Adoption of Māori digitised resources by polytechnic Māori students and staff

by

Karn Heavey

Submitted to the School of Information Management,

Victoria University of Wellington

in partial fulfilment of the requirements for the degree of

Master of Information Studies

October 2014

Abstract

Research problem: Little is known about Māori digitised resources. The objective of this research was to explore the factors that influence Māori students' and staff decisions to use or not use Māori digitised resources within a polytechnic and to examine the ways in which they are used and identify the reasons for their use.

Methodology: An indigenous paradigm called Kaupapa Māori research and the Māori Tertiary Education Framework were used to investigate the viewpoints of the participants. Additionally, Rogers' diffusion of innovations theory was used to understand aspects about how and why participants adopt and use digitised resources. Semi-structured interviews were used to gather data from a purposive sample of five Māori students and four Māori staff.

Results: Several factors such as teaching Māori research, learning Te Reo Māori and personal reasons positively influenced the attitude of individuals to enjoy using Māori digitised resources. Most individuals felt comfortable using them and several suggestions were made around improving their use and these included training, technologies enhancements and further investigation.

Implications: The digital shift from using traditional methods to using the internet to find and use Māori digitised resources is having an effect on library users. It has changed the way Māori have access to Māori digitised resources and will continue to influence how Māori students and staff learn.

Further investigation should be undertaken to see how Māori students and staff at other New Zealand polytechnics and University use Māori digitised resources.

Keywords: Digital systems, communications technologies, Māori cultural studies, indigenous peoples, digitised resources

Acknowledgements

There are a few people that have supported me throughout this research project. I would like to thank my supervisor Dr Dan Dorner for his patience, helpful advice and support throughout this project.

I would like to thank my participants that were interviewed for their time and being a part of this research journey.

I would also like to thank Noreen Kelly for her advice and support, and Margaret Young for her assistance and patience with translating text into Te Reo Māori.

And lastly to my partner Brooke for her support, and my whānau for their support throughout my studies.

Table of Contents

Problem Statement

The protection, preservation and ownership of mātauranga Māori (Māori knowledge) are at risk because traditional methods are not being used by the Māori community for many reasons. Digitising this knowledge could save it and make it accessible for future iwi/hapū and whānau generations (Burtis, 2009; Parker, 2003; Riley, 2013). Disseminating this knowledge in a digital format is challenging, and little is known about how these resources are being used and accepted by the Māori community (Barlow, 2011; Burtis, 2009; Keenan, 2005; Reed, 2011; Riley, 2013).

Traditional indigenous knowledge (IK) such as storytelling, songs, written and oral texts is increasingly being lost. Digitised IK is traditional texts such as land maps, oral history and written texts that are transformed into digital form available on the internet for communities to access (Barlow, 2011; Burtis, 2009; Keenan, 2005). Riley (2013, p.829) suggests "tōku reo tōku ohooho; tōku reo tōku mōpihi mauria; tōku reo tōku whakai marihi" (my language is my awakening; my language is my object of affection; it is my precious adornments). Keeping te reo alive will make sure a strong Māori culture is retained and visible for future generations.

Māori use digitised objects in different ways. Studies have shown that these digitised objects have negatively influenced the attitudes of those Māori communities using IK online (Blaser, de Costa, McGregor & Coleman, 2010; Brown, 2007; Burtis, 2009; Magara, 2005; Taubman & Leistner, 2007; Tella, 2010). To ensure Māori culture and language are acceptable, visible and accessible by communities in the future, the materials to be digitised and protected must be carefully chosen (Brown & Nicholas, 2012; Brown, 2007; McCarthy, 2007; Netwell, 2012; Rewi, 2013).

Little is understood about how useful Māori digitised knowledge is for Māori. Traditional knowledge is worth preserving but there is a substantial gap in the literature that explains how useful these resources are and will help create further opportunities for other research within this discipline (Brown, 2007; Burtis, 2009; Kincheloe & Steinberg, 2008). The community will also benefit because factors identified will show how useful these digitised resources are and help explain the value they have for future generations.

Research Objectives

Some aspects of Rogers' (2003) "diffusion of innovations theory" formed the theoretical framework of my study. Rogers' theory seeks to understand why an individual knows about an innovation and explain their feelings and attitudes towards using it. Additionally, the Māori Tertiary Reference Group [MTRG] (2003) Māori Tertiary Education Framework was used to describe how Māori learners use wider communities to learn and the significance of mātauranga Māori towards their studies and/or teaching.

With these aspects in mind, the following are my research objectives:

1. To identify the factors that influence Māori students and staff decisions to use or not use Māori digitised resources.
2. To determine whether Māori students and staff make use of Māori digitised resources, and if so, which ones and why.
3. To examine the ways in which Māori digitised resources are used, and if so, how are they are used.

Research Questions

1. What factors influence the decisions of Māori students and staff using Māori digitised resources?
   a. How do these factors influence Māori students and staff using Māori digitised resources?

2. What suggestions, if any, do Māori students and staff have to improve the use of Māori digitised resources?

Literature Review

Digtising Māori resources, such as oral history and written texts are important for all Māori communities, and in particular Māori learners. This literature review will critically look at using scholarly texts written about how Māori learners use technologies and resources for their learning in educational institutions. From readings, it appears there is little known about Māori digitised resources and how

Māori use them for their learning. However, traditional IK is increasingly being digitised and made available for Māori learners (Brown & Nicholas, 2012; Hunter, 2005; Tau, 2012). Brown (2007) explains that the internet has allowed Māori learners to access knowledge of significant cultural and spiritual value.

This literature review will firstly explain how Māori learners are using digital technologies to assist in their learning. Also to be considered are the ways Māori learners use Māori digitised resources, how useful they are, and technological solutions being adopted by Māori.

Māori cultural heritage learning using digital technologies

Traditional IK is increasingly being digitised and used to assist Māori with their learning. Pere (1994) and Kincheloe and Steinberg (2008) believe Māori learners are successful when effective learning relationships are established, when there is learner enthusiasm and when being is Māori acknowledged while learning about their cultural heritage. Digital technologies should assist Māori learners through creating a virtual environment that encourages, assists collaborative learning and provides relevant online Māori digital resources. Māori learn when support and processes are in place to encourage them to be involved with te reo Māori and customs (Durie, 2004). Furthermore, Keegan, Keegan and Laws (2011) intimate learning management systems are one tool that can assist Māori learners with learning Māori IK. Magara (2005) and MTRG (2003) explain Māori learn differently and digital systems used to support their learning will need to suit their learning styles for them to succeed in their studies. Digital technologies used to support Māori learners have not been tested and little is known about how they are used effectively.

However, Corscadden (2003) and Hunter (2005) claim digital technologies have caused some obstacles for Māori and learning from digital systems can be challenging. Furthermore, according to Anandarajan, Igbaria and Anakwe (2002), indigenous people struggle to use these digital technologies owing to a lack of internet access and skills. This suggests Māori learners struggle and find using digital technologies challenging. Digital technologies are nevertheless proving to be

useful for Māori learners, but little is known about the way they use the technology for their learning.

Burtis (2009), and Tjitayi and Osborne (2014) suggest institutions are providing support for digital technologies and have shown Māori learners are using these systems but sparingly (Keegan et al., 2011). According to Brown (2007) Māori learners are beginning to find digital technologies useful to gain access to their digitised IK to learn about their cultural heritage. However, Hunter (2005) and Tella (2010) suggest digital technologies still have a long way to go to effectively disseminate traditional knowledge and create efficient digital systems for Māori learners to use. Furthermore, the way Māori learners engage with online materials is different (Burtis, 2009; MTRG, 2003; Parker, 2003) and little is known around how they use digitised IK effectively. Digital technologies play a major role in tertiary institutions and Māori learners are increasingly being expected to use this technology. Māori learners and their learning methods are changing and institutions will need to support the increasing use of using Māori digitised resources.

Māori digitised resources and their usefulness for the tertiary community
Digitised resources are useful in the Māori community to learn about their cultural heritage. Brown and Nicholas (2012) suggest Māori individuals use resources that relate to te reo Māori and Māori customs and culture. In the tertiary community, digitised resources are increasingly being used by indigenous peoples (Blaser et al., 2010; Burtis, 2009) because of the value they have in supporting Māori with their studies and learning (Brown, 2007). Tau (2012) believes it is important that traditional IK and Māori taonga (treasures) are carefully selected and digitised to suit the community who will be using them. In the available literature, it was found that Māori digitised resources that had significant spiritual and cultural value were more likely to be used than others.

Technologies used by Māori will need to be designed around their needs. However, the perceptions to help explain why these resources are being used, which are the focus of this research, have not been well addressed. Taubman and Leistner (2007) suggest restricting access to digitised Māori resources and only making them available to selected individuals is important for protecting their intellectual property

rights. Additionally, Greyling and Zulu (2010) and Tella (2010) imply there are some concerns around access and what contents should be made available via the internet, which can lead to materials not being digitised and left in the traditional format. However, according to Graham and McJohn (2005) and Parker (2003), Māori want traditional IK available to those who appreciate it and use it respectfully. At institutions, Māori students and staff use technologies for their studies and/or teaching and find them challenging to use (Keegan et al., 2011). Objects that are digitised should be easy to find and should showcase Māori cultural heritage appropriately (Burtis, 2009; San & Jeyaraj, 2013; Tau, 2012). For Māori in a tertiary environment, materials should be not only of value, but useful for their learning about Māori concepts and customs.

Kimery and Amirkhalkhali (2011) and Tella (2010) suggest digital systems designed to capture, disseminate and store IK are poorly designed and difficult to use. Furthermore, digital systems should be robust, efficient and user-friendly (Burtis, 2009; Tella, 2010). But, other studies suggest digitised Māori IK are effective using available digital technologies and are useful for the indigenous community they serve (Christie, 2004; Hunter, 2005; Keenan, 2005; McCallum & Papandrea, 2009). Although little is known about how useful digitised resources are, Māori learners are starting to use digital technologies for their learning but are finding them challenging.

According to Christie (2004) and McCallum and Papandrea (2009) an effective cultural identity is one that showcases indigenous cultural heritage and is created when objects are digitised to meet their needs. For Māori learners in tertiary institutions, a cultural identity is difficult to find because little is known about how useful digitised resources are.

Technology adoption and Māori learners

Brown (2007) believes indigenous people use technologies when these have significant value and usefulness for the community. Sahin (2006) and Klaebe and Burgess (2010) narrowed this down, claiming effective adoption of educational systems occurs when particular characteristics and attributes are present. However, how technology adoption occurs with indigenous learners has not been investigated. Results found by Tjitayi and Osborne (2014) confirm indigenous digital technologies

are continuously being improved and are being designed to capture IK knowledge effectively. Brown (2007) and Tella (2010) suggests through digital archiving, the dissemination of IK is effective and useful for indigenous people. Tjitayi and Osborne (2014) implemented and tested a digital system by asking Māori learners their perceptions and results were significant for those using the technology. In contrast, Brown (2007) and Tella (2010) proposed a method to investigate whether indigenous people understood educational technologies but did not explore the participants' perceptions of using these systems. Furthermore, little is known about Māori learners using these technologies and whether they fit the cultural learning style for the online presence of cultural heritage materials.

Corscadden (2003) and Durie (2004) explain online resources play a role in Māori learner success. Although this has not been tested, other studies suggest digital IK provides Māori learners the chance to engage with Māori IK such as customs and oral history (Keenan, 2005; Makoare, 1999; MTRG, 2003). These researchers show technologies need to be designed around Māori learner needs and to provide access to various mātauranga Māori. Furthermore, Sahin (2006) believes technology adoption happens when educational technologies are designed to increase knowledge and engage Māori learners. This has not been tested for accuracy but it does suggest digital systems will need to be designed effectively in order for learners to use them for their studies.

