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Inside a Digital Maori World

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INSIDE A DIGITAL MAORI WORLD

"... Educating students to strengthen their Maori roots and identity..."

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WPI

Abstract

The School of Maori Studies at Victoria University of Wellington uses a digital cultural Atlas in Maori Studies research, the *Te Kawa a Maui* Atlas, as an integral part of its coursework. The purpose of this Interactive Qualifying Project is to heighten the engagement of the Maori Studies students by connecting them to names, histories and locations of cultural relevance using digital interactive technologies. We analyzed data from student and faculty surveys, interviews, and a focus group. To effectively engage students, we recommended improvements to the current Atlas and evaluated the feasibility of an Augmented Reality application.

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Executive Summary

The staff and students at Victoria University of Wellington, School of Maori Studies, believe in educating students to strengthen their Maori roots and identity. Dr. Ocean Mercier, a senior lecturer in the School of Maori Studies created the *Te Kawa a Maui* Atlas for this purpose. This Atlas is an interactive geo-biographical tool containing student-produced work.

As part of her proposal to fund interactive technology in the School of Maori Studies, Dr. Mercier says, "[I]ndigenous identity is inextricably tied to land but the narratives that express those relationships are passing with *kaumatua* [tribe elders], are not always as accessible, nor are they as widely understood." This project aimed to reverse the disappearance of these narratives as generations of storytellers pass. We recommended the creation of "… a location-specified digital interface that reveals multiple narratives related to a physical place[.]" Dr. Mercier believes this technology "… could radically reshape the way we view, understand and teach history."

While Dr. Mercier has created the *Te Kawa a Maui* Atlas, she hoped to incorporate more interactive technologies, namely Augmented Reality, into the school's curriculum. Augmented Reality displays digital information over a physical space, therefore it could be used to maintain the locational nature of Maori history. This project had three main deliverables to address the development of both interactive technologies and implementation into the classroom:

1. Recommendations to improve usability and effectiveness of the Te *Kawa a Maui* Atlas.
2. Create a development plan for an Augmented Reality application for Maori cultural education.
3. Develop a plan for the School of Maori Studies to increase awareness of the Te *Kawa a Maui* Atlas and a hypothetical Augmented Reality application.

To guide our research efforts for these deliverables, two sets of objectives were developed. The first objectives were to define the most engaging aspects and biggest challenges when using the *Te Kawa a Maui* Atlas and represent the lecturer's view on the use of the Atlas in the classroom. To complete these objectives, we used three methods. First, we surveyed students and staff at the School of Maori Studies to evaluate their current use of the Atlas. We emailed a questionnaire hosted by Qualtrics, an online surveying tool. We then used this data to shape our

next two methods, faculty interviews and a student focus group. These interviews and focus group identified more specific improvements and uses of the Atlas.

The second set of objectives was to evaluate the hypothetical use of an Augmented Reality application for Maori cultural education. In a separate section of the survey used above, we showed a prototype and video explaining Augmented Reality. This section was sent to students and staff in several departments at Victoria University. Additionally, we discussed possible uses and adaptations of the technologies with lecturers in the School of Maori Studies. We then interviewed Augmented Reality expert, Professor Mark Billinghurst, to evaluate the development of a Maori culture-based Augmented Reality application.

Classroom Implementation

Students and staff are interested in using the *Te Kawa a Maui* Atlas and a hypothetical Augmented Reality application in class. Of the Maori Studies students who took the survey, all rated their interest in and relevance of the Atlas to their studies as either 'good' or 'excellent'. Additionally, the majority of Victoria University staff and students have the technological capabilities to use an Augmented Reality application. Over 90% of the students and faculty at Victoria University own or use smartphones or tablets and two-thirds of this population feel comfortable using those devices.

Furthermore, lecturers in the School of Maori Studies were excited by the idea of incorporating both the *Te Kawa a Maui* Atlas and hypothetical Augmented Reality application into their courses. While none of the interviewed lecturers had used the Atlas in their courses, they all want to incorporate interactive technology in future classes and listed several ways to integrate the technology.

Adapt Technology to Maori Culture

Any interactive technology used for Maori cultural education must be adapted to suit this culture. Traditionally, Maori educators pass on their wisdom through spoken stories. Many research participants mentioned concerns regarding the loss of Maori traditions. As recommended by an interviewed lecturer and students in the focus group, this could be addressed by including orators' recordings of Maori history.

The other major concerns identified were content privacy and accuracy. The *iwi*, or Maori tribes, are keen to share and preserve their stories; however many stories must be kept

within that *iwi*. Since the content used for interactive technology in the School of Maori Studies is mainly student-produced, participants raised concerns about conflicting interpretations of history from *iwi* to *iwi*.

Awareness

Awareness is the greatest challenge for the success of the *Te Kawa a Maui* Atlas. Over half of the students in the School of Maori Studies are unaware of or have never used the Atlas. Furthermore, only half of the surveyed Maori Studies lecturers used the Atlas in class and none of the interviewees used it in class. The best way to acquire new users of the Atlas is for lecturers to require students to use it for coursework. Therefore, the success of the Atlas relies on the lecturers' willingness to modify their curriculum to include the Atlas.

Conclusions and Deliverables

We developed three main conclusions based on the background research and methods conducted:

- The School of Maori Studies and Victoria University support using interactive technology for Maori education.
- One must consider values, needs and sensitivities of Maori culture when developing technology.
- Few students and staff of the School of Maori Studies are aware of interactive educational technology.

These conclusions shaped the team's deliverables to help the School of Maori Studies develop and implement interactive technologies.

The team's first deliverable was to improve usability and effectiveness of the Te *Kawa a Maui* Atlas. We worked with software services company, SQUIZ, to add a tutorial and legend to the Atlas. These additions will reduce confusion with the large number of pins. SQUIZ also created a 'read more' option to standardize the content of all pins. Lastly, the team recommended adding audio capabilities to the *Te Kawa a Maui* Atlas. This feature would engage students more effectively and mirror traditional Maori educational methods, namely storytelling.

Next, the team created a development plan for an Augmented Reality application for Maori cultural education. We interviewed Augmented Reality expert, Professor Mark Billinghurst to evaluate a prototype application and develop funding options for our sponsor. If granted the Marsden Proposal, the School of Maori Studies would be able to create a custom application. If rejected, the school could use crowd funding to create an application using a default Augmented Reality browser.

Lastly, we developed an awareness plan for the School of Maori Studies to use to increase knowledge of the *Te Kawa a Maui* Atlas and a hypothetical Augmented Reality application. This plan relies on the Maori Studies lecturers increasing the use of interactive technology in their courses. We suggested a faculty seminar to help lecturers understand how to use it in their curriculum. We also recommended using social media and advertising tools on television screens across campus.

Overall Assessment

Maori culture is strongly tied to its locations and storytelling, yet modern society often challenges its traditions. Interactive technologies, such as the *Te Kawa a Maui* Atlas and a hypothetical Augmented Reality application, have the capabilities to compliment traditional Maori teachings by preserving stories to be accessed in the future at the convenience of the user. Proper use of these interactive technologies will successfully allow the School of Maori Studies to educate students to strengthen their Maori roots and identity.

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1. Introduction

The Maori people, once the sole inhabitants of New Zealand, now comprise 15.4 percent of the population ("2006 Census Data," 2006). As the Maori population decreases and society evolves, many strive to preserve their stories and traditions. Even though urbanization may threaten the sanctity of Maori culture, it also provides the opportunity for Maori education to thrive through modern technology.

The ability to instantly access information using mobile devices has revolutionized how students learn; yet students frequently overlook valuable resources and instead rely on convenient research means, such as search engines (Bomhold, 2013). With the increased use of web-based tools in education, it is important to innovate these tools and increase their use amongst students to maximize their opportunity to learn. More specifically, this is still relevant when these modern technologies are applied to Maori cultural education.

Since its establishment in 1978, the School of Maori Studies at Victoria University of Wellington has been a leader in Maori cultural education. The school hosts the *Te Kawa a Maui* Atlas, an interactive geo-biographical map that contains student research. The Atlas was updated since its launch in 2010 to increase usability and create a more visually appealing interface. Currently, the Atlas is used in less than half of the Maori Studies students' classes, yet lecturers believe that the Atlas could impact the development of their students' Maori identity. Dr. Ocean Mercier proposed a complimentary interactive application to increase emphasis on the locational value of the Maori culture. This application will likely use Augmented Reality, which overlays digital information on a physical surface or object.

