australasian journal of
TECHNOLOGY EDUCATION

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Publisher: The Technology, Environmental, Mathematics and Science (TEMS) Education Research Centre, which is part of the Faculty of Education, The University of Waikato, publishes the journal.
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Cover Design: Roger Joyce

ISSN: 2382-2007

The marau Hangarau (Māori-medium Technology curriculum): Why there isn't much research but why there should be!

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Whakarāpopototanga: Abstract

New Zealand is one of the few countries which has an indigenous technology curriculum. Hangarau is the New Zealand Māori-medium Technology curriculum; however, it is well-recognised as being under-researched. As a decolonising curriculum, with a Māori foundation of thinking and being, Hangarau connects future, past and present in a holistic approach to technological practice. However, few people understand its structure and content, and even fewer, its origins.

He marautanga reo Māori tēnei mā ngā kura reo Māori. Nō reira, he tika te whakaputa whakaaro, te rangahau mōna ki te reo rangatira. Heoi anō, ko tō mātou hiahia kia tukuna atu tēnei kōrero ki te tokomaha. Hei tōna wā, ka rere pai te reo rangatira ki konei, tae atu ki ngā tōpito o te ao.

This paper outlines the development of the Hangarau curriculum between 1993 and 2017. Data were collected from interviews and from documents sourced via the Official Information Act.

Keywords: Hangarau, Māori-medium Technology, curriculum, New Zealand curricula, indigenous

He Whakatakinga: Introduction

Aotearoa-New Zealand has multiple national Technology curricula but the Māori-medium curriculum had not been researched until recently (Lemon, 2019). We argue the timelines of development have played an important role in this lack of research (see Figure 1; Table 1). In the 1990s, Māori-medium curricula were developed after their English-medium counterparts. Because the development of the Hangarau curriculum trailed after the development of the Technology curriculum, it was not made a compulsory classroom subject until 2011 (Ministry of Education [MoE], 2009). Being an optional subject, Hangarau was not included in the Curriculum Stocktake Project research (McMurchy-Pilkington, 2004; MoE, 1999-2008, 2002) conducted in the lead-up to the second cycle of curriculum design. This meant that, given governmental prioritisation of literacy and numeracy in the classroom, for Māori-medium, the research focus in the early 2000s was on Te Reo Matatini and Pāngarau (Buchanan & Jacob, 2010; Jacob, 2010). The size of the sector played a large role in the timelines portrayed in Figure 1, in that curriculum design requirements do not change, but the Māori-medium sector was about four percent of the total New Zealand education sector. This meant that some schools were working on normal Professional Learning Development (PLD) requirements, plus up to five curriculum projects (MoE, 1999-2003, 2003-2012). There was a smaller pool of experts available to complete the work of curriculum design. Then there were governmental expectations and sector perceptions of Hangarau as a curriculum.

In the 1990s, the lack of a government strategy in relation to Māori-medium education led to the development of a perception amongst the Māori-medium sector that the Māori-medium curricula were little more than translations of the English-medium curricula. Tensions resulted for the curriculum writing team who were expected to take an English document and just translate it (Dale, 2016; Lemon, 2019; McKinley, 1995; McMurchy-Pilkington, 2008; MoE, 1999-2008; Stewart et al., 2017).

> The structure of levels and strands and the use of learning outcomes was imposed on both the English and Māori versions. However, the development of a Māori version had other aspects imposed on it ... The restrictions on the development of the Māori version meant that the Māori group could not develop a curriculum from the same starting point that the group writing the English version did. (McKinley, 1995, p. 54)

While McKinley is referring to the development of Pūtaiao, this was the same political climate that the Hangarau curriculum team found themselves in. The sector was aware of these constraints and so, among many there was the perception that the English-medium and Māori-medium documents were interchangeable, or mirrors of each other (Stewart et al., 2017). Both groups have evolved in their thinking but sector perceptions are important because they impacted on the ways in which Hangarau was understood as an optional curriculum area. Stewart et al. (2017) discuss the contested nature of the dynamics in the relationship between the English-medium New Zealand Curriculum ([NZC]; MoE, 2007), and its mirror, the Māori-medium Te Marautanga o Aotearoa ([TMOA]; MoE, 2008, 2017).

Over time, the perception changed to that of a parallel set of documents, never meeting but with the Māori document tethered to the English. The mirror metaphor is closest to Penetito's (2010) concept of 'paralleling'. More recently, the metaphor of a companion or hoa haere has been used (Stewart et al., 2017), in that the documents are not twins. They contain some parallels, a necessary result of the political climate and the governmental constraints imposed on the writing teams – but they could, and might, function more as companions supporting teachers in Aotearoa to design teaching and learning experiences for our children.

