

TEACHERS' PLANNING PROCESSES: Seeking Insights from Australian teachers

Peter Sullivan

Monash University
< peter.sullivan@monash.edu >

Doug M. Clarke

Australian Catholic University

James Albright

University of Newcastle

David J. Clarke

Melbourne University

Lesley Farrell

University of Technology, Sydney

Peter Freebody

University of Sydney

Jessica Gerrard

Melbourne University

Deborah Michels

Monash University

The Australian Curriculum: Mathematics (AC:M) prompts consideration of planning processes teachers typically use (as a whole school, in grade levels, and at the classroom level). In order to gain insights into the nature of the planning decisions teachers make, Australian teachers drawn from every state and territory were invited to respond to a survey on planning processes, during professional learning programs or voluntarily online through the Australian Association of Mathematics Teachers' website. In this article, we provide background to the overall project in which this survey was situated, and describe the process through which the survey was developed. Subsequent articles in this journal detail some important findings from the survey data.

Introduction

It is common for each professional learning team of teachers in a school to develop a schedule for the topics they will teach over the year for particular levels. Such schedules can include, among other things, sequences of topics, suggested timing, lists of school-based resources, and assessment plans. Based on the schedule, teams then commonly develop plans for the individual topics. These topic or unit plans may include references to the relevant State or national curriculum, statements of the specific learning goals for students, suggestions of teaching tasks and other resources, homework plans, specific assessment details, and sometimes pedagogical advice. The decisions that are made for each element of both types of planning are important and influence the learning opportunities of students. But not much is known about how teams and individuals come to make these plans, and what support might assist teachers in improving their planning. In supporting a project that is exploring such issues, The Australian Association of Mathematics Teachers (AAMT) provided a link to a survey of various aspects of planning. The responses of teachers of primary-level mathematics are reported in this special issue.

The Peopling Educational Policy Project¹

The survey responses reported below were gathered as part of the *Peopling Educational Policy* Project (PEP) in which we are focusing on the resources, systems and developmental experiences that can support teaching and learning, documenting the ways in which those who will implement the new curricula aim to align their interpretations, practices and policy decisions. We are investigating the responses of educators and teachers, and (at the time of writing) designing and evaluating initiatives based on these responses, and developing a corpus of exemplars that represent successful realisation of the *Australian Curriculum* (AC).

The overarching research questions are as follows:

1. What are sources of documentation relating to *Australian Curriculum: Mathematics* used by educators and teachers, and how do they interpret this documentation?
2. What is the impact of the *Australian Curriculum: Mathematics* on the management of curriculum in schools and in classrooms?
3. What support do teachers call for to enact their own roles, and the roles of colleagues in other contexts, in this curriculum initiative, and what transitional phases do they foresee?
4. What new knowledge is seen as required and what processes are proposed for gaining this knowledge?

1 The Peopling Education Policy Project is funded by the Australian Research Council (LP110100062) with additional funding provided by the NSW Department of Education and Training, Victorian Curriculum and Assessment Authority, Catholic Education Office Melbourne and the Australian Curriculum Assessment and Reporting Authority. The project is a collaboration between Monash University, Australian Catholic University, University of Sydney, University of Technology Sydney, University of Newcastle and the University of Melbourne. The content is the responsibility of the authors and the views expressed do not necessarily represent the views of the universities or the partners.

5. What constraints are anticipated in addressing expectations of the *Australian Curriculum: Mathematics* and system-based interpretations?

There are three sequentially-connected phases to the research: Phase I (now concluded) generated data about which documents are salient to the institutional process of curriculum reform and how educators and teachers interpret and use them. As well as addressing the research questions, we are using these data to work with partners to design interventions for Phase II. We will study and evaluate these interventions. From this we will develop and study the use of digital exemplars that represent successful interventions (Phase III).

