

# Do Groupies Do Better? Perceptions of Practising Teachers Undertaking Tertiary Study in Mathematics

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In 2005, the Ministry of Education began investigating ways in which the teachers who had participated in the teacher development programme could be supported in maintaining and extending their knowledge and expertise. This paper describes the perceptions of a group of teachers whose tertiary studies were partially funded through a Ministry initiative designed to help sustain the gains of the NDP. The study found that group support, unexpectedly, was not identified by the participating teachers as important for success. Despite finding the papers valuable in meeting many of their immediate and long-term needs, many teachers identified issues such as the lack of time available for concentrated study and variable levels of support given by their schools as impediments to their study.

## Introduction

Since the introduction of the Numeracy Development Projects (NDP) in 2000, almost all teachers in primary and intermediate schools have undertaken the extended school-based development in teaching mathematics that forms the basis of the NDP. These facilitated workshops and in-class support sessions focus on improving student performance in mathematics by improving the professional capability of teachers.

Evaluations have consistently shown that teachers' confidence and professional capability have improved substantially as a result of their involvement in the NDP (for example, Young-Loveridge, 2004). However, most teachers spent only two years in the professional development programme, and it soon became evident that for many teachers this was simply not enough time to fully understand the NDP and implement it with all their students (Cheeseman, 2006).

By 2005, the issue of sustainability had become increasingly important:

The NDP is moving into a phase in which the emphasis is not only on improving the teaching and learning of mathematics in New Zealand schools but also on enhancing the capacity of schools to sustain and build on that learning. (Ministry of Education, 2005, p. 4)

A response to this move was an initiative developed by the Ministry of Education to provide funding support for selected primary and intermediate school teachers to undertake approved tertiary study as a strategy for sustaining high-quality mathematics teaching. The relationship of the scheme to the NDP was clearly explained in the Ministry's announcement on the *nzmaths* website in November 2006:

The scheme is part of the Ministry of Education's efforts to further develop teachers' pedagogical content knowledge and understanding of mathematics education. This scheme builds on from the work started with the Numeracy Development Projects by supporting schools efforts to raise the achievement of all their students through increasing the expertise and knowledge of their teachers. (Retrieved November 2006 from [www.nzmaths.co.nz](http://www.nzmaths.co.nz))

The initiative provided for approximately 600 teachers each year to be supported to study a mathematics education paper at graduate or post-graduate level. Tuition fees were to be paid for, half by the Ministry of Education and half by the teacher's school. The scheme did not provide for release from teaching duties.

In 2007, there were 108 applicants, all of whom were granted funding. The low number of applicants meant that the criteria for selection outlined on the website did not need to be applied. The geographical spread was wide and roughly proportionate to that of all New Zealand teachers. Seventy percent of the applicants were lead teachers of numeracy within their schools. Almost half applied with others from their school (in groups of between two and five teachers). Class levels taught covered the full range of primary and intermediate school classes, and teacher applicants had a wide range of teaching experience (with 20+ years being the most represented) and covered the full range of experience in the NDP (with 50% starting in 2004 or 2005).

Faculties and colleges of Education from six New Zealand universities provided approved papers. Many of these were closely related to the NDP work already undertaken by the teachers in their schools, and two universities provided opportunities for teachers to study at a local school site rather than on the university campus. A number of papers were available through distance education.

## The Study

This paper is the initial part of a wider study that seeks to investigate how teachers undertaking tertiary study in mathematics can best be supported. It reports on the results of a questionnaire sent to teachers who undertook tertiary study funded through the Ministry scheme in 2007 while continuing to teach. The questionnaire sought information relating to sources of support for these teachers, asking them to identify the extent to which they felt each of a range of factors had provided support for their studies and to make general comments relating to that support. It was anticipated that the information from the questionnaires would provide direction for follow-up, in-depth interviews. The overall study can thus be described as a mixed-mode design, drawing on both quantitative and qualitative approaches (Kervin, Vialle, Herrington, & Okely, 2006).

