He Kupu Whakakapinga | Concluding Words

Mātanga: Curriculum designers, developers of PLD and authors or curriculum support materials for the first, second and third hangarau curriculum documents.

Semi-structured interviews (Brinkmann & Kvale, 2018)

Documents retrieved under requests for official information to the Ministry of Education.

Document analysis (McCulloch, 2011)

Main research question

What are the challenges in indigenising the Māori-medium technology curriculum?

Sub-questions

What is the place and role of Indigenous Māori knowledge in hangarau?

How does the content, design, and structure acknowledge and reflect Indigenous knowledge and pedagogy?

What constitutes an Indigenous philosophy of hangarau?

What implications do these concepts have on classroom implementation and the enactment of the marautanga hangarau?
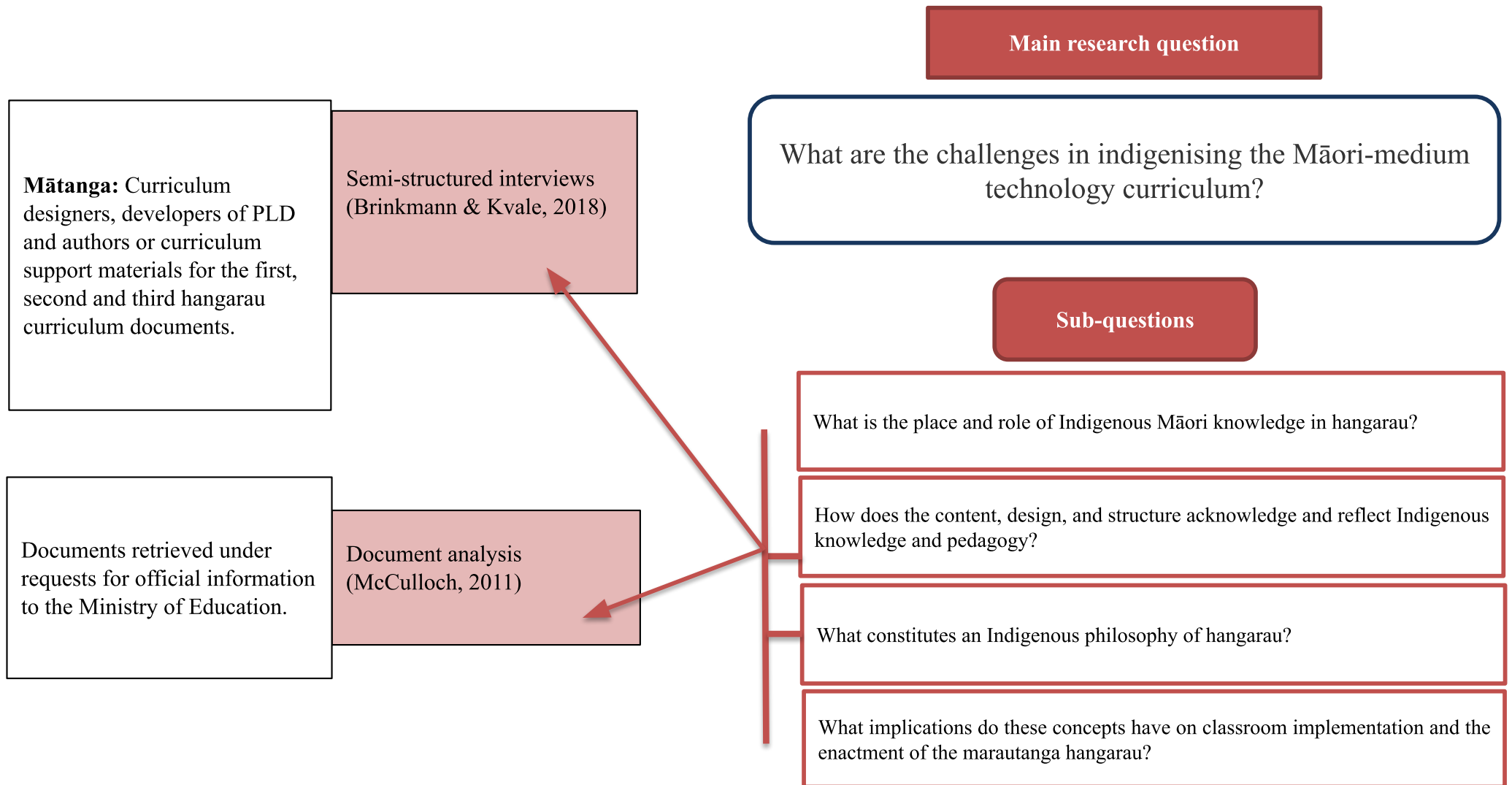
The following sections address the findings of the research question and sub-questions, as illustrated above. First, I address the sub-questions then the findings in relation to the main research question. Then, the study's limitations are considered briefly, before messages for mātanga working in Indigenous educational contexts nationally and internationally are shared. The chapter closes with recommendations for further research.