While many are excited about including interactive technology in education, the benefits of using interactive technology in cultural education are unproven. Specifically, Maori culture is a unique topic that requires careful consideration when exposed to technology. With the recent development of this technology and its rapid integration into the classroom, the uses and effectiveness of interactive technology tools are mostly unknown among potential users. The lack of knowledge detracts from the overall use and demands more emphasis on publicity. These awareness issues played large roles in the development of our project.

This project assessed and recommended improvements to the current *Te Kawa a Maui* Atlas and evaluated a proposed Augmented Reality application for Maori cultural education. These interactive technologies aim to address the goal of the staff and students at the School of Maori Studies: educating students to strengthen their Maori roots and identity. To accomplish this goal, we conducted a survey, interviews, and a focus group to understand the relevance, effectiveness, and awareness of the Atlas and an interactive Augmented Reality application for the future.

2. Background

The main purpose of this project is to increase culture awareness by engaging students in their studies. The following chapter will briefly discuss educational methods, the use of technology in education, and information about the Maori culture. The first section explores several educational theories and different approaches towards learning. It is not simply the digital tools that interest students but rather the way that the tools are incorporated into their course curriculum. The second major section of the background discusses technological tools and their potential use in the classroom, including Augmented Reality and mobile-based learning. Lastly, this chapter includes a brief history of the Maori people, highlighting the importance of the Maori culture and locational history. These topics all helped frame our perspective when completing this project.

2.1. Integrating Technology into Education

The way a student gains knowledge or acquires a skill has progressed over the last several decades as new learning technologies have emerged. Many strategies have been developed to try to best accommodate each student and the way a student absorbs or understands the material. A student's perception contains four areas: visual, auditory, reading/writing and tactile/kinesthetic. Individuals use all four of these skills but some are more capable in one style than the others (Felder & Brent, 2005). Different educational approaches, whether it is through traditional means, technological means or a mixture of both, are more conducive to certain senses and different situations. Approaches to education have been altered by the way students of the current generation obtain information. The current era has become an age of instant information access rather than having to physically obtain information. This creates a different set of difficulties when looking to develop an effective educational approach.

2.1.1. Blended Learning

Learning conducted through any electronic media or the internet has its advantages and has made an impact on the world's view of education. In learner-controlled activities, the technology contains resources to entice and interest the learner. But today, students are approached with learning methods that are conducted face-to-face as well as online contexts. This new generation of learning is often referred to as 'blended learning' (Ginns & Ellis, 2007).

Blending traditional types of learning (face to face) and E-Learning (online) aims to combine the strengths of E-Learning and traditional learning. Combining these methods cuts out unwanted and ineffective pedagogical approaches, in order to create a more effective educational approach (Tawil, Norngainy Mohd, Nur Arzilah, Izamarlina, & Haliza, 2013)

Students become more engaged when technology is involved and has the ability to cater to varying learning styles (Roden, 2011). The integration of technology in education allows students to learn outside of the classroom by giving students access to educational material regardless of location via the internet (Ismail, Issham, Siti Norbaya, & Nizuwan, 2013).

Al-Qahtani and Higgins compared the results of student's achievement in the three educational approaches: face-to-face, E-Learning and blended learning. They concluded that blended learning produced better 'student achievement.' Identifying which part within the approach lacks effectiveness is most difficult (Ginns & Ellis, 2007). Thus, an educator having the ability to apply technology effectively is the only way 'blended learning' can work properly (Kereluik, Mishra, & Koehler).

Implementing technology successfully allows teachers to educate students in more effective ways than traditional methods. Many teachers expressed that learning the various types of new technologies was a challenge and it took time before they became comfortable with it. This learning curve seems to be most evident in the middle-aged to older generation. Technology seminars and conferences help educators become comfortable with the technology (Donnelly & Boniface, 2013).

2.2. Technology in Education

In order to determine the effectiveness and full potential of technology in the classroom, one must consider the technological resources available, competence of society, and accessibility. Along with these factors, it is also critical to assess how different forms of technology are appropriate for different purposes. This section explores steps that New Zealand has taken regarding technology in education and how students and teachers reacted to it. It also covers how mobile devices have impacted education and discusses educational software, known as Augmented Reality.

2.2.1. Le@rning Federation

As the power of the World Wide Web grew through the 2000s, the possibilities for computer-based learning gained momentum (Schibeci et al., 2008). One of the earliest steps that Australia and New Zealand took toward online education was the Le@rning Federation. This government funded agency was established in 2001 to encourage and manage online curriculum at a variety of schools (Schibeci et al., 2008). The ultimate goal of this Federation is to "collaboratively develop and provide Australian and New Zealand schools which a continuing supply of high quality digital resources through a series of projects" (Schibeci et al., 2008). This effort is intended to engage students and increase the value of their education.

The value of interactive learning often blends text, graphics, audio, and animation (Freebody, 2006). By implementing these techniques, the Federation hoped they would be able to capitalize on the information and make it more accessible and absorbable.

The Federation introduced a field review project to assess the impact, application, and effectiveness of online digital learning previously implemented by the Federation. After students were exposed to online curriculum, they were surveyed about what aspects were most helpful. The feedback was exceedingly positive as seen in Figure One. There are many benefits to the system that students appreciated and students signaled that working at their own pace was the most helpful aspect of the system (Freebody, 2006).

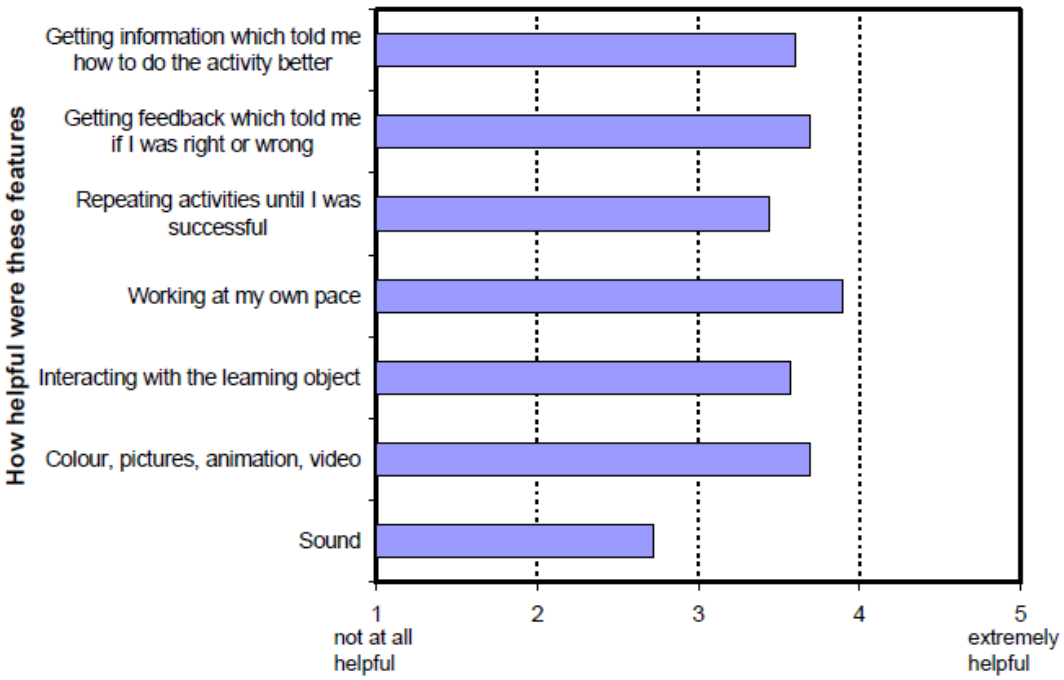


Figure 1: Student Reflection on Digital Learning Objectives

This program can combine interactivity with visual stimulation while still maintaining a comfortable pace for each student. Teacher feedback was even more positive than student responses (Freebody, 2006). In Figure Two, it is quite clear that teachers are convinced that the digital learning system engages their students more fully. Teacher support of the process is an indication that they are seeing positive results already. Digital learning attempts to engage students, keep them persistent, encourage collaboration and independence, and help them enjoy their studies. According to the graph below, these objectives are accomplished.

