Ngā Whanaketanga: Minimising contradictions and maximising opportunities for teacher learning

Margie Kahukura Hohepa
Faculty of Education
The University of Waikato

Cath R. Rau
Kia Ata Mai Educational Trust

Abstract

In 2010 the assessment of student progress and achievement against National Standards became mandatory in English medium schooling in Aotearoa New Zealand. In that same year information gathering and revision work was carried out on the then draft Whanaketanga, developed in 2009. The Whanaketanga are deemed to be the equivalent to National Standards for classrooms implementing Te Marautanga o Aotearoa, the curriculum for immersion Māori medium settings. The information gathering and revision work was carried out in readiness for mandatory implementation of the Whanaketanga in 2011. The work also provided important opportunities for Māori medium teacher professional learning and development.

The introduction of National Standards has been controversial. The development of Whanaketanga has also been controversial and challenging in nature. The first half of this paper provides an overview of Whanaketanga development and the challenges its developers worked hard to address. The second part discusses implications for Māori medium teacher professional learning and development, drawn from findings from research case studies of the information gathering and revision work.

Keywords

Whanaketanga; Māori medium teacher professional development.
Introduction

Efforts to improve educational outcomes for students have led many countries to develop national education standards. Around the world national standards are being used as an indication of acceptable levels and qualities of achievement. They may also be used to provide information to inform teachers’ work and to ensure that students achieve at or above defined acceptable levels (Klenowski & Wyatt-Smith, 2010). In some parts of the world, standards have been developed and used as a means to influence the development of national curriculum (Porter, McMaken, Hwang, & Yang, 2011). In contrast, in Aotearoa New Zealand standards have been developed that align to the existing national curriculum, which consists of a curriculum document in English (Ministry of Education, 2007) and a curriculum document in Māori (Ministry of Education, 2008a).

In 2010, assessing progress and achievement of students in English medium classrooms against National Standards (Ministry of Education, 2009a, 2009b) became mandatory in school settings that use The New Zealand Curriculum for English Medium Teaching and Learning in Years 1–13 (Ministry of Education, 2007). Their introduction has not been without controversy (Crooks, 2011; Openshaw & Walshaw, 2010; Thrupp, Hattie, Crooks, & Flockton, 2009). The National Standards are used by teachers and schools to make judgements about and provide information on English medium students’ achievement in reading, writing and mathematics in Years 1 to 8 of the compulsory school system. In order to do this teachers and schools are expected to gather evidence from a range of sources, including scores from formal assessment tools. To help facilitate this work in English medium settings, the Ministry of Education has undertaken work on aligning scores from existing English medium tools (Ministry of Education, 2012).

In 2009 work began on developing “Whanaketanga” as equivalent documents to the National Standards for use in Māori medium schools and classrooms implementing the curriculum document “Te Marautanga o Aotearoa” (Ministry of Education, 2008a). Māori medium education is an umbrella term for provisions spanning all compulsory schooling levels that use Māori language as the medium of teaching and learning for at least 12 percent of the time. Māori medium education includes Level 1 to 4 programmes. Level 1 programmes are described as immersion, which deliver instruction in Māori for at least 81 to 100 percent of the time and implement Te Marautanga o Aotearoa. Many Māori medium immersion settings are Kura Kaupapa Māori, which operate within specified cultural and philosophical guidelines (see Education (Te Aho Matua) Amendment Act, 1999), or are Kura ā Iwi, which focus strongly on local iwi knowledge and local Māori dialect in their curriculum (Ministry of Education, 2008b). Māori medium immersion classrooms are also in schools that provide English medium education.

In 2010 information gathering and revision work was carried out with draft Whanaketanga documents in readiness for mandatory implementation in Māori medium immersion settings at the start of 2011. The work involved a range of Māori medium immersion settings and Māori medium te reo matatini (literacy) and pāngarau (mathematics) facilitators.
Developing and revising the Whanaketanga

Developing the Whanaketanga

Two groups developed the draft Whanaketanga documents. The Whanaketanga Reo document was developed by a group with Māori medium expertise in te reo matatini and Whanaketanga Pāngarau was developed by a group with Māori medium expertise in pāngarau.

Whanaketanga development and implementation brought with it challenges in relation to addressing the contradictions between the intent of national standards and philosophical positions held by developers. How contradictions have been approached in this instance might be understood in terms of what Wyman et al. (2010) have described as maximising opportunities presented by educational policies and accountability systems to open new “ideological and implementational spaces” (p. 701), for indigenous language schooling provisions such as Māori medium education.