The Challenges of Hangarau Curriculum Design

The Role and Place of Indigenous Māori Knowledge in Hangarau

The mātanga in this research strongly argued for the examination and contemporary reinterpretation of traditional Māori categorisations of knowledge for several reasons. The first concern here revolves around the idea that relying exclusively on the New Zealand Curriculum instead of integrating Te Marautanga o Aotearoa could marginalise Māori knowledge and perspectives. Te Marautanga o Aotearoa was designed to reflect and honour Māori values, knowledge systems, and cultural perspectives. By focusing solely on the New Zealand Curriculum, which is more oriented towards Western perspectives, there is a risk of underrepresenting or neglecting Māori ways of knowing and understanding the world. Traditional Māori categorisations of knowledge are integral to preserving and transmitting Māori culture and heritage. If these are not examined and reinterpreted in contemporary contexts, there is a risk that important aspects of Māori knowledge could be lost or undervalued in modern education. Incorporating Te Marautanga o Aotearoa into the taught curriculum supports equity by ensuring that Māori students see their culture and knowledge systems reflected in their education.

Discussions centred around different methods of organising concepts and the knowledge base of the hangarau curriculum. However, there was consensus on the importance of including knowledge relevant to contemporary children. The concept of students navigating dual worlds—one informed by mātauranga Māori and the other by a Western worldview, was challenged as potentially outdated. There was a shared perspective that curriculum organisation could draw from both Western and Indigenous frameworks while emphasising the integration of contemporary knowledge pertinent to children today. Consequently, the

notion of students engaging with two distinct and separate worlds, rooted in Māori and Western knowledge, may no longer accurately reflect current educational realities.

Accordingly, there was a view advocating for the promotion of mātauranga Māori through a shift from a national to a localised approach, favouring mandated regional curricula over a centralised national one. As noted, one of the primary tensions identified in Māori curriculum development lies in balancing the creation of a national Māori identity alongside Pākehā influences. Historically, prior to European contact, the hapū served as the fundamental political, economic, and social unit within each iwi, each possessing unique practices, traditions, and protocols. It is argued that these localised forms of knowledge cannot be adequately represented within a nationally mandated curriculum. Instead, consideration should be given to integrating hapū-specific knowledge tied to each school's locality and the familial knowledge of students' whānau (especially in schools that are not kura-ā-iwi or tribal schools, where connections to diverse places and knowledges may exist). However, developing curricula solely based on localised knowledge rather than national standards presents significant challenges.

A national curriculum plays a crucial role in fostering a collective Māori identity by promoting shared values, history, and identity across diverse communities, thereby enhancing social cohesion and national unity, which is particularly important for transient students and families. Localised knowledge may struggle to gain recognition and validation beyond its immediate context, potentially limiting opportunities for students to have their skills and knowledge acknowledged and valued outside their local community. Furthermore, focusing solely on localised knowledge may restrict the breadth of subjects that prepare students for broader societal engagement and future opportunities beyond their immediate community. For instance, the enrolment numbers of Māori-medium students pursuing NCEA qualifications through Te Marautanga o Aotearoa are currently disproportionately low compared to English-medium counterparts.