Overall, technologies play a major role for Māori learners in their studies. Technologies are used to engage Māori learners and present digitised materials for their learning needs (Brown & Nicholas, 2012; Tau, 2012). Researchers (for example, Burtis, 2009) agree digitised Māori IK needs to honour the significant spiritual and cultural value it has for the community it is aimed at. Also, Māori learners are successful when effective learning relationships and resources are available to them for their studies. However, according to Brown (2007) technologies are complicated to use and learning them can be difficult. Māori learners are increasingly using these technologies in tertiary environments as Māori IK is made available online (Keenan, 2005; San & Jeyaraj, 2013; Tella, 2010). However, little research has been conducted on tertiary communities and the perceptions Māori staff and students have with using digitised Māori IK. This research is aimed to close the gaps of knowing little about digitised Māori resources, investigate the use of

Māori digitised resources, and provide further understanding of the perceptions of polytechnic Māori students and staff. The study will focus on identifying factors that influence why Māori students and staff decide to use Māori digitised resources or not.

Theoretical Framework

For this research, specific characteristics from Rogers' (2003) diffusion of innovations theory were used. These characteristics showed whether learners in higher education environments adopt or reject innovations to suit their needs (Rogers, 2003; Sahin, 2006). Characteristics of personality variables, communication behaviour, relative advantage, compatibility and complexity were investigated within this study (*see Figure 1: Rogers' model of five stages in the innovation-decision process*). This research focused on using these knowledge and persuasion characteristics to explore whether Māori digitised resources are used or not. The other characteristics in this model help explain reasons behind adopting and using these innovations over time but are not useful for this research.
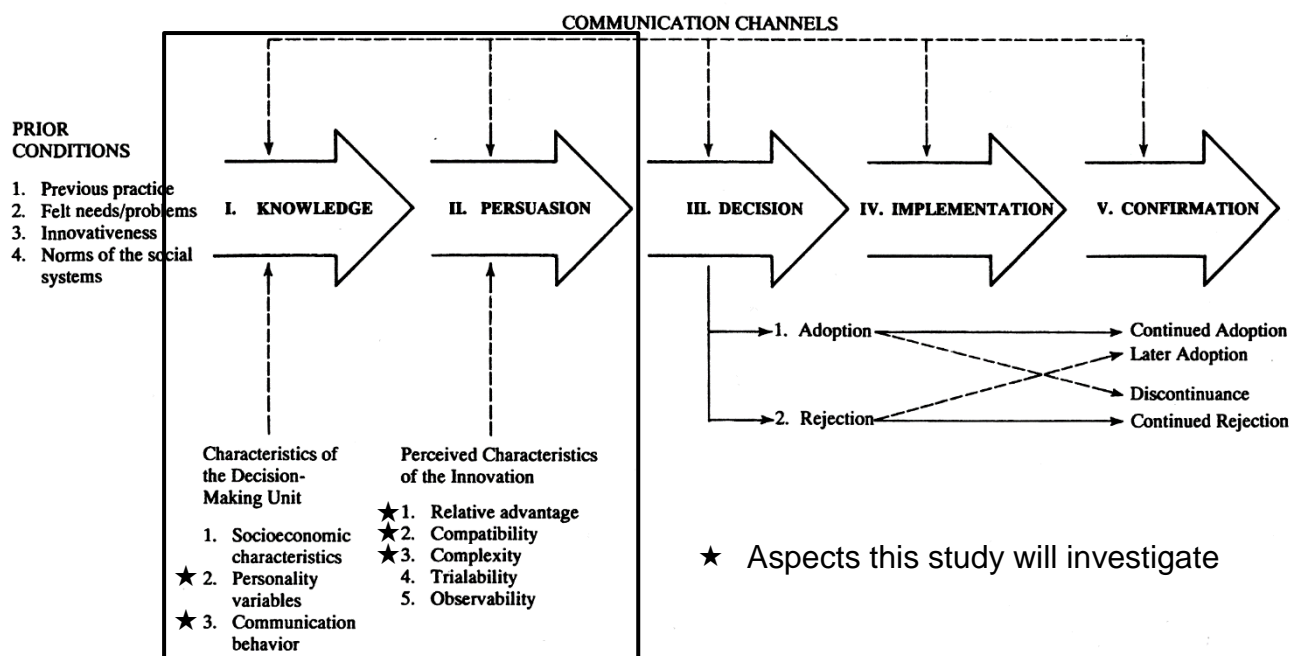

Figure 1: Rogers' model of five stages in the innovation-decision process (Rogers, 2003, p.170)

The characteristics investigated were selected to show why an individual learnt about an innovation, including how they share / communicate the innovation, and

their individual attitudes and feelings afterwards. Earlier studies found that individuals who had positive experiences and were early adopters understood the risks, and were confident to solve issues and share what they knew (Jackson, Chow & Letich, 1997; Rogers, 2003; Sahin, 2006). But individuals who did not use an innovation lacked understanding and felt innovations were too difficult to use (Rogers, 2003; Sahin, 2006; Sherry, 1997).

To assist in explaining how Māori learners use Māori digitised resources in a tertiary institution, the Māori Tertiary Education Framework was used. It identifies visions for Māori education and shows learning outcomes, such as building whānau and iwi relationships, providing inclusive and collaborative learning environments all of which are important to Māori learners (MTRG, 2003). It suggested individuals would need to have some existing knowledge and skills to engage with Māori digitised resources for their learning. For instance, communication behaviour from Rogers (2003) and the MTRG (2003) frameworks were considered: Whether the communication was for the dissemination of knowledge alone, or did communication reflect the Māori cultural standpoint of mutual support and the learning process. For this study, the following aspects of the MTRG (2003) Māori Tertiary Education Framework were significant:

- Inclusive learning environments and life-long learning for Māori learners and educators within the institution, and extended to whānau, hapū and iwi.
- Engage with Māori learners and support them throughout their learning journey.
- Access and contribution to mātauranga Māori resources within the institution.

For Māori learners, learning extends to the needs of the local Māori community (MTRG, 2003). Brown (2007) and MTRG (2003) explain inclusive learning environments will assist in explaining the sorts of cultural needs required to support and encourage Māori learners to use Māori digitised resources for their needs.

The characteristics of personality variables were considered important for my study because they would show if individuals felt Māori digitised resources are useful for themselves and their learning pathway (MTRG, 2003; Sahin, 2006). Also, communication behaviour was investigated in order to identify how Māori digitised resources are shared and how individuals find out about digitised resources that are

useful to them. Other aspects about the existence of Māori digitised resources were not investigated because there was little relevance to this research and its objectives.

The aspects of relative advantage, compatibility and complexity were explored to explain why the polytechnic Māori community use these resources and how valuable they are. Relative advantage suggests an individual perceives an innovation to be better than what the idea supersedes (Rogers, 2003). This helps explain why an individual uses Māori digitised resources and identifies the advantages for using them. The characteristic of compatibility shows why an innovation is perceived in relation to an individual's values, past experiences and early adoption needs (Rogers, 2003; Sahin, 2006). Generally, a lack of compatibility in IT will impact negatively on an individual's use and experience of using a new innovation (Sherry, 1997). Complexity explains why an innovation is perceived to be difficult to understand and use and why some innovations are easy to use and some are not (Rogers, 2003; Sahin, 2006).

Research Design

Indigenous worldviews focus strongly on people and entities coming together to help and support one another in ways that incorporate values of knowledge, truth, natural and physical phenomena, spirituality and respect (Hart, 2010; Smith, 2012; Wilson, 2008). An indigenous paradigm comes from the belief that knowledge is relational and it is created for communities to use forever (Hart, 2010). It also incorporates four entities: ontology (reality of relationships), epistemology (relationship process of mutual reality), axiology (relational accountability) and methodology (process to relational accountability) (Hart, 2010; Wilson, 2008). Each of these entities blends one into the next and uses the indigenous worldview to show how indigenous peoples view research and how knowledge is created for the community.

For this research, the kaupapa Māori research paradigm was followed. Kaupapa research is "the Māori way", is connected to Māori philosophy and principles, and is concerned with cultural well-being, and Māori language and culture (Cram, 2013; Cunningham, 2000; Smith, 2012). It is about power using mātauranga Māori and resources to include the Māori community in relevant research. For this study,

several Māori students and staff within the polytechnic community were used and significant for the findings. Additionally, kaupapa Māori research involves seven principles to critically think about the importance of Māori constructions around self-definitions and self-valuations (Katoa Limited, n.d.). These principles include tino rangatiratanga (self-determination), taonga tuku iho (cultural aspirations), ako (culturally preferred pedagogy), kia piki ake i nga raruraru o te kāinga (socio-economic mediation), whānau (extended family structure) and kaupapa (collective philosophy) (Katoa Limited, n.d.; Smith, 2012). For this research, aspects of taonga tuku iho and ako were used to explain the research process to participants and provide advice to the researcher about cultural aspects and values around Māori knowledge and resources. Throughout the data collection of the research process, participants were asked several culturally sensitive questions and this formulated findings for this research.

Methodology

For this research, a qualitative methodology was used to capture detailed information about Māori learners' lives (values, opinions, practices, beliefs) and experiences using digitised materials (Cram, 2013). Using this type of methodology established ties between people and aligned with the kaupapa Māori research paradigm (Cram, 2013; Cunningham, 2000; Smith, 2012). Quantitative methods were not effective because they are aimed at analysing statistics and produce numerical values in an attempt to explain phenomena about a community (Cram, 2013). This research used qualitative methods and techniques to explore how participants used Māori digitised resources and explained the reasons why Māori digitised resources are used and suggest ways to increase their use.

Population and Sample

This study was carried out using a small sample of nine Māori participants, either employed by or studying at a medium-sized polytechnic. A non-probability sampling technique called purposive sampling was used to select participants who were of Māori ethnicity and were involved in a Māori studies programme at the Māori studies department within a polytechnic. These participants were asked questions around

their use of digital resources and technologies. The Head of School of the Māori studies department gave permission for the study, and asked on behalf of the researcher, potential students and staff who were studying and/or teaching Māori studies if they were willing to participate in this research. The chosen sample had some understanding of te reo, Māori customs, and online learning. Of those chosen, five Māori students and four Māori staff were selected to be interviewed for this research. The criteria allowed data to be collected effectively within a short time frame and produce a mixture of perceptions but was not fully representative (Silverman, 2010; Zikmund, Babin, Carr & Griffin, 2008). Overall, this target provided the necessary rich data to solve the study's questions and objectives.

At the polytechnic, many Māori digital resources are online and participants are increasingly using them in their studies. The chosen sampling method resulted in participants being involved as they were interested in expressing their opinions, experiences and beliefs (Yin, 1994). Additionally, in this research, once sufficient data was collated and analysed, no new participants were interviewed as no new data was required.

Data Collection

Several authors have noted that collecting data through interviews for Māori participants is the best method because individual experiences and opinions can be captured easily in a natural setting (Cram, 2013; Smith, 2012); other collecting methods such as questionnaires were difficult to use and ascertain the same information. Cram (2013) explains when conducting kaupapa Māori interviews, cultural protocols such as mihimihi (greetings and introductions) and karakia (prayers) are important as these allow people to enter into and exit out of the research space. For this research, an interview guide was designed and incorporated a mihimihi and karakia, and carefully planned questions (*see appendix A: Participant interview guide*).

Data was collected through one-on-one interviews as these were more appropriate than group interviews for this research (Brinkmann & Kvale, 2014; Cram, 2013; Kumar, 2014). Focus groups allow several participants to answer questions collaboratively (Scott & Garner, 2013), but this study needed to capture individual

experiences and beliefs to identify how Māori students and staff use Māori digitised resources. The interviews were semi-structured and used an interview guide that gave questions related to the area of Māori digitised resources. The questions were asked slightly differently, depending upon the participant (Brinkmann, 2014; Dawson, 2013; Yin, 2014). This was effective for this research as it ensured all participants answered a similar set of questions, and it acted as a guide for the researcher (Brinkmann & Kvale, 2014; Scott & Garner, 2013) (*see appendix A: Participant interview guide*).

Additionally, an interview protocol was followed to aid with data collection and designing suitable interview questions (Dawson, 2013; Flick, 2014; Ruane, 2005; Trainor, 2013; Yin, 2014). Both the Rogers (2003) diffusion theory framework and the MTRG (2003) Māori Tertiary Education Framework were used to identify aspects to be answered, such as the type of Māori digitised resources used and the technology experiences for an individual's needs. They provided aspects that needed answering and were appropriate for establishing whether participants use Māori digitised resources or not.