Whanaketanga developers had to address a fundamental issue—critical differences between the notion of standards coupled with the expectation that all students should be at a certain “place” at a certain time, and the philosophical positions they and many others working in Māori medium settings hold about how students learn and about how achievement should be expressed (Ministry of Education, 2011a; Takao, Grennell, McKegg, & Wehipeihana, 2010). One way developers sought to do this was by ensuring that the Whanaketanga aligned with, rather than contradicted, their collaboratively held philosophies.

Before starting on the development of Whanaketanga, the groups met together to examine and discuss their own positions on standards and any potential benefits and costs that standards might pose for Māori medium schooling. These discussions resulted in drawing principles from Te Tīrewa Mātai, a draft national framework for describing student achievement in Level 1 immersion settings (Ministry of Education, 2011b, p.10) to ensure cohesion and consistency in the development of Whanaketanga. The principles include the following:

- illumination of Māori achievement;
- sensitivity and responsiveness to linguistic issues such as dialectical differences and bilingual code-switching;
- fulfilment of Māori aspirations for language regeneration and cultural transmission;
- enablement of teachers and schools to meet national curriculum (Te Marautanga o Aotearoa) and local curriculum requirements;
- validation of Māori knowledge; and
- alignment of assessment practices across the different types of Māori medium education.

The decision to use the term whanaketanga (literally “growth” or “development”), rather than the Māori term for standards (paerewa), was made in order to denote and focus on growth and progression of the child, rather than privileging the notion of a standard that children must reach. Moreover, developers linked the Whanaketanga directly to levels in their respective learning areas of the Māori medium curriculum,
rather than to school year levels. They also identified the length of time a student may have been learning in Māori medium contexts as an appropriate consideration when making judgements about a Māori medium learner’s achievement, rather than a singular focus on how old the learner is.

The Whanaketanga are not Māori translations of the English National Standards. Whanaketanga Reo (Ministry of Education, 2010a) lay out expectations for student progress and achievement in relation to curriculum levels in Te Marautanga o Aotearoa for kōrero (oral language), pānui (reading) and tuhituhi (writing). Whanaketanga Pāngarau (Ministry of Education, 2010b) lay out similar expectations for the pāngarau learning area.

It could be argued that the approach taken in Aotearoa New Zealand, to develop English language National Standards for English medium schooling and te reo Māori Whanaketanga for Māori-medium immersion schooling, goes some way to open new spaces and to address potential contradictions of applying standards to indigenous language schooling in the dominant societal language only, as has occurred in other countries. Whanaketanga might also be seen as an acknowledgement of how pressure in other countries to devote instructional time to knowledge and skills tested in English only has been at the expense of indigenous languages and indigenous cultural teaching and learning (Beaulieu, Sparks, & Alonzo, 2005; McCarty, 2009; Romero-Little, 2006).

Standards, however, tend to focus on particular areas of the curriculum irrespective of the language in which they exist. In Aotearoa New Zealand the English medium standards focus on reading, writing and mathematics from the position that these are fundamental to accessing the curriculum and ensuring successful attainment of school qualifications in the latter years of schooling and beyond. Whanaketanga focus on equivalent aspects of learning in te reo Māori. But they have also utilised implementational space to recognise that Māori language as a spoken language is a critical component for the regeneration of Māori language and culture. By implication, given that oral language is a key way Māori cultural knowledge, beliefs and practices are enacted and transmitted, this recognition extends also to wider cultural learning. In the Whanaketanga Reo a small number of Māori traditional or cultural texts are included as text types that students should be able to produce and reproduce in spoken, as well as written, forms.

Whanaketanga are primarily focused, however, on aspects of literacy and numeracy skills and knowledge. They encourage teachers to check that learners are making the necessary progress in order to continue to achieve throughout their schooling and on to post-compulsory education and the workplace. There are other student outcomes that are highly valued in Māori medium schooling and by students’ families and communities (Hohepa, 2011; McKinley, 2000; Takao et al., 2010). At the very least, educational outcomes valued by many families who choose Māori medium pathways for their children ought to include Māori or iwi knowledge and understandings, beliefs and practices.