Addressing these challenges requires a balanced approach, recognising the importance of integrating local and national knowledge within the curriculum. This approach aims to incorporate diverse perspectives while ensuring educational equity, relevance, and coherence. In the second development cycle, there was a symbolic representation of local knowledge within the marautanga hangarau through the metaphorical wrapping of the inaugural document around the moki. This symbolic gesture echoed the thesis's opening theme, te iho o

te hangarau, which underscores the adaptation of traditional knowledge in contemporary contexts. Ongoing challenges persist in identifying Indigenous knowledge for preservation and growth, integrating old with new, and determining the essential knowledge that will shape future generations' roles as technologists, scientists, thinkers, and educators.

According to the research participants, a pivotal aspect of hangarau revolves around the decolonisation of thought. Kaihangarau are expected to adopt distinct decision-making models influenced by their unique worldview, values, and beliefs. This perspective introduces tensions between concepts of commerce and entrepreneurship on one hand and kaitiakitanga [stewardship] on the other. Hangarau students are actively navigating these tensions as they strive to strike a balance between traditional and contemporary, Western and Indigenous approaches within their hangarau practice.

Marautanga Hangarau – Reflecting Indigenous Knowledge and Pedagogy

Decolonising the curriculum refers to the process of critically examining and reshaping curriculum, educational materials, pedagogies, and practices to challenge and dismantle colonial perspectives, biases, and power structures while centring Māori knowledge, community and whānau voices and histories that have been marginalised or suppressed by colonialism. Decolonising knowledge and curricula is an intricate process that requires a deep understanding of the epistemological and ontological foundations of Indigenous knowledge. It involves not just integrating different content but also fundamentally rethinking and reshaping how knowledge is perceived, valued, and taught.
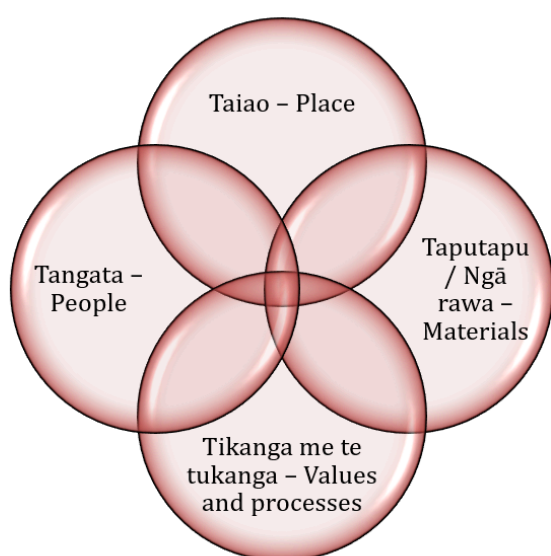
Decolonising and indigenising a curriculum share some similarities but also have distinct focuses and approaches. Indigenising the curriculum focuses specifically on centring Indigenous knowledge, perspectives, languages, and cultures. The aims of mātanga to decolonise the curriculum and then to indigenise the curriculum have not been fully realised yet. Requirements around the utilisation of curriculum levels and the inclusion of specific achievement objectives impact and change the original intent. An Indigenous education curriculum's epistemological and ontological foundations are intrinsically tied to its philosophy. In this area, some progress has been made.

I have considered what might constitute an Indigenous philosophy of hangarau—an inquiry into fundamental questions about existence, knowledge, values, reason, mind, and language.

