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## New Perspectives on Mathematics Pedagogy

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# **NEW PERSPECTIVES ON MATHEMATICS PEDAGOGY**

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Symposium Contributors: Tony Brown, Tony Cotton, Brent Davis, Elizabeth de Freitas, Moshe Renert, David Stinson, Fiona Walls

*“New Perspectives on Mathematics Pedagogy” represents a serious attempt to understand pedagogy within mathematics classrooms. To that end, this symposium will address the key questions and issues surrounding mathematics pedagogy presently confronting vast numbers of researchers, as well as educators, and policy makers. Organised around presentations, responses, discussion and debate, the symposium is intended not only to enhance understanding but also to stimulate fresh thinking and initiate ongoing critical dialogue about the practice of mathematics pedagogy within teaching and learning settings.*

## **AIMS OF SYMPOSIUM**

This symposium aims to engage the audience in a critical discussion on a new and provocative book in the field of mathematics education. *Unpacking Pedagogy: New Perspectives for Mathematics* is a forthcoming (December 2009) publication by Information Age Publishing. Based on the chapters of this edited collection, this symposium will address the key questions and issues surrounding mathematics pedagogy presently confronting vast numbers of researchers, as well as educators, and policy makers. By pedagogy we mean the elements of practice characterised not only by the regularities of teaching but also the uncertainties of practice. If pedagogy is about the production of mathematical knowledge and the construction of mathematical identities, it is also about social relations and values. Pedagogy takes into account ways of knowing and thinking, language, emotion, and the discourses made available and generated within the physical, social, cultural, historical, and economic community of practice in which mathematics teaching is embedded.

The symposium directly involves nine chapter authors who will present their research and/or act as respondents. Their presentations are not intended to provide analytic consensus in their attempts to understand what it is that structures the pedagogical experience. Highly influential in informing the analyses will be Foucault’s understanding of how practices are produced within discourses and within power configurations; Lacan’s notion of subjectivity; evolutionary frameworks of complexity science to rethink mathematics pedagogy; and Bourdieu’s notion of habitus to explain the teaching/learning nexus.

## **RELEVANCE OF SYMPOSIUM**

As educators and researchers, we believe that mathematics pedagogy is at a crossroads. The harsh reality is that many students do not succeed with mathematics; they are disaffected and continually confront obstacles to engaging with the subject.

Recent analyses of international mathematics test data have revealed patterns of social inequity that provide a sobering counterpoint to claims of an equitable pedagogical experience for all our students. Many settings, where teachers have been trained to deal with undifferentiated learner populations, now require teachers to contend with diverse learner cohorts, as well as differing behavioural and epistemic responses from students of mathematics.

These difficulties and challenges are nested within a much larger complex of social, cultural, technological, and economic phenomenon. Within this context, the policy response to poor student performance has commonly been the classic deficit response: to put the blame on teachers. As a result, teachers and teaching have become objects of scrutiny and critique, resulting in heavy workloads and new curricular policy mandates. Increased surveillance, set within a new audit culture, along with demands for evidence-based practices and scientific pedagogical methods and testing are the order of the day. For example, in the US *No Child Left Behind* initiatives, funding for schools is linked to heightened standardised performance measures. Attempts have also been made to standardise teacher-student interactions, instructional approach, and the kind of mathematics constructed within the learning context.

The postmodern vocabulary for talking about mathematics pedagogy within these contexts and conditions is more relevant than ever. “New Perspectives on Mathematics Pedagogy” takes that vocabulary seriously and engages symposium participants in responses to key issues through theory development. Working from the premise that new ideas are too important and complex to be ignored, presenters will speak about pedagogy in ways that participants may not have imagined possible. The responses to theory, highlighting a direct application to practice in mathematics education, will allow participants to build new knowledge about mathematics pedagogy and its situatedness within institutions, as well as within historical, cultural and social fields. As a result, the symposium will be a key medium for interrogating and understanding teaching. In that role, the symposium will raise thorny questions about the generalised discourse of mathematics pedagogy by theorising the contradictory realities of teachers and the complexity and complicity of their work.

The symposium contributors believe that negotiating through the epistemological indeterminacy of the postmodern moment can be facilitated by closely examining the concrete, material and human specificities of the mathematics pedagogical experience. Approaches that draw on postmodern ideas are now widespread across many disciplines. However, postmodern ideas have not yet been given any significant platform within the discipline of mathematics education. Until now, students and scholars alike in mathematics education have tended to present their findings and their claims from the standpoint of more traditional thinking and have often based their analyses of pedagogy on examples from ‘sanitised’ classrooms. In the process many crucial aspects of the pedagogical relation have remained unquestioned. In particular, discussions of classroom practice have tended to gloss over intersubjective

negotiations that take place in the development of teacher identity and that take place in the construction of mathematical knowledge.

The symposium presentations will pay careful attention to these crucial aspects. This is new territory for researchers of mathematics education classroom life and, because of this new ground, the presentations are designed to stimulate thinking and to question the way we think about pedagogical work in mathematics classrooms. Presenters will do this by offering conceptual resources to develop a new sensitivity to everyday pedagogical practice. Relational, contextualised, and in some ways provocative, the presentations will provide, above all, an opportunity to explore what drives mathematics teaching practice and to examine pedagogy's effects.

## **SYMPOSIUM PLAN**

The symposium will represent a coherent set of theoretical, narrative, empirical and practical applications of postmodern concepts to the field of mathematics pedagogy. Two main objectives structure this set of applications. One objective is from a theoretical perspective that involves examining the issue of teacher subjectivity and exploring how intersubjective negotiations shape the production of classroom practice. A second objective is to apply these theoretical understandings to the construction of both mathematical knowledge and teacher identities in the contexts of actual mathematics teaching and learning settings. To that extent, we plan a two-session symposium (i) a focus on theory that involves examining key concepts and thinking, and (ii) a focus on practice that applies those theoretical concepts to pedagogy within specific historical, cultural, and social contexts.

The first objective will be met during Day 1:

- ◆ Introduction to the key issues concerning mathematics pedagogy
- ◆ Three presentations on theory relevant to understanding and researching mathematics pedagogy
- ◆ Questions, discussion and debate [both peer and symposium-wide]
- ◆ Closing and Day 2 preview

*Contributors to Day 1:* Margaret Walshaw (Introduction/closing); Brent Davis and Moshe Renert; Fiona Walls; Tony Brown.

The second objective will be met during Day 2:

- ◆ Short overview of theoretical presentations from Day 1
- ◆ Three responses to the theories; each response discusses the relevance of the 3 theories to a particular issue/setting and applies one theory in particular to a setting/issue
- ◆ Questions, discussion and debate [both peer and symposium-wide]
- ◆ Closing comments

*Contributors to Day 2:* Kathleen Nolan (overview/closing); David Stinson; Tony Cotton; Elizabeth de Freitas.

All contributors are deeply involved in working with new ideas in their research in mathematics education. They represent a range of geographical regions and countries: Canada, Australia, United States, England, and New Zealand. As stated previously, their presentations will be based on the chapters in the volume *Unpacking Pedagogy: New Perspectives for Mathematics*. This collection is edited by one of the symposium coordinators, Margaret Walshaw, and contains a chapter contribution from the other coordinator, Kathleen Nolan. Participants attending the two symposium sessions will have opportunities during both days to ask questions, to discuss, to debate and to critically interrogate the content of the presentations. That opportunity has specifically been scheduled into the timetable.

## REFERENCES

Walshaw, M. (Ed.) (*in press*). *Unpacking Pedagogy: New Perspectives for Mathematics*. Charlotte, NC: Information Age Publishing Inc.