Tomlins-Jahnke (2008) argues for a place for cultural standards linked to the transmission of relevant Māori iwi knowledge to be included in the learning pathways of Māori children, irrespective of the medium of instruction. She proposes this as a way to not only support Māori students’ identity development as Māori within the context of Aotearoa New Zealand, but also as a means to recognise knowledge of the land, its history, geography, flora and fauna as valuable learning outcomes for all students. At
present Whanaketanga Reo are able to support outcomes relating to Māori language regeneration and cultural knowledge transmission only to a limited extent in Māori medium via the inclusion of Māori oral language and Māori traditional and cultural text types.

Revising the Whanaketanga

When implementation of National Standards began in 2010, Māori medium immersion schools were in the process of developing capability to deliver Te Marautanga o Aotearoa by the start of 2011, as gazetted by the Ministry of Education. In addition to this, they were working in an environment in which there are relatively fewer formal Māori medium assessment tools\(^{11}\) compared with what is in place in English medium settings. This meant that Māori medium teachers had fewer appropriate assessment tools to draw on to support their judgements about student progress achievement (Rau, 2008). They had fewer opportunities to develop knowledge and skills in collecting and using assessment evidence. In cognisance of the demands of implementing a new curriculum and fewer assessment tools, developers of Whanaketanga Reo and Whanaketanga Pāngarau negotiated with the Ministry of Education for information gathering and revision work to take place on the Whanaketanga in 2010. With regards to the Whanaketanga Reo, the main focus of the remainder of this article, the work included getting feedback and recommendations on the draft documents from teachers and schools involved in the information gathering and revision work.

The Whanaketanga Reo information gathering and revision work in 2010 drew on existing relationships between the national coordinator for the work (the second author), the facilitators and the school communities involved. Twelve facilitators worked with a total of 32 schools with Māori medium immersion programmes on the draft Whanaketanga Reo. The facilitators had longstanding, well-developed professional relationships with the respective schools in which they worked. Six facilitators were resource teachers of Māori or Māori Medium literacy, four were classroom teachers and one was the national coordinator (the second author). Facilitators were lecturers or graduates of Ngā Taumatau, a Māori medium literacy leadership programme, and had a deep knowledge of Māori medium literacy teaching and learning. Principals and many of the teachers identified that pre-existing relationships with facilitators, and in-depth knowledge of the facilitators’ work, were key to their willingness to participate in the Whanaketanga information gathering and revision work. A teacher participant in the case studies (see below) emphasised the importance of these relationships and knowledge:

Waimarie au i hui a [facilitator] ki te awhi i a māua.... Ko ia tētahi kaimahi mo te Whanaketanga me Te Marautanga ... I te mea he tangata mōhio, nāna anō āna mōhio i whai. He tohunga ia ki tēnei mahi, whakapono ki āna mahi. Kāore anō kia kite i te tangata pēnei ana ki te whakapau kaha. (I was fortunate to have met with [facilitator] to help us [in the past].... She is one of the facilitators for Whanaketanga and for Te Marautanga ... because she is a knowledgeable person, who walks the talk. She is an expert at this work and dedicated to her work. I haven’t seen yet seen anyone who works as hard like this.)
The research project

A research project was undertaken in 2010 to examine the information gathering and revision work on the then draft Whanaketanga Reo document by the first author (Hohepa, 2011). The remainder of the article focuses on one aspect of the project—professional development and support strategies for Māori medium teachers and schools for the implementation of the Whanaketanga. It draws on information collected as part of in-depth case studies of four of the 32 schools that Whanaketanga Reo facilitators worked with on the information gathering and revision work. The case study schools were purposively selected to reflect a range of Māori medium immersion settings. The schools comprised a mix of large and small schools that span Deciles 1 to 3. Two were immersion schools with rolls between 100 and 200 students; one was a Kura Kaupapa Māori with strong iwi ties, the other a Kura Māori. The other two schools offered English and Māori medium programmes. One was a larger school with an immersion unit of six classrooms. The other school was smaller with two immersion classes.

Interviews with 26 teachers, four principals and three facilitators in total took place across the four case study school sites. A fourth facilitator was interviewed off-site. Participants were asked about resourcing to support teaching and assessment, and about professional learning and development relating to Whanaketanga Reo. Principals provided copies of school policies and documents relevant to assessment.