With my mātanga, this philosophical thinking about hangarau has led me to consider the boundaries of the field—there are philosophies of technology, engineering and technology education. Drawing from the recent NCEA change work (2021–2022), four whakaaro whānui [significant ideas] have been identified as the learning that cannot be left to chance in hangarau. As a working group, we considered the key elements involved in hangarau practices, and these became the first elements we explored in preparing the draft of the tukutuku ako [learning matrix] (see 'Key Elements Involved in Hangarau Practice'). These concepts were refined (and flipped) so that **tikanga me te tukanga** became **nō te ao Māori te hangarau**—the idea that mātauranga Māori is centrally important. It is no longer about decolonising and including this content but about centralising and celebrating kōrero tuku iho, tukanga and tikanga Māori as the foundation of all hangarau practice.

Figure

Key Elements Involved in Hangarau Practice

Tangata and taputapu/Ngā rawa were expanded to become **mā te hangarau e ea ai te hiahia**—kaihangarau and the processes they followed in meeting the needs of someone or something. All the key elements identified in Figure 13 were thought about as one—the dynamics and relationality between all the elements are fundamentally important. **Mātua te whanaungatanga i te hangarau. taiao**, the final element was expanded on: **Me toitū te taiao i te hangarau**. Throughout the discussions, the processes and the materials selected are the underlying values of future sustainability and well-being of the environment (in the wider sense of the word), extending from the physical environment to the linguistic, encompassing ngā taonga tuku iho.

Key concepts to expand on that embody these significant thoughts, remembering that a constant challenge is how to acknowledge these concepts in curricula that aim to prioritise local Indigenous knowledge whilst ensuring that the evolving and dynamic nature of the

knowledgebase is maintained—a balance between traditional Māori knowledge, ngā taonga tuku iho and evolving Māori knowledge relevant to the new generation of learners. Four key concepts become the foundation on which the key elements of hangarau practice are built: mana [power/essence/presence]; mauri [energy/spiritual essence]; kaitiakitanga [sustainability in a wider sense, inclusive of language and society]; and whakapapa [pedigree, ancestral lines, and connections].

Holistic Understanding – Interdependence of Mana and Mauri

The Indigenous Māori curriculum philosophy embraces a holistic view of knowledge, integrating spiritual, ecological, social, and intellectual dimensions. This contrasts with the compartmentalised knowledge structure typical of Western education. These contrasting views influence how curricula are designed. From the Indigenous Māori perspective, subjects are interconnected, with a focus on the relationships between different areas of knowledge. For example, a lesson on plant biology might include ecological, medicinal, and spiritual perspectives. Here, one of the foci lies in illuminating the concept of mana in relation to mauri and their place in an emerging philosophy of hangarau. It is important to note that the concepts of mana and mauri overlap and connect with one another.

Mana and mauri underpin te ao Māori, as encapsulated in the anecdote of Scotty Morrison shared in Chapter 2 (Douglas & Christie, 2020). When Scotty Morrison 'meets' the historical artefact, the pocketknife, he acknowledges its mana, its mauri, the stories, and the connections to the tribal group Ngāti Rangitāne o Wairau.

Mana is about respecting and honouring the stakeholder, the kaihangarau, the place and the processes used to meet the stakeholder's needs. It is about asking ethical questions transcending the basic question of 'Can we do this?' and getting to a place where questions such as 'Should we do this?' are regularly asked. When working as a kaihangarau using a Māori lens, there are decisions that would not be made because the kaihangarau is respecting and acknowledging the mana of an ancestor, a place, a stakeholder, as in the example shared in Sections 4.4.1 and 7.7 where elder Ngāneko Minhinnick talks about the Waikato River. This concept would be integral to the navigation of the tensions between entrepreneurship and kaitiakitanga.

Thus, there is an interdependency between mana and mauri. **Mauri** and **mana** are interconnected in that the state of one's mauri can influence one's mana. For instance, if a person's mauri is strong and balanced, their mana may be enhanced, reflecting a state of

well-being and effectiveness. Conversely, when mauri is compromised, such as through environmental degradation or personal harm, it can diminish mana, reflecting a loss of power or influence. The balance between mauri and mana reflects a holistic view of well-being. Healthy mauri contributes to positive mana, while strong mana supports the nurturing of mauri. Both concepts together emphasise the interconnectedness of spiritual, physical, and social aspects of life.

