

Acknowledgements

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- My Research Whanau
- My Wife, Children, Moko and my Mum

Outline

Research question 1

The historical and contemporary characteristics and voices portrayed in these chapters encouraged and captured the whānau's hopes of identifying mātauranga and tikanga Māori (*Māori epistemologies and ontologies*). We sought to build on the base proposition that mātauranga, te reo and tikanga Māori could be incorporated within current and future AI systems

Research question 2

Many whānau live in different parts of Aotearoa, Australia and Europe. In addition, our whānau have great difficulty keeping in contact with each other, linking to our tribal homelands, gathering face to face and meeting our cultural obligations. Our whānau were highly motivated by the need to investigate approaches as to how we, as a dispersed whānau, remain connected to our tribal territories of Te Whakatōhea.

Research question 3

It was required of our whānau to build understandings about colonisation, culture assimilation and Māori language loss. As the Distinguished Professor Graham Hingangaroa Smith has noted, colonisation has not gone away. It has more often simply changed shape and is coming at us in new formations. It is, therefore, critical to develop counter-colonising responses in multiple sites, in various forms and numerous resistance initiatives (G.H. Smith, personal communication, 26 February 2023).

Methodologies – Kaupapa Māori Theories

- Firstly, this chapter discusses theories of transformative praxis that define Kaupapa Māori as a theory, while also describing the selection of Kaupapa Māori theoretical tools that offer a setting for our research that is free from the pressures and limitations of the dominant culture (L. T. Smith, 2017).
- Ko ahau anō (*me, myself and I, autoethnography or self-reflection*) or Indigenous autoethnography underpins the notion of drawing on my personal experiences; my experiences as a whānau member, as a person with interest, knowledge and skill in the field of AI-related development, as the lead researcher and facilitator of our research, and as a sharer of knowledge through encounters with other significant Māori who have shared their thoughts and insights about their experiences with AI-related development. I acknowledge Professor Paul Whitinui for his work around Indigenous autoethnography.
- Wānanga is a traditional notion of sharing, co-creating and transmitting Māori knowledge. Wānanga provides a space where sophisticated and nuanced interpretive practices and pedagogies take place
- Finally, Ngā Poutama Whetū is a culturally progressive literacies evaluation procedure offering a counter to the dominant Western literacy tennets

Methodologies – Kaupapa Māori Transformative Praxis

- **Personal experiences**

I have experienced much of what this study discusses in various capacities and settings. As a child, I grew up as my dad was learning new technologies in the automotive trade, as a student experiencing the strong colonising and assimilating forces that most other Māori children did. As an internationally well-travelled adult observing the same colonial oppressive influences on the lands of other Indigenous relatives, and now as a Māori academic researcher, my experiences and reactions give me insight into what issues must focus upon for our research.

- **Focus groups**

- a. Whānau groups
- b. Expert interviews

To find out whether technologies that use AI techniques provide for cultural well-being for whānau and their futures, a cohort of whānau, hapū and iwi members, including Māori experts, thought leaders, and data scientists were invited to participate in our research.

Findings

The Nukutere Model begins by extending **Kaupapa Māori Key Principle** insights and utilising research praxis through online wānanga, hui, interviews, observations and literature.

These practical research-based activities generated **twenty-one Mātauranga and Tikanga Māori Elements** aggregated as the key ‘success’ elements, which the whānau themselves identified.

These twenty-one Mātauranga and Tikanga Māori Elements have been subsequently reorganised into **six Whakatōhea-a-Iwi Factors**.

The **Whakatōhea-a-Iwi Factors**, inform a culturally sensitive algorithm to respond positively to Māori cultural well-being.

Factor: Whakapono - Integrity

Continuous consideration of the group’s kaupapa, i.e., a collective vision and a set of goals and objectives, supports the ability of Māori to be in control.

Factor: Moemoeā - vision

Cultural and structural mechanisms must be put in place for Māori to realise their aspirations for the future.

Factor: Āhurutanga - Comfort

Affirmation of mātauranga, tikanga and te reo Māori is essential to ensure Māori cultural well-being.