Hangarau must be researched, from curriculum history to curriculum design and the philosophy of Hangarau; from research focusing on educational practices in a range of contexts to that which focuses on student understanding of Hangarau concepts. Research informs further curriculum design and implementation, including exploration of the most effective pedagogical approaches to support students' Hangarau practice. Williams (2018), in an update to an ongoing survey of research into English-medium Technology education, has identified a trend towards consolidation of research in key fields but continues to argue that a diversification of research could strengthen the literature. There has been one study (Lemon, 2019) conducted to date focusing on the stories of Māori-medium Hangarau curriculum design. A research base is needed to inform the Māori-medium educational sector.

Mā te huruhuru ka rere te manu: It is because of feathers that a bird can fly.

Ngā Rārangi Wā: The Timelines

Contextually, it is important to understand that the impact of colonisation in Aotearoa led to a dramatic decline in the number of proficient Māori language speakers and, in turn, the language revitalisation movement of the 1980s. Māori sector lobbying resulted in the Minister of Education giving the go-ahead for the development of a Māori language curriculum. At this time, Technology was being introduced as a curriculum area in the global context (Ferguson, 2009). This provided a base of thinking from which the Technology team could inform their ideas. The Māori curriculum writing team in the 1990s were given the English- medium 'template' on which to base their thinking. Initially the marautanga writing process was constrained and documents were expected to replicate the English-medium curricula (Lemon, 2019; MoE, 1999-2008). During the 1990s, the English-medium Technology curriculum was treated preferentially as the older or richer cousin and Hangarau came trailing after (Lemon, 2019; see Table 1). This staggered development impacted on the opportunities for research because Māori-medium curriculum development projects secured less funding and had less time to achieve the same goal as English-medium (Lemon, 2019; MoE, 1999-2003, 2007-2009).

Table 1: Development timeline of the parallel Māori-medium curricula

Curriculum			
Year	English-Medium	Year	Māori-Medium
1993	The New Zealand Curriculum [NZC] Framework	1993	Te Anga Marautanga o Aotearoa
1993	Science in the NZC	1994	Pūtaiao i roto i TMOA
1992	Mathematics in the NZC	1996	Pāngarau i roto i TMOA
1994	English in the NZC	1996	Te Reo Māori i roto i TMOA
1995	Technology in the NZC	1999	Hangarau i roto i TMOA
1997	Social Studies in the NZC	2000	Tikanga-ā-iwi i roto i TMOA
1999	Health in the NZC	2000	Hauora i roto i TMOA (Tauira or Draft)
2000	The Arts in the NZC	2000	Ngā Toi i roto i TMOA

Source: Dale, 2016, p. 24.

Figure 1 below emphasises the close timeframes of the three curriculum development cycles which run up to the production of each curriculum draft: 1993-1998; 1999-2007; and 2008-2016.

This figure was informed by interviews with tuakana-curriculum experts and a series of requests for official information. The English-medium Technology curriculum was developed in Aotearoa in 1995 (MoE, 1995) and gazetted in 1999, whilst the first iteration of the marau Hangarau was developed between 1996 and 1999 (MoE, 1999a), but was not formally gazetted. This is highly significant for both implementation of the curriculum and research into Hangarau because until a curriculum document is gazetted in New Zealand, it is optional to plan and implement it in classroom practice as a teacher. The final tauaromahi for the first iteration of Hangarau were completed in 2005, with exemplars being a key resource developed to support the implementation of the curriculum (MoE, 1999-2003; Poskitt et al., 2002). The government was considering a curriculum stocktake (MoE, 2002) in early 2003 that was to become the second round of curriculum design. The newness of Hangarau resulted in its exclusion when gathering data for the Curriculum Stocktake Report (McMurchy-Pilkington, 2004; MoE, 1999-2008). The second iteration of the Hangarau curriculum was developed between 2006 and 2008, and gazetted to become a compulsory part of the national curriculum from February 2011 (MoE, 2009, p.3812). At the same time, the re-designed Technology curriculum replaced the earlier Technology curriculum.

Less than three years after the formal inclusion of Hangarau, Hekia Parata, the Minister of Education, and Steven Joyce, the Minister of Tertiary Education launched a strategic plan focusing on science and society (New Zealand Government, 2014). The plan led to the call to include Hangarau Matihiko (Māori-medium Digital Technologies or HM/DT) as a new strand of the Hangarau curriculum, which was to be gazetted as a formal part of the curriculum for both TMOA and NZC educational contexts from 2020. In this third cycle, the new curriculum content was developed concurrently, something that had not been achieved in the second cycle, the Curriculum Marautanga Project. We argue that the reasons for the lack of research are related explicitly to the timing in the following three cycles of curriculum design, as illustrated in Figure 1 below.