Each interview was audio-recorded in a meeting room situated at the Māori studies department within the polytechnic. This method allowed participants to express opinions about their events and experiences in a familiar environment, which in the case of this study relates to Māori digitised resources (Yin, 1994). The data collected was "information rich" and captured unique and valuable perceptions (Cram, 2013; Tella, 2010; Trainor, 2013). Cram (2013) also explains by organising interviews in this way, participants are able to express their ideas in a natural setting and respect their cultural values.

Pilot Study

A pilot interview was conducted with one Māori staff member employed at the polytechnic to indicate the appropriateness of the study's interview guide. Results from this pilot identified some problems and the interview guide was amended accordingly.

Ethics

Before this research could be conducted, approval was given by the Victoria University of Wellington Human Ethics Committee (VUW HEC). The application outlined how participants would be informed and how their information collected and safely stored. A consent form was filled out by each participant that outlined the research purpose, benefits, boundaries, and responsibilities of the researcher throughout the research. Participants were able to withdraw before data analysis began and the interview audio-recordings and participants were informed that the recordings would be destroyed after two years. The data collected was sensitive and the researcher needed to prevent this information from being disseminated inappropriately (Battiste, 2008; Cram, 2013; Hart, 2010). Additionally, approval was required by the polytechnic and was given to collect data.

To conform to the ethical requirements of this research, pseudonyms are used to identify the name of the polytechnic and the name of the Māori studies department. Also, as this research involved Māori participants, te ara tika Māori ethics framework was used. Four tikanga (ethics and practices) based principles of whakapapa (relationships), tika (research design), manaakitanga (cultural and social responsibility) and mana (justice and equity) were followed to ensure good practices and the Treaty of Waitangi principles of partnership, participation and protection (Hudson, Milne, Reynolds, Russell & Smith, 2010). Each interview incorporated these aspects to ensure participants felt comfortable and culturally respected. Also, through using this Māori ethics framework, it showed the VUW HEC and the polytechnic research committee that Māori participant's values are considered and ethics are applied within this study. The research involved a kuapapa Māori research design to engage Māori participants and ensure they understood the scope, risks and relationships that were involved in this study (Cram, 2013; Flick, 2014; Hudson et al., 2010; Smith, 2012; Wilson, 2008).

Data Analysis

To analyse the rich data effectively, a content analysis technique called conventional content analysis was used. Once data was collected, each interview was transcribed. Perakyla and Ruusuvuori (2011) claim that analysing and transcribing

each interview allows the researcher to understand the social structures, such as the individual's body language as well as the individual's answers to the interview guide. This method was effective as questions were re-worked to capture more useful data. Additionally, it provided the opportunity for an individual to express their opinions and explain them in-depth rather than capturing a numerical value (Cohen, Manion & Morrison, 2007; Cram, 2013). For indigenous research, capturing participants' cultural well-being, experiences and values are important (Cunningham, 2000; Wilson, 2008) which will be valuable and significant when reporting data to the polytechnic community.

Once transcribing was completed and checked by individuals for validity and reliability (Lincoln & Guba, 1985; Trent & Cho, 2014), data was read repeatedly to obtain an understanding of the repetitive words, phrases and ideas that emerged (Cohen et al., 2007; Flick, 2014; Hsieh & Shannon, 2005; Liamputtong, 2009). Data was then read again to identify derived codes such as learning purposes and poor loading times that captured key thoughts or concepts. Hsieh and Shannon (2005) and Zhang and Wildemuth (n.d.) explain initial codes are established and these are sorted into categories based on how they related and linked to each other. Once categories and codes were finalised, codes were grouped into meaningful clusters (Grbich, 2007; Hsieh & Shannon, 2005; Miles, Humberman & Saldana, 2014). To analyse the emergent data, definitions and examples were developed for each category such as whakaumu Māori (Māori digitised resource experiences). If appropriate, sub-categories were created, such as Ngā wheako ki ngā rauemi (Positive experiences). Codes developed were grouped and clustered into the appropriate category and sub-category (Grbich, 2007; Miles et al., 2014). This data explained what individuals thought about Māori digitised resources and why individuals chose to use them or not.

Results

After the interviews were transcribed and analysed, the relationship between the categories of whether individuals used Māori digitised resources or not, their experiences, and improvements, became clear. A common theme running through all the interviews was a positive attitude to and use of Māori digitised resources within the polytechnic community.

Participants interviewed identified themselves from iwi dispersed around the North Island in Aotearoa, New Zealand, including Ngāti Porou, Ngāti Kahungunu, Ngāti Tūwharetoa, Ngāti Rangitihi, Ngāi Tūhoe, Ngāti Hikairo, Ngāti Maniapoto and Ngāti Awa. Those interviewed had either been studying at the polytechnic Māori studies department for two to four years or teaching from five to twenty years. Additionally, participants were involved in many cultural activities within the Māori studies department and in the wider community. These included kapa haka, wānanga (educational seminar), Māori performing arts, Te Reo Māori translation, Te Reo Māori events, community projects, and involvement at their marae. Their understanding of how Māori culture fitted into their studies and teaching was evident in their explanations of what they used digitised resources for, accounts of their experiences, and opinions on the benefits of these resources. The rich data collected fitted well with the research objectives and identified many factors that influenced polytechnic Māori students and staff to use Māori digitised resources. Additionally, suggestions around how these could be improved were also made.

Factors influencing the decisions of Māori students and staff

The following section provides the data analysis relevant to answering the first research question:

1. What factors influence the decisions of Māori students and staff using Māori digitised resources?

There were many factors that motivated both polytechnic Māori students and staff to use Māori digitised resources for their studies and/or teaching. Figure 2 shows the number of reasons identified by individuals.
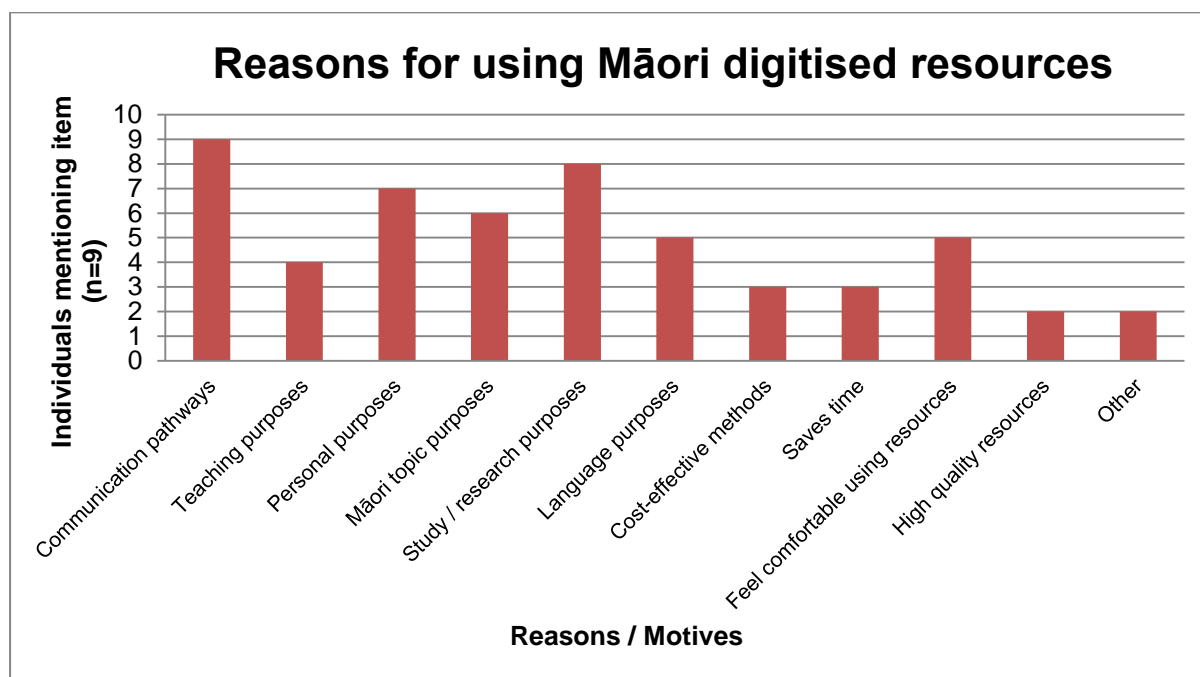
Figure 2: Individual reasons for using Māori digitised resources

All participants mentioned communication pathways as a reason why they used Māori digitised resources. This finding confirms Māori digitised resources were found to be useful for sharing and communicating, with eight individuals identifying Māori digitised resources were useful for their study and research needs. Other reasons include: Six individuals mentioned searching for Māori topics; seven individuals thought Māori digitised resources were useful for personal reasons; three individuals mentioned cost-effective methods and time saving; finally, two individuals used Māori digitised resources for high quality reasons.

Additionally, participants mentioned reasons that describe why some Māori digitised resources are not used within the polytechnic. Figure 3 identifies the number of individuals who mentioned reasons why some Māori digitised resources are not used.
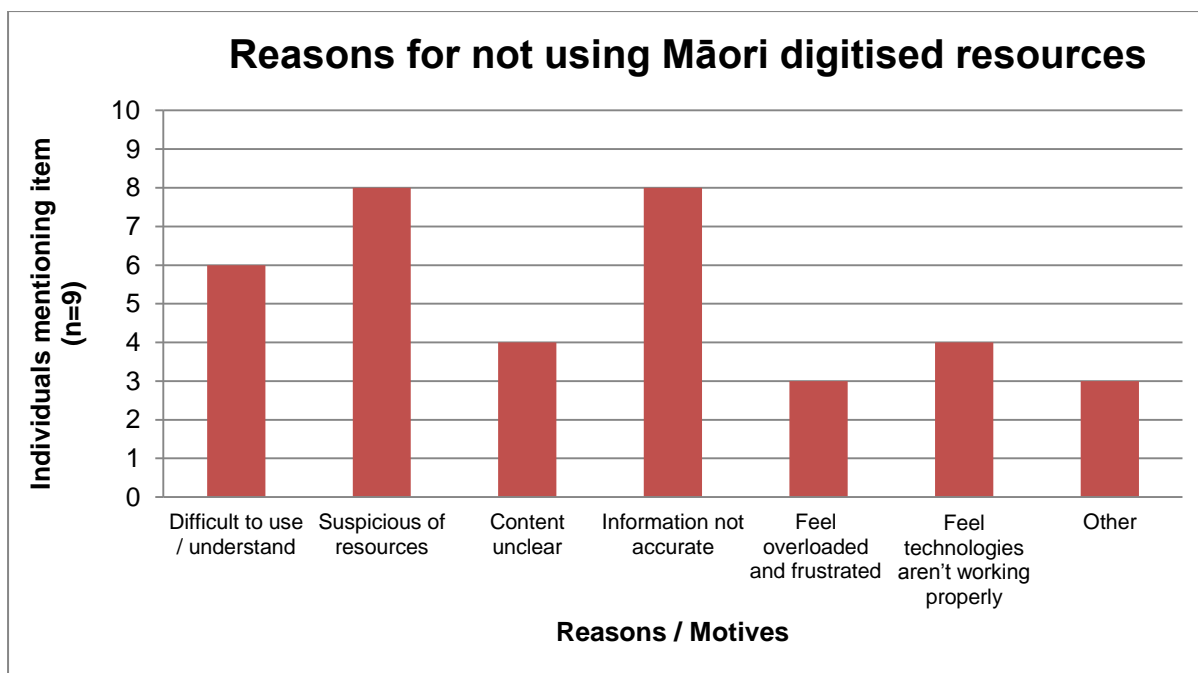
Figure 3: Individual reasons for not using Māori digitised resources

Eight individuals thought Māori digitised resources were suspicious and are not accurate. This signifies how carefully digitised information should be selected for an individual's purpose. Also, six individuals thought Māori digitised resources are difficult to use and understand. Three participants felt overloaded with information and four individuals were annoyed with content being unclear once the resource had loaded. Overall, polytechnic Māori students and staff viewed Māori digitised resources useful when there is a purpose and when the technology works properly. Evaluating Māori digitised resources are important to ensure the right fit for an individual's needs.