Relational Existence – Kaitiakitanga and Whakapapa

Kaitiakitanga of the whakapapa are central concepts that deeply connect to the philosophy of an Indigenous curriculum. These elements reflect the intrinsic values and practices of Māori culture, shaping both the content and approach to the potential design of the curriculum. The Māori worldview sees humans as part of a larger ecosystem where all elements are interconnected and interdependent. This interconnectedness underscores the responsibility to care for the environment as a living entity that sustains all life. Indigenous Māori philosophies emphasise the importance of sustainability and thinking about the impact of actions on future generations.

Mātanga did not believe that kaitiakitanga was only possible if there was no entrepreneurship. Mātanga believed that a careful consideration of the world's resources was necessary.

When balanced by the concept of whakapapa, it becomes much easier to recognise the mana and mauri of the technologist, the shareholder, the processes, and the outcome.

Thus, whakapapa and kaitiakitanga are deeply intertwined in Māori culture, reflecting a holistic understanding of relationships and responsibilities. **Whakapapa** represents the genealogical connections that link people to their ancestors, the land, and the natural world, forming a foundational framework for understanding one's place and duties within these networks. **Kaitiakitanga**, on the other hand, refers to the practice of guardianship and stewardship over the environment and its resources, grounded in these ancestral connections. Through whakapapa, individuals and communities recognise their role as caretakers who have inherited responsibilities from their ancestors to protect and sustain the land and its resources. Thus, whakapapa provides the context and rationale for kaitiakitanga, ensuring that stewardship practices are aligned with cultural heritage and long-term sustainability.

The integration of environmental stewardship and genealogy reflects a holistic approach to education, where learning encompasses intellectual, spiritual, emotional, and physical

dimensions. Education is seen as a communal activity that benefits not only the individual but also the broader community and environment. Kaitiakitanga of the environment and genealogy are fundamental to the philosophy of the Māori curriculum, grounding education in the values of interconnectedness, sustainability, identity, and community. By integrating these elements, the curriculum fosters a holistic, community-centred, and culturally rich educational experience that prepares students to be responsible, knowledgeable, and respectful members of both their communities and the natural world.

Mātauranga Māori – Epistemological and Ontological Foundation

Several key conclusions can be drawn from the discussion on the epistemological and ontological foundations of mātauranga Māori. The epistemological and ontological foundations of mātauranga Māori advocate for a holistic integration of knowledge that spans spiritual, ecological, social, and intellectual domains. This approach informs curriculum design by promoting interdisciplinary and theme-based lessons that reflect the interconnected nature of Māori understanding. Such a curriculum design ensures that education is not fragmented but rather interconnected, aligning with Māori philosophical perspectives.

Emphasising experiential and community-centred learning is crucial. This involves field-based education and the active involvement of kaumātua, which fosters practical engagement and cultural immersion. By integrating these elements, the curriculum becomes more relevant and engaging for students, allowing them to experience and connect with their cultural heritage meaningfully.

Understanding whakapapa and identity is fundamental in Māori education. Curriculum elements such as genealogy projects and cultural narratives significantly connect students to their heritage and reinforce their sense of identity. This approach highlights the importance of acknowledging and integrating students' cultural backgrounds into their learning experiences.

Incorporating spirituality and respect through tikanga and lessons on the spiritual significance of natural elements is essential. This ensures that the curriculum respects and reflects Māori values and practices, embedding spiritual and cultural dimensions into the learning process.

Emphasising environmental stewardship and sustainability through projects and teachings on traditional Māori practices reinforces the concept of kaitiakitanga. This perspective promotes an understanding of the ethical and sustainable management of natural resources, aligning educational content with Māori worldviews on environmental responsibility.

The curriculum should promote relational learning and collective responsibility through collaborative activities and ethical teachings. This approach underscores the importance of relationships within the community and the environment, encouraging students to understand and appreciate the interconnectedness and responsibilities inherent in their social and ecological contexts.