The questionnaires were sent to 98 teachers, and 32 responses were received. Response rates for each of the universities ranged from 20% to 50%. All but one of the respondents indicated that they had passed the papers in which they had enrolled.

## Results and Discussion

Many research studies have identified a number of general principles that encourage teachers to adopt innovative practices (for example, Hill, Hawk, & Taylor, 2002; Corcoran, 1995). Most of these included suggestions that:

- effective professional development should take place over an extended period of time and as close as possible to the teacher's own working environment;
- groups of teachers should be involved, rather than individuals from a school;
- the teachers should be fully supported by the school administration;
- schools should use the services of a consultant.

The in-school teacher development associated with the NDP was carefully designed to include all of these principles (Bobis, Clarke, Clarke, et al., 2005), and succeeded in developing the "communities of learners" described by Birman, Desimone, Porter, & Garet (2000).

However, planning for the sustainability of the NDP provided an opportunity to consider other aspects that were relevant to teachers' learning. Issues such as differing levels of experience (National Council of Teachers of Mathematics, 1991, p. 161–162), variations in the readiness of the teachers to change their teaching practice, their personal knowledge of content and pedagogy, and their commitment

to on-going study were difficult to accommodate in whole-school development programmes. The provision (and funding) of tertiary courses to complement the in-service work seemed to enable these issues to be dealt with, as McLaughlin & Talbert (2006), suggest:

High quality offsite professional development affords teachers unique opportunities to access knowledge of content, to rethink their practice and to experience learning in a community of peers. (P. 65)

### *Selection of Papers*

It was envisaged that the act of enrolling in tertiary study would involve a conscious commitment on the part of the teacher, thus ensuring a feeling of personal involvement. Papers could be selected to address issues of concern recognised by teachers themselves and would provide ongoing opportunities for reflection and feedback.

However, while this conscious commitment and individual selection was clearly true in some cases, almost half of the teachers enrolled in tertiary papers that were closely related to their in-school numeracy development work. These papers were seen as a natural extension of learning in the NDP, and most of those enrolling in them were lead teachers acting on the recommendation of their facilitators and/or principals of their schools.

Most teachers provided one or two reasons for selecting specific papers. Twenty of the respondents commented on the relevance of the paper to their teaching and/or their role as a lead teacher in their school. Eight teachers chose a paper to continue or complete degrees or diplomas that they had already begun, five because the cost was subsidised, and two based their choices on interest. Two teachers commented on the convenience of the venue. Although almost half of the respondents reported enrolling with others from their school, only one included the perceived advantage of studying with colleagues as a reason for choosing a specific paper.

### *Relevance of Personal Experience*

Teachers were asked about the extent to which aspects of their personal experience influenced their performance in the papers they studied. The broad groupings in Table 1 show that a significant number of respondents felt that their personal experience and knowledge had some impact on their performance.

Table 1  
*Extent to Which Personal Experience Influenced Performance*

	Personal Mathematical Knowledge	Previous Tertiary Study	Teaching Experience	NDP Experience
Greatly	31%	44%	47%	37%
Somewhat	60%	53%	53%	53%
Not at all	9%	3%	0%	6%

This was especially evident in the group who chose to study extramurally. The years of teaching experience in this group was high, ranging from 16–30 years, with an average of over 20 years. Their responses rated their personal mathematical knowledge, previous tertiary study, and teaching experience as important factors in their success. Most of the teachers in this group were continuing or completing qualifications that they had already begun, and their decision to enrol in the papers was a “conscious commitment” to further study. They did not see their NDP experience as being a major factor in their success.

Teachers who participated in “face-to-face” papers that were very specifically related to the NDP were a much less experienced group, with an average “teaching life” of just over 8 years. Assessment in these papers required teachers to use their current NDP involvement to achieve success.