From the qualitative content analysis of participants' interview transcripts, three categories of factors emerged, as shown in table 1.

Table 1: Categories identifying factors that influence decisions[1]

Categories
Category one: Te Whakamahi o te Mātauranga Māori (Individual use of Māori knowledge)
Category two: Te arotakengā o ngā rauemi whakaumu Mātauranga Māori (Evaluation of digitised Māori knowledge)
Category three: Te whakaritenga hangarau (Technology adoption process)

[1] Te Reo Māori translations courtesy of M. Young, Napier

Category one: Te Whakamahi o te Mātauranga Māori (Individual use of Māori knowledge)

The majority of individuals used Māori digitised resources for study and teaching purposes. Four individuals thought it was important to consider other ideas and use the internet to find digitised resources for their needs. These individuals thought they were able to understand the contents of Māori digitised resources and found these useful for themselves. Table 2 shows the codes used and the resulting definitions that identify what individuals use these resources for.

Table 2: Individual use of Māori knowledge category

Category / Code	Definition
Category one: Te Whakamahi o te Mātauranga Māori (Individual use of Māori knowledge)	**The way Māori individuals use knowledge and why.**
Personal purposes	Use Māori digitised resources for personal research reasons.
Teaching purposes	Use Māori digitised resources for teaching reasons.
Language purposes	Use Māori digitised resources for Te Reo Māori language reasons.
New Information	Find new phenomena or new information from Māori digitised resources about a specific topic.
Improve knowledge	Māori digitised resources assist in improving an individual's knowledge.
Tailor digitised resources to needs	Māori digitised resources suit Māori individuals looking for a specific topic.
Communication benefits	Māori digitised resources allow individuals to connect and give communication benefits to each.
Māori research purposes	Use Māori digitised resources to look up specific Māori research topics.
Learning purposes	Use Māori digitised resources to learn and create new learning journeys.
Convenient uses	Māori digitised resources are convenient for an individual's use.

Each individual used Māori digitised resources for one or more of the following purposes: teaching, learning, personal, research or Te Reo Māori. Four individuals said they used the Māori land court for their own personal research and used the New Zealand Digital Library (NZDL) to look up topics in Te Reo Māori newspapers. Māori digitised resources are useful for researching Māori topics and for personal uses. This showed individuals had a positive attitude using Māori digitised resources for many reasons. Five individuals said they used the internet to discover Māori information. Furthermore, they said the internet was very convenient to access the library website and other digitised resources in order to build bibliographies for their study and/or teaching purposes.

Information is continuously being digitised and individuals are using the internet to improve their knowledge and for their needs. Individuals view the internet as a useful tool to find Māori digitised resources for their needs and is an advantage to them. Three individuals said the internet has a lot of research about Māori sites and can be useful to access online prints if you cannot have access to the physical book. Also, a participant said:

> "I'm always on there, always looking. You know, just trying to keep ahead and current."
> (Staff member D)

Improving an individual's knowledge about Māori topics is important and Māori digitised resources are useful for this purpose. One individual described the internet as a journey to find Māori information and said:

> "I'll continue to do it because it's ongoing as you know. You touch one link and you're off to another journey."
> (Student A)

One individual also said they were a big believer in using different teaching methods. They believed that the internet is a beneficial resource and that both Māori students and staff could benefit from it. Additionally, sharing and communicating Māori digitised resources were beneficial for individuals. They used the internet because they found out thinks and knew what was going on. The internet helped individuals to

find out about the existence of Māori digitised resources. For most, sharing these online resources benefited each for their study, research and teaching needs.

Category Two: Te arotakenga o ngā rauemi whakaumu Mātauranga Māori (Evaluation of digitised Māori knowledge)

The data showed that Māori digitised information needs to be put online for specific and meaningful purposes. Three individuals said putting resources online that have no author is not much use and they saw no purpose for putting these resources online. These individuals felt the digitised information was difficult to use and were unlikely to use it. Table 3 shows the codes and definitions that describe factors that individuals used to decide whether a resource is valuable or not.

Table 3: Individual motives for evaluating Māori digitised knowledge

Category / Code	Definition
Category two: Te arotakenga o ngā rauemi whakaumu Mātauranga Māori (Evaluation of digitised Māori knowledge)	**Views that Māori individuals have to evaluate digitised information and technologies.**
Information integrity	Māori digitised resources are accurate, current and meaningful to individuals.
Evaluating information	Māori digitised resources are evaluated for their research purpose and use.
Compare information	Māori digitised resources are compared with other sources for its use and value.
Careful selection	Māori digitised resources are carefully selected for its use.
Useful / factual information	Māori digitised resources provide the right and factual information.
Respect information	Information that is put online is treated with respect and used for specific purposes.
Critical analysis of author and content	Author and digitised resource content is checked for its valuable use.
Trusted sources	Sources are acknowledged throughout the digitised resource and are useful.
Good reputation	A Māori digitised resource is of value and has been developed morally, ethically and with cultural respect.
Cross-reference checking	Māori digitised resources are checked by iwi and whānau for accuracy.

Most importantly, it became apparent from the data that Māori digitised resources must be accurate and evaluated for an individuals' purpose. Six Individuals said they

are careful about what they pull out and use. For example, a participant found a website about a topic they were researching and checked it with a different text and then knew how good the information was. Also, information found should be factual and should tell someone where it has come from. An individual said:

> "It's just looking back and seeing where it actually came from."
> (Student E)

It is important for individuals to recognise the validity of a Māori digitised resource and whether it was useful for their assignment or teaching need. Five individuals said they were only looking for specific things on the internet. Once information was found, these individuals felt that it was always important to compare with other factual resources. They said it was always good to use trusted sources that provide accurate information. This showed information was evaluated by individuals and that Māori digitised resources could be difficult to use. Four individuals suggested that digitised resources should be checked by whānau and iwi and ensure facts are accurate. One individual said:

> "It pays to cross-reference from the computer with a few books, and then go back to the iwi and make sure everything matches."
> (Student B)

From the data analysed, it could be seen that online resources were critically analysed by individuals to ensure the author and content are useful. Four individuals said it was useful to see the names of the authors and where it came from. This meant Māori digitised resources should have trusted sources throughout them. Two individuals felt it is important to see the sources of the digital text to know it is factual and useful. It would benefit individuals and further influence others to use Māori digitised resources.

Three individuals suggested Māori digitised information should be evaluated for its factual value and cultural significance. They felt that digitised texts should be carefully studied to ensure the information is accurate and trustworthy. This meant individuals felt more comfortable using them as these resources would meet their values, expectations and beliefs. However, two individuals treat information with respect and only use parts that are useful for them. An individual said where

information is not valid for them, they may make a mental note of it and respect it and leave it how it is. It showed information should be treated with respect and critically evaluated where possible to ensure good integrity and tikanga (principles). Overall, five individuals felt Māori digitised information is only useful if they think they are accurate, current, cross-referenced and trustworthy.

Category Three: Te whakaritenga hangarau (Technology adoption process)

The data showed many reasons why Māori students and staff adopt Māori digitised resources. In order for individuals to complete their studies and teaching, they had to rise to the challenge and force themselves to learn how to use digital technologies and resources; those that did, confirmed the benefits. Four individuals said they were competent and felt comfortable using technologies such as NZDL, NZTEC and other digitised books and written texts. Individuals benefited from these resources as the information was easy to follow. Table 4 describes the characteristics required by individuals in order to use technologies effectively.

Table 4: Individuals' use of technologies and how they feel about using them

Category / Code	Definition
Category three: Te whakaritenga hangarau (Technology adoption process)	**How Māori digitised resources are adopted and the reasons behind that.**
Invaluable technologies and benefits	Technologies hold sacred and valuable Māori digitised resources that are of great benefit.
Invaluable digitised resources	Māori digitised resources are valuable for many purposes.
Cultural needs	Māori digitised resources meets individual cultural needs.
Computer literacy	Level of computer skills to use technologies and Māori digitised resources.
Specific use of internet	Only selected online technologies are used to find Māori digitised or digital information.
Repetition of use	Technologies use the same functionality, start-up process andfeatures that are familiar to individuals.
Access to online information	Individuals have unlimited access to find and use technologies Māori digitised information.
Comfortable using technologies	Individuals are comfortable with using technologies that hold Māori digitised information.
New technology characteristics	Individuals easily use new technologies and features to find Māori information.

Five individuals said technologies that hold digitised texts provided many benefits for them, giving access to someone's thoughts and ideas. These individuals acknowledged the value of digitised information to themselves, their whānau, iwi and other connections. One individual said:

> "I think digitised resources are beneficial to the students but aid the tutors really well, once they know how to use it."
> (Staff member B)

Māori digitised resources are helpful and are of significant advantage for an individual's learning. Five individuals felt comfortable using technologies and could easily find what they needed. Also, materials that have a cultural identity met individual cultural needs. Seven individuals felt for what they are required to do, the resources were adequate, and they could successfully use a variety of technological systems. This showed individuals could connect to Māori digitised resources and had a positive attitude to using them.

Three individuals said they had poor computer literacy and felt uncomfortable using digital technologies and digitised resources. One individual said when they came to the Māori studies department they were not computer literate. At first it was difficult to use the computer, but over time they felt more comfortable and understood computing basics. It showed individuals are unlikely to use Māori digitised resources if they felt uncomfortable using them, but if the resources met their needs, they would adopt and use these technologies. From the data analysed, individuals felt technologies that used the same features and were familiar were more helpful and would improve their confidence. One individual said the repetition of using the computer to do the same activities helped them understand how to use it. For example, the journey from turning on the computer to turning it off and going to the same place on the internet to read a digitised resource helped to build their confidence.

Also, five individuals felt privileged to have access to the internet and online resources. These individuals picked and chose what they wanted to share with others. For example, an individual mentioned when they typed in a word, lots of online resources appeared. However, individuals felt it was important to ensure the accuracy of a digitised text and that it applied effective tikanga. This showed that

individuals would need to ensure digitised texts in Te Reo Māori are correct and trustworthy.

How the factors influence Māori students and staff

From the data analysis, the following section relates to answering a sub-question of the first research question:

Sub-Question:

> a. How do these factors influence Māori students and staff using Māori digitised resources?

The data showed Māori students and staff will need to participate and communicate with each other to use Māori digitised resources. For example, to start a new journey, individuals would click on a link and then experience something new. These experiences would influence whether Māori students and staff would go back on the internet and look for other Māori digitised information. From the data collected, two categories emerged as shown in table 5.

Table 5: Categories identifying how the factors influence decisions

Categories
Category four: Ngā huarahi whakawhitiwhiti kōrero (Communication paths)
Category five: whakaumu Māori (Māori digitised resource experiences)

Category four: Ngā huarahi whakawhitiwhiti kōrero (Communication paths)

Seven individuals enjoyed sharing Māori digitised resources with others in many communication forms. For example, once a digitised text was found and the individual felt comfortable and was confident about the texts accuracy, content, meaningfulness and suitability it was shared amongst the polytechnic community. It showed these individuals have interconnected networks and are early adopters using Māori digitised resources. Table 6 shows the methods with which these resources are shared and used by polytechnic Māori students and staff.

Table 6: Individual communication methods to share Māori digitised resources to others

Category / Code	Definition
Category four: Ngā huarahi whakawhitiwhiti kōrero (Communication paths)	**The way Māori resources are shared amongst individuals.**
Face-to-face communication	Various technologies and online resources are found out through word-of-mouth amongst individuals.
Facebook communication	Technologies, digitised and online resources are shared using Facebook and is beneficial for many individuals and communities.
Email communication	Various technologies and online resources are shared via email alerts from individuals or virtual groups.
Individual searching	Individuals find out about technologies and online resources through search engines and following links from various systems.
Educational groups	Various education groups share technologies and online resources using different technologies and methods.
No promotion	Some individuals chose not to follow any communication tools and not share technologies or online resources.
whānau and iwi connections	Various whānau and iwi members share technologies and online resources using different technologies and methods.