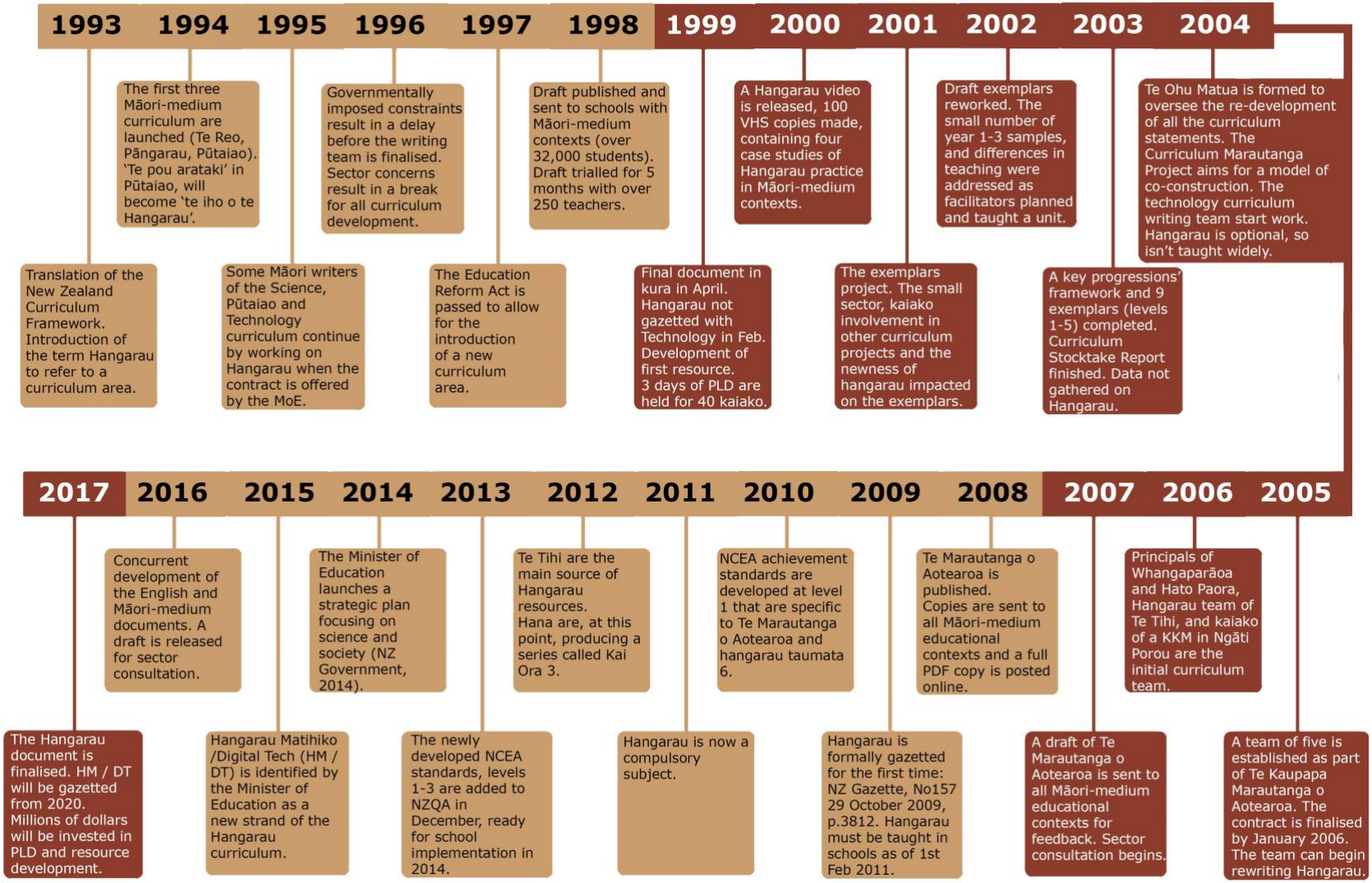

Figure 1: Selected significant events in the three cycles of curriculum design: 1993-1998; 1999-2007; and 2008-2016**.**

Ngā Whakaaro o ngā Kaiako Māori: Māori-Medium Teachers' Perceptions

Sector perceptions impacted on whether research was seen as useful. In the first cycle of curriculum design, many thought that Hangarau was just a translation of the English technology curriculum document (Lemon, 2019; MoE, 1999-2008, 2003-2012; Stewart et al., 2017). In 2003, the proposal for an intensive 20 week Hangarau PLD programme examines the realisation "of our earlier concerns about teachers' knowledge of the Hangarau curriculum" (MoE, 2003-2012, p. 2), citing classroom and teacher documentation; privately and publicly published resources for schools; national reports; and the outcome of the Curriculum Stocktake as evidence for the following concerns.

