

To what extent are Maori studying ICT: The Policy Implementation Gap?

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Abstract

Maori are studying ICT at a disproportionate rate. Maori make up 15% of the New Zealand population yet Maori school leavers are trailing the success tables and despite the advent of the Wananga, Maori tertiary students (aged 18 to 24) are declining (Social Report, 2007). Recent government reports are also identifying Maori as having a low level of involvement in ICT (NZ Government Executive, 2000). With the approval of CPIT's Kaiarahi, this paper examines the current literature on this issue. It also examines the responsibilities under the Treaty of Waitangi, gives a brief overview and analysis of the government policies and strategies involved, and looks at how these responsibilities, policies and strategies are working in practice. Finally this paper suggests the need for in-depth collaborative applied research – both at a local and a national level.

Keywords: Maori education, Maori ICT education, computing education

1 Introduction

The Tertiary Education Strategy 2007-12, was released on 14 December 2006, and incorporated the Statement of Tertiary Education Priorities 2008-10 (MoE, 2007). The Strategy recognises the responsibility that tertiary education has for contributing to the achievement of Maori aspirations and development – so much so that a separate document has been developed – Ka Hikitia, Managing for Success, The Draft Maori Education Strategy 2008-12, released in August 2007 (MoE, 2007).

This quality assured paper appeared at the *21st Annual Conference of the National Advisory Committee on Computing Qualifications* (NACCQ 2008), Auckland, New Zealand. Samuel Mann and Mike Lopez (Eds). Reproduction for academic, not-for profit purposes permitted provided this text is included. www.naccq.ac.nz

This document emphasizes the need for more Maori to participate in tertiary education, with the aim of achieving more and higher-level qualifications. The strategy highlights the need for the school sector to adequately prepare students for lifelong learning and to keep them engaged at school and able to make informed choices about future tertiary pathways (MoE, 2007).

The stakeholders consulted for the development of these documents included tertiary providers (including most ITPs (Institute of Technology and Polytechnic) and all universities), local businesses, and other interested local bodies and community groups (CPIT, 2007). Fewer stakeholders participated in the 2007 Ka Hikitia consultation and ITPs, apart from all the Wananga, were not visibly present, with a few regional exceptions (MoE, 2007).

2 Te Tiriti O Waitangi (The Treaty of Waitangi)

In the Maori translation of the text (New Zealand History Online, 2008) in Article the Third, the Crown gave an assurance that Maori would have the Queen's protection and all rights accorded to British subjects (par XII, New Zealand History Online, 2008). The key responsibilities or obligations here from the educational concept are the guarantee to the protection and safety of the Maori language (Te Reo) and Maori culture.

Because these statements are based on the Maori interpretation of the Treaty of Waitangi the possibility exists for different understandings. Because of the different understandings and the need to apply the Treaty to the present day, most references, either in literature or legislation, are not so much to the Treaty itself, but rather to the "principles" of the treaty (New Zealand History Online, 2008, Wilson, K. 2002).

3 Rights under the Treaty

In 1994, in the Broadcasting Assets case, Lord Woolf described the rights under the Treaty of Waitangi as being

an obligation on the Crown. “The Maori language is a taonga [and] the Crown is under a solemn Treaty obligation to protect Maori property” (par XIV, The Maori Law Review, 1994).

According to Miller (2005), a Court of Appeal ruling in *New Zealand Maori Council v Attorney-General*, [1987] 1 NZLR 641, Justice Cooke, then President of the Court of Appeal, said that there were two core principles of the Treaty of Waitangi – “partnership” and “active protection”. Justice Cooke said that the “the Treaty signified a partnership between the races” (p 1, Miller, 2002).

Therefore, all cases of rights, responsibilities and/or obligations, are bound to be protected by the on-going active partnership between the two races (Maori and non-Maori) of our bi-cultural country, despite a speech of the former coordinating Minister of Race Relations, Trevor Mallard entitled “We are all New Zealanders now” (Mallard, 2004).

While in the educational context the rights of a British subject included the right to an education this was not extended to Maori and Pakeha alike until 1880 when universal compulsory education was established (Gillard 2001).

The right of indigenous people to all levels and forms of education was established by Article 14, Coolangatta Statement, developed in Brazil in 1993, and gives the right to establish and control their educational systems and institutions, providing education in their own language (Coolangatta Statement, 1993) and confirmed by the United National Declaration of Indigenous Peoples Rights, 2007.