Five individuals said it was beneficial to use technologies and see them as a way of communication and to share what they have found. Also, seven individuals found out about different technologies and Māori digitised resources through word-of-mouth. One individual mentioned they found out about NZDL through one of their colleagues and found this technology useful for Te Reo Māori language and teaching purposes. All individuals used Facebook as a way to view, share and communicate their ideas and digitised resources. There are many Facebook pages within the Māori studies department and individuals found this communication tool very useful for gathering new information and communicating freely with others. One individual said there are always things happening on Facebook, where students and staff could keep up with their work, friends and make connections. It meant each individual communicates effectively and actively engages with Māori digitised resources. They have greater knowledge about the innovation and are likely to use it because they know the innovation exists for their needs (Rogers, 2003).

Additionally, seven individuals said Facebook was used in the wider community to connect their educational work with their whānau and iwi. It means if a digitised resource is found, it is shared amongst many virtual connections for everyone to view. One individual said it was helpful to use Facebook to connect with their iwi or family for information. Three individuals have joined Facebook educational groups that share digitised resources and other information. Additionally, one individual mentioned they have joined educational Māori groups in Facebook as it helps with their work and staying connected to other virtual communities.

From the data analysed, four individuals found emails useful to find out new information and share digitised information with others. An individual said sometimes they receive emails about information containing updates and whānau meetings. These emails can be passed on to others to benefit from and show the existence of Māori digitised resources. However, two individuals chose not to follow any communication tools as it is not beneficial to them. One individual mentioned they do not promote online resources unless they find them specific to what the class is discussing. Also, three individuals found out about Māori digitised resources and technologies through other channels. These include typing keywords into Google and scanning through to find digitised resources that are useful for them. The data shows there are many useful Māori digitised resources and by sharing them as this has benefited others and allows individuals to easily find and use.

Category five: whakaumu Māori (Māori digitised resource experiences)
The data that was collected and analysed showed seven individuals have had many different experiences using Māori digitised resources. Seven individuals said they enjoyed using technologies to learn, share and teach various Māori subjects. Table 7 shows two sub categories that identify positive and negative experiences that individuals have had while using Māori digitised resources.

Table 7: Individual experiences using Māori digitised resources

Category / Code	Definition
Category five: whakaumu Māori (Māori digitised resource experiences)	**Māori individual experiences using Māori digitised resources.**
Sub category one: Ngā wheako ki ngā rauemi (Positive experiences)	**Positive individual experiences using Māori digitised resources.**
Digital shift	Information is moved to a Learning Management System and teaching resources are retrieved using the internet.
Sharing resources online	Technology platforms are used to share Māori digitised resources to other individuals.
Virtual connections	Whānau, iwi and Māori studies department connect together in avirtual environment to use Māori digitised resources.
Cost-effective methods	The internet and technologies are cost-effective and save money.
Technology response times	Software and hardware perform at an acceptable level to load technologies and Māori digitised resources.
Competent computer user	Individuals have acceptable computer skills to use technologies, Māori digitised resources and devices.
Quick to find Māori information	Technologies are used by individuals to find Māori information quickly.
High quality Māori online resources	Digitised information, video and audio resources found online are of high quality and very useful for teaching and learning.
Simple to use and follow	Technology interfaces are simple, easy to use and individuals feel comfortable using them.
Sub category two: Ngā wheako kāore i te pai (Negative experiences)	**Negative individual experiences using Māori digitised resources.**
Limited access	Individuals have limited access to devices and online materials off-campus.
Incorrect information	Some Māori digitised resources have information that is not correct and no references or author to verify it is a credible source.
Poor loading times	Technologies fail to load content and this caused frustration amongst individuals.
Difficult technologies	Some technologies are complex and difficult to understand and use by individuals. Often useful Māori digitised information cannot be found.
Time waster	Some technologies involve too much work and can be distracting for individuals.
Content unclear	Sometimes content within Māori digitised resources do not load properly and causes frustration for individuals.
Advertising pop-ups	Advertising ads within digital systems can disrupt individuals interpreting digitised Māori information.

Sub category one: Ngā wheako ki ngā rauemi (Positive experiences)

From the data shown, there were many reasons why Māori students and staff used Māori digitised resources to support their studies, teaching and other purposes. An individual said one of the positive reasons was there's always another path besides standing up and delivering your subject. It was important for individuals to make sure their positive experiences were a learning pathway for their own learning.

Four individuals felt by sharing online resources and making virtual connections they were able to enlighten someone else and find Māori digitised resources more easily. These individuals thought technologies are useful as Māori information could be found quickly. One individual said it was quick to find what they wanted in Te Reo Māori. For example, an individual explained they did have to ring somebody and ask they needed to know that ensured the information was correct. Individuals also commented that it is useful if technology loads acceptably and that everything is instant. This influenced individuals to adopt Māori digitised resources as they found the resources quickly, and they were easy to use.

Three individuals said the online environment has influenced teaching resources to shift from traditional methods to accessing content, using a computer with an internet connection. One individual said moving to a learning management system was a big shift, and they enjoyed being able to communicate with students from other locations. This interchange has benefited others and provided individuals with another pathway to learn and share their knowledge, experiences and beliefs. Another individual remarked on how it is important it was to encourage students to use any kind of resource as this also enhances their learning. Sharing and promoting Māori digitised resources allows individuals to greater access to these resources.

The data showed that three individuals felt online technologies were cost-effective and saved money. These individuals utilised Facebook because it was instant and did not cost 17 cents to reply. Also, six individuals felt competent with using the computer to find, access, and evaluate Māori digitised resources. Three individuals mentioned they were unfamiliar with computers when they started their studies, but needed to learn how to use them and are now competent users. One individual also mentioned there are high quality audio and digitised learning resources available on the internet for a variety of languages and texts, including te Reo Māori. It means

Māori digitised resources are being adopted by individuals as they are of use for their learning.

Six individuals felt technologies that hold Māori digitised information had simple user interfaces and were easy to use. One individual said Māori land maps were easy to use and sharply focused. This participant particularly enjoyed the zoom feature, from the satellite and global positioning system to view particular land details. Another individual said technologies were useful and caused little frustration. They used NZTEC because it is written in simple English and is easy to understand. Also, individuals found technology features clear and useful to find content easily. Another individual said:

> "You can find what you are looking for straight away within a digitised book." (Student E)

Individuals saved time finding what they needed compared to finding content in a physical book. It showed Māori digitised resources are easy to understand and are being positively adopted by individuals.

Sub category two: Ngā wheako kāore i te pai (Negative experiences)
The data showed that there are some reasons why individuals do not use Māori digitised resources. An individual said it could be frustrating when content did not load properly. These experiences have created annoyance for some and discouraged the use of technology or Māori digitised resource.

Two individuals mentioned they had limited access to devices and Māori digitised resources off-campus. They said sometimes there was information they could or would not want to access and it meant there was a need to go directly to the person for the answer. Additionally, technologies could be difficult to use and understand. An individual explained it took them a long time to understand tabs as they did not know and could not figure it out. Also, two individuals said they found it difficult to choose what information they required. One individual said:

"Sometimes you get too much information so you don't know what's true or what's not, or what you should be looking at."

(Student D)

Some Māori digitised resources were perceived as complicated and individuals do not use these. However, individuals said they have confidence in using Māori digitised resources and positively supported using them. Also, two individuals felt some Māori digitised resources contained incorrect information and were frustrating. An individual said there is a folk song website and translations to the words were wrong. The meanings were romanticised and this has been a frustration to polytechnic students and staff. Another individual said some technologies, such as Facebook, could be distracting and frustrated them while they were on the internet. One individual mentioned advertising pop-ups could be distracting for them while trying to read Māori information online. These factors frustrated individuals and negatively impacted on the use of Māori digitised resources.

Suggestions for improving the use of Māori digitised resources

The following section provides the data analysis relevant to answering the second research question:

2. What suggestions, if any, do Māori students and staff have to improve the use of Māori digitised resources?

The data showed there were many factors that influenced individuals to use or not use Māori digitised resources. Many suggestions were made by individuals to in facilitating access to these resources. From the data collected, one category emerged as shown in table 8.

Table 8: Category identifying improvements for using Māori digitised resources

Category
Category six: Ngā whanaketanga o ngā rauemi whakaumu Māori (Digitised Māori resource improvements)

Category six: Ngā whanaketanga o ngā rauemi whakaumu Māori (Digitised Māori resource improvements)

The majority of improvements identified by six individuals within this category were around training, technology enhancements and future resource investigation. Four individuals mentioned future encouragement and learning would be achieved if these were taken into consideration as Māori digitised resources are frequently used for many purposes, not only for study or teaching. Table 9 shows the codes and definitions that identify improvements which could be made to Māori digitised resources.

Table 9: Suggested improvements of Māori digitised resources

Category / Code	Definition
Ngā whanaketanga o ngā rauemi whakaumu Māori (Digitised Māori resource improvements)	**Individual suggestions around improving the use of Māori digitised resources and technologies.**
Technology training	Individuals would like to see instructions or training materials about using specific technologies.
Technology learning	Learning a new technology can be challenging for individuals. Virtual community support around using specific technologies would be useful.
Selection and investigation	Māori digitised resources will continuously be selected and used for many purposes. Digitised resources will continuously be evaluated and this may be difficult in the future for individuals.
Sacred information	Protecting personal and important online information will be significant and will need to be improved for individuals.
Technology resistance	Some technologies are difficult to use and as more are developed, individuals may resist using them.
Colour schemes	Colours will need to be effective for individuals so content can be useful and clear.
Technology features	Digital technologies will need features that assist individuals to find Māori information effectively.
Technologies being interconnected with each other	Different technologies should integrate with each other to improve functionality and Māori resource sharing to individuals.

It is important for individuals to keep up-to-date with relevant information and technologies. One individual said:

"The more I use it, the more I will learn tricks and what not."

(Student A)

Three individuals mentioned the more they use Māori digitised resources, the more confidence they gained using different kinds of digitised resources.

Two individuals mentioned understanding how technologies work was difficult. An individual mentioned that some people have no knowledge of how to search and so having a page somewhere that outlines the steps would be useful. Additionally, three individuals said they resisted using some technologies as they were difficult and challenging. These individuals felt technologies could be hard to navigate in order to find Māori digitised information easily. An individual said sometimes technologies could be too hard to use and often gave up. To encourage other individuals to use technologies that are hard to navigate and find Māori digitised information, they should be designed effectively and easy to follow. These factors show innovations should be continuously worked on to meet individual. Five Individuals said it can be time consuming and annoying scrolling through content to find what they wanted for their studies or teaching needs. Simple and effective technology features and colour schemes would be useful. For example, an individual mentioned a resource called kupu o te wiki (Māori word of the week). The colours of the highlighted words look effective rather than other sources that use only black and white colour.

Two individuals mentioned they are always looking for new Māori digitised resources. Māori digitised resources are continuously being developed and put online. These individuals felt they needed to keep evaluating the information on the sites as this is an ongoing issue. However, two individuals felt putting personal and sacred information online is inappropriate. Technologies will need to improve to ensure this information is safe and protected as individuals felt they were not comfortable publishing their personal information online for others to see. These experiences influenced individuals and have a negative impact on adoption for using Māori digitised resources.

Learning new technologies is challenging and individuals felt this would need to be improved. Repetitive technologies should showcase the importance of who initiated the idea and the community should support the technology that holds this information and ensure it is factual and correct. This is to ensure individuals feel supported while learning a new tool. Also, an individual suggested that different technologies should integrate with each other to improve technology features for those using them. One

individual said it would be better if digital technologies, such as Moodle and Facebook, were interconnected as there are activities available on Moodle but not on Facebook. Seven individuals mentioned there were many ways of improving how Māori digitised resources are used within the polytechnic community and wider communities.