1. The perception that Hangarau and Technology are one and the same thing. This misconception is held by many teachers, pre and in-service educators, and publishers of Māori medium resource materials.
2. The very few teachers in the service who have a sound grasp of Hangarau, its principles and practices.
3. The inherently Māori philosophy of Hangarau is not being practiced.
4. Teachers are lacking in curriculum knowledge, pedagogy, content knowledge, technological and technical skills.
5. The specific language of Hangarau is not being used by teachers and is therefore not available to students either.
6. Progression is difficult to measure because teachers cannot interpret the achievement aims and objectives of the document and apply them to classroom practice.
7. Key ideas remain unclear for most teachers.
8. The teaching of Hangarau is practically non-existent in secondary schools. (MoE, 2003-2012, pp. 2-3; see Education Counts, 2020 for secondary subject enrolments)

The transition towards concurrent curriculum development and lesser governmental constraints for the curriculum teams in 2006 meant that the perceived differences between Technology and Hangarau grew until many thought that the curricula were now parallel, possibly never meeting, but with TMOA tethered to NZC in perpetuity (MoE, 1999-2008; Stewart et al., 2017). Teachers needed to perceive the differences because what they see changes the dynamics of how they interact with the curriculum. Because the political stance had been made by a few arguing that the documents were only a direct translation, and because of the governmentally imposed constraints, there were many who thought the documents could be used interchangeably. This behaviour did not change until the sector began to perceive the differences between the documents.

Te Rahinga o te Rāngai Māori: Size of the Sector

The timelines (see Figure 1; Table 1) emphasise the dynamics of the overlap between the three cycles of curriculum design. The size of the sector and the number of concurrent projects meant that there was a heavy demand on the schools for the purposes of testing the curriculum, and trialling exemplars and curriculum support resources (MoE, 1999-2003, 1999-2008; 2007-2009). When the Hangarau curriculum was sent to schools, the MoE (1999-2008) counted more than 32,000 students involved in Māori-medium education, of a total pool of 727,298 students in Aotearoa at the time, or just over 4 percent of the student population. This total included classroom contexts where less than half of the learning was conducted through the medium of te reo Māori. This small sector was newly established, and required experts to author a large number of curriculum support materials across the board.

Teacher workload was high. There were the same number of curriculum initiatives as the English-medium curriculum but a much smaller base of schools. As a result, there was an increased demand on teachers' time, schools involved concurrently in three to five curriculum development projects (MoE, 2003-2012), with Hangarau as the fifth in a line of nine documents.

Six Hangarau facilitators delivered PLD for the whole of the North Island. Due to the size of the sector, a creative use of pre-existing networks was necessary to facilitate efficient trialling of the curriculum and of resources. Then, in April 1999, after the release of the first Hangarau curriculum, the availability of Hangarau facilitators defined the curriculum support materials that could be authored and the PLD opportunities that could be offered, with staggered deadlines to accommodate the select few who had the expertise (MoE, 1999-2008, 1999-2003, 2003-2012, 2007-2009). This staggered development of resources and PLD opportunities was compounded by the priority given to Pāngarau and Te Reo Matatini PLD opportunities that were offered. The model of PLD that was offered in the 1990s meant that selected teachers would be taken out of their classrooms for a period of time to complete the planned professional learning (Lemon, 2019; MoE, 2003-2012). They would then pass on their learning to colleagues and the wider school.

The third cycle of development took place concurrently with English and Māori-medium sectors. On one hand, this represents the achievement of the goal of the Curriculum Marautanga Project. On the other, this has implications for kaiako and their understanding of the marau Hangarau. To some, Hangarau Matihiko/Digital Technologies (HM/DT) is Computer Information Science, not the processes involved in using digital technologies as a tool in solving a problem for a group of people.

There was a $12 million PLD package focusing solely on the new content (Hipkins, 2018), yet there is one video title sharing four case studies of Hangarau in action in the classroom (MoE, 1999-2003). What could happen, is that the original intent of Hangarau may become lost, subsumed by the deluge that is HM/DT. Research is needed to support kaiako in developing philosophies of Hangarau.