4 The Treaty and Education

Chappel, Jefferies and Walker (cited in Else, 1997) established that there was a ‘gap’ between Maori and non Maori educational achievement, which is now widely reported as a disparity in educational literature, rooted in socio-economic inequity.

Maori achievement indicated that 35% of Maori leave high school with no qualification including fewer than 14 credits at NCEA Level 1. At tertiary level, Maori participation in education increased by 148% 2001 – the last data published in the 2006/2007 report, with the growth of the Wananga. Enrolments increased from 26,000 students in 2001 to 45,500 at the time of publication of the report. However, this masked the fact that Maori are five times more likely to enroll in remedial training programmes in contrast to non-

Maori being three times as likely to enroll in an academic qualification (MoE 2007).

5 Education Policies and Strategies

The Ministry of Education is seeking to address these disparities through its two policy statements - The Tertiary Education Strategy 2007-12, incorporating Statement of Tertiary Education Priorities 2008-10 and Ka Hikitia, Managing for Success, The Draft Maori Education Strategy 2008-12 (MoE, 2007)) and their inter-connectivity (see Fig 1: Ka Hikitia Strategic Context Diagram) with the admirable goal of “A world leading education system that equips all New Zealanders with the knowledge, skills and values to be successful citizens in the 21st Century.”

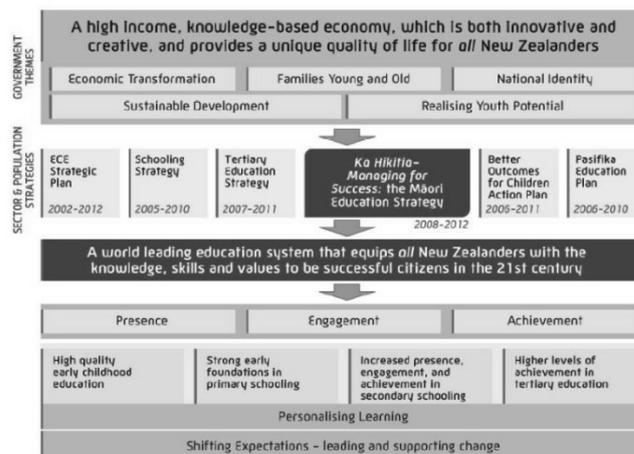


Fig 1: Ka Hikitia Strategic Context Diagram (used with permission of the Maori Education Strategy Group, Ministry of Education)

In The Tertiary Education Strategy 2007-12, incorporating Statement of Tertiary Education Priorities 2008-10 (MoE, 2007) the government charges the Tertiary Sector to “increase the number of New Zealanders achieving qualifications at higher levels (e.g. trades, training, diploma, degree and postgraduate education).” The government states as one of the major priorities to help maximize Maori collective assets and grow Maori innovation – develop Maori business leaders with entrepreneurial and management capabilities to underpin innovation and productivity.

It challenges ITPs to deal more effectively with Maori students in the mainstream tertiary institutions, in partnership with the Wananga and points to the Maori Education Strategy (Ka Hikitia) as articulating the aspirations of Maori in education for the education sector as a whole. This is to include an increasing cross-sector

collaboration to improve staircasing and pathways between the Wananga and other tertiary providers to maximize Maori potential opportunities.

Under the section on trade, technical and professional qualifications (which includes Information Technology), the strategy document particularly prioritises the need to increase achievement across a range of qualifications to support Maori economic development. In measuring the success of this priority, the government will be looking for specific evidence of tertiary qualifications that meet the needs of Maori, both in regional and national industry especially in areas of long-term, high-level skill shortages (MoE 2007).

6 The Reality of Maori Education

In the latter half of the last century and in recent decades, the patterns in Maori tertiary enrolment has been poor in courses such as medicine, science, business or computing (Else 1997).

According to Else (1997) there is a gap in the education achievement levels between Maori and non-Maori. She reports that anyone leaving school with no exam passes and no other qualifications is going to find it very difficult to get a secure, well-paid job (such as in the ICT industry). Two out of three Maori leaving school in 1978 had no qualifications. By 1991 the gap had narrowed to about one out of three Maori leaving school had no qualifications. Since the advent of NCEA, it is now possible to say that students who do not gain a qualification do at least accumulate credits towards such a qualification. However, recent figures released in the Maori Senior Secondary Students Achievement 2004-2006 Factsheet (Education Counts, 2008), show that Maori Years 11 – 13 students have increased their participation in NCEA over that three year period, but non-Maori still have a higher attainment rate.