In summary, incorporating the epistemological and ontological foundations of mātauranga Māori into curriculum design involves creating an educational framework that respects and integrates Māori values, traditions, and worldviews. This approach fosters a holistic, contextually relevant, and ethically grounded curriculum that not only enhances technical proficiency but also deepens students' understanding of life's interconnectedness and their responsibilities in maintaining balance and harmony within the world.

Challenges of Indigenous Curriculum Implementation

Reintegrating Hangarau: Addressing Misconceptions and Embracing Holistic Indigenous Education

Indigenous philosophies of education often emphasise holistic approaches to learning, encompassing spiritual, cultural, social, and environmental dimensions. A curriculum philosophy that embraces this holism promotes the integration of Indigenous knowledge systems, languages, and cultural practices across various curriculum areas. It ensures the curriculum is coherent and interconnected, fostering students' holistic development and well-being. Hangarau emphasises a holistic approach and is not static but a dynamic, creative process. It was not intended to be a standalone subject but is pivotal in the design of cross-curriculum learning. Despite its great potential for cross-curriculum teaching and learning, there have been significant misconceptions about hangarau since its inception, and it continues to be underrepresented in the taught curriculum.

Hangarau was initially conflated with computing or devices, which also occurred with the English-medium technology curriculum, partly due to the focus on educational technology in the sector. Sector perceptions included the belief that hangarau and technology were interchangeable because one was a translation of the other. Hangarau only became a gazetted subject in 2011, meaning that it was formally mandated by the Government as a compulsory subject to be taught in Māori-medium classes adhering to Te Marautanga o Aotearoa three years after the second hangarau curriculum had been written. Hangarau was excluded from the research conducted in the build-up to writing the second hangarau curriculum in 2008. In

2015–2017, when the hangarau matihiko content was added to the third hangarau curriculum, many thought that hangarau matihiko had subsumed the other contexts/content. The combination of these misconceptions resulted in a curriculum absent from many classes.

Challenges in Māori-Medium Education – Resource Development and Teacher Support

Analysis of the full dataset, which included both document analysis and semi-structured interviews with mātanga, identified similar issues: a delimited view of Māori knowledge, disempowerment, and access problems in three major policy areas—curriculum development, its resourcing, and PLD for teachers. The data analysis revealed that the issues encountered in resource development processes overlapped with those in curriculum development and PLD.

The imbalance between demand and supply, especially regarding specialist hangarau practitioners and high-quality Māori-medium resources for all levels of Māori-medium education, including wharekura students, remains a significant challenge for this small and diverse educational sector. Implementing a curriculum in the classroom is very difficult without adequate resources. There is a clear need for high-quality materials that facilitate planning, create engaging learning experiences, and support and enhance teacher thinking in this area. Māori-medium practitioners require these support materials to implement Te Marautanga o Aotearoa in their classrooms successfully.

Governmental support will be critical to the growth of the sector and the development of high-quality, engaging resources that are not just a translation of an English-medium 'twin' resource—to face a future where our practitioners, from teachers to policymakers, are crystal clear in their understanding that there is a unique philosophy of hangarau and that our students will continue to engage with the discipline if there are teachers. It would be impossible to develop resources for every localised curriculum, but what is possible is the preparation of ongoing PLD consisting of modules or templates. Schools could use the templates as part of developing a local curriculum and be scaffolded through the process. This ongoing generation of resources would attract more teachers to specialise. Curriculum support materials (specifically) should be developed bilingually and designed using a te ao Māori lens. A similar approach could be used here, where schools can edit modules or templates to generate their localised curriculum support materials.

Balancing Centralised Versus Localised Professional Learning and Development Models

The current PLD model is inadequate for the Māori-medium sector. It should be restructured from a centralised, national approach to one that better addresses local needs. The current one-size-fits-all model is ineffective, highlighting the necessity for a balance between standardisation and customisation. Effective and ongoing PLD is crucial for implementing best practices in Māori-medium education. Research supports the need for continuous, tailored professional development to improve teaching and learning outcomes in these contexts.