The nature of curriculum planning

The *Peopling Education Policy* project was prompted by the development, trialling and implementation of the new *Australian Curriculum* and the opportunity it offers to improve the teaching and learning of mathematics. Particular challenges for this curriculum initiative include addressing the substantial challenges confronting Australian mathematics teachers, such as the diversity of achievement levels in most classes, low participation rates of students in elective mathematics study, and the serious over-representation of students from particular socio-economic and cultural/ethnic groups in the performance “tail” (e.g., report on PISA by Thompson & Bortoli, 2007).

In seeking to address such challenges, the Australian Curriculum Assessment and Reporting Authority (ACARA) (2012) outlined the rationale and guiding principles for the development of the *Australian Curriculum: Mathematics*. That document explained the decision to develop discipline-specific curriculum, and also described structures and processes to build connections

between those disciplines and to ensure that current issues are addressed. The overall *Australian Curriculum*, in addition to the discipline-specific documents, describes cross curriculum priorities (e.g., Aboriginal and Torres Strait Islander histories and cultures), and general capabilities (e.g., numeracy, creative and critical thinking). There is an accompanying *Mathematics Shape Paper* (ACARA, 2009) which recommends reforms in prior curriculum documentation. Changes recommended in the *Mathematics Shape Paper* are that:

1. the process strands (understanding, fluency, problem solving and reasoning) be integrated with the content strands;
2. the curriculum be less “crowded”, allowing for greater depth of study;
3. the most capable students be extended by engaging with sophisticated ideas within basic topics (rather than being accelerated to content from a subsequent year level); and
4. there be greater attention to statistics and probability than is in most previous jurisdictional curriculum at all levels of schooling.

An assumption underpinning the research is that teachers are best able to support students when they know what they hope students will learn. Hattie and Timperley (2007), for example, reviewed a range of studies on characteristics of effective classrooms and found that feedback was one of the main influences on student achievement. They listed the key elements as being that students receive information on: “Where am I going?”, “How am I going?”, and “Where am I going to next?”. Presumably, part of the planning process is anticipating how such questions might be answered for students—a key aspect of which is identifying the important aspects of the topic to be taught. It is presumed that the curriculum is intended to inform such decisions on those important aspects. We are exploring the extent to which the current version of the curriculum does this.

A further assumption underpinning

this research is that teachers’ planning decisions are informed by their knowledge of curriculum generally and the curriculum they are intending to teach in particular. Shulman (1986) claimed:

The curriculum is represented by the full range of programs designed for the teaching of particular subjects and topics at a given level, the variety of instructional materials available in relation to those programs, and the set of characteristics that serve as both the indications and contraindications for the use of particular curriculum or program materials in particular circumstances. (p. 10)

Note that this statement does not mention knowledge of the type of curriculum documentation that has been produced by the various Australian jurisdictions previously, or the documentation associated with the *Australian Curriculum: Mathematics*. Shulman went on to argue that this is an aspect of teacher knowledge that is underemphasised: “If we are regularly remiss in not teaching pedagogical knowledge to our students in teacher education programs, we are even more delinquent with respect to ... curricular knowledge” (p. 10). Hill, Ball, and Schilling (2008) included knowledge of curriculum as one of the elements of their model of teacher knowledge. Kilpatrick, Swafford, and Findell (2001), also noted the importance of knowledge of curriculum. They argued that planning is critical, takes much effort and is the core activity of experienced teachers.

Presumably, the various State curriculum documents informed teachers’ planning in some way previously, and that, in the future, teachers will consider the *Australian Curriculum: Mathematics*, or at least some variation of that, as part of their planning routines. It is, however, not clear when and how curriculum documents are consulted, and how the documents inform teachers’ planning. That is the focus of the research reported in this special edition of *Australian Primary Mathematics Classroom*.

The development of the survey

This section describes the focus groups that informed the items of the survey, the structure of the survey, and the profile of the participants.