The methodological approach taken in the research project sits within a Kaupapa Māori framework that positions Māori language, knowledge and culture as legitimate and valid. Along with the maintenance of culture and language, Kaupapa Māori theorising holds that Māori autonomy and control over our lives is fundamental to Māori survival and wellbeing (Smith, 1999). Within a Kaupapa Māori framework, cultural knowledge and culturally valued practices are drawn on as ethical and practical guides for research work. Māori cultural values and practices were drawn on in this work, for example, in the negotiation of schools’ involvement in the research and the use of te reo Māori. Entries of the first author as researcher into two schools she had not previously worked in were preceded by pōwhiri. Many of the research interviews and meetings that followed were conducted entirely through te reo Māori—all interviews and meetings incorporated some te reo Māori.

Professional learning and development approach

The approach taken to gather information to revise the Whanaketanga Reo, and to provide professional development and learning opportunities, meant that Māori medium teachers from the case study schools (along with the remainder of the 32 schools) were able to contribute to the development of Whanaketanga Reo. This arguably helped to strengthen support and acceptance of Whanaketanga Reo within the Māori medium education sector.

Seeking teacher and school input into the development gave recognition to Māori medium teachers’ professional knowledge and experience, not only in teaching and assessing Māori medium students but also in the development of the Māori medium education sector. This underlines the importance of professional development opportunities that recognise and draw on teacher professional knowledge and
experience as a means of identifying and addressing learning needs. Sometimes these ways of working are called strength-based approaches (Lopez & Luis, 2009). Many indigenous peoples recognise these ways of working as part and parcel of indigenous collective ways of living (Kana'iaupuni, 2005). The approach taken also underlines the importance of recognising and honouring the efforts of Māori medium pioneers—not only teachers, but also parents, whānau, communities and students—that has resulted in Māori medium schooling as a means to meet language, cultural and educational challenges and aspirations.

In the case studies the teachers had the opportunity to find out how the Whanaketanga came to be developed, as well as to critique and make recommendations. The national coordinator developed an introductory PowerPoint presentation explaining issues and reservations that Whanaketanga Reo and Whanaketanga Pāngarau developers had with national standards philosophy, some of which are described above. The presentation also explained reasons for the developers’ final agreement to work on the Whanaketanga. The agreement was based on a collective decision to use the “implementational space” (Wyman et al., 2010, p. 70), as an opportunity to develop standards and practices that reflect, not contradict, philosophical positions held across Māori medium education. Use of the presentation provided opportunities for teachers and school leaders to discuss the constraints and benefits of the Whanaketanga Reo relating to their use. In particular, discussions helped to set up a positive context for professional learning and development work by helping to uncover, critically discuss and where possible address any issues or concerns that teachers may have had about the Whanaketanga.

The professional development approach involved facilitators and teachers working together regularly over time (usually weekly for a few months) with the Māori medium curriculum document to plan and implement oral, reading and writing programmes, as a means to introduce the Whanaketanga Reo. As described above, the Whanaketanga Reo is closely aligned to the te reo Māori learning area in Te Marautanga o Aotearoa. Because of this alignment, effective implementation of the Whanaketanga Reo requires a sound understanding of and ability to implement this learning area in the Marautanga document. When facilitators began working with teachers, many of the schools were still developing their capabilities to deliver the curriculum. Developing Māori medium teachers’ knowledge and understanding of the Whanaketanga Reo provided a significant opportunity to increase their knowledge of the new curriculum and enhance their implementation of the te reo Māori learning area for oral language, reading and writing. One facilitator made the following observation:

One of the things that I think we [facilitators] have all come to clearly understand is that unless teachers have a sound understanding of the Marautanga, they are going to struggle with Ngā Whanaketanga. Having said that though there is a reciprocal relationship because for those schools who have had less PL and D [professional learning and development] on the Marautanga ... what Ngā Whanaketanga Rumaki Māori have allowed us to do, because they are derived from the Marautanga, is to use that as the starting point for going back to the Marautanga and helping teachers to understand that.
Feedback from teachers indicates that for many, the Whanaketanga professional development emerged as a major pathway to understanding the new curriculum. For example one teacher explained:

I te tīmatanga ka noho au ki roto i te kohu ā Rangi, āheinga reo, rautaki reo, puna reo, he aha te tikanga o ērā? Ka hui tahi mātou, kātahi ka whakaritea tētahi aromatawai.... Hoki ki te akomanga, making judgements kei hea ngā tamariki. (At the start I had been in the fog, language function, language strategies, language knowledge, what is the meaning of these? We met together, then set up an assessment.... We went back to the classroom, making judgements about where children were.)