There is a need for research across various Māori-medium educational settings to identify and evaluate effective practices and principles tailored to these environments. Investment in the Māori-medium sector is essential for its growth and development. This investment is necessary to address shortages of experts fluent in te reo Māori and to support the participation of schools in the development and review of curriculum materials.

Indigenising Hangarau – Autonomy and Development in Māori-Medium Education

From the discussion on indigenising hangarau in Māori-medium education, several conclusions can be drawn and elaborated upon, as discussed below.

For Māori-medium education to effectively integrate hangarau and other disciplines, it is crucial that it operates with autonomy from the English-medium sector. This autonomy allows the Māori-medium sector to develop and prioritise its educational approaches based on its unique cultural and pedagogical needs rather than being constrained by frameworks designed for a different context. Granting this autonomy is essential for ensuring that hangarau can be adapted to reflect Māori values, knowledge systems, and pedagogical methods.

A viable interim solution for indigenising hangarau involves a strategic blend of traditional mātauranga Māori with contemporary knowledge. This approach, metaphorically described as "wrapping the old with the new", facilitates the integration of Māori cultural perspectives into modern technological education. By systematically and critically engaging with existing resources, educators can adapt and contextualise them to better align with Māori ways of knowing and teaching.

To support the effective teaching and learning of hangarau, it is important to critically assess and utilise existing resources, such as the inaugural hangarau curriculum and the tauaromahi framework. These resources provide a foundation for understanding and evaluating student knowledge and progress in hangarau practice. By integrating these resources with Māori perspectives, educators can enhance their relevance and effectiveness within the Māori-medium context.

Practical experiences, or wheako whakaari, play a vital role in the indigenisation of hangarau. These experiences allow students to apply their knowledge in real-world contexts and deepen their understanding of how technology intersects with Māori culture and values. Incorporating practical, hands-on learning opportunities into the curriculum helps bridge theoretical knowledge with practical application, making learning more relevant and engaging for students.

The tauaromahi framework, which assesses student progress in hangarau, should be adapted to better fit the Māori-medium context. This adaptation ensures that assessment methods are culturally appropriate and reflect Māori educational values. By modifying existing frameworks to accommodate local knowledge and perspectives, educators can more accurately gauge and support student learning in a way that honours Māori cultural traditions.

In summary, the effective indigenisation of hangarau within Māori-medium education requires granting autonomy to the Māori-medium sector to develop its own educational priorities and approaches. Integrating traditional Māori knowledge with contemporary practices, critically engaging with existing resources, and adapting assessment frameworks are crucial steps in creating a technology curriculum that is both culturally relevant and pedagogically sound. By doing so, Māori-medium education can foster a more meaningful and effective learning experience that respects and incorporates Māori values and perspectives.

Study Limitations

Limitations in choosing document analysis as a method include dealing with biased selectivity, which arises from incomplete documentation datasets. As both a researcher actively engaged in the education sector and recently involved in curriculum design, I aimed to navigate the available Ministry of Education documents, identify what was missing, and understand the reasons behind these gaps. Cardno (2018) emphasises the importance of addressing this aspect of documentary research. Additionally, I chose to engage with mātanga

experts to clarify the gaps identified in the documents and to use insights from these documents to support mātanga practitioners. This approach was particularly relevant given the cyclical nature of hangarau curriculum design, which spans over three decades.

The limitations imposed by word counts and publisher requirements significantly influenced the completion of this thesis and its associated publications. Each chapter started with specific word count constraints, which shaped the focus to predominantly highlight mātauranga Māori at a broader level while emphasising the importance of local knowledge. This approach is further supported by an emphasis on the strengths of the proposed methodologies. It is important to recognise that no single solution is universally applicable; each proposed approach has its own strengths and weaknesses. This study would benefit from a more explicit discussion of the weaknesses associated with each approach. Nonetheless, the dissemination of ideas through conferences, journal articles, and books has been invaluable, with peer review in these forums playing a crucial role in refining and solidifying the study's direction.