Category Relationships

The categories identified show several links to each other. Figure 4 shows the categories and the relationships that emerged from what individuals said during their interviews. Links amongst these categories became clear once each question from this study was answered.
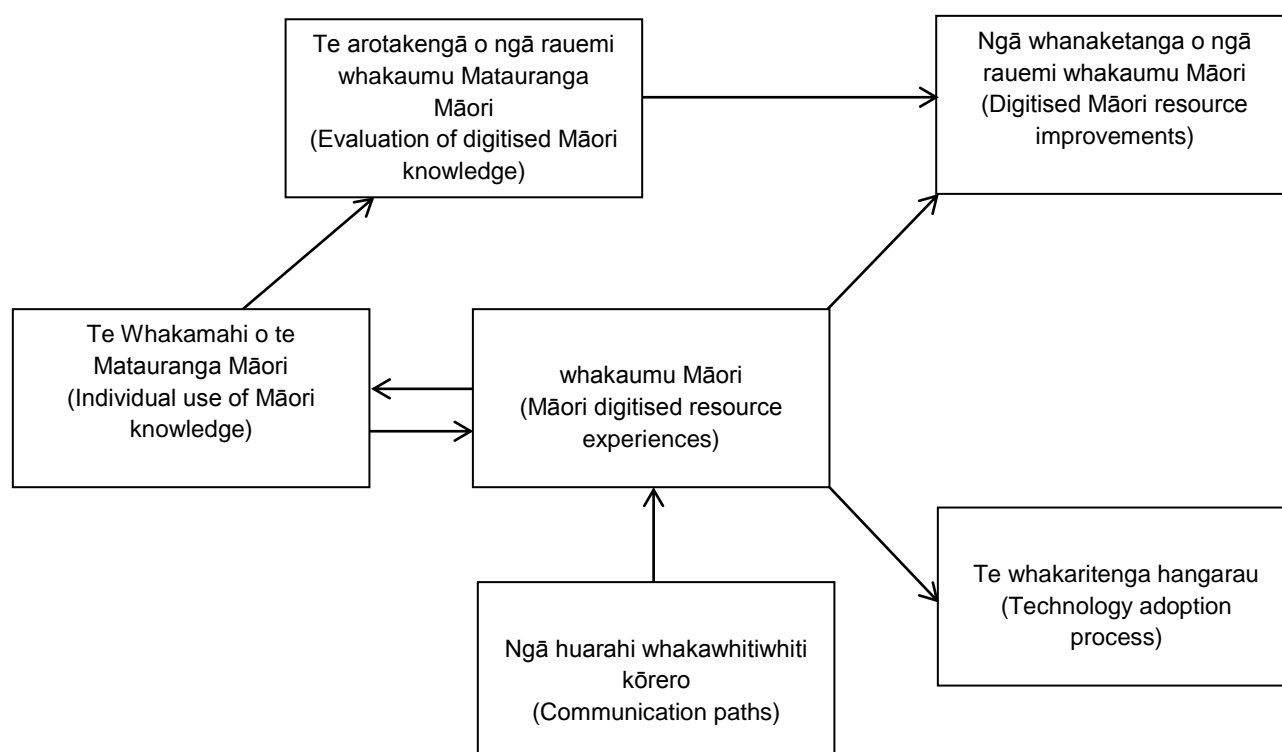

Figure 4: Relationships between categories

For the Ngā huarahi whakawhitiwhiti kōrero (communication paths) category, seven individuals mentioned communication paths that directly affected the way they experienced using Māori digitised resources. Communication factors influenced other individuals to adopt technologies and allowed these individuals to make decisions to use them or not. Six individuals strongly indicated that the use or non-use of Māori digitised resources was based on individual experiences and needs. From the data, individual use of Māori knowledge influenced their decision to experience and engage with Māori digitised resources. For the whakaumu Māori (Māori digitised resource experiences) category, individuals had several positive and negative experiences, which led to them suggesting further improvements (Ngā whanaketanga o ngā rauemi whakaumu Māori, digitised Māori resource

improvements category). Also, for the evaluation of digitised Māori knowledge category, six individuals thought evaluating them was important, which indicated a strong link to further improvements (Ngā whanaketanga o ngā rauemi whakaumu Māori, digitised Māori resource improvements category).

Individuals felt Māori digitised resources were being used because of their advantages, purpose and positive experience. Five individuals felt comfortable using them and knew about their existence from other individuals, which led to a positive attitude towards using Māori digitised resources. From the data, factors such as communication benefits and uses show that Māori digitised resources are useful for the community and that individuals have a positive attitude towards using them.

Discussion

Polytechnic Māori students and staff use Māori digitised resources for different purposes and felt comfortable using them. Rogers' (2003) believes the process that individuals use to decide whether to use an innovation is "an information-seeking and information-processing activity, where an individual is motivated to reduce uncertainty about the advantages and disadvantages of an innovation" (p.172). Individuals can choose whether they will adopt and use a technology or not, and whether they will meet their needs. In this study, individuals found Māori digitised resources useful and would use them if they met a specific purpose. Only two individuals were suspicious of Māori digitised resources because the information was inaccurate.

In accordance with Roger's Diffusion of Innovations (2003) theoretical framework for technology adoption and the MTRG (2003) Māori Tertiary Education framework, the following aspects emerged that relate to how individuals used them.

Roger's (2003) Diffusion of Innovations framework

    a. Personality variables

Four Individuals found using the computer and viewing Māori digitised resources easy. In this study, individuals had a positive attitude and felt comfortable these resources. They also felt they were in control of using Māori digitised resources because the information was meaningful and fulfilled their purpose. Graham and McJohn (2005) and Parker (2003) found Māori want traditional IK to be available to those who appreciate and use it respectably. Furthermore, Burtis (2009) and Tau (2012) showed that digitised objects should showcase Māori cultural heritage appropriately. For this study, six individuals had confidence and self-belief for using the internet and found Maori digitised resources easily to use and this increased their existing knowledge.

Additionally, these individuals felt because they were studying or teaching at an institution, they have higher expectations of their own capabilities, in particular to access digitised materials and have the motivation to learn and

grow their own pathways and learning journeys. Three individuals found using the computer difficult. Similarly, Anandarajan et al. (2002) suggest Māori learners struggle and find digital technologies challenging to use. However, this study showed that a few individuals struggled but overcame this and now can benefit from using technologies. Christie (2004) and McCallum and Papandrea (2009) found that an effective cultural identity is important and shows digital objects met their needs. This study showed individuals understood how digitised Māori digitised resources can benefit them and work with peers to retrieve the here-and-now information they need.

Many Māori digitised resources have significant cultural value for whānau, iwi and others. Each individual is being imaginative and using these resources for specific purposes. As these resources are often written by experts and published via communication channels, each individual are using these resources for their study, teaching and other purposes. Studies from Hunter (2005) and Tella (2010) showed digital technologies have a long way to go to disseminate IK effectively and created useful digital systems for Māori. However this study showed six individuals were confidently using them, recognising their value and relevance. Resources are continuously changing and each individual feel comfortable with using them online for their studies and/or teaching, such as NZDL, NZTEC and other digitised texts.

b. Communication behaviour

Each individual used face-to-face, Facebook and email communication for social interaction and to share their thoughts, opinions and beliefs about Māori digitised resources. Three individuals did not use any communication channels or use the internet to find Māori digitised resources themselves. There were only a few individuals who did not use Facebook because they felt it was inconvenient or a time waster. Individuals felt comfortable sharing Māori digitised resources with several Facebook pages or groups and saw this as a virtual community to comfortably share ideas. Similarly, Durie (2004) found digital technologies should assist Māori learners by creating a virtual environment that encourages collaborative learning and provides relevant

online Māori digital resources. Individuals have many interpersonal connections and have connected with many educational groups, iwi and whānau members through Facebook and email. Seven individuals mentioned they shared opinions about Māori digitised resources amongst other community groups.

Significantly, this study found communication a key factor for using Māori digitised resources. Other studies such as Durie (2004) and Sahin (2006) believes Māori adopt and use educational technologies when they were designed to increase knowledge and engage Māori learners. This study showed five individuals mentioned they are continuously looking for other Māori digitised resources and technologies. Many two-way communication paths between two or more individuals happened via Facebook and this increased their way to find other Māori digitised resources.

c. Relative advantage

Individuals identified many advantages to using Māori digitised resources. All individuals said they use these resources because they fit their purpose and that they meet their needs to find useful information. Keegan et al. (2011) showed that Māori learners are using systems sparingly. This study did not find this but found Māori digitised resources are used for specific reasons and are evaluated for their use. Three individuals said it was easy to share information using communication channels such as Facebook. Kennan (2005) and Tella (2010) showed that Māori learners are increasingly using digital technologies to access Māori IK as this information is available online. In this study, four individuals found the internet useful to find digitised Māori texts from NZDL, NZTEC and Google books, but others did not.

All individuals said that Māori digitised resources improve their learning and knowledge. This meant these resources are of value and significantly benefit individuals. They felt comfortable using them, found them to be of high quality and that it saved time finding relevant and valuable traditional IK online. However, some individuals felt information could be inaccurate and are

suspicious of these resources being online and doubted whether these resources would be of value to them for these reasons. Greyling and Zulu (2010) and Tella (2010) found there are some concerns about access and what contents should be made available on the internet. In this study this was not found, but digitised information is continuously being evaluated by individuals and only specific texts are being made available for public use. Three individuals suspected many Māori digitised resources are shared privately amongst specific individuals, whānau and iwi.

According to Tjitayi and Osborne (2014) technologies and Māori digitised resources are continuously being improved and being designed to capture IK effectively. This study showed seven individuals said they have had positive experiences using Māori digitised resources, accepting that computers are a necessity for their learning. As Māori digitised resources are generally free to view, computers and the internet serve an advantage to all individuals who have access to the internet. Individuals who had positive experiences using Māori digitised resources view them as a useful tool, easy to use and follow and particular information can be found easily and quickly.

d. Compatibility

Each individual had several positive and negative experiences using Māori digitised resources. These experiences included transferring teaching materials to the online environment, sharing Māori digitised resources online, connecting to other individuals using an effective cost method; resources are of high quality and are easy to use. Three individuals felt that they had limited access, found the information was, there was too much information available, and content did not load properly. Kimery and Amirkhalkhali (2011) and Tella (2010) suggest digital systems are poorly designed to capture, disseminate and store IK effectively. However, in this study individuals' attitudes towards using these resources remains positive and they felt Māori digitised resources are useful for their assignments and teaching methods.

Some individuals felt uncomfortable using Māori digitised resources. Eight individuals said they were suspicious about using Māori digitised resources.

Similarly, Taubman and Leistner (2007) found restricting access to digitised Māori resources is important for protecting their intellectual property. In this study, individuals were concerned that some Māori digitised resources should not be visible for others to see. This affected the way these individuals use Māori digitised resources for their studying and/or teaching needs.

Additionally, two individuals said they were having difficulty accessing Māori digitised resources off-campus. Anandarajan et al. (2002) found Māori learners struggle with accessing the internet and technologies. This negatively impacted on learning the computer at home but individuals said they asked for help from others to gain access to the internet and resources. Overall, at first individuals struggle and found Māori digitised resources challenging to use and it was found in this study that over time individuals have gained confidence and found Māori digitised resources useful for many purposes.

e. Complexity

Each individual felt Māori digitised resources were useful if they found the information they were seeking. Careful selection and evaluation of Māori digitised resources is important and is continuously being practised by individuals to see whether it has a significant benefit for them. They felt if a digitised resource does not have the right information or if the information is not correct, then it will not be used because of tikanga issues. Burtis (2009) and Tau (2012) found that digitised objects should be carefully selected and should showcase Māori cultural heritage appropriately.

Some individuals found it difficult to use technologies. Other studies showed that digital systems should be robust, efficient and user-friendly for the community to use them (Burtis, 2009; Christie, 2004; Hunter, 2005; Keenan, 2005; McCallum & Papandrea, 2009; Tella, 2010). In this study, six individuals felt digital technologies were difficult to use and IK systems hard to understand. It shows that Māori digitised resources are being found but are challenging to use.