Teacher focus groups

Because we had no preconceptions about the types of documents that teachers consult, the authority they attribute to those documents, the role of their experiences, the resources to which they may have access, and so on, we first conducted eight focus groups of primary teachers in the first half of 2011. The prompts for those focus groups were intended to promote discussion and even argumentation among the teachers. For example, we presented participating teachers with extracts from the *Australian Curriculum: Mathematics* and asked questions such as: What does this extract mean to you? To what extent does this suggest changes to your current practices? What would you need to know to implement this aspect of the curriculum in your classroom? How might you assess whether students learn the content suggested by the curriculum content descriptions? How might this influence your planning?

The focus group interviews were recorded and transcribed, and the transcripts analysed to identify themes in the teachers' responses. These themes were used as the basis of a survey through which we sought responses from a broader range of teachers.

The survey

Informed by data emerging from the focus group conversations with primary teachers in Victoria and New South Wales, teachers were invited to complete a detailed survey. The survey, which took typically 30 minutes to complete and involved 34 items (some with multiple sub-questions), sought the following:

- demographic information;
- information on the relative use of various resources during planning to teach mathematics;

- the most useful components of official curriculum documents;
- the sources used (written and human) in resolving disagreements about what to teach;
- the next topic teachers were intending to teach and the most important idea for focus in that topic;
- planning routines that teachers use;
- the role of assessment in planning;
- their interpretation of the reasoning proficiency strand, and
- their perceived need for support in implementing the *Australian Curriculum: Mathematics*.

The participants

At the time of writing, the survey had been completed by 264 primary teachers. Many teachers completed the survey online, courtesy of the AAMT website. Some groups of teachers to which we had occasional access completed a paper version of either the whole survey or particular sections. Table 1 presents the background characteristics of those who completed the survey.

Table 1. Percentages of various background characteristics of survey respondents (n = 264).

	% of the primary teachers
Surveys completed online	60
Female respondents	86
Government school teachers	36
Based in metropolitan schools	65
School-based respondents	93
Teaching for more than 20 years	46
Classroom teacher with additional responsibility	30
Respondents from NSW	43
Respondents from Victoria	25

With the exception that there was a disproportionately large percentage of primary respondents from non-government schools, this represents a reasonable distribution of teachers from across the categories of potential interest (gender, geography, system, experience, roles).

In the remaining articles within this journal, we discuss the findings of the survey and the implications for teachers, professional associations, our industry partners, and others responsible for teacher professional learning in Australia.

References

- ACARA (2009). *Shape of the Australian Curriculum: Mathematics*. Accessed February 2012 from http://www.acara.edu.au/verve/_resources/Australian_Curriculum_-_Maths.pdf
- ACARA (2012). *The shape of the Australian Curriculum*. Accessed January 2012 from http://www.acara.edu.au/verve/_resources/The_Shape_of_the_Australian_Curriculum_V3.pdf
- Hattie, J. & Timperley, H. (2007). The power of feedback. *Review of Educational Research*, 77(1), 81–112.
- Hill, H., Ball, D. & Schilling, S. (2008). Unpacking pedagogical content knowledge: Conceptualising and measuring teachers' topic-specific knowledge of students. *Journal for Research in Mathematics Education*, 39, 372–400.
- Kilpatrick, J., Swafford, J. & Findell, B. (Eds). (2001). *Adding it up: Helping children learn mathematics*. Washington, DC: National Academy Press.
- Shulman, L. S. (1986). Those who understand: Knowledge growth in teaching. *Educational Researcher*, 15(2), 4–14.
- Thompson, S. & De Bortoli, L. (2007). *PISA in brief from Australia's perspective*. Australian Council of Educational Research: Melbourne.



Peter Sullivan



Doug M. Clarke



James Albright



David J. Clarke



Lesley Farrell



Peter Freebody



Jessica Gerrard



Deborah Michels

Copyright of Australian Primary Mathematics Classroom is the property of Australian Association of Mathematics Teachers and its content may not be copied or emailed to multiple sites or posted to a listserv without the copyright holder's express written permission. However, users may print, download, or email articles for individual use.