> When teachers have understood the concepts of Hangarau, what we have observed has been quite inspirational…. They are starting to see Technology as a real subject and not just an add-on. It has quite a lot of potential in terms of accessing and reclaiming Māori knowledge that has, for various reasons, been lost – *Wharehoka Wano.* (MoE, 1999b, p. 4)

Te Rangahau i te Hangarau: Researching Hangarau

The structure of Hangarau must be shared to answer the question why research in this field would enrich the education sector. The first iteration of the Hangarau curriculum was designed using an oval (see Figure 2), which supported sector perceptions of a strong parallel between Hangarau and Technology (MoE, 1995) that also used ovals to represent the structure of the curriculum area (see Figure 3). The outer oval refers to developing fluency in Hangarau, so it would suggest that technological literacy is an encompassing practice or aim of this curriculum. To the left, Mātauranga-ā-Iwi is one of two strands: societal knowledge and learning, exploring the impacts and relationships between people and technology, and between the environment and technology. To the right, Mātauranga Hangarau, the strand for technological knowledge, understanding and capability follows ethics. The two strands complement each other. There is a balance between them: the yin and the yang, meaning that ethics must be debated and considered before any technological knowledge can be applied in practice. The authors of the Hangarau document share their hopes that the document will guide students and provide opportunities for them to link their worlds to the world of tomorrow (MoE, 1999a, p. 5; see also Lemon, 2019; MoE, 1999-2003).

Figure 2: The structure of the 1999 Hangarau curriculum
(Source: MoE, 1999a, p. 11)

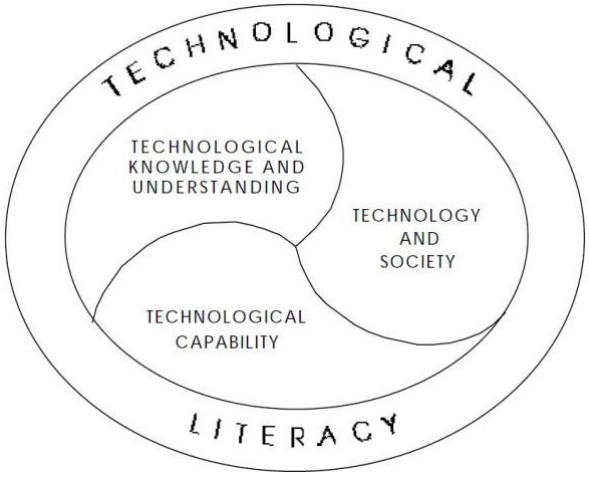

Figure 3: The structure of the 1997 Technology curriculum
(Source: MoE, 1995, p. 8)

The development of the Hangarau curriculum in Aotearoa was a political, tightly constrained process in the 1990s where the curriculum teams used re-ordering, reshaping and the inclusion of subtle differences to indicate Māori perspectives (Lemon, 2019; MoE, 1999-2008), which were most apparent in the series of wheako whakaari (scenarios or learning experiences) written using Māori contexts. These connotations were communicated through PLD opportunities to selected kaiako (MoE, 2003-2012), with the hope that kaiako would carry this knowledge back with them to their schools.

The decolonising nature of Hangarau can be represented through the questions that guided the development of a curriculum resource in April 1999.

1. What did our tūpuna do? What would they do in a particular situation?
2. Why did they take this particular course of action?
3. What did they have to know (about their world, environment, resources...)?
4. How did they do it? What was their capability?

What were their beliefs and values and how did these beliefs and values affect what they did?

5. What were their beliefs and values, and how did these beliefs and values affect what they did?
6. How did the resources they had affect what they did?
7. How would they have tested, trialled, evaluated and modified their course of action?
8. What about today?
9. Could we do it the same way today? Should we?
10. What are the differences and similarities in the actions we could take?
11. Would we have the same outcomes today?
12. Have our values and attitudes changed today? (MoE, 1999-2008)

The review and redevelopment of Hangarau which occurred in the mid-2000s saw only two conditions imposed contractually and the curriculum teams had the opportunity to rethink curriculum for Māori-medium schooling (Lemon, 2019; MoE, 1999-2008). There were regular meetings of writing facilitators of each learning area. Te Ohu Matua, a group comprising representatives of all Māori-medium stakeholders would meet with writers of

each learning area, providing feedback and input to the writers over the duration of the project. In addition, lead writers met regularly to ensure some linguistic consistency across curriculum. This represented a significant change from the ad hoc approach to development of curriculum linguistic corpus in the 1990s (MoE, 1999-2003, 1999-2008, 2007-2009). The notion of paralleling (Penetito, 2010) in the second phase of Māori-medium curriculum development had changed from meaning parallel curriculum. The notion now meant similar but not the same and also equal in mana (status) in contrast to the unequal power relations in the 1990s (Personal communication, T. Trinick, 11 May, 2020). These changes were great because the acknowledgement that the documents were unique was highly significant for the Māori-medium education sector.