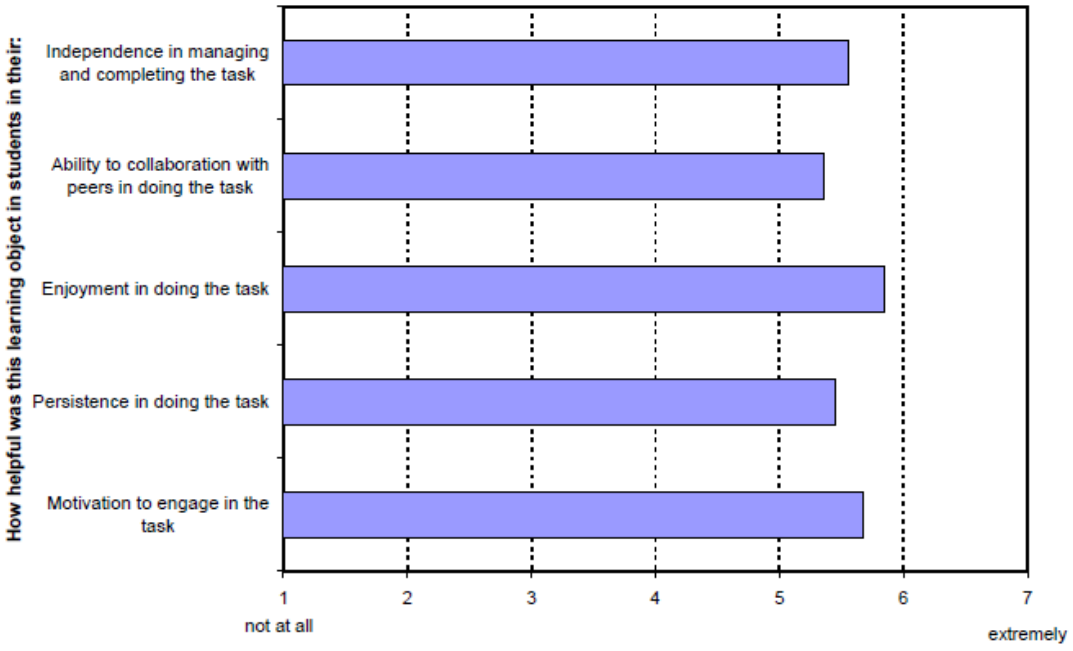


Figure 2: Teacher Feedback on the Effects of Digital Learning Objectives

2.2.2. *Te Kawa a Maui* Atlas

Victoria University focuses on location-based technology, such as the *Te Kawa a Maui* Atlas, to effectively engage students. The Atlas displays a database composed of student work about the Maori culture. In 2010, the school began developing the Atlas through the introduction of location-based assignments into their classes. The students use Google Earth, GPS, GIS, and other mapping technologies to connect their research to significant historical locations. The interactive online version of the *Te Kawa a Maui* Atlas was released in June 2013 which allowed students to access the information via the internet. The map includes geo-biographies on important historical figures, events, and locations (Martin & Ertzberger, 2013). This database-

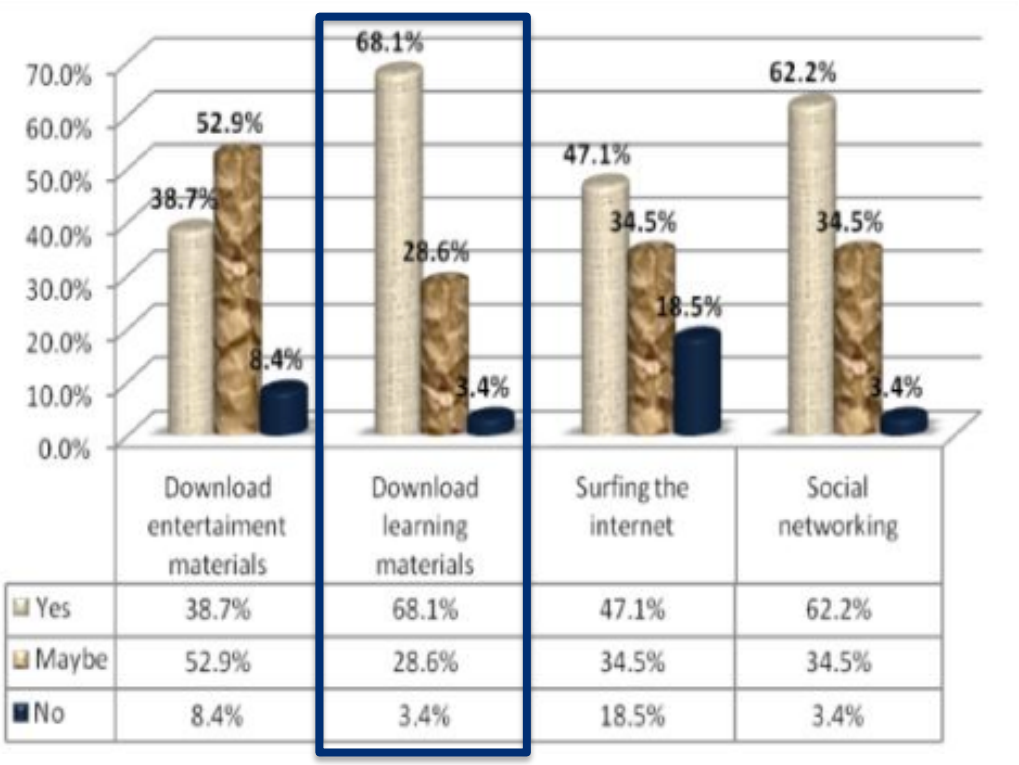
driven Atlas is one of several means that students use to access reliable information for their studies.

2.2.3. Mobile Phones and Tablets in Education

Smartphones and tablets are growing in society just as quickly as computers did in the early 21st century. A study of undergraduate students at an anonymous university in the United States reported that 91 percent of sampled students have mobile phones with internet access. (Bomhold, 2013). Given this, there is a potential for these smartphones to be used as an educational tool.

Smartphones and tablets open up the possibility for something known as Mobile Learning, or M-Learning. This new educational model is education through a mobile device which is significant because these devices are "small, portable, and wireless" (Furió, González-Gancedo, Juan, Seguí, & Costa, 2013). The devices are also cheaper than most laptops or desktop computers. M-Learning allows students to study interactively and visually just as they might on a computer, yet with more convenience.

One study from a university in the United States used psychometric testing to compare the use of mobile devices to computers in education. Tests about art showed that those who took the test using a mobile device learned less in an exercise than those who used computers. However, mobile device users clearly indicated that they had a more positive experience. This suggests that the mobility and multi-functionality of mobile devices was engaging, yet harmful to test scores.



	Download entertaiment materials	Download learning materials	Surfing the internet	Social networking
Yes	38.7%	68.1%	47.1%	62.2%
Maybe	52.9%	28.6%	34.5%	34.5%
No	8.4%	3.4%	18.5%	3.4%

Figure 3: Mobile Learning

A Digital Buzz info-graphic shows that 57 percent of the global population uses smartphones. Of these users, many students use mobile devices for school purposes in their everyday lives. Figure Three, confirms that smartphones are often used for learning materials (Page, 2013). Another study done by the University of North Carolina Wilmington found that 83 percent of smartphone users use their device for school purposes (Martin & Ertzberger, 2013). More specifically, when using mobile devices for academics, 60 percent of students reported using search engines while only 4.3 percent used databases or library websites according to a study done by the University of Southern Mississippi (Bomhold, 2013). Bomhold states that this is likely due to the convenience factor of search engines. Even though search engines are not as reliable for education as a database, they are familiar, quick, and easy to use which makes them the top choice for many students (Bomhold, 2013).

Bomhold presents two viable situations to direct student's mobile education toward more reliable databases and library resources:

- Design an application that offers more than just static information that could be found through a typical search engine.

- Make an application look and function exactly like a search engine or popular website that youth are familiar with.

These options suggest that mobile education can be successful if the application is constructed correctly. One innovative way to become technologically superior to search engines may be through a tool known as Augmented Reality.