Contributing factors are that Maori parents have less education and resources than non-Maori and that this gap begins at birth. The gap in family resources between Maori and non-Maori is believed to be the key reason for the gap. Another key reason is seen to be the negative way in which older Maori students, especially boys, react to school. These Maori boys, instead of getting into computing at this age, as do many of their non-Maori counterparts, believe they can do nothing but not do well in the education system (Else, 1997).

Further to such studies of socio-economic differences, there is also a mismatch between the culture of the school and the ethnic cultures of the students (Durie, 2005) and while family income, poverty and social class have a confounding effect, ethnicity cannot be dismissed as a determinate of outcome (MoE, 2006).

Daldy and Gibson (2001) report that there is growing interest by policy makers in the gap between those who have skills in ICT and those who do not – in part due to the rising income inequality. They advise that on the basis of overseas research, several groups have been identified in New Zealand who are most likely to be disadvantaged in terms of ICT skills, including Maori.

Daldy and Gibson (2001) say their research suggests that the factors determining participation in computer-related training differ significantly from the factors determining participation in other subject matter training. Therefore, they believe that any policies to increase the number of Maori students in computing courses would be less successful than more direct interventions that focus on such matters as school attainment. They believe that improving general education for Maori would lead to greater opportunity for Maori to choose such on-going education as computing studies.

Else (1997) believes that about two-thirds of the education gap is because so many Maori families have few resources in the home (such as computers) and that the other third of the gap is created by the fact that Maori children tend to go to schools which have many families with fewer resources and therefore the schools themselves are less resourced.

Engaging in ICT as Maori is challenging because of the need for well resourced hardware, software, and ICT teachers. Studies have shown that both primary and secondary schools throughout New Zealand are not well resourced and the majority of teachers are not computer literate (McCarthy & Ross, 2005).

From 1996 to 1999 the AIMHI Project ran as a school support initiative to raise the achievement of Maori and Pacific Island students in nine low decile secondary schools (Hill & Hawk, 2000). Results of the project found, amongst other things, that each of the schools involved had a number of teachers whose performance did not meet the students' needs, and that a number of performance standards should be developed to become a part of what is required of teachers who work in these schools.

It was further found that, when reporting on the use of equipment, most lessons did not include the use of electronic equipment, and the use of computers was predominantly confined to word processing classes. In other words, ICT equipment was seen as something for doing typing with – not a domain of the young teenage Maori male.

According to Keegan (1998), in 1993 the Computer Science Department within the School of Computing and Mathematical Sciences at Waikato University offered an introductory course on computing taught mostly through the medium of Maori, breaking new ground in doing so.

Since the original paper in 1993, two other papers have been added to the list – also taught in Maori and these three courses are still the only computer science courses taught in Maori anywhere in New Zealand. Attendance was good, about the same as the equivalent course in English, with 1995 being the only exception, and from most to all students passed, with about the same grade average as those in the English class. Benefits of the course were grouped into advantages to the students, the School of Computing and Mathematical Sciences, and the Maori language.

As well as learning computing, the students were practicing and improving their Maori language skills. It was found that these students did not feel foreign in their computer class (as is believed to be the case when a Maori student is taught in English), but rather that they had a birth-right to be in the class. The school was advantaged because it made available a whole new level of funding, and because these courses eventually became feeder courses into higher levels, and because the school was seen to be supporting Maori initiatives and fulfilling responsibilities and obligations of the Treaty of Waitangi. It was found that the Maori language itself gained an advantage in that these courses showed the language capable of encompassing a new technology. New words were generated which showed that the Maori language was not a static language but instead is growing and developing to suit its changing environment.

Keegan (1998) found there were many difficulties involved in setting up and running the courses. Apart from the more obvious ones such as staffing the course with Maori-speaking trained and qualified ICT lecturers and lab tutors, the other difficulties all related writing a course using a language that had not been traditionally used to express this subject. Keegan said that finding new terms and creating suitable examples would always be challenging as it required an in-depth knowledge of the language and field of

study, and an ability to create teaching material that was clear and easily understood.

The findings of this project are still in keeping with Else (1997). However, it does show the more positive side, and especially in terms of the apparent failure of the AIMHI project, gives a positive indicator for other such future projects and some element of hope for the future. It also relates strongly to Daldy and Gibson's (2001) work and their recommendation that Government strategies in the area of Maori education, and more specifically Maori education in ICT, need themselves to be specific.