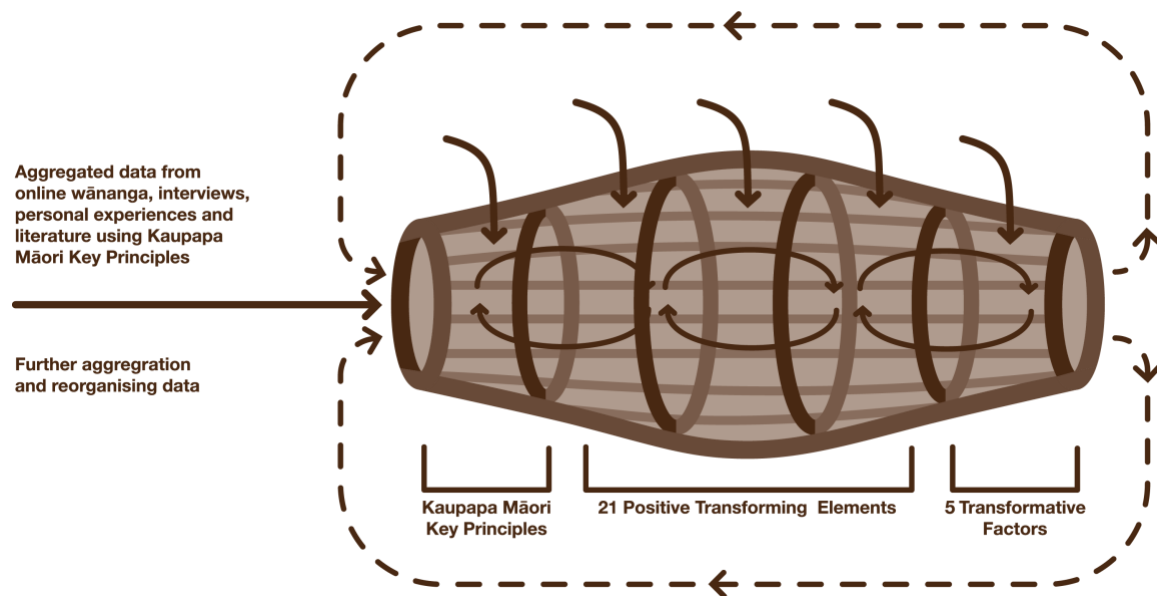
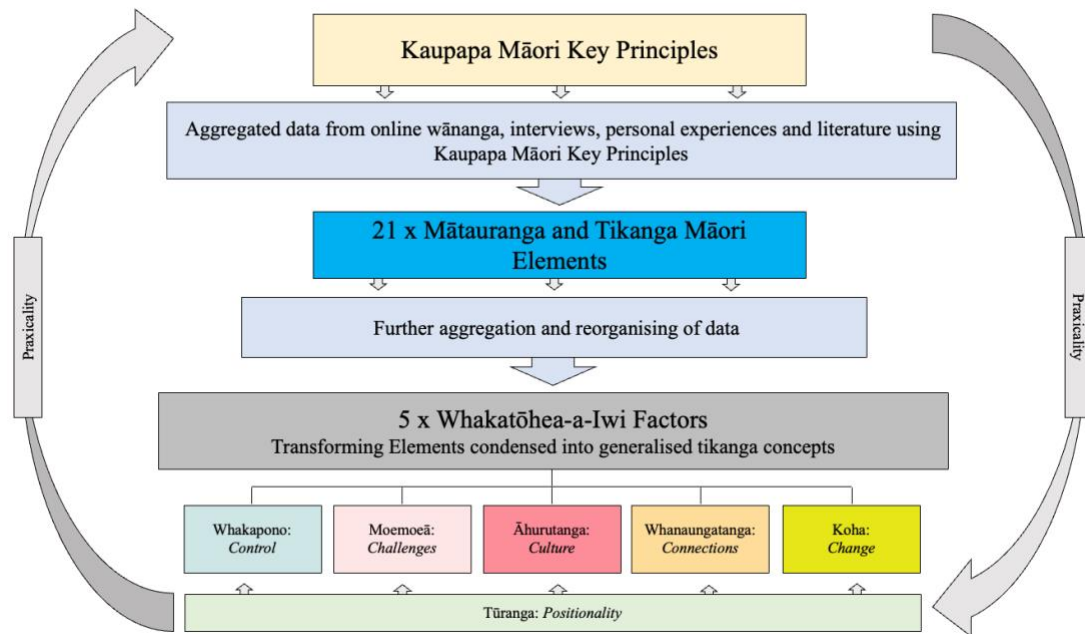
Factor: Whanaungatanga - connections

Māori connection to wairua, tūpuna, whanaunga, and whenua through whakapapa remains fundamental to Māori and must be acknowledged.

Factor: Koha - change

Vivacious and successful experiences for Māori need to be advanced to forward transformative change.

The Nukutere Models



Contributions

Contribution No. 1: Building an intervention model that can harness AI technologies to support whānau connectivity

The *Nukutere Model*, a framework enabling us to identify mātauranga and tikanga Māori, that when woven into algorithms, has the potential to inform next-generation AI systems which will promote cultural well-being for our whānau and their futures. The development of the *Nukutere Model* has enabled the keeping of our widely spread whānau in contact with each other and with our whenua. More importantly, it provides a means for the transmission of cultural knowledge to our mokopuna and each other.

