Mathematics Teacher Education and Development 2010, Vol. 12.2, 1–4

Editorial

Leadership of Reform in Mathematics Education

Janeen Lamb Michael Gaffney
Australian Catholic University

This special issue of MTED addresses the changing context of teaching mathematics by linking educational leadership with the issue of reform in mathematics. This linking of leadership and reform in mathematics is most timely in an era of globalisation and the contemporary 'push' for mandated curriculum reform (Barber & Mourshed, 2007). By linking the research literature on leadership with reform in mathematics education a deeper understanding of sustainable change is possible.

The papers within this special issue of MTED reflect the current pressures and possibilities with reforms in mathematics curriculum. Current research alerts us to the high failure rate of curriculum reform in mathematics (Handal & Herrington, 2003) and explaining this level of failure, researchers point to a number of inhibitors experienced by teachers. Commonly cited inhibitors include a lack of depth and breadth of content knowledge to successfully implement curriculum reform in mathematics (Ball & Bass, 2003; White, Mitchelmore, Branca, & Maxon, 2005). Also identified in the literature is the need for appropriate resourcing and professional development to enable teachers to implement mathematics curriculum reform in their classrooms (Lingard, Ladwig, hayes, Mills, Bahr, Chant & Warry, 2001). Moreover, despite strong arguments in respect to situating mathematics curriculum reform in the context of the professional learning community, researchers consistently report the challenge of constructing this model of school community (Proudford, 2003; Smeed, Kinmber, Millwater, & Ehrich, 2009). Finally, the literature notes the uncertainty and confusion often caused by conflicting policy agendas in the context of an 'avalanche' of curriculum reform and associated calls for professional agency in support of student learning (Lamb, 2010; Sachs, 2003).

In addition, these papers broadly frame educational leadership in terms of both formal and informal leadership roles in schools as well as the part played by policy-makers and external educational professionals. Research and scholarly writing in the area of educational leadership has evolved from an understanding of leadership as synonymous with positional authority and the province of single individuals in those positions to one which views leadership as an influencing relationship in educational settings. This latter perspective on leadership is evident in those capable of influencing others, either individually or in teams to further student learning. In this contemporary understanding, educational leadership can be shared or distributed across the entire education system,

incorporating classrooms, school communities, and central offices (Branson, 2010; Duignan, 2006; Fullan, 2005).

The articles in this special issue cover a range of issues and possibilities associated with the leadership of reform in mathematics education. The overriding message is that such reform is multi-faceted and requires attention to a number of factors to develop and sustain improvement in teaching quality and student learning outcomes in mathematics.

One theme linking these factors is the knowledge, skills and attitudes that teachers of mathematics bring to their work, and how these are best developed and supported. The article by Leonie Anstey and Barbara Clarke, titled *Leading and supporting mathematics teacher change: The case of teaching and learning coaches*, reports on a large scale systemic initiative in Victoria designed to provide intensive assistance to teachers in identified schools. The leadership role of coaches in bringing about changes in practice and attitude is explained, and the need to develop and sustain the leadership capabilities of these educators is strongly recommended.

A related theme linking these factors is the importance of educational leadership practised by principals and teachers in school settings, and the nature of the professional learning opportunities required to develop their leadership capabilities. This theme is treated in the article by Janeen Lamb, titled *Leading mathematics reform and the lost opportunity*. Her article reports on the pressures being faced by principals to ensure their schools perform appropriately on external accountability measures. She argues that principals' responses to these pressures are narrowing their perspective and approach to leadership, encouraging them to act more pragmatically, rather than strategically and in the process depriving themselves and their teaching staff of the opportunity to develop and embed more lasting developments in the teaching and learning of mathematics.