Keegan (1998) described his computer lab as being more relaxed and open than the equivalent class in English. He described the environment as being more helpful, more united and an almost family feeling amongst the students and between students and teachers.

One part, a major part, of Keegan's success was that the teaching was in Maori and this success at tertiary level is also consistent with the success found in primary education through the Kura Kaupapa immersion schools designed by Maori for Maori. This success was not followed through to the secondary sector with only 1% of Maori students in immersion programmes. While some 37 tertiary education providers offer Maori language programmes and qualifications, it is only the three Wananga that offer tertiary programmes in Maori (Te Puni Kokiri, 2000).

Ngatuere, Tupu and Young (2002) applied the overall issue of low uptake of ICT by Maori to the specific field of Maori women. Ngatuere et al identified a group of six students that met their reporting criteria – female, Maori, and enrolled in the UNITEC Bachelor of Computing Systems (BCS). The participants were invited to attend a focus group meeting of which four of the original six attended. The outcome of the focus group meeting was a series of summarized personal stories with pseudonyms of the participants' own choosing. Ngatuere, Tupu and Young concluded that, even with the success of the participants, supported by the high degree of support systems in place at UNITEC for Maori students, there was an identified need to investigate Maori perceptions of ICT and understand by ICT has not been a more conscious choice in the past.

Tupu, Ngatuere and Young (2004) continued their 2002 study also using the "interviews as chat" methodology of Bishop (1996) cited in Tupu, Ngatuere and Young (2004) and Ngatuere, Tupu and Young (2002). Tupu, Ngatuere and Young (2004) re-interviewed the initial participants of the 2002 study. One "Erena", had since graduated, "Hira"

was still continuing her studies and the other two participants had taken a temporary break from studying.

Tupu, Ngatuere and Young (2004) then went on to interview seven more Maori female students to find that the majority of the students had come through from bridging programmes rather than straight from secondary school but that they had a strong desire to achieve their educational goals, provide an educated role model for their children so that future generations would be able to value education as a way of improving their lifestyle. From the researchers' perspective, it was hoped that their work would lead to more Maori women ICT graduates in the future, leading to major technological decisions that would shape the lives of future generations.

Bishop and Graham, (1997), cited in Wilson (2002), suggest that tertiary institutions should base their policies and practices on the three Treaty of Waitangi principles of partnership, protection and participation. This should be applied to ensure shared decision making, guaranteed protection for Maori to define and protect their taonga (treasures) and to guarantee Maori equity of educational opportunity and outcomes, including research objectives and methodology.

Lomax and Lemon (2007) agree with Bishop's stance and further suggest that effective research projects are best designed as action research within a *kaukapa* Maori framework, with outcomes developed into the generalist *Ako Hangarau* framework (teaching and learning *with* technology) based on the collectivist *Ta Te Ao Maori* (Maori world view). As ICT lecturers training our students as ICT specialists these principles can be applied to tertiary teaching and learning environments. Such principles have also been recognised as fundamentally sound pedagogical principles in Western educational practice as well (Hemara, 1999; Collier and Neal, 2004). Lomax and Lemon (2007) found children responded well to mixed level groups (*mahi-a-ropu*) enabling *tuakana-teina* (older helping younger) using feedback-feedforward about ICT teaching and learning. They suggest using *ata* (deliberate strategies such as making time to resolve problems without stress, listening constructively, being prepared and precise in verbal input, including instructions, reflecting on this process and ensuring relevance). Story telling through anecdotes, metaphor and *whakapapa* have many parallels, as do working from the concrete (technical) aspects of ICT to abstract concepts, (*poutana*) as agreed by Tupu, Ngatuere, and Young, 2004 (cited in Lomax and Lemon, 2007).

Gotterbarn, Clear, Gray and Houliston (2006) come up against the collectivist *Ta Te Ao Maori* (Maori world view), when SoDIS (Software development impact statement inspection system) was applied to the practice of designing software for the Maori culture. The SoDIS process has been successfully used in the past to address social, professional and ethical risks. Gotterbarn, Clear, Gray and Houliston, working with the *Ngapuhi Iwi* for the proposed TRAION web site project to replace a paper-based *Iwi* membership system, recognised the cultural differences in attitude to data contained within a database. While the West viewed information primarily in an instrumental sense, to Maori there are the principles of the *mana* of the information that comes from the *Iwi*, the sacredness of the *whakapapa* contained within the information, and the issues of rights of ownership of the data between the individual, the *whanau* and the *Iwi*. By using the SoDIS process to identify these concerns of particular relevance to Maori, Gotterbarn, Clear, Gray and Houliston believed that the Maori perspective had been successfully incorporated into the software development project. They found from their experiences that a joint governance or guardianship model, based on the Treaty of Waitangi, included active participation by both parties in all decision making and active protection of Maori interests, rights and taonga.

