

# Findings from the New Zealand Numeracy Development Projects 2008

## Foreword

The Numeracy Development Projects (NDP) began in 2000 with a pilot programme specifically aimed at improving the teaching and learning of number in the early years of schooling in New Zealand primary schools. The NDP have now developed to cover all primary and intermediate years, in both English-medium and Maori-medium (Te Poutama Tau) settings, as well as the first years of secondary school (the Secondary Numeracy Project and the wharekura Te Poutama Tau).

This compendium is a collection of papers based on research in primary and intermediate schools that has been funded by the Ministry of Education. Broadly, these papers cover the following areas: student achievement, professional practice, and evaluations of initiatives. In the rest of this foreword, I want to mention some concerns that the research papers in this volume have highlighted.

A well-known Maori proverb finishes with “Māku e kī atu he tangata, he tangata, he tangata.” (“You ask me, what is the most important thing on earth. My reply is, it is people, it is people, it is people.”) Paraphrasing this, “What is the most important thing in education? It is teachers, teachers, teachers.” This is reinforced in a number of papers in this volume, especially those that emphasise developing and strengthening not only teachers’ mathematics content knowledge but also their mathematics pedagogical content knowledge. In other words, it is not sufficient for teachers to know the material that they teach, they also have to know how to teach it and how to respond to individual students’ needs during the learning process. Gaining pedagogical content knowledge is an ongoing process for each teacher as their expertise increases and as research extends our overall knowledge of the field. Hence, there is a need for continual investment by the Ministry of Education in both research and professional development. This compendium shows that funding is being made available for both of these important areas.

My main concern in this area is not the professional development of practising teachers but the education of pre-service teachers. I am concerned that a sound grounding in the NDP is not being provided in some teacher education programmes, and I would like to see this aspect of teachers’ preparation expanded.

The next two aspects that I want to cover are related to the stages of the Numeracy Framework. The first of these is the different ranges covered at the different levels of the Framework. As a rough generalisation, the early stages cover less mathematics than the later ones and therefore students progress more rapidly through these stages. This gives the false impression that younger students are progressing more rapidly than older ones. This is almost certainly not the case, but when reading some of the papers in this volume, it is important to bear this difference in mind. I would assume that the problem has arisen largely because of our research knowledge of the field. Much more work has been undertaken in the early years of school, and so we know much more about younger students and their development. As research continues world-wide, it will certainly be the case that we will be able to provide a better progression over the whole range of the Number Framework. This raises another issue: the NDP should not be considered as complete and should not be seen as static. As our knowledge grows, the NDP must improve too.

The second aspect relates to student performance and curriculum level. The mathematics and statistics learning area of *The New Zealand Curriculum* is strongly related to the Number Framework. At the moment, the research suggests that a significant percentage of students are not performing on numeracy assessments at expected curriculum levels for their age. It is likely that this was a

conscious decision of the curriculum developers in the belief that this positioning would help to raise standards. And their belief may well be justified over the longer haul, so it is too soon to try to make any changes to the curriculum. My concern now, however, is the next step in the education chain – National Standards. These have to be based on the curriculum; this is inevitable. What will happen if students generally cannot be lifted to the curriculum/Standards levels by 2010?

The other matter that is slightly related to the last is the continued poorer achievement of Māori and Pasifika students and students in low-decile schools. Although there is visible improvement for these students as the result of NDP, they do not appear to be catching up with higher-decile New Zealand Europeans. Do we fully understand the extent of the educational and social issues involved here? What has to be done to achieve both equal opportunity and equal achievement?

My last point of concern is the “transfer drop”. Why is it that the level of ability of students seems to drop when they go from early childhood education to primary, from primary to intermediate school, and from intermediate to secondary school? What is it about the process of transferring schools that causes a drop in mathematical ability? This phenomenon is not isolated to New Zealand, so it is not something that can be attributed to NDP. However, it ought to worry us sufficiently that we try to overcome it.

Finally, I want to say that there is no doubt that the NDP have been invaluable in improving students’ learning and teachers’ knowledge and performance, but there are still problems that need to be solved. These problems have to be tackled, and New Zealand has the personnel both in and outside its classrooms to make progress towards their solution.

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