### *Support from the School*

Teachers in the survey were asked to consider ways in which they felt their schools supported their tertiary studies. The view of the Ministry of Education is clear:

Principals and numeracy lead teachers are central to sustaining and developing effective practices. They need to be enthusiastic, supportive, and involved. (Ministry of Education, 2005, p. 4)

Perceptions relating to these issues are shown in Table 2.

**Table 2**  
*Sources of School-based Support*

	Support from Principal *	Support from Lead Teacher **	Support from Colleagues	Time Allowance / Reduced Responsibilities
Greatly	32%	20%	28%	3%
Somewhat	36%	40%	12%	3%
Not received	32%	40%	60%	94%

\*/\*\* Participants included a principal and 12 lead teachers, who are excluded from these categories.

There are several factors that may have contributed to the perceived lack of support. The impending introduction of *The New Zealand Curriculum* (Ministry of Education, 2007) became a necessary focus for schools, with the result that almost half of the respondents were working in schools where numeracy was no longer a professional development focus at the time of their study. The links between numeracy development in the schools and some of the tertiary papers offered was very clear, with the papers being fully supported by the facilitators who had provided teachers in the school with the initial NDP programme. However, particularly in the case of the distance-education papers, other numeracy papers may not have been seen to have the same relevance to the school-wide NDP programme. Several lead teachers described being torn between supporting others and attending to their own studies.

Where support was offered by the principal and or senior management, it was clearly appreciated:

I had a very supportive principal who was interested in my study and the benefits of the study both to myself and to the school. He provided feedback on my assignments, and we discussed aspects from my study in relation to our school practices and performance. (Lead teacher, large medium-decile school)

Teachers who enrolled as part of a group that included a member of the school’s senior management team felt advantaged in this regard:

Have doubts whether enough support would have been given from my school had there not been a colleague from the school management team doing the paper with me. (Class teacher, large high-decile school)

However, several respondents commented on the difficulties of continuing to teach full time and maintain a wide range of school responsibilities while studying, and those who were not classroom teachers had difficulty in completing the on-going practical teaching requirement of some papers.

## The Papers

Table 3

*Extent to Which Aspects of the Papers Helped Teachers to Succeed*

	Feedback	Fit with Current Teaching	Meeting Long-term Needs	Support of Others In the Class
Greatly	72%	66%	66%	28%
Somewhat	28%	34%	31%	53%
Not at all	0%	0%	3%	19%

Most of the teachers felt well supported by the lecturers and facilitators who led the papers in which they enrolled. Several commented favourably on the organisation of the papers and the enthusiasm and professionalism with which they were presented. Most of the teachers felt that the papers they took met both their immediate and long-term needs. The supportive nature of the feedback they received was appreciated by most:

Feedback from the lecturer, while seeming critical to begin with, did develop my understanding of the teaching of maths. (Lead teacher, large primary school)

## Concluding Comments

Many of the issues raised by the teachers in this study relate to the difficulties of studying at a tertiary level while dealing with the on-going demands of a teaching job. While individuals named different aspects that were supportive of their studies, two common themes appeared in their comments. The lack of time available for concentrated study was, as expected, an issue for almost all of the participants. Although it was anticipated that teachers would find the support of a group important to their success, this was not the case. Rather, teachers commented on the importance of a single supporter or “critical friend” as the most helpful area of support. This finding, together with the discrepancies evident in the support given to teachers by their schools, would seem worthy of further investigation.

The Ministry of Education initiative that provided funding for the teachers in this study aimed to build on the NDP school-based teacher development in numeracy by further developing teachers’ pedagogical content knowledge and understanding of mathematics education. Despite the range of difficulties experienced by the teachers, their comments suggest that, for many, this aim had been achieved:

Learning from doing the paper has certainly made me a more confident teacher of maths and has also increased my confidence in my own maths ability. It has also given me the confidence to take more of a leadership role in my school regarding the maths curriculum. (Teacher, large integrated school)

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