Also, six individuals felt many Māori digitised texts are difficult to use because the information is not useful or incorrect. However, Māori digitised resources are used by individuals who were interviewed because it met their needs. Five individuals thought technologies and digitised resources are easy to use and the software has technology features that enhance resources. Māori digitised resources are available using technologies that individuals felt they are easy to follow and they are competent with using them on their computer and/or device(s). Māori digitised resources can be difficult and challenging to use in the beginning but individuals have found the IK systems are effective, user-friendly and easy to understand to locate and find the necessary information.

Māori digitised resources have great benefits for individuals wishing to use them for their needs. For some, they could be difficult to use but from this study, most individuals have positively adopted them because of the sharing capabilities online, the content they provide and the value they have for their studies, assignments and/or teaching needs.

Māori Tertiary Reference Group (2003) Māori Tertiary Education framework
It was evident from the findings that Māori digitised resources are being used by individuals. It meant each individual felt their cultural needs and experiences are met and important for their growth, long-life learning and creation of mātauranga Māori. These findings showed that the following MTRG framework priorities including Māori whānau, hapū and iwi advancement; inclusive learning environments; lifelong learning pathways; and finally, Māori-centred knowledge-creation are important to Māori learners.

Seven individuals thought that Māori digitised resources met their cultural needs. They said these resources contain valuable Māori content that is culturally sensitive and useful for the needs. Brown and Nicholas (2012) found Māori learners use resources that relate to te Reo Māori, Māori customs and culture. In this study, two individuals said their cultural needs are not met online because their connection is physical and spiritual from connecting with other people physically around them.

Individuals are having positive experiences using the computer and internet to connect with Māori digitised resources that relate to the programmes they are involved with. Individuals felt they are upskilling as they use the computer to access online Māori knowledge and digitised resources. Each individual said they would continue to use the computer to find other valuable Māori knowledge and other resources after they graduate or while they continue to teach others. Other studies such as Pere (1994) and Kincheloe and Steinberg (2008) found Māori learners are successful when effective learning relationships and engagement with their cultural heritage is achieved. In this study, new mātauranga Māori was found daily and individuals are making use of this knowledge through sharing it and using it in individual assignments and/or teaching. Six individuals felt confident using the computer to search and find Māori topics from technologies and Māori digitised resources. Corscadden (2003) and Durie (2004) found online resources play a major role in Māori learner success. For five individuals, their knowledge is continuously being improved and the way they use Māori digitised resources is important throughout their journey. The way these resources are shared and used online are of great benefit to all individuals and their whānau, and are meeting their Māori educational needs.

Māori digitised resources showed individuals are connected with their whānau, iwi and hapū using several communication channels. These channels are effective because they allow technologies, digitised resources and other social interaction to happen. Māori digitised resources are extending to other local communities and are continuing to meet their needs. An extension to their knowledge is established through improving their knowledge, and technologies are fostering creativity for sharing and interacting with others using these digitised resources.

Individuals mentioned they used the internet to find Māori topics. Māori learners felt comfortable using the internet to access and acquire mātauranga Māori for their learning and research purposes. Similarly, Brown (2007) found that the internet has enabled Māori learners to be in control and access knowledge that is of significant cultural and spiritual value. It meant individuals felt supported and confident using the internet to find information in an inclusive learning environment that the polytechnic provides.

Four individuals felt Māori digitised resources had positive experiences for their learning while studying and/or teaching. For Māori learners, they felt empowered and encouraged to find Māori digitised resources for their needs. It meant Māori learners have a long life passion to find Māori topics online and continue to use them to learn and find out further Māori-centred knowledge.

Sahin (2006) and Klaebe and Burgess (2010) suggest effective adoption of educational systems occur when individuals present particular characteristics and attributes. In this research, overall individuals felt comfortable using Māori digitised resources in many ways that meet their needs. The characteristics and attributes of Rogers' (2003) diffusion of innovations framework (personality variables, communication behaviour, relative advantage, compatibility and complexity) and Māori Tertiary Education Framework (growth, life-long learning and creation of mātauranga Māori) were present and shows Māori digitised resources are being used within the polytechnic community. In this study, individuals felt in control and comfortable using Māori digitised resources for their studying and teaching. No matter the personality, they all took advantage of access to digitised resources of mātauranga Māori.

Implications of findings

The digital shift from traditional methods of using information to using the internet to find digitised resources is having an effect on library users. It has changed the way Māori have access to digitised resources and how they learn using the online environment. The combination of Rogers' (2003) Diffusion of Innovations and MTRG (2003) Māori Tertiary Education Framework has implications because it enables non-Māori librarians to understand and apply the cultural needs for Māori. This combination would be useful for future researchers because it will enable them to articulate the way that Māori learners and educators engage with their institution and how they are learning.

Delimitations:

- This study is confined to one polytechnic that is active in providing Māori programmes and digital resources from certificate to postgraduate level.

Limitations:

- This study captured and analysed participant perceptions of Māori digitised resources and used a framework, Rogers' (2003) Diffusion of Innovations and the MTRG (2003) Māori Tertiary Education Framework to guide the study; it was not designed to test a theory.
- The factors found in this study are open to interpretation.
- This study used a small sample of Māori participants at an institution and themes/patterns found are locally specific and will need to be further explored with other Māori communities in order to generalise how Māori digitised resources are used.

Further research

Individuals are using Māori digitised resources for many purposes, especially for communication and teaching and/or research. Individuals felt encouraged to use Māori digitised resources because they were of significant value and benefit to themselves, the polytechnic community and the wider community. This study was confined to one medium-sized education institution, and could form the basis of a

similar study, exploring and comparing other studies conducted at other polytechnics in New Zealand. Also, it would be useful to conduct the same or similar study in New Zealand universities to establish any similarities and differences. Also, further investigation explaining the extent to which individuals use Māori digitised resources, which they favour and the reasons why, would be useful.

Additionally, a list of Māori digitised resources that Māori students and staff are looking for and what they are using would be useful to assist with establishing what IK could be digitised in the future. This list would see how other IK systems could be developed to evaluate whether an individual decides to use these Māori digitised resources or not, and highlight any findings similar to those in this research.

Conclusion

From the research, it is apparent that Māori students and staff are engaging with Māori digitised resources and will continue using them because they are of high quality and useful for teaching and research. There is a positive approach in the polytechnic community because of significant communication benefits such as promotion, a growing virtual community through Facebook and email, and resource quality and its usefulness. Factors such as *resources being difficult to understand* and *resources are suspicious* were identified as the main reasons why Māori digitised resources were not used. Sometimes Māori digitised resources do not meet individual needs but participants found there are choices with many different digitised resources available on the internet. However, overall Māori staff and students support each other through their learning pathways and with using Māori digitised resources.

This study shows there are many factors that influence an individuals' decision whether to use Māori digitised resources or not. Māori digitised resources incorporate the values that are important to Māori and the data showed digitised resources are useful for knowledge, truth and meaningfulness for the community. The factors identified build on existing concepts about the use of indigenous peoples using online resources and the role information technologies play in an individual's learning journey. Although a small sample was used, this research contributes to what Māori are using and identifies reasons for that use.

As traditional Māori resources are increasingly being digitised, a focus on building stronger relationships between Māori students and staff, iwi and whānau and wider communities will need to continue. If individuals are encouraging others to adopt and use Māori digitised resources, these resources could be used more for their needs. Māori digitised resources benefit polytechnic Māori staff and students, and will continue to provide useful information. This study found that Māori polytechnic staff and students feel comfortable using these resources and further research could establish whether other academic institutions and providers use Māori digitised resources effectively amongst Māori students and staff.

References

Anandarajan, M., Igbaria, M. & Anakwe, U. P. (2002). IT acceptance in a less-developed country: A motivational factor perspective. *International Journal of Information Management, 22*(1), 47-65. Retrieved from ScienceDirect Journals database.

Barlow, C. (2011). *Tikanga whakaaro: Key concepts in māori culture*. Melbourne, Australia: Oxford University Press.

Battiste, M. (2008). Research ethics for protecting indigenous knowledge and heritage: Institutional and research responsibilities. In N. K. Denzin, Y. S. Lincoln & L. T. Smith (Eds.) *Handbook of critical and indigenous handbook* (pp.497-509). Thousand Oaks, CA: Sage Publications.

Blaser, M., de Costa, R., McGregor, D. & Coleman, W. D. (2010). Reconfiguring the web of life: Indigenous peoples, rationality, and globalization. In M. Blaser, R. de Costa, D. McGregor & W. D. Coleman (Eds.) *Indigenous peoples: Insights for a global age and autonomy* (pp.3-26). Vancouver, Canada: UBC Press.

Brinkmann, S. & Kvale, S. (2014). *Interviews: Learning the craft of qualitative research interviewing* (3rd ed). Thousand Oaks, CA: Sage Publications.

Brinkmann, S. (2014). Unstructured and semi-structured interviewing. In P. Leavy (Ed.) *The Oxford handbook of qualitative research* (pp.277-299). New York, NY: Oxford University Press.

Brown, D. & Nicholas, G. (2012). Protecting indigenous cultural property in the age of digital democracy: Institutional and communal responses to Canadian first nations and Maori heritage concerns. *Journal of Material Culture, 17*(3), 307-324. doi:10.1177/1359183512454065

Brown, D. (2007). Te ahu hiko: Digital cultural heritage and indigenous objects, people, and environments. In F. Cameron & S. Kenderdire (Eds.) *Theorizing digital cultural heritage: A critical discourse* (pp.77-91). Cambridge, MA: MIT Press.

Burtis, A. T. (2009). Managing indigenous knowledge and traditional cultural expressions: Is technology the solution? In M. Lowe & T. Samek (Eds.)

Information for Social Change (pp.14-21). Retrieved from
http://www.libr.org/isc/issues/ISC29/articles/3%20%20Managing%20Indigenous
%20Knowledge.pdf

Christie, M. (2004). Computer databases and Aboriginal knowledge. *Learning
Communities: International Journal of Learning in Social Contexts, 1,* 4-12.
Retrieved from
http://www.cdu.edu.au/centres/spill//journal/IJLSC_1_Feb2004.pdf

Cohen, L., Manion, L. & Morrison, K. (2007). *Research methods in education*. New
York, NY: Routledge.

Corscadden, K. (2003). *Information and communication technologies: Are maori
students disadvantaged in tertiary education.* Paper presented at the
NZARE/AARE Conference, 29 November – 3 December 2003. Retrieved from
the College of Information Sciences and Technology Pennsylvania State
University website:
http://citeseerx.ist.psu.edu/viewdoc/download;jsessionid=1DD43102F0E98E60
054D0DF1F2C84772?doi=10.1.1.123.6276&rep=rep1&type=pdf

Cram, F. (2013). *Kaupapa Māori research for beginners: A guide to undertaking a
kaupapa Māori research project: Part 1: Re-search.* Retrieved from
http://www.katoa.net.nz/kaupapa-maori/beginning-a-research-project

Cunningham, C. (2000). A framework for addressing Māori knowledge in research,
science and technology. *Pacific Health Dialog, 7*(1), 62-69.

Dawson, C. (2013). *Advanced research methods: A practical guide for social
research projects*. London, England: Constable & Robinson.

Durie, M. (2004). *Huitaumata mātauranga IV: Increasing success for Rangatahi in
education insight, reflection and learning environment: Māori achievement:
Anticipating the Learning.* Retrieved from
http://www.masseyuniversity.co.nz/massey/fms/Te%20Mata%20O%20Te%20T
au/Publications%20%20Mason/Maori%20Achievement%20Anticipating%20the
%20learnong%20environment.pdf

Flick, U. (2014). *An introduction to qualitative research*. London, England: Sage Publications.

Graham, L. & McJohn, S. (2005). Indigenous peoples and intellectual property. *Washington University Journal of Law & Policy, 19*, 313-337. Retrieved from http://www.digitalcommons.law.wustl.edu/cgi/viewcontent.cgi?article=1383&context=wujlp

Grbich, C. (2007). *Qualitative data analysis: An introduction*. London, England: Sage Publications.