Teachers reported that the Whanaketanga professional development not only helped to increase their knowledge and understanding of Te Marautanga o Aotearoa and its implementation, but for some it also helped to clear up misinterpretations they had formed about the curriculum. For example, another teacher explained how she and her colleague had decided to start using the Marautanga for classroom planning, but had misunderstood the three overarching aims in the te reo learning area:

I tērā tau i tīmatata māua ki te mahi i te marautanga. Engari i tēnei tau i te wā i whakamārama mai a [Facilitator] i te tino ngako o ēnei mea, kua āhua hē tā māua nei! I tērā tau—ko te puna reo mo te pānui pukapuka, ko te rautaki reo mō te kōrero ā waha, ko te āheinga reo mo te tuhituhi.... Inaianei e mōhio ana au, mehemea e aro ana mātou ki te puna reo, kei roto i ngā whenu katoa! (Last year we [two-teacher syndicate] started to use the marautanga. But this year when [Facilitator] explained the absolute essence of these things, we had been mistaken! Last year—language knowledge for reading only, language strategies for oral language only and language functions for writing only.... Now I know if you are focusing on—language knowledge—that is in all the language strands!)

That the Whanaketanga Reo supported curriculum learning opportunities for teachers may seem somewhat counter-intuitive—a reasonable assumption might be that curriculum and content knowledge would support the implementation of the Whanaketanga. This raises questions about effective ways to introduce and roll out new resources—including curriculum documents—how effective is professional development that focuses on new curriculum and new resources in isolation? Professional development is likely to be more effective when it focuses explicitly on links and alignments between new and existing documents and resources, and provides concrete opportunities to plan, teach and assess with these in concert.

In the case of the Whanaketanga, starting with the curriculum helps to position learning and teaching at the centre, rather than standards. The approach underlines the role of assessment and standards as tools to support teaching the curriculum, and guards against the danger of assessments and standards becoming positioned as teaching goals in themselves. The approach reinforces the role that standards can have as a component of, rather than the driver of, improvement of classroom teaching programmes. Understanding how the Whanaketanga sit in relation to the curriculum and teaching is particularly significant, not only for Māori medium teachers and Māori medium school
leaders, but also for those working at governmental and policy levels. This understanding may help to avoid the standards-centric and assessment-centric views that other countries have engaged in and to avoid punitive sanctions taken against schools and teachers who fail to ensure their students meet the standard or pass the test (McCarty, 2009; Wyman et al., 2010). Better understanding may also help to avoid situations where schools and teachers manipulate or narrow curriculum implementation in the classroom in order to “teach to the test”.

In contrast to the situation that some teachers and schools face in other parts of the world where curriculum, teaching and assessment resources are tightly prescribed, schools and teachers in Aotearoa New Zealand exercise a high degree of choice about resources they use, as well as how they will implement the national curriculum. However, in Māori medium choice may be limited due to the relatively limited availability of appropriate and relevant resourcing (Rau, 2008).

The Whanaketanga Reo national coordinator and facilitators not only had to plan and deliver professional development aimed at supporting the implementation of the Whanaketanga Reo, they also had to develop resource materials in order to do this. This links to another aspect of the professional development approach that was used—local development for local delivery. Facilitators began collating, developing and trialling potential professional development materials with teachers while they were collecting school and teacher feedback and recommendations for the revision of the Whanaketanga Reo.

Facilitators developed and adapted resources and tailored their use in cognisance of the strengths and needs of the schools and teachers they were working with. They documented and discussed their experiences and recommendations for using and modifying resources on Google Groups and at regular facilitator meetings. Materials identified as particularly useful by teachers and facilitators were then incorporated into a loose-leaf resource manual. For example, a facilitator developed an activity in which teachers matched the Whanaketanga Reo, Te Marautanga o Aotearoa te reo Māori learning area and Te Korowai (Te Kōhanga Reo National Trust, 1995) to their respective definitions, discussed the documents’ purposes and the extent to which documents supported or contradicted the philosophy of the kura. The activity was then shared with all the facilitators and included in the resource manual for other facilitators to use. Thus the way the facilitators worked with resources might be best described as participating in a professional learning network rather than as a group of facilitators delivering standard or generic professional development packages to teachers and schools.

