Editorial

The Importance of Teacher Knowledge and Teacher Thinking

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The twelfth issue of *Mathematics Teacher Education and Development* (MTED) is the first for the new editorial team and also marks a turning point in the evolution of the journal. It therefore seems appropriate to comment on the journal's future as well as reflect on its past. Building on the foundation laid by the previous editors, MTED progresses into its second decade of publication by moving from a single annual publication to two issues per year. The longer-term goal is to increase the number of annual issues to three. Several strategies support achievement of this goal; a) producing a special issue each year under guest editors; b) broadening the scope and style of papers for inclusion, for example, theoretical views or policy and curriculum discussions, and; c) promoting the journal widely as a quality outlet for scholarly work on the education and development of mathematics teachers.

For the editors, the regular special issues will allow the opportunity to capitalise on current events and topics in the field, and to provide an outlet for forums and special interest groups. From the reader's point of view, the focused collection of papers provides a useful resource for professional learning or as a support for further research around the focus topic. We therefore encourage readers of this journal to consider possibilities for creating a special issue and to contact the editors for an initial discussion of ideas. Special issues can be initiated with a collection of authors already in mind, or by an open call for contributions to a described content framework.

Although the first two issues of MTED in 1999 and 2000 contained only papers from Australian and New Zealand authors, the third issue heralded the internationalisation of the journal by including only one Australasian paper. Now international authors account for about 34% of the total content. Contributions have come from Asia, Europe, North America and Africa, and a similar diversity is reflected in our expanding Editorial Board. While the journal maintains a focus on publishing material of interest and application to the Australasian context, encouraging a global perspective on mathematics education is also important. Therefore it is pleasing to note that this issue contains papers that originate from Australia, New Zealand, USA and Norway.

MTED complements the other journal of the Mathematics Education Group of Australasia, the *Mathematics Education Research Journal*, which attracts high quality research articles on mathematics teaching and learning. The continuation and growth of the MTED journal demonstrates both the parent organisation's commitment to the profession, and the increased international attention being

given to researching the development and practice of mathematics teachers and educators.

Turning to the present, the articles in this issue of MTED illustrate well, some of the current trends in research and development around teachers. Each of the papers, in its own way, deals with the notion of teacher thinking and its interrelationship with various factors such as content knowledge, pedagogical content knowledge and beliefs. The papers also illustrate a range of inquiry methods, including Lesson Study, action research, interviews, questionnaires and tests.

Yarema describes the impact of a Lesson Study approach to professional development, which revealed teachers' thinking about accountability testing. Through the identification of issues in their grades 6-10 mathematics classrooms, and planning of the research lessons, teachers revealed four views of accountability testing. Each suggested accountability testing was a means to learn about one of the following: students' knowledge; mathematical content; vocabulary usage and correct responses; and classroom learning environments.

Nickerson and Masarik assessed middle school mathematics teachers' interpretations of students' work. Over a year of professional development, the authors identified shifts in teachers' interpretations and changes in knowledge and practice that included an increasing range of pedagogical moves. The shifts were described as shifts in 'positioning' with changes along three dimensions: the teachers' role; perception of what it means for students to understand the mathematics; and differentiation for moving students along a trajectory.

Two knowledge constructs (Common Content Knowledge and Specialised Content Knowledge) and two beliefs constructs (emphasis on rules or emphasis on reasons) were examined in Drageset's study of 356 Norwegian teachers. Analysing teachers' responses to a questionnaire and a multiple-choice test identified connections between the knowledge and beliefs constructs. While the research provided evidence of relationships, it was not possible to determine causal relationships.

Working with lead teachers in New Zealand, Tait-McCutcheon identified pedagogical and organisational changes in programs after a professional development project of action research. Statistics embedded in a range of contexts provided the catalyst for the changes with subsequent changes in students' levels of achievement compared to national norms.

Norton raises the issue of whether a particular program provided sufficient time to prepare primary pre-service teachers to teach mathematics well. Assessing mathematical knowledge and pedagogical content knowledge before and after the program provided evidence of growth, particularly in the curriculum strands of number and algebra which were the main foci of the program.