As tertiary institutions recognise that the different and parallel documents of the Treaty of Waitangi are developing real partnerships, some responses may be that Maori push harder and some *pakeha* resent disruption to their positions regarding Maori as being unreasonable (Jenkins & Jones, 2000, and Christie, 1999, cited in Wilson (2002)).

McIsaac (2000) would go even further to claim that institutional racism is rife in the tertiary sector. McIsaac reported that, despite a particular North Island ITP's statement of commitment to the principles of the Treaty of Waitangi, a "sad reflection of monocultural racism existed within the institute's culture" (par III, McIsaac, 2002).

The institute in question had no formally designated positions for Maori staff within management structures or on decision-making bodies; and no formal policies, procedures or practices were in place to implement Treaty objectives. Maori issues in relation to the Treaty partnership were dealt with on an ad hoc, informal basis and Treaty initiatives by staff were not being followed through (McIsaac, 2000).

A year later, a further study of the same body of work showed little or no improvement. In fact, by probing deeper, only at that point was it revealed how widespread the lack

of appreciation of the issues involved in exercising the responsibilities under the Treaty (McIsaac, 2000).

Another study two years later as the concluding portion of the body of work, showed that now, while at least there was a vastly increased level of awareness amongst the general teaching staff, there were large gaps between what the institute actually delivered in terms of its Treaty obligation and what staff expected or believed should be happening (McIsaac, 2000).

Ohia, 2004 (cited in Collier and Neal, 2004) states that Maori need to be in the position of exploring and using it [technology] with confidence, as well as predicting what may be just around the corner. He quotes from an old saying that goes “There are three types of people in the world: those who make things happen, those who watch things happen, and those who say, “What happened?”. Ohia claims that Maori have enough entrepreneurial spirit and opportunism to be at the cutting edge of technological innovation and creativity, and lead in its engagement with Maori learners and resource people. He says this knowledge will not jump out of the sky at Maori, but that in the best traditions of Tawhaki, Maori have to retrieve it in cooperation with those who already have it.

7 Conclusions

There is no doubt that to date the quality of education in New Zealand has had a huge negative impact on Maori, but there is a need to consider how to meet the Ministry’s stated priority outcomes, especially relating to trade, technical and professional qualifications – and in our case, ICT (MoE 2007) and how this can be achieved through recognition of the responsibility under the Treaty and collaboration of all relevant parties.

Much of the reviewed literature gives constructive pathways to both the methodologies required to work towards achieving better results for Maori in ICT, and the partnerships required to deal with these methodologies. Certainly much of the success, minor or otherwise, in tertiary education or otherwise, can point towards a way forward to address any concerns of institutional racism, where nothing more than lip service is paid to the responsibilities and obligations laid out in the Treaty, the Government policies, and an institution’s statement of guiding philosophy.

There is certainly a need to recognise the ownership of the issues and the responsibilities under the Treaty of Waitangi, and various ITPs kaupapa policies. Certainly

there is a greater chance for success when Maori learn in a Te Reo immersion environment, but this is offset by the Government’s policies, and those of the ITPS, to deal with Maori education in the mainstream. In turn, these mainstream policies could be offset by Maoris’ own desire to “retrieve it [knowledge] in cooperation with those who already have it” rather than going it alone (Ohia, 2004)

8 Recommendations

This issue is a challenging one, in terms of how best to progress our partnership to address education disparity in computing education. We need to work through existing policies and breathe life into them, in the contest of our field. More research is needed as a means of ongoing monitoring of government digital and educational strategies and our implementation of them in our programmes of study. CPIT certainly needs to investigate this matter further, in collaboration between the School of Computing, Te Puna Wanaka, and the Kaiarahi to develop our own solutions for our own people. To assist us in this investigation and to help us come to terms with these issues it is recommended that we should also collaborate with other ITPs to look at similar issues and possible solutions.

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