Contribution No. 2: Enhancement of whakawhanaungatanga

Research Whānau Questions 1 and 2 aided in the facilitation for our research to enhance our whānau ability to ‘socialise’ beyond kanohi ki te kanohi because the *Nukutere Model* augments our whānau, hapū and iwi connectivity. The research wānanga also allowed for the critical conscientisation of the whānau as another important contributing element enabling transformation.

Whānau articulated, listen to, felt comfortable, where strengthened

Contribution No. 3: Expanding a Kaupapa Māori Methodological approach

The *Nukutere Model* draws and builds on the insights from Kaupapa Māori theorising (Cram, 2001; Pihama et al., 2004; Smith, 1997a; Smith, 2021).

Research Whānau Questions 1 and 3 highlighted that *Kaupapa Māori theoretical frameworks* offered our whānau the freedom to explore the development of a new intervention without the pressures and limitations of the dominant culture (L. T. Smith, 2017). *Ko ahau anō* allowed me to draw on my experiences (Whitinui, 2014). Wānanga provided a traditional platform for sharing, co-creating and transmitting Māori knowledge (Mahuika & Mahuika, 2020; Smith et al., 2019). *Ngā Poutama Whetū* permitted our whānau to explore literature around power relations and prioritises Māori viewpoints (Hapeta et al., 2019) as seen in Figure 3.1.

Contribution No. 4: Adds grounded research literature in a scarce pool of Māori AI R&D

Research Whānau Question 3 led our whānau to articulate that our research has added to existing literature contributing to the AI field where there is:

1. A lack of culturally informed literature

A shortage of written narratives that illustrate how culture and cultural elements affect actual circumstances and outcomes is referred to as a lack of culturally informed literature. This may be caused by a number of things, such as a lack of knowledge or interest in cultural diversity and how culture affects how people behave, as well as a lack of funding and resources to do research and compile case studies.

2. A dearth of Indigenous authors

A dearth of Indigenous authors refers to a situation where there is a shortage of writers who identify as Indigenous or who are members of Indigenous communities. This can be due to a number of factors, including historical trauma and discrimination that has made it more difficult for Indigenous people to access education and publishing opportunities, as well as a lack of investment in Indigenous literature and cultural expression.

3. A scarcity of culturally based case studies

A scarcity of culturally based case studies refers to a situation where there is a lack of written accounts that provide examples of how culture and cultural factors impact real-world situations and outcomes. This can be due to a variety of factors, including a lack of understanding or interest in cultural diversity and the ways in which culture shapes human behaviour, as well as a shortage of resources and funding to conduct research and document case studies.

Contribution No. 5: Highlights the need to decolonise western AI systems

Research Whānau Question 3 helped discover that ACC, Corrections, Healthcare, the Police and other public institutions and agencies use algorithms in Aotearoa to map behaviours. Emerging technologies that use AI techniques have also been the subject of much criticism. To put this point in perspective, AI may be a new form of colonisation, while simultaneously being a helpful tool for cultural revitalisation. Understandably, this is a complex issue, which highlights how the over-representation of Māori via adverse statistical outcomes suggest algorithms are potentially flawed and biased. In this respect, it would be beneficial for future research to also utilise culturally informed approach, alongside active engagement by Māori to help continue deconstructing some of these tensions.

Future Work

Dissemination of findings

The distribution of the research findings to our whānau is critical, however, the use of appropriate language and communication techniques is essential to ensure that our whānau and others can profit from our research efforts.

Collaborations with other whānau

As I stated, Te Uri o Patumoana and Raikete Amoamo viewpoints were the main focus of this study. Collaborations with other whānau may be a part of future projects in order to develop a deeper understanding of the goals and perspectives of more whānau and other hapū and iwi.

Replicating the Nukutere Model

A substantial contribution to the research is the Nukutere Model, which highlights Māori epistemologies and ontologies that may be recognised and incorporated into AI systems. The replication and adaptation of this concept for application in other hapū, iwi, indigenous communities, or cultural contexts has the potential to be the subject of future projects.

Research in other communities

The tribal homelands of Te Whakatōhea are the focus of the research, but comparable research issues and approaches may be investigated in other indigenous or cultural societies in future studies. Similar research would contribute to a greater comprehension of the various circumstances in which the potential of AI may assist cultural well-being.

Interdisciplinary collaborations

Future research might entail interdisciplinary cooperation with authorities in computer science, anthropology, cultural studies, social sciences, ethics, data sovereignty, and technologists due to the complexity of AI and its potential impact on cultural revitalisation. These partnerships might allow for more research into how technology and culture interact.