The second cycle of curriculum design illustrates some of the unique identity that Hangarau was developing. Figure 4 is part of a presentation shared with sector stakeholders as part of the second curriculum design process (MoE, 1999-2008). The slide shares the aim of the marau Hangarau. Its translation, provided by author, is:

> The aim is to develop student's technological literacy by accessing Māori knowledge, understanding and cultural practices, beliefs and values. Hangarau is about excellence in education for Māori students learning in te Reo Māori, in all aspects and areas of technological literacy.

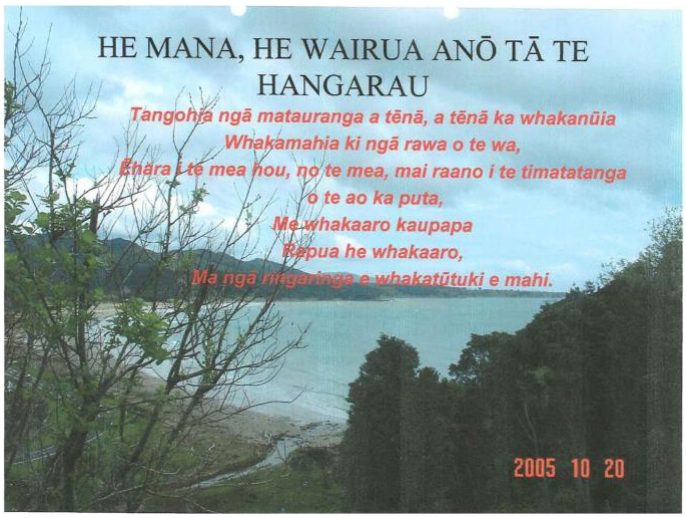

Figure 4: Powerpoint slide used in consultation with the sector: What is the aim and rationale of Hangarau?
(Source: MoE, 1999–2008)

Early drafts that had been written for feedback from stakeholders continued to emphasise the centrality of Hangarau practice to Māori culture, traditions and ways of being (MoE, 1999-2008; 2003-2012).

Figure 5 illustrates the experimentation that the curriculum team went through. 'Whakaharatau Hangarau' was one proposed strand, encompassing the nature of Hangarau, skills, and capability. The branches of the tree, from left to right:

- Hangarau Kai—Food technology,
- Ngā Matū Māori—Māori Materials,
- Te Hanga—Structures,
- Iahiko—Electronics,

- Ngā mahi mōhiohio—Communicative actions,
- Koiora—Living systems

The trunk of the tree explains that te reo Māori will carry Hangarau practice.

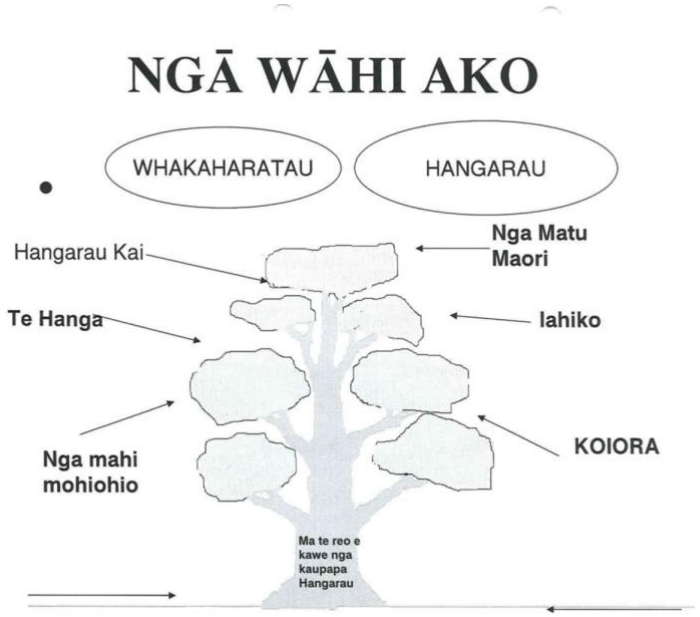

Figure 5: A draft structure for the Hangarau curriculum
(Source: MoE 1999-2008)

The Ministry of Education did not agree with the idea of a learning area consisting of only one strand, so Hangarau kept its two strands (Lemon, 2019; MoE, 1999-2008). However, it was seen as vitally important that Ngā Āhuatanga o te Hangarau (The Nature of Hangarau) and Te Whakaharatau Hangarau (Hangarau Practice), skills and knowledge were communicated as interdependent and inseparable (Lemon, 2019).