2.2.4. Augmented Reality

Augmented Reality, also known as AR, is a tool that "enables the seamless connection of the digital and physical domains" (M. Billinghurst & Duenser, 2012). This technology is used with both computer and digital devices. To demonstrate the effect of this technology, consider an augmented book. This would be a real book essentially integrated with a digital version of a pop-up book (M. Billinghurst & Duenser, 2012). One would look at the physical book through a lens and a three-dimensional superimposed graphic would rise off of the page.

More sophisticated uses of Augmented Reality involve introducing a three-dimensional digital world to the physical world (Mark Billinghurst, 2002). Participants would view this digital world through special lenses as information is displayed either on a central surface or on a 'placeholder', a small card-like item. Since this information would be displayed in three dimensions, individuals would be able to circle the central surface or manipulate the placeholder to view the object from a variety of angles (Mark Billinghurst, 2012). Researchers are exploring the possibility of incorporating this into student group-work as well. Working off of a central screen can hinder effective communication between students; therefore researchers are investigating solutions, such as a hand-held device or special lenses, which would act as windows to the Augmented Reality world.

One example of Augmented Reality currently in use is the CityViewAR application in Christchurch, New Zealand, Figure Four. This mobile application uses GPS locations to find buildings that have been damaged by earthquakes and superimposes virtual pictures of the original site on top of them (M. Billinghurst & Duenser, 2012). The application allows the user to view the world around them with maps, panoramic pictures, photo galleries, and optional layers of detailed information. These options allow the users to choose which interface is most engaging for their purposes and interests.

Figure 2. The CityViewAR application showing the history of earthquake-damaged Christchurch. The application uses the mobile phone's GPS and compass sensors to superimpose a virtual undamaged building on the site of the real building remains.

Figure 4: An example of Augmented Reality in use in New Zealand

In an assessment of Augmented Reality for educational purposes, Mark Billinghurst and Andreas Duenser (2012) insist that the most effective way to use this technology is to blend it with traditional techniques. They stress that this strategy should be used as a supplement to traditional tools, allowing students to become more deeply related to the topic that they are learning. In a reflection of Augmented Reality used in the mathematics classroom, Henry Duh reflects that Augmented Reality "reduces the cognitive load and increases the freedom to learn" (Duh & Klopfer, 2013). More specifically, the applications of Augmented Reality increase student understanding by drawing connections between concrete objects and digital representation.

Given the locational aspects of Augmented Reality, this tool will be adept for supplementing the Atlas, as the Maori culture is location-centric. The cohesion of these characteristics makes this tool highly effective.

2.3. Significance of Maori Culture

The Maori once were the sole inhabitants of New Zealand but now make up only 15.4 percent of the population ("2006 Census Data," 2006). In the 1960s and 1970s, there was a push for cultural revitalization, which has stimulated interest in Maori (Spolsky, 2003). This revitalization resulted in the creation of numerous institutions, including the School of Maori

Studies at Victoria University and indigenous knowledge programs, such as the one in New Zealand's Maori-Language Immersion School (Harrison, 2005).

The most characteristic of Maori beliefs are veneration for their home topography and their ancestors (O'Connor & Macfarlane, 2002). This belief structure signifies the group-centric thought process of the Maori people, as they do not see themselves as distinct from their past or their homeland. With so many Maori losing touch with their history, there has been a push to counteract this trend. Victoria University's use of the *Te Kawa a Maui* Atlas helps their Maori students appreciate their homeland via the geo-biographies, both within their tribes and for all Maori lands.

2.4. Summary

The School of Maori Studies at Victoria University of Wellington strives to educate their students to their fullest potential. Understanding how students learn and engage in their studies has created opportunity for interactive learning tools to grow. As discussed, education can be approached by many different methods, but technology provides an option that can optimize traditional learning techniques by blending them with interactive, visual, and stimulating elements of digital sources. A new viable option within interactive learning, Augmented Reality, is also evaluated.

The benefits of web-based and computer-based learning styles are becoming more realistic, given the rise of technology in both New Zealand society and their classrooms. The Le@rning Federation allowed New Zealand and Australia to take steps in this direction by using online resources in their curriculum. However, this emerging notion is accompanied by many challenges dealing with accessibility, usability, and the technological abilities of students and teachers alike. Facing and overcoming these challenges will lead to success in educational systems such as the School of Maori Studies. By engaging their students more effectively through E-Learning, the school can ultimately strengthen cultural awareness by establishing a more concrete connection between a student's culture and studies.

3. Methodology

The purpose of this Interactive Qualifying Project is to engage the Maori Studies students at Victoria University of Wellington in order to increase location-based awareness regarding indigenous Maori history and culture (NewZealand, 2013). To accomplish this, we developed the following research objectives:

1. Define the most **engaging aspects** of the current *Te Kawa a Maui* Atlas from a student perspective.
2. Analyze the biggest **challenges** and areas needing improvement for students using the Atlas.
3. Represent the **lecturers' view** on the use of *Te Kawa a Maui* Atlas in the classroom.
4. Evaluate the hypothetical use of **Augmented Reality** and other **pedagogical tools** in the classroom.
5. Ascertain the **university-wide interest** in Augmented Reality to improve awareness of Maori **place-based history**.

Figure Five shows a graphical overview that describes how we executed the process of engaging the Maori Studies students at Victoria University of Wellington in order to increase location-based awareness regarding the indigenous history.

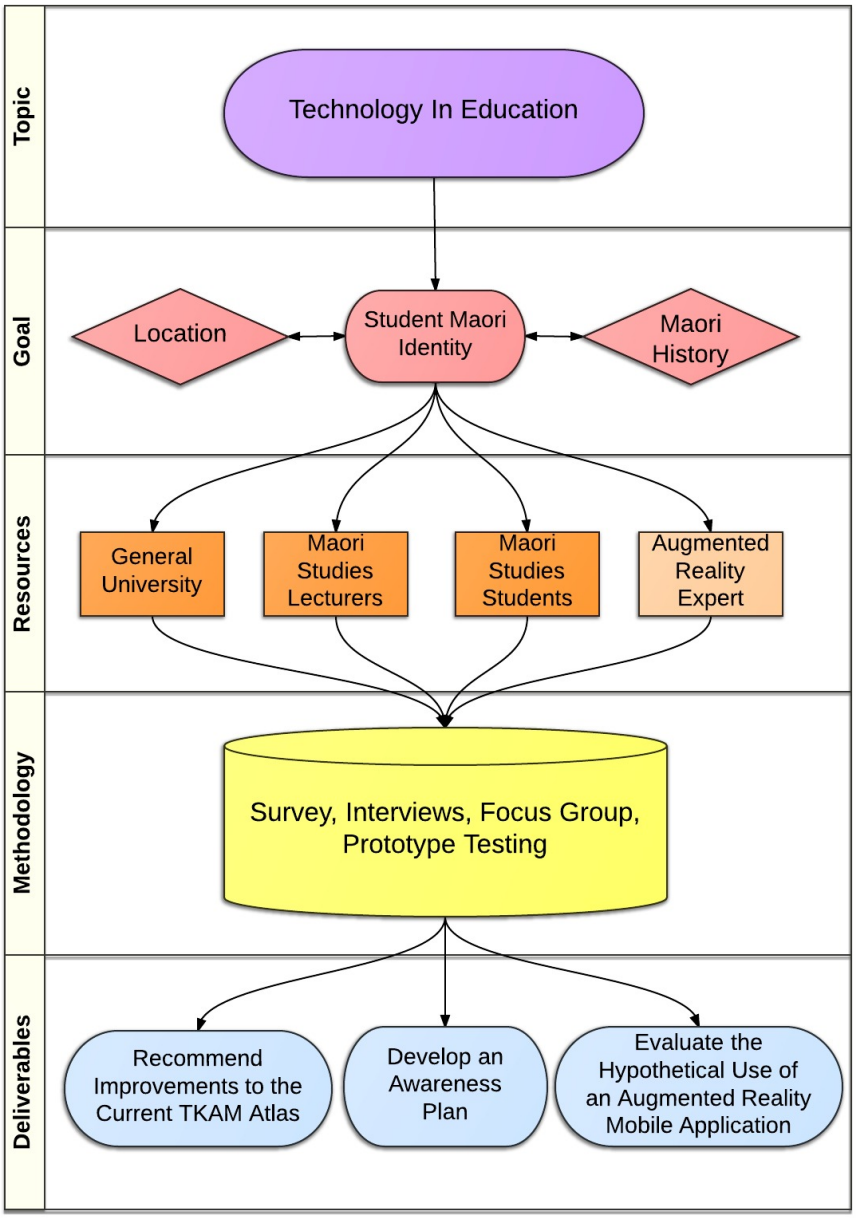


Figure 5: Project Overview

These objectives were completed over a seven-week period as shown in the Gantt Chart, Table One. The surveying was completed in weeks two and three to allow for enough time to analyze the data prior to the internal deadline for Dr. Mercier's funding proposal (marked by the double red line). Each of the red lines for particular tasks mark the due dates for those tasks. For certain tasks, we allotted more time than necessary to allow our team to adjust to the schedules of the students and staff on campus. Each 'x' marks a day out of the office due to national or citywide holiday.