Messages for Mātanga Nationally and Internationally

In this section, key discussion points are pulled together in terms of their relationship to the sub-questions. The focus is on the main research question and what messages this research has for curriculum experts, both nationally and globally.

The expression "consuming ourselves to death" (Wilk, 2009, p. 265) has become widely recognised. Philosophies of hangarau offer valuable insights for addressing the challenges of overpopulation and dwindling fossil fuel reserves that fail to meet rising demands. There is an urgent need for kaihangarau who can innovate beyond the current reliance on lithium batteries, deep-sea mining, and deforestation.

This study underscores the critical need to navigate and reconcile the tensions between Indigenous and Western viewpoints, commercial interests, environmental concerns, and broader versus local Indigenous knowledge perspectives. From the Māori-medium community, several key messages emerge that are relevant to other contexts working to revitalise Indigenous languages and knowledge through curriculum development.

Firstly, it highlights the importance of seizing curriculum development opportunities, even if they initially seem limited. Secondly, it advocates for leveraging education to advance Indigenous goals and counteract historical colonisation patterns on a global scale. Thirdly, it

stresses the need to achieve full community ownership and engagement in educational initiatives. Lastly, the study emphasises the role of research in building community capacity, asserting the importance of identifying and prioritising areas critical to Indigenous communities.

Ngā Whakaaro Rangahau | Recommendations for Future Research

A significant gap in the literature pertains to the history of PLD in Aotearoa, particularly regarding its evolution within both English-medium and Māori-medium education sectors. Documenting this history would be invaluable for future PLD facilitators, as effective and continuous PLD is crucial for promoting best practices. This underscores the need for research across various Māori-medium contexts to identify optimal strategies.

As an emerging discipline, hangarau requires more research and support materials to guide future curriculum designers, develop specific philosophies, and identify effective pedagogical approaches. Initial research should focus on philosophical inquiries into key concepts and practices within hangarau, followed by studies on its practical applications in educational settings. This approach would enhance academic rigour by aligning research with curriculum theory, PLD, and pedagogical practices. As the Māori-medium education sector grows, achieving critical mass is essential to effectively address the complexities of designing professional development and implementing curricula.

Hangarau holds significant potential for integrated teaching and learning methodologies; however, persistent misconceptions have limited its presence in many classrooms. Further research is needed to explore how mātauranga Māori can be seamlessly integrated into the curriculum and linked with effective pedagogical strategies, preparing students for engagement both within te ao Māori and the broader global context. Research should cover all aspects of Te Marautanga o Aotearoa, with particular emphasis on ngā toi [Māori-medium arts], hauora [Māori-medium health], and tikanga-ā-iwi [Māori-medium social sciences]. Additionally, exploring broader curriculum concepts, such as traditional knowledge categorisation and mātauranga Māori-based pedagogical approaches, is essential for advancing educational practices within Māori-medium contexts.

Research forms the foundation for advancing curriculum design and implementation, especially in identifying effective pedagogical methods to enhance students' engagement with hangarau. For example, Lemon's (2019) study on Māori-medium hangarau curriculum

design and this thesis's focus on the marautanga hangarau contribute valuable insights into the challenges of implementing an Indigenous curriculum and developing an emerging philosophy of hangarau. Such research informs mātanga practitioners involved in the ongoing cycles of Māori-medium curriculum design in Aotearoa, aiding in creating curriculum support materials and PLD programmes. Ultimately, these efforts establish a robust research foundation crucial for advancing educational practices within the Māori-medium sector.

There has been one case study of teaching and learning with a hangarau foundation (Lemon & Hanly, 2023). Further case studies focusing on hangarau across the wāhanga ako of Te Marautanga o Aotearoa are needed. Consideration of Te Aho Matua, local kura-ā-iwi curricula, and schools' local curricula—in development and in practice—is vital for further capacity building.

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