Te Marautanga o Aotearoa (MoE, 2008) became the national curriculum document for Māori-medium schools in 2008. The structure for this curriculum was represented with a species of trumpeter fish called a moki being carried in a kete (basket or kit), as shown in Figure 6. The outer circle of this iteration is the strands placed top and bottom in parallel with the sides of the kete: the top strand focusing on ethical practice that takes the environment, the people and the life of the hanga (product or outcome, the solution) into consideration. The bottom strand encompasses Hangarau practice. The strands are interlaced with the five aho or contexts for learning. In 2008, the contexts were:

- *Hangarau Koiora*: Biotechnology, with a focus on sustainable ethical practice;
- *Te Tuku Mōhiohio:* Information Transfer, not ICT, but an exploration of communication, having a past, a present and a future. A focus on researching and reclaiming traditional techniques, then reframing them for the contemporary world through innovaton or adaptation;
- *Ngā Hanga me ngā Pūhanga Manawa:* Structures and Mechanisms, the relationships between the parts and the whole;
- *Te Tāhiko me te Hangarau Whakatina:* Electronics and Control Technology; and
- *Hangarau Kai:* Food Technology. (MoE, 2008, p. 111)

In 2017, the context named Te Tuku Mōhiohio was removed to facilitate the introduction of the new Hangarau Matihiko context, shown in Figure 7. Te Tuku Mōhiohio was seen to be fundamentally important to Hangarau and would be embedded throughout the curriculum. The tenets of this context were to be embodied in the opening lines of the document known as te iho o te Hangarau (the essence of Hangarau).

Figure 6: The structure of the 2008 Hangarau curriculum (Source: MoE, 2008, p. 110).

Figure 7: The structure of the 2017 Hangarau curriculum (Source: MoE, 2017, p. 110).

Whakawhāititanga me te Whakarāpopototanga: Conclusion and Summary

We have shown that the Māori-medium curriculum was initially expected by the Ministry of Education to be a direct translation or mirror of the English-medium curriculum documents. This was the political climate that documents, such as Pāngarau (Māori-medium Numeracy), Pūtaiao (Māori-medium Science) and Hangarau were required to navigate. Through a combination of Māori-led resistance and agency (and the passing of time), there has been increased opportunity to achieve outcomes closer to Māori aspirations: unique curricula designed by, and for, New Zealand's indigenous people. Since 2008, the New Zealand Māori-medium national curriculum Te Marautanga o Aotearoa [TMOA] (MoE, 2008) has framed the planning and delivery of educational experiences for children in Māori-medium immersion contexts.

Selected significant events in the three curriculum development cycles for Hangarau, were outlined through the timeline to illustrate the impact that timing had on curriculum development, PLD and opportunities for research (see Figure 1). An example is that Hangarau was not compulsory in Māori-medium classrooms until 2011, meaning it was an optional curriculum. As a result, Hangarau was not being taught in the majority of schools before the second cycle of development of the Hangarau curriculum. This impacted on the research conducted as part of the curriculum stocktake (McMurchy-Pilkington, 2004; MoE, 1999-2008). It also impacted on the implementation of the curriculum and the design of curriculum support materials, such as the Māori-medium exemplars project (MoE, 1999-2003).

The size and relative newness of the sector impacted on the processes followed both in curriculum development and in the development of support resources. Six Hangarau facilitators delivered PLD for the whole of the North Island. This meant that Hangarau facilitators were often working on several significant projects concurrently, covering large distances to work with kaiako and schools. Hangarau was the fifth document to be re-developed, meaning that most of the 53 schools (in 1997) were already committed to other curriculum projects.

