Baker’s (2006) novel framework for investigating teachers’ pedagogical content knowledge, and Muir’s (2006) piloted observation schedule for documenting aspects of effective numeracy teaching – within the current review will continue to showcase innovative data tools.

Walshaw and Anthony (2004) noted the prevalence of studies based on test items or task assessment performance of students or teachers, with some research studies utilising pre- and post-test items. When combined with ethnographic and case study enquiry these research studies accounted for approximately 60% of the research papers in the 2000-2003 review period. However, a notable feature of the 2000-2003 period was the increase in papers designated as design studies – a category described as including work that engaged teachers in collaboration with researchers, classroom action research, and teaching experiments. Walshaw and Anthony suggested that the increase reflected a greater involvement of “school professionals [in] research from the inside, navigating between their practice and their research through experiences, such as teacher study groups, teacher narratives, and classroom-based action researcher studies” (p. 17). There is evidence of this continuing trend, for example, Geiger and Goos’ (2006) description of their successful collaborative experiences, and Pritchard and Bonne’s (2007) details of some of the challenges faced by both the teacher researchers and university researchers within their collaborative study of teacher questioning practices.
Who was involved in the research?

In Walshaw and Anthony’s (2004) analysis of MERGA papers from the previous review period it was noted that students were the main research participants. Most often student involvement was in the form of completing test/task items or interviews; in relatively few studies were students’ perceptions of their learning explored. Including student voice, as did Doig, Groves, Campbell, Mousley, and Williams (2007) with examples from primary, secondary, and tertiary students would highlight how “information about teaching and learning that would otherwise be inaccessible to mathematics educators” (p. 884) could be made available.

Learners have been a central focus of research studies, and the school sector the main setting in which they are studied. The 2000-2003 review revealed a scarcity of research reported at MERGA conferences that were contextualized within the home, the community, pre-school settings, or the tertiary sector. While the number of researchers working in these contexts still appears to be small, it was significant that the 2007 MERGA conference featured a symposium focused on early years mathematics research (e.g., Fox, 2007).

In association with the increased focus on design research studies noted in the 2000-2003 review, and with the expectation that this will persist, it is anticipated that teachers will become an increasing focus of research attention, particularly in studies into effective professional development models. In the current review period, there are signs of a growing interest in research on teacher learning and teacher change, with more teachers actively involved as research collaborators/participants, and more self studies by teacher educators (e.g., Cheeseman, 2007).

CONCLUSION

The current review of Australasian mathematics education research is the seventh in the short history of MERGA. That such a series exists at all is a credit to the organisation and its members. There have been many similarities in the contents of these reviews, much the direct result of dedicated advocates for particular areas of mathematics education research who have not only undertaken significant research in their own right but have also stimulated quality research in their areas by colleagues and younger researchers. This trend appears to have continued into the present review. Of particular note is the area of gender and mathematics that has featured in the review series since the first review in 1984. Also of note – and following the predicted trend highlighted by Jones (2004) – is the presence of chapters dealing with sociocultural contexts. As Australia and New Zealand strive to provide their indigenous groups and some other culturally, socially and linguistically diverse groups with outcomes in mathematics equivalent to those enjoyed by their white middle-class populations, mathematics education researchers will more and more need to be seeking their evidence through sociocultural lenses.
However, the contexts of the 2000-2003 MERGA review (Perry, Anthony, & Diezmann, 2004) and the 2004-2007 MERGA review (Forgasz et al., 2008) are more dissimilar than similar. In both periods, there was a concern with the quality of mathematics teaching and the shortage of mathematics teachers and mathematics teacher educators. However, in the latter period there has been considerable change in the Australasian research context, with the foci on the assessment of research quality, and the substantial funding change in favour of practitioner projects. The nature of many MERGA members’ work will have changed as they have responded to and been successful in these new contexts. According to Sternberg (2003), successful intelligence involves the ability to work effectively within the context by “adapting to, shaping and selecting environments” (p. 152). In the chapters in the present 4-yearly review of mathematics education research, the research reported will build on the past, and the ways that researchers, or their participants, have adapted to, shaped, and selected mathematics education environments will be reported. Within Australasia, such adaptations will result in the enhanced learning and teaching of mathematics as well as a continued stream of significant quality mathematics education research.

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