Greyling, E. & Zulu, S. (2010). Content development in an indigenous digital library: A case study in community participation. *IFLA Journal, 36*(1), 30-39. doi:10.1177/0340035209359570

Hart, M. (2010). Indigenous worldviews, knowledge, and research: The development of an indigenous research paradigm. *Journal of Indigenous Voices in Social Work, 1*(1), 1-16. Retrieved from http://scholarspace.manoa.hawaii.edu/bitstream/handle/10125/15117/v1i1_04hart.pdf?sequence=1

Hsieh, H. F. & Shannon, S. E. (2005). Three approaches to qualitative content analysis. *Qualitative Health Research, 15*(9), 1277-1288. doi:10.1177/1049732305276687

Hudson, M., Milne, M., Reynolds, P., Russell, K. & Smith, B. (2010). *Te ara tika Guidelines for Māori research ethics: A framework for researchers and ethics committee members*. Retrieved from http://www.hrc.govt.nz/sites/default/files/Te%20Ara%20Tika%20Guidelines%20for%20Maori%20Research%20Ethics.pdf

Hunter, J. (2005). The role of information technologies in indigenous knowledge management. *Australian Academic & Research Libraries, 36*(2), 113-128. Retrieved from Academic Search Premier database.

Jackson, C. M., Chow, S. & Letich. (1997). Toward an understanding of the behavioral intention to use an information system. *Decision Sciences, 28*(2), 357-389. Retrieved from Business Source Complete database.

Katoa Limited. (n.d.). *Kaupapa Māori research*. Retrieved from
http://www.katoa.net.nz/kaupapa-maori

Keegan, P. J., Keegan, T. T. & Laws, M. (2011). Online Māori initiatives for teaching
and learning: Current activities, successes and future directions. *MAI Review,
1,* 1-13. Retrieved from
http://www.ojs.review.mai.ac.nz/index.php/MR/article/view/365/605

Keenan, D. (2005). The past from the paepae: Uses of the past in Māori oral history.
In R. Selby & A. Laurie (Eds.) *Māori and oral history: A collection* (pp.54-61).
Wellington, New Zealand: National Oral History Association of New Zealand.

Kimery, K. M. & Amirkhalkhali, S. (2011). Information and communication
technologies and aboriginal peoples in Canada: Information seeking,
community building, and access challenges in geographically and socially
marginalized populations. *International Journal of Management & Information
Systems, 15*(4), 41-45. Retrieved from ProQuest Central database.

Kincheloe, J. L. & Steinberg, S. R. (2008). Indigenous knowledges in education:
Complexities, dangers, and profound benefits. In N. K. Denzin, Y. S. Lincoln &
L. T. Smith (Eds.) *Handbook of critical and indigenous handbook* (pp.135-156).
Thousand Oaks, CA: Sage Publications.

Klaebe, H. G., & Burgess, J. E. (2010). A story worth telling: Putting oral history and
digital collections online in cultural institutions. Paper presented at the 16th
International Oral History Conference, 7-11 July 2010. Retrieved from the
Queensland University of Technology website:
http://www.eprints.qut.edu.au/38109/1/c38109_Paper.pdf

Kumar, R. (2014). *Research methodology: A step-by-step guide for beginners* (4th
ed). London, England: Sage Publications.

Liamputtong, P. (2009). *Qualitative research methods* (3rd ed). Melbourne, Australia:
Oxford University Press.

Lincoln, Y. S. & Guba, E. G. (1985). *Naturalistic inquiry*. Newbury Park, CA: Sage
Publications.

Magara, E. (2005). *Digitisation of community indigenous knowledge in developing countries: A strategy for Uganda*. Paper presented at the Museums and the Web Conference, 14-16 April 2005. Retrieved from the Museums and the Web website: http://www.archimuse.com/mw2005/papers/magara/magara.html

Makoare, B. (1999). Kaitiakitanga i roto i ngā whare pukapuka: Appropriate care for Māori materials in libraries and archives. *Archifacts,* 18-26.

Māori Tertiary Reference Group. (2003). *Māori tertiary education framework*. Retrieved from the Ministry of Education website: http://www.minedu.govt.nz/~/media/MinEdu/Files/EducationSectors/TertiaryEducation/MaoriTertiaryEducationFrameworkPDF.pdf

McCallum, K., & Papandrea, F. (2009). Community business: The internet in remote Australian indigenous communities. *New Media & Society, 11*(7), 1230-1251. doi:10.1177/1461444809342059

McCarthy, C. (2007). *Exhibiting Māori: A history of colonial cultures of display*. Wellington, New Zealand: Te Papa Press.

Miles, M. B., Humberman, A. M. & Saldana, J. (2014). *Qualitative data analysis: A methods sourcebook* (3rd ed). Thousand Oaks, CA: Sage Publications.

Netwell, J. (2012). Old objects, new media: Historical collections, digitization and affect. *Journal of Material Culture, 17*(3), 287-306. doi:10.1177/1359183512453534

Parker, B. (2003). Maori access to information technology. *The Electronic Library, 21*(5), 456-460. doi:10.1108/02640470310499830

Perakyla, A. & Ruusuvuori, J. (2011). Analyzing talk and text. In N. K. Denzin & Y. S. Lincoln (Eds.) *The Sage handbook of qualitative research* (pp.529-543). Thousand Oaks, CA: Sage Publications.

Pere, R. R. (1994). *Ako: Concepts and learning in the maori tradition*. Wellington, New Zealand: Te Kohanga Reo National Trust Board.

Reed, A. W. (2011). *Maori myth and legend*. Auckland, New Zealand: Penguin Group.

Rewi, P. (2013). He ora, he orotītanga: Māori language: Safe or endangered. In S. Katene & M. Mulholland (Eds.) *Future challenges for Māori: He kōrero anamata* (pp.101-124). Wellington, New Zealand: Huia Publishers.

Riley, M. (2013). *Wise words of the Māori: Revealing history and traditions*. Paraparaumu, New Zealand: Viking Sevenseas.

Rogers, E. M. (2003). *Diffusion of innovations* (2nd ed.). New York, NY: Free Press.

Ruane, J. M. (2005). *Essentials of research methods: A guide to social science research*. Malden, MA: Blackwell Publishing.

Sahin, I. (2006). Detailed review of Rogers' diffusion of innovations theory and educational technology-related studies based on Rogers' theory. *The Turkish Online Journal of Educational Technology, 5*(2). Retrieved from http://files.eric.ed.gov/fulltext/ED501453.pdf

San, Y. & Jeyaraj, A. (2013). Information technology adoption and continuance: A longitudinal study of individuals' behavioral intentions. *Information & Management, 50*(7), 457-465. doi:10.1016/j.im.2013.07.005

Scott, G. & Garner, R. (2013). *Doing qualitative research: Design, methods, and techniques*. Upper Saddle River, NJ: Pearson Education.

Sherry, L. (1997). The boulder valley internet project: Lessons learned. *The Technological Horizons in Education Journal, 25*(2), 68-73.

Silverman, D. (2010). *Doing qualitative research: A practical handbook* (3rd ed.). London, England: Sage Publications.

Smith, L. T. (2012). *Decolonizing methodologies: Research and indigenous peoples* (2nd ed.). New York, NY: Zed Books.

Tau, T. M. (2012). Culture: Thinking, doing and meaning. In R. Nairn, P. Pehi, R. Black & W. Waitoki (Eds.) *Ka tū, ka oho: Visions of a bicultural partnership in psychology: Invited keynotes: Revisiting the past to reset the future* (pp.171-193). Wellington, New Zealand: The New Zealand Psychological Society.

Taubman, A. & Leistner, M. (2007). Traditional knowledge. In S. von Lewinski (Ed.) *Indigenous heritage and intellectual property* (2nd ed., pp.59-90). Alphen, The Netherlands: Kluwer Law International.

Tella, R. (2010). *Indigenous knowledge: Documentation and dissemination: Challenges in the new millennium*. Paper presented at the 4th International Indigenous Conference, 6-9 June 2010. Retrieved from the Ngā Pae o te Māramatanga website: http://www.traditionalknowledge2010.ac.nz/sites/default/files/NPM2010Tradition alKnowledgeConferenceProceedings.pdf

Tjitayi, K. & Osborne, S. (2014). At the heart of learning: Kurunta kanyintja: Holding knowledge in our spirit. *Alternative: An International Journal of Indigenous Peoples, 10*(1), 23-32.

Trainor, A. A. (2013). Interview research. In A. A. Trainor & E. Grane (Eds.) *Reviewing qualitative research in the social sciences* (pp.125-138). New York, NY: Taylor & Francis.

Trent, A. & Cho, J. (2014). Interpretation strategies: Appropriate concepts. In P. Leavy (Ed.) *The Oxford handbook of qualitative research* (pp.639-657). New York, NY: Oxford University Press.

Wilson, S. (2008). *Research is ceremony: Indigenous research methods.* Black Point, Canada.

Yin, R. K. (1994). *Case study research: Design and methods* (2nd ed.). Thousand Oaks, CA: Sage Publications.

Yin, R. K. (2014). *Case study research: Design and methods* (5th ed.). Thousand Oaks, CA: Sage Publications.

Zhang, Y. & Wildemuth, B. M. (n.d.). *Qualitative analysis of content.* Retrieved from https://www.ischool.utexas.edu/~yanz/Content_analysis.pdf

Zikmund, W. G., Babin, B. J., Carr, J. C. & Griffin, M. (2008). *Business research methods* (8th ed.). Mason, OH: South-Western Cengage Learning.

Interview Guide

Research Project Title: Adoption of Māori digitised resources by polytechnic Māori students and staff

Researcher: Karn Heavey, School of Information Management, Victoria University of Wellington

Background and mihimihi (introduction) (both researcher and participant)

Demographic information:

1. Interview date:

2. Age range: 17-24 25-35 35-45 50-60 60+

3. How many years have you been studying or teaching?

4. What programme(s) are you studying or teaching?

5. What course(s) are you studying or teaching this semester?

6. How well do you speak Te reo Māori?

7. Do you belong to an iwi? If so, which one(s)?

8. Are you involved in any cultural activities? If so which one(s)?

9. Tell me about yourself – describe your whakapapa, iwi/hapū, whānau, marae and involvement with Māori and events.

Internet use:

1. Do you use the internet to search for Māori topics for your study or teaching?

2. Would you use the internet to find information about:

- Your whakapapa (geneology)?

- Māori language?

- Māori customs and waiata (Māori songs)?

- Your iwi (tribe)?

- Māori lands?

- Oral history or written texts?

If so, what sort of digital systems would be useful for your studies or teaching? If not, why don't you use the internet to find information about these topics?

3. Tell me about some experiences or stories about using this information to support your study or teaching? Can you include some examples?

4. What are your feelings about using the internet to find Māori information? What sort of information would you find useful on the digital domain?

Communication:

1. How do you find out about digital technologies that have Māori information useful for your study or teaching?

2. Do you use facebook or social media to share digitised resources or ideas that support with your study or teaching? If so, how effective is it for you? If not, why don't you use social media?

3. Tell me about some experiences you have with finding out about digital technologies to use with your studies or teaching?

4. Have you found digital technologies difficult to use for your study or teaching? Tell me about some experiences? What digital technologies do you find difficult?

Technology adoption and use:

1. How do you feel about using these technologies for your study or teaching? Are Māori digitised materials useful for you?

2. What impact do digital technologies have on your learning or teaching? Do you think there is an advantage with using them?

3. Tell me about how you feel with using these technologies to benefit your study or teaching?

4. Do digital technologies meet your cultural needs for your learning or teaching? Tell me why or not this happens?

5. Do you find digital technologies and their interfaces easy to use? Tell me about one technology you have used in your study or teaching? If not, what sort of technology would you want to use?

6. Do you think digital technologies that hold Māori digitised information are easy to use? Tell me how you feel about using these technologies.

New technologies and use:

1. How do you find about new digital technologies that have Māori digitised information? How do you feel about using these technologies for your learning or teaching?

2. Have you had any negative experiences with using Māori digital technologies? If so, tell me about some experiences? Can you give me an example?

Conclusion:

1. Is there anything else I've missed that you would like to add?

Karn Heavey

Word count: 13, 325