Table 1: Gantt Chart for the 7 weeks onsite in Wellington, New Zealand

Activity	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7
Develop and Test Surveys for Professors and Students	x		x x				
Review AR Background Material from Ocean	x		x x				
Revise Methodology Chapter	x		x x				
Revise Background Chapter	x		x x				
AR Prototype Testing	x		x x				
Conduct Surveys with Students and Professors	x		x x				
Focus Group and Test Module with Students	x		x x				
Interview Professors	x		x x				
Analysis Data	x		x x				
Outline Data and Analysis Chapter	x		x x				
Outline Conclusion and Recommendations Chapter	x		x x				
Provide Ocean with Recommendations by the Interal Deadline	x		x x				
Draft Data and Analysis Chapter	x		x x				
Draft Conclusions Chapter	x		x x				
Revise Introduction Chapter	x		x x				
Finalize Data and Analysis Chapter	x		x x				
Finalize Conclusions Chapter	x		x x				
Abstract	x		x x				
Executive Summary	x		x x				
Final Presentation	x		x x				
Edit Final Report	x		x x				
Submit Final Report	x		x x				

3.1. Survey

To fulfill the objectives, we distributed an online survey to the students and staff of the Victoria University of Wellington. We emailed the survey to administrators within each department, who then forwarded the survey to their students. Since we were unable to send the survey directly to the students, we cannot know how much of the student population received the survey. The complete survey questions are included in Appendix D.

When designing this questionnaire, we utilized the part-part consistency effect to encourage respondents to explain areas of the *Te Kawa a Maui* Atlas that are either successful or need improvement (Houtkoop-Steenstra, Ebrary Academic, & ebrary, 2000). For instance, we asked students to rate their satisfaction with the Atlas's usability. Subsequently, we asked why that feature is 'satisfactory' or 'dissatisfactory' based on their first answer. We used the answer regarded as "average" (three of five on the Likert scale) as the 'satisfactory' cutoff throughout the survey. This strategy is valuable because it reveals the attitude and feelings regarding the subject matter in both quantitative and qualitative form (Houtkoop-Steenstra et al., 2000). We could successfully use this strategy because we used an online survey tool, Qualtrics, which is capable of navigating the subject through certain paths based on previous responses.

The online aspect of the survey simplified our research because of the timing and sample audience. The survey was launched during a holiday period, when less students or staff are at the Victoria University of Wellington campus. The survey had the potential to reach all 20,885 students and all staff members at the university. However, it was unrealistic to think that each student and staff would receive the email, and of those who did receive it, we believed that only a portion would complete it. We predicted we would receive 150 total responses. However, we received 117 completed responses during the 15 days that our survey was active. Of these responses, 35 were Maori Studies students and seven were Maori Studies staff. The remaining responses were a mix of staff and students from other departments at Victoria University.

The Qualtrics-powered survey consisted of six blocks that addressed the two topics covered in our project: the *Te Kawa a Maui* Atlas and Augmented Reality. Blocks, or sets of questions, broke the survey into sections depending on the category of respondent. These categories were as follows:

- Block 1: Screening Question - Affiliation to Victoria University of Wellington
- Block 2: School of Maori Studies Students - *Te Kawa a Maui* Atlas / Augmented Reality
- Block 3: School of Maori Studies Academic Staff - *Te Kawa a Maui* Atlas / Augmented Reality
- Block 4: School of Maori Studies General Staff - *Te Kawa a Maui* Atlas / Augmented Reality
- Block 5: Non - School of Maori Studies Students - *Te Kawa a Maui* Atlas / Augmented Reality
- Block 6: Non - School of Maori Studies All Staff - *Te Kawa a Maui* Atlas / Augmented Reality

These blocks helped organize the survey and guided respondents through pathways depending on their previous answers. Figure Six illustrates the general possible paths a respondent could take, since only the School of Maori Studies respondents answered questions about the *Te Kawa a Maui* Atlas. All non-Maori students and staff only completed the Augmented Reality portion of the survey because they were unlikely to have any experience with the Atlas. A question in the Augmented Reality section of the survey uses a two dimensional visual model of a possible prototype of the Augmented Reality application. By asking questions about the displayed prototype, we gathered feedback for the application without creating a tangible working prototype. This feedback helped us create a better interactive prototype, which was used for additional research (Kuutti et al.).

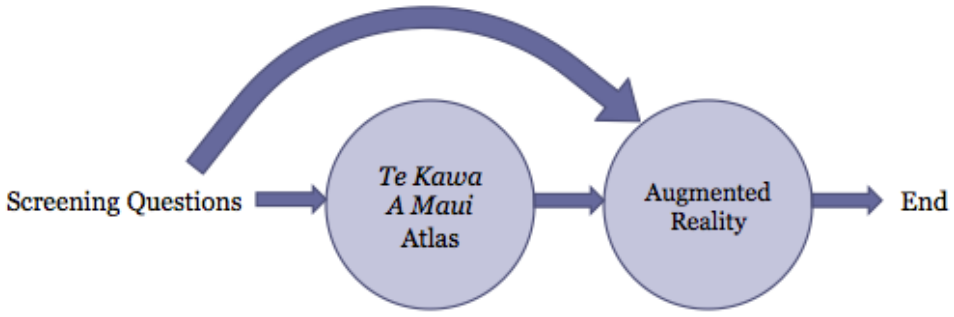


Figure 6: Survey Flowchart

During the survey design, each question was mapped to a particular research objective and, ultimately, linked to the deliverables, shown in Appendix C. This survey produced both

quantitative and qualitative results. To analyze and draw conclusions from this data, the information was organized using coding and drill downs.

We used drill downs to organize and analyze the quantitative data. This tool was used to assemble data so we could see how responses to a particular question compared to others. Comparing multiple questions revealed valuable connections and helped us provide specific conclusions. The 'drill down' page on the Qualtrics website described the method of setting up drill downs in this software in detail (Qualtrics, 2014). When we used this tool, we expected to find that respondents who were comfortable using mobile devices were more interested in an Augmented Reality application. By drilling down the answer to question 3.2, "Rate your ability to interact with your smartphone or tablet," we expected to get a detailed dataset correlating one's ability with smartphones and one's opinion toward a hypothetical Augmented Reality application. The use of similar drill downs allowed for thorough analysis of correlations between multiple survey questions.

To analyze the qualitative responses from the survey, we coded the responses. Coding is done by recognizing trends or patterns in many individual's responses and combining these responses into categories, allowing the researchers to draw conclusions. Refer to *The Coding Manual for Qualitative Researchers* to view examples of hypothetical patterns ("The coding manual for qualitative researchers," 2009). Using these pattern recognition techniques, each response was analyzed and assigned a corresponding key word or concept that reflects the ideas of the response. Therefore, each response was sorted into a subcategories, then into major categories, such as education and engaging aspects. This method grouped answers with similar concepts. Note that keywords and categories adapt based on each response received, which makes it impossible to define these categories prior to analyzing all interviews.

3.2. Focus Group

We conducted a focus group with four Maori Studies students who were particularly interested in the development of the Atlas. We recorded the audio of the focus group for future reference, however all responses were kept anonymous. In this session, we asked for specific suggestions to improve the Atlas as well as possible suggestions for the design and use of an Augmented Reality application. Furthermore, the students in the focus group elaborated on concepts that were overlooked in the survey.

We provided participants with the opportunity to interact with the Atlas, shown in Appendix B, on an iPad. The visual information facilitated the discussion regarding the Atlas. While participants interacted with the Atlas, we prompted the students to comment openly about their reactions, as these comments remained anonymous. We created an interactive Augmented Reality prototype, which we presented to the students in the focus group, shown in Appendix Q.

We developed this prototype based on the Augmented Reality application development process presented by Professor Mark Billinghurst, founder of HITLabNZ. To develop this prototype, we first created a storyboard; this was a series of pictures that illustrated how the application could be used, along with action symbols to navigate through the menus. From there, we made an interactive presentation using PowerPoint, which served as our navigable prototype. We used this prototype during the focus group to evaluate its strengths and weaknesses from a student perspective. We asked them to explain the pros and cons and comment on additional features they would like to see.

3.3. Interviews

We conducted six interviews at Victoria University, four of which were with lecturers in the School of Maori Studies, in order to understand their use of the *Te Kawa a Maui* Atlas or their potential reasons for not using the Atlas. Furthermore, we endeavored to establish what attributes could be added, either to the Atlas or a potential Augmented Reality application, that would ease the incorporation of these tools into their curriculum. The interviewees were chosen based on volunteers and availability, as the interviews were scheduled for February 13th, between 10am and 3pm. After the academic interviews occurred, we interviewed Professor Mark Billinghurst from the University of Canterbury and his team of Augmented Reality experts at HITLabNZ in Christchurch, New Zealand. We discussed Professor Billinghurst's existing successful Augmented Reality applications, how to evaluate the development of these applications, and funding options. All interviews were conducted informally. The interviewer used the questions in Appendices F and J as a topic guide during the interview.

While coding these interviews we established the leading causes for academic staff not using the Atlas in their coursework, the main purposes academic staff seek to use the Atlas or potential application, and other trends. Coding allowed for organization of data so that it was most efficiently analyzed. (Saldaña, 2009) Utilizing the results of interviews, a focus group, and

a survey, we provided Dr. Ocean Mercier with several recommendations for the *Te Kawa a Maui* Atlas as well as supporting evidence to substantiate her grant proposal for an Augmented Reality application.

4. Data and Analysis

The results of our three methodologies, a survey of students and staff at Victoria University, faculty and expert interviews, and a focus group with students from the School of Maori Studies, established an interest in and the ability to use interactive technologies, namely the *Te Kawa a Maui* Atlas and a proposed Augmented Reality application, to advance understanding of Maori culture. Furthermore, the faculty interviews, supported by the survey responses, persuaded us to create a plan to counteract lack of awareness of the *Te Kawa a Maui* Atlas. During the focus group, students identified a range of useful options to adapt the Atlas and an Augmented Reality application to better suit Maori culture. Finally, the team developed a plan to design and fund an Augmented Reality application based on the advice from Professor Billinghurst. This plan includes multiple funding options in case the current Marsden proposal is declined.

4.1. Impact of Interactive Technology on Maori Culture

Several Maori Studies staff members we interviewed believe that knowledge of Maori culture in modern society is fading. Even though 15.4 percent of the population of New Zealand currently identifies as Maori ("2006 Census Data," 2006), a survey respondent said, “Maori histories and experiences are not given the recognition they deserve.” Accordingly, the former Head of School of Maori Studies and current manager of the *marae*, Senior Lecturer Te Ripowai Higgins attributes this current lack of Maori knowledge to Maori people urbanizing and distancing themselves from their *marae*. She said that because “…many of them don’t know how to manage, how to keep the stories...” Fortunately, the School of Maori Studies is working to revitalize the Maori culture through interactive technology.

Integrating culture-based interactive technology into the coursework and personal lives of Maori Studies students could increase their engagement in Maori cultural education. All four School of Maori Studies staff members who were interviewed agreed that one example of this, a hypothetical Augmented Reality application, would “[p]ut a new spin on engagement with items [such as]… historical buildings” for students. More importantly, this would strengthen the tie between Maori history and its cultural location. One student said, “[b]eing able to see something and think about the meaning and significance at the [same] time, is so much better than thinking,

'I will look that up later'." Interactive technologies capable of blending information and location, such as Augmented Reality, are becoming more convenient and accessible.

Map-based technology increases the value of Maori education because it can rapidly identify and illuminate the significance of Maori locational ties. A student in the focus group explained, "I'd imagine if I was to go to Taranga, I'd point my camera on my phone and just scan and I could see all of the history." Furthermore, the vast majority of the Maori Studies students, Maori Studies staff, and general staff at Victoria University whom we surveyed indicated that an Augmented Reality application for Maori cultural education 'would enhance locational awareness of Maori knowledge and history,' as shown in Figure Seven. Clearly, such an educational tool would enhance the relevance of cultural information, the history, when students connect with the locational reality.

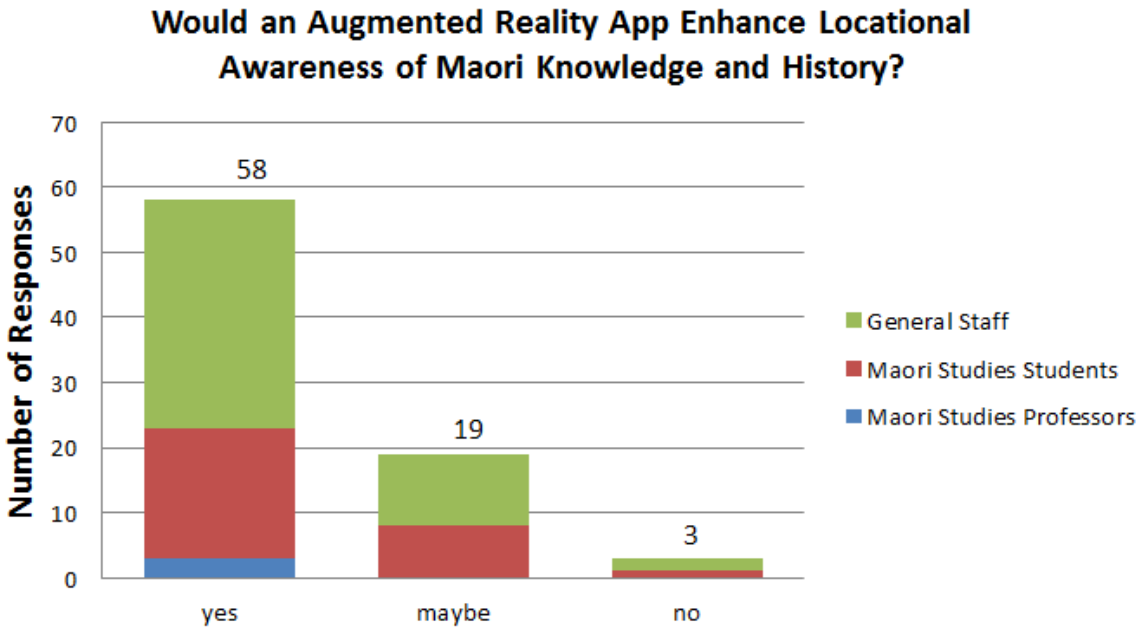


Figure 7: Locational Awareness with Augmented Reality

Augmented Reality can effectively preserve and present the storytelling component of Maori tradition by recording orators' stories. According to the former head of School of Maori Studies, Te Ripowai Higgins, Maori is an oral culture. The Maori pass their wisdom down through stories told by elders. When speaking of Augmented Reality, one survey respondent was excited about "[s]haring knowledge that can come directly from communities, *whanau*, *hapu*, *iwi*, and all learning institutions," through interactive technology on mobile devices. This idea of

'sharing' information is a formative part of many interactive technologies, since it helps peers learn collaboratively.

The existing Atlas or a potential Augmented Reality application could increase accessibility to Maori narratives and preserve them for the future, so the stories outlive their generation. All six faculty and staff interviewees were supportive of documenting sound bites to preserve the oral aspect of Maori culture. Ultimately, interactive technology can bring life to the spoken word of past orators at the users' convenience. However, it is also necessary to consider overall interest and the feasibility of the integration into Maori Studies courses.

4.2. Interest

Students find the atlas helpful and enjoyable to use within their Maori Studies classes. Senior Lecturer Higgins said, "[t]he students love it," Appendix G, when discussing the *Te Kawa a Maui* Atlas. Block Two[1], of the survey confirms this strong student connection to the atlas; one student indicated that he or she is interested in the atlas because it "use[s] student work" to tell "[s]tories specific to New Zealand and our histories." Furthermore, all Maori Studies students rated their interest when using the *Te Kawa a Maui* Atlas as good or excellent, shown in Figure Eight. The students also responded that they enjoyed "the local areas of interest that you don't hear about any other ways," and that "it has a great overview of many [well-researched] historical Maori sites."

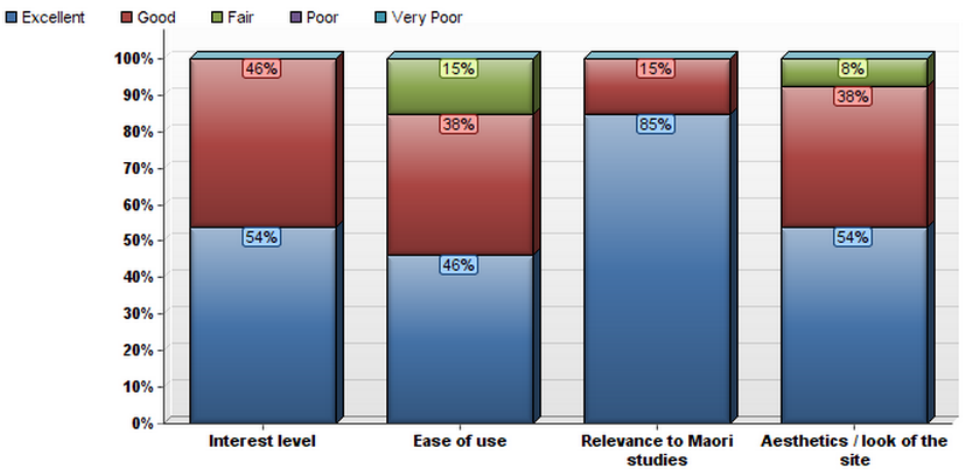


Figure 8: Student Evaluation of *Te Kawa a Maui* Atlas

[1] Block Two of Survey: Student respondents from the School of Maori Studies

Nearly three-quarters of the respondents in Block Two[2], of the survey declared that they would like to use an Augmented Reality application both in and outside their Maori Studies courses, showing strong Maori Studies student interest. However, Maori lecturers infrequently use the existing interactive technology, the *Te Kawa a Maui* Atlas, in class since the recent online launch. All four lectures that we interviewed were nevertheless excited to incorporate Atlas-based assignments and projects into their curriculum in the future. Three lecturers who have used the Atlas in courses rated both the Atlas and a potential Augmented Reality application as easy to incorporate into their coursework, Block Three[3]. Results from Block Three[3] of the survey established that the three lecturers who currently do not use the Atlas in their courses would do so in the future.

Once lecturers developed a better understanding of Augmented Reality, they were enthusiastic for the potential possibilities of its educational value along with that of the *Te Kawa a Maui* Atlas. Lecturer Rata stated that she "[d]efinitely [would] like to build it into the [treaty] courses [she teaches]," referring to the possibility of visiting old battlegrounds to gain a sense of location utilizing Augmented Reality. Alternatively, a language lecturer, Mike Ross focused on increasing the effectiveness of language education by incorporating Augmented Reality into the classroom. Lecturer Ross also suggested incorporating translation assignments to create "[l]anguage exercises around the locations" significant to Maori history. The versatility and wide range of capabilities of these interactive technologies add to their educational value.

4.3. Usability

Within the School of Maori Studies, lecturers and students are interested in using interactive technology in the classroom. To maintain the interest of both groups, the audience must be capable and comfortable using the devices and the interface must be designed to function easily and intuitively.

Our survey indicated that over 90 percent of students and faculty own or have access to devices capable of running Augmented Reality applications. Additionally, two-thirds of this population feels 'comfortable' or 'most comfortable' using smartphones or tablets. Hence, they should find few challenges using Augmented Reality applications on such devices. The majority

[2] Block Two of Survey: Student respondents from the School of Maori Studies
[3] Block Three of Survey: Staff respondents from the School of Maori Studies

of students who were identified as 'familiar' with the *Te Kawa a Maui* Atlas in Block Two[4] rated the overall ease of use as 'excellent' or 'good'. Students highlighted the "filters and search function" and the "clearly placed and colored [pins]" as aspects that made the Atlas easier to use.

4.4. General Suggestions for the *Te Kawa a Maui* Atlas

In Block Two[5], no respondents rated the overall user experience with the existing *Te Kawa a Maui* Atlas as 'poor', yet many research participants offered suggestions to improve the Atlas. A Block Two[5] respondent suggested adding a "[l]ink to a page of instructions… and the uses that the atlas provides to a user." A tutorial could help new and repeat users understand both the basic and in-depth capabilities of the Atlas. Moreover, one student in the focus group suggested clarifying the pin color-coding system by adding a legend on the side of the page. Lastly, both survey respondents and interviewees mentioned that many pins offered widely varying amounts of information. Standardized information presentation could provide a more organized interface.

4.5. Adapt Technology to Maori Culture

We encountered several concerns about integrating technology into the School of Maori Studies because of the values and sensitivities of the Maori culture.

In interviews, many Maori educators expressed concern about the accuracy of the information displayed on the *Te Kawa a Maui* Atlas or a possible Augmented Reality application. Lecturer Rata expressed the importance of "… being clear that these are people's personal opinions … as opposed to the position of the School [of Maori Studies]," when making information public. Additionally, Lecturer Bruce McFadgen suggested integrating the technology into classes with a checks and balance system. By this, he intends to have students research topics that have already been written about to compare interpretations and accuracy, eliminating bias or flaws of research.

A student in the focus group also addressed a concern about personal information being too accessible: "[y]ou don't want to give out too much information." Because of this concern, one student recommends linking the atlas to an existing *iwi* database to verify one's heritage

[4] Block Two of Survey: Student respondents from the School of Maori Studies
[5] Block Two of Survey: Student respondents from the School of Maori Studies

prior to gaining access to certain sections, proposing that it would "give the *iwi* the right, [and] the ability to control what the public sees" to ensure that privacy is maintained as needed.

Participants in both the survey and the interviews stated that they were concerned about the loss of human interaction if technology replaced traditional oral education in a *marae*. One student, in a response in Block Two[6] of the survey, mentioned "To sit down and share a story about a meeting house takes the listener on a journey that no software would be able to convey...through a phone or app." In addition, a graduate student, Vini Olsen-Reeder said, "on a national scale, the 'rate' of Māori people that can speak Māori is declining." Interviewees proposed that bilingual audio recordings of orators could help preserve both the language and oral traditions. Given this, students could simulate the experience of the traditional marae at any convenient location. While interactive technology can help preserve Maori culture, the greatest challenge is incorporating this technology without diluting Maori culture and its traditions.

4.6. Awareness

The versatility of location-based technologies increases its relevance to Maori cultural education, yet the current educational tool, *Te Kawa a Maui* Atlas, has been underutilized thus far.

More than half of the Maori Studies students do not know how to use the *Te Kawa a Maui* Atlas, while nearly half of students have never heard of the Atlas whatsoever. This lack of awareness among the student body presented itself in Block Two[6] of the survey and was reinforced by the student focus group. One graduate student said, "…the only reason I knew about the Atlas is because I had to put a cover sheet and it says at the bottom 'do you want this to [be] submitted to the cultural Atlas?' So I never checked yes but if I had known what it was I probably would have tapped yes." This shows that the staff of the school of Maori studies is not communicating information about the Atlas well.

All of the Maori Studies staff that we interviewed agreed that students are generally unaware of the *Te Kawa a Maui* Atlas. Of the Block Two[6] respondents who have used the Atlas before, only a third were presented with the *Te Kawa a Maui* Atlas in lecture. One student who participated in the focus group commented on how she had used the Atlas before, "...inside of

[6] Block Two of Survey: Student respondents from the School of Maori Studies

class… just to navigate the system and see what was really in there," suggesting that lecturers do not use the Atlas to its full potential.

All four lecturers who we interviewed from the School of Maori Studies admitted they have not incorporated the Atlas into their curriculum yet. Lecturer Rata stated, "I've only looked around on it, I haven't used it a lot" and believes that "... we could be pushing it even more," referring to the lecturers' role in spreading awareness of the Atlas to students. The four Maori Studies lecturers' interviews indicated that the lack of understanding and awareness of the *Te Kawa a Maui* Atlas prevents lecturers from using the Atlas in class. This diminishes the opportunity for students to take advantage of the available interactive technology.

4.7. Funding Alternatives

One focus of this project was to assist the School of Maori Studies in presenting a successful funding proposal to the Marsden Fund by supplying evidence of the benefits of using Augmented Reality within Maori cultural education. During our interview with Professor Mark Billinghurst, an expert on Augmented Reality, we discussed the consequences and possibilities of not receiving the Marsden Fund, Appendix K.

Based on the conversation with Professor Billinghurst, receiving the $750,000 from the Marsden Fund would provide the resources needed to create a custom Augmented Reality application. Professor Billinghurst suggested that either students at HITLabNZ or students at Victoria University could manage the technical maintenance using this fund. The flexibility to customize the application would allow the team to address the specific requirements to adapt this technology to the Maori culture.

Professor Billinghurst suggested using default Augmented Reality browsers Junaio and BuildAR as an alternative approach for application development if the Marsden Fund is not granted. Although not ideal, Professor Billinghurst recommended crowdfunding as an alternative approach to raising money for the introduction of this type of Augmented Reality application.

4.8. Summary

The *Te Kawa a Maui* Atlas and Augmented Reality could allow the School of Maori Studies to preserve Maori stories conveniently and to reflect its storytelling traditions. Although few at Victoria University have used the *Te Kawa a Maui* Atlas, students and staff are interested in the technology. Therefore, many lecturers have considered new ways of incorporating both

the *Te Kawa a Maui* Atlas and Augmented Reality into their curriculum. Given the nature of Maori culture and the current small user base of the Atlas, the main aspects of research suggested the need to adapt technology to Maori culture and increase the awareness of the *Te Kawa a Maui* Atlas. Lastly, we interviewed Augmented Reality expert, Professor Mark Billinghurst to discuss development and funding options of an Augmented Reality application.

5. Conclusions and Deliverables

5.1. Conclusions

Our background research and methods have prompted three main conclusions for this project. They are as follows:

1. The School of Maori Studies and Victoria University support using interactive technology for Maori education.
2. One must consider values, needs and sensitivities of Maori culture when developing technology.
3. Few students and staff of the School of Maori Studies are aware of interactive educational technology.

5.1.1. Support for Interactive Technology

Interactive technology can be relevant to Maori cultural education due to its locational and storytelling capabilities. Furthermore, students and staff at Victoria University are strongly interested in using the *Te Kawa a Maui* Atlas and a hypothetical Augmented Reality application in class and for personal interest. Given this, we conclude that both of these interactive technologies could be successfully incorporated into the School of Maori Studies curriculum.

5.1.2. Adaptation of Technology to Maori Culture

Any technology implemented at the School of Maori Studies must be adapted to suit the needs of Maori cultural education to be effective. Therefore, we identified suggestions that will allow interactive technologies to be used appropriately for Maori cultural education.

It is necessary to preserve the accuracy and credibility of content and research in the database driven Atlas and hypothetical Augmented Reality application. First, the audience needs to understand that the content is student interpretation. Secondly, we recommended a system of checks and balances to maintain accuracy where multiple students could research the same story or location and discuss the inconsistencies found between the two sets of research.

Beyond the content accuracy concerns, a major concern is the public's access to personal stories. We recommended creating the option for users to log into the Atlas or Augmented

Reality application as a member of their *iwi* to view private content. This feature could provide Maori with stories that are currently difficult to share outside of their respective *marae*.

Storytelling and word of mouth are the traditional Maori educational methods. We recommended recording orators from the *iwi*s to include in the Atlas or potential Augmented Reality application. Additionally, it has become increasingly difficult to preserve aspects of Maori culture that cannot be expressed clearly in English; therefore, we recommended including bilingual options, *Te Reo Maori* and English, for voice recordings in both interactive technologies. This allows the audiences, such as *iwi* members who are separated from their own *marae*, to still experience hearing an elder tell them the story of their history. This could also create opportunities for new assignments in language courses and improve language preservation.

5.1.3. Awareness Conclusions

Any advantages of interactive technology might go unnoticed without raising awareness of the *Te Kawa a Maui* Atlas and a potential Augmented Reality application. Many students and staff have neither heard of nor used the Atlas; this disuse inhibits the effectiveness of quality interactive technologies at Victoria University. We conclude that it is vital to raise awareness for any interactive technology to successfully supplement the students' Maori cultural education.

5.2. Deliverables

This project had three main deliverables:

1. Recommendations to improve usability and effectiveness of the Te *Kawa a Maui* Atlas
2. Create a development plan for an Augmented Reality application for Maori cultural education
3. Develop a plan for the School of Maori Studies to increase awareness of the Te *Kawa a Maui* Atlas and a hypothetical Augmented Reality application

5.2.1. *Te Kawa a Maui* Atlas

To deliver a less overwhelming and more usable *Te Kawa a Maui* Atlas, we provided recommendations to SQUIZ, the software services company that created the Atlas. Our sponsor, Dr. Ocean Mercier, met with SQUIZ everyday from February 24th to March 7th. Our team joined multiple meetings to give feedback and track progress. The evolution of the Atlas over the course

of those two weeks can be seen in comparing Appendix B (old) to Appendix M (new). SQUIZ used the recommendations that we provided and made these changes:

- Added a legend which defines pin colors
- Added a user tutorial for first time site visitors and as well as a home page tutorial link
- Formatted pins to show consistent amounts of information on first click
- Added a 'read more' option to view longer descriptions if desired
- Included an option for audio files

Due to time and feasibility constraints, SQUIZ was unable to provide every change requested. Mainly, the structure of the Atlas prevented the possibility of a privacy mechanism for each *iwi*.

5.2.2. Development of Augmented Reality Application

Much of our research has been focused around supporting a proposal for the Marsden Fund. If granted, this fund would provide the School of Maori Studies with up to $250,000 per year for the next three years. We created a document, shown in Appendix N, which contains essential statistics and conclusions to support our sponsors' Marsden Proposal for an Augmented Reality application on February 19th, 2014.

In addition to the Marsden Proposal conclusions, we created a plan addressing the next steps of developing an Augmented Reality application. This is a four-step plan, which Professor Billinghurst recommended to develop a successful Augmented Reality application. We completed the first two steps of the process, shown in Appendix P, and provided Dr. Ocean Mercier with guidance to complete the development of the Augmented Reality application.

Prototyping Process

1. Storyboard (see Appendix R)
2. Simple interactive prototype (i.e. PowerPoint, see Appendix Q)
3. Intricate prototype (i.e. Proto.io)
4. Actual application (i.e. Junaio or HITLabNZ)

From the data gathered in the expert interview with Professor Billinghurst, Appendix K, we developed a funding option chart to provide guidance to Dr. Mercier on two feasible approaches towards acquiring money for the development of the application. The approach shown above remains the same, yet the two funding options delivered to Dr. Mercier will influence the extent to which professionals can customize the application toward Maori culture, as seen in Appendix P.

5.2.3. Awareness Plan

We developed a multistep process to raise awareness about the Atlas, detailed in Appendix O. This process relies heavily on academic staff's willingness to include and advertise the Atlas and potential application in their courses.

The first step in this process is to host a faculty seminar. The goal of this seminar is to prompt lecturers who have not used the Atlas before to incorporate it into their courses. This seminar will demonstrate to lecturers how to use the Atlas to best engage their students along with why the Atlas should be utilized in their courses.

Next we recommended developing an advertisement to display on several television screens located in areas around campus frequented by students. This advertisement will display not only screenshots or videos of the Atlas or, once created, the Augmented Reality application, but also why such technology should be used in the class. Similar to this, we considered a poster with a QR code for the Augmented Reality application to allow for direct download access.

We also suggested that the School of Maori Studies link the Atlas to social media, such as Facebook and Twitter. Students use social media as a means to learn information, allowing current users to create interest among their peers. The School of Maori Studies could post about trips to significant Maori locations or general interesting information about the interactive technologies available to the student body to further encourage use of it.

The last recommendations for increasing awareness of the Atlas were to include links or icons on the course outline, the library computer desktops, and each lecturer's email signoff. We recognize that