The approach that was taken involved facilitators developing fine-grained knowledge of individual teacher strengths and needs as well as group-located strengths and needs, and tailoring their support accordingly. The overall picture of the approach used indicates that effective professional development provisions for Māori medium education are responsive and reflexive and delivery is tailored to the diversity within given contexts.

**Māori medium professional development capacity and capability**

Information collected from case study schools reflected the importance of Māori medium networks and relationships for effective professional development in Māori
medium settings. Also highlighted is that while Māori medium schooling is a relatively new provision within the New Zealand education system, there is capability within it to provide Māori medium professional development of high quality. Existing networks and relationships across Māori medium schooling were drawn on by the national coordinator to develop and provide effective learning opportunities for teachers in a very short period of time. However it is still too often the case that Māori medium teachers and leaders are expected to access English medium professional development and then transfer any learning so that it is relevant for Māori medium classrooms, philosophies and goals (Hohepa, 2010).

The case studies also showed, however, that while professional development capability exists within Māori medium, how its capacity might be best built needs addressing urgently to avoid overload of those relatively few people who have that capability. Those who are capable of upskilling others to become professional development facilitators also need protecting from overload—at present Māori medium educators capable of this are carrying a double load, providing professional development to teachers and at the same time preparing others to be professional developers. Developing the capacity required can also come at a cost at the level of schools, as skilled, experienced teachers are often those “shoulder-tapped” to provide professional development across the Māori medium sector. What is required is a comprehensive strategy that includes capacity building in the Māori medium professional development arena, as well as ensures that the much-needed teaching knowledge and skills base is protected and strengthened in Māori medium schools.

Conclusion

The development of Whanaketanga as Māori medium equivalents to the National Standards contained some key challenges for the writers. The approach taken in the development of the Whanaketanga was described by the developers as one of “creating alignment out of contradiction”. The approach taken in the writing of the drafts and in the subsequent information gathering and revision work leading to the final versions of Whanaketanga enabled the exploitation of ideological and implementational spaces that Wyman et al. (2010) describe as sometimes being opened by educational policies and accountability systems.

Writers used ideological space to incorporate their philosophical views about student achievement and assessment, views shared by many working in Māori medium educational contexts, into the writing of Whanaketanga. Implementational spaces opened up by the information gathering and revision work were used as opportunities for school leaders and teachers (as well as parents and whānau—see Hohepa, 2011), to contribute to the Whanaketanga development.

The opportunity to be involved was also significant in encouraging teachers to critically engage with the Whanaketanga Reo. It provided first-hand experience of how using Whanaketanga0(113,982),(260,999) might be beneficial or otherwise for their school and students. They were also able to gain a deeper understanding of critiques and concerns that have also been raised about national standards more generally.

Space was also used to provide opportunities for teacher professional learning and development. Teachers who participated in the case studies viewed positively the opportunity to be involved in the development of the Whanaketanga Reo. Teaching-
related aspects highlighted across the case studies included opportunities for teachers:
to develop their content pedagogical knowledge and knowledge about Te Marautanga o
Aotearoa and plan teaching programmes from this; to develop knowledge about
assessing Māori oral language, reading and writing progress; and to learn to use
currently available teaching and curriculum resources.

Acknowledgments

We would like to acknowledge the Ministry of Education for the funding of the
Research Project that resulted in the publication of this paper.

References

Behind in Indian country. Washington, DC: National Indian Education
Association.

Education (Te Aho Matua) Amendment Act, 80, § 155. (1999). Retrieved from


from a Native Hawaiian perspective. Educational Researcher, 34, 32-38.

Klenowski, V., & Wyatt-Smith, C. (2010). Standards, teacher judgement and


McCarty, T. (2009). The impact of high-stakes accountability policies on Native

McKinley, S. (2000). Māori parents and education: Ko ngā mātua Māori me te

Ministry of Education. (2007). New Zealand curriculum for English medium teaching

Ministry of Education. (2008a). Te Marautanga o Aotearoa. Wellington, New Zealand:
Learning Media.


Ministry of Education. (2009a). Mathematics standards for Years 1–8. Wellington,
New Zealand: Learning Media.


ii See http://e-asttle.tki.org.nz/e-asTTle for information about the e-asTTle assessment tool, which includes Māori language assessments for pānui, pāngarau and tuhituhi.