The Māori knowledge-base of Hangarau was evident from the 1999 marau Hangarau through the integration of skills and capability into one strand and through the prioritisation of Ngā Āhuatanga o te Hangarau (The Nature of Hangarau). The loosened governmental constraints in the mid-2000s gave the curriculum development team the opportunity to investigate what Hangarau could look like as a Māori-medium learning area. This resulted in an emphasis on the desire for graduate students to be strong in their knowledge of tikanga Māori (Māori practices) and whakaaro Māori (Māori thinking). There are nine institutes in New Zealand that offer Huarahi Māori teacher education programmes (Lee-Morgan et al., 2018) and the desire for graduates strong in tikanga and whakaaro Māori is a prominent feature of each course. It is also a significant part of many charters for kura Māori and Māori immersion units. There has been a continued strengthening to the holistic and embedded nature of Hangarau practice and the links this represented between the past through to the present and on to the future. At the heart of Hangarau practice remained the stakeholders, without whom Hangarau is impossible – the whānau, hapū and iwi, the relationality and dynamics between the maker, the product and the teacher.

Ngā Whakaaro Rangahau: Recommendations for Future Research

Research must be conducted in every possible area related to Hangarau to inform the next generation of curriculum designers; to develop philosophies of Hangarau; and to explore the most effective pedagogical approaches in Hangarau. Philosophical inquiry into the key concepts and practices of Hangarau is an initial priority for research in this field. A range of pedagogical studies should then be conducted into Hangarau practice in educational contexts. This research would raise the academic rigour in this field by facilitating discussions about the links between curriculum theory, PLD, and their impact on pedagogical practice. There is a need to research the value of fostering an integrated holistic education in English-medium technology that would better enable students to be ethical and critical technologists.

Ka hīkoi whakamuri au ki anamata, ko ōku karu e anga ana ki ōnamata: I walk backwards into the future with my eyes fixed on my past

Papakupu: Glossary

Aho	Contexts for learning
Aotearoa	The first name of New Zealand
Hanga	Product or outcome, the solution
Hangarau	Māori-medium Technology
Hangarau Kai	Food Technology
Hangarau Koiora	Biotechnology
Hangarau Matihiko	Māori-medium Digital Technologies (HM/DT)
Hapū	A section of a larger kinship group or iwi, consisting of a number of families descending from a common ancestor
Hato Pāora	A Catholic Māori boys' boarding school
Hauora i roto i TMOA (Tauira)	The Arts in TMOA (Draft)
Hoa haere	Companion
Huarahi Māori	Māori-medium pathway
Iahiko	Electronics

Iwi	A larger kinship group
Kete	A basket or kit
Kaiako	Teachers
Kia matatau ki te Hangarau	To become literate in Hangarau
Koiora	Living systems
Kura	Schools
Kura Kaupapa Māori (KKM)	Māori-medium immersion schools
Mana	In this paper, we are referring to status or prestige
Māori	Indigenous people of New Zealand
Marau Hangarau	Māori-medium Technology curriculum
Marautanga	Curriculum
Mātauranga Hangarau	Technological knowledge
Mātauranga-ā-Iwi	Societal knowledge and learning
Mātauranga Māori	Māori knowledge
Mauri	Essence
Moki	A species of trumpeter fish, *Latridopsis ciliaris*
Mokopuna	Grandchildren
Ngā Āhuatanga o te Hangarau: The Nature of Hangarau	
Ngā Hanga me ngā Pūhanga Manawa: Structures and Mechanisms	
Ngā mahi mōhiohio	Communicative actions
Ngā Matū Māori	Māori Materials
Ngāti Porou	Māori tribal group of East Coast area north of Gisborne to Tihirau
Ngā Toi i roto i TMOA	The Arts in TMOA
Pāngarau	Māori-medium Numeracy
Pūtaiao	Māori-medium Science
Tamariki	Children
Tamariki mokopuna	The next generation: literally children and grandchildren
Tauaromahi	Exemplars
Taumata	Level (in this paper, we are specifically referring to curriculum levels)
Tauaromahi	Exemplars
Te Anga Marautanga o Aotearoa: The New Zealand Curriculum Framework	
Te hanga	Structures
Te iho o te Hangarau	The essence of Hangarau
Te Kaupapa Marautanga o Aotearoa:	Curriculum redevelopment project of 2006-2007
Te Marautanga o Aotearoa (TMOA) :	Māori-medium curriculum
Te reo	Language
Te reo Māori	Māori language
Te Reo Matatini	Māori-medium literacy
Te Tāhiko me te Hangarau Whakatina: Electronics and Control Technology	
Te Tuku Mōhiohio:	Information Transfer (not ICT)
Tikanga	Practices
Tikanga-ā-iwi i roto i TMOA: Social Studies in TMOA	
Tuakana	Experts
Tūpuna	Ancestors
Whangaparāoa	An area about 25km north of Auckland
Whakaaro	Thinking; Thought
Whānau	Family
Wheako whakaari	Scenarios or learning experiences

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