This issue of pressure in dealing with externally imposed reform is also addressed in the article by Colleen Vale, Anne Davies, Mary Weaven, Neil Hooley, Kristy Davidson and Daniel Loton, titled *Leadership to improve mathematics outcomes in low SES schools and school networks*. In contrast to the 'lost opportunity' reported in the Lamb article, this study reports on the progress made to date in improving student numeracy achievement through a direct focus on distributed leadership and networking within and across school communities. The role of system authority in supporting school networks is also highlighted. Such support is seen as crucial in developing the leadership capability of principals and teachers in working productively and cohesively with reform in mathematics education.

The importance of taking a systemic view is also apparent in the article by Mike Gaffney and Rhonda Faragher, titled *Sustaining improvement in numeracy: Developing pedagogical content knowledge and leadership capabilities in tandem*. The article reports on similar contexts to those discussed in the article by Vale et al, and similarly emphasises the need for leadership at the local school level to be practised by principals and teachers working in partnership. The Leading

Aligned Numeracy Development (LAND) project reported in this article provides a practical approach, grounded in the literature on school improvement and leadership development, to bring about higher levels of pedagogical content knowledge of teachers and principals alike, and the leadership actions to bring this about. The importance of alignment and integration of resources and effort at classroom, school and central office level is emphasised as a key component in sustaining higher levels of teaching quality and student outcomes in mathematics.

A related perspective on the complexity of reform in mathematics education is taken in the article by Scott Eacott and Kathryn Holmes in their article titled, *Leading reform in mathematics education: solving a complex equation*. These authors argue that such complexity is best dealt with through the development of five types of educational leadership literacies: cultural, social, political, historical and future. Consideration of each type of literacy provides both an opportunity for reflection and for action, where the aim is to develop in educational leaders, the capability to understand and work across various educational, cultural, social, and political contexts.

We believe that the advantage of having a series of articles that promote such knowledge in one journal can only help to promote the collaborative leadership capabilities at the classroom (teacher leadership), school (principal/school executive leadership), education department/system (education authority) as well as at the global level. Ultimately such knowledge will assist collaboration and alignment to effect sustainable improvement in student outcomes in mathematics. Given these priorities the role of leadership at all levels of mathematical education deserves consideration.

References

Ball, D. L., & Bass, H. (2003). Towards a practice-based theory of mathematical knowledge for teaching. In B. Davis, & E. Simmt (Eds.), *Proceedings of the 2002 Annual Meeting of the Canadian Mathematics Education Study Group*, (pp. 3–14). Edmonton, AB: CMESG/GCEDM.

Barber, M., & Mourshed, M. (2007). *How the world's best–performing school systems come out on top*. London: McKinsey.

Branson, C. (2010). *Leading educational change wisely*. Rotterdam: Sense Publishers.

Duignan, P. (2006). *Educational leadership: Key challenges and ethical tensions*. Cambridge: Cambridge University Press.

Fullan, M. (2005). *Leadership and sustainability: System thinkers in action*. London: Corwin Press.

Handal, B., & Herrington, A. (2003). Mathematics teachers' beliefs and curriculum reform. *Mathematics Education Research Journal, 15*(1), 59–69.

Lamb, J. (2010). *Implementing mandated curriculum reform: Sources of support for teacher meaning making*. Unpublished PhD Thesis. Australian Catholic University, Fitzroy, Victoria.

Lingard, R. L., Ladwig, J., Hayes, D., Mills, M. D., Bahr, M. P., Chant, D. C., & Warry, M. (2001). *The Queensland school reform longitudinal study*. Brisbane: Department of Education.

Proudford, C. (2003). Building professional learning communities for curriculum change. *Curriculum Perspectives, 23*(3), 1–10.

Sachs, J. (2003). The activist teaching profession. Berkshire, UK: Open University Press.

Smeed, J., Kinmber, M., Millwater, J., & Ehrich, L. (2009). Power over, with and through: Another look at micropolitics. Leading and Managing, 15(1), 26–41.

White, P., Mitchelmore, M., Branca, N., & Maxon, M. (2005). Professional development: Mathematical content verses pedagogy. *Mathematics Teacher Education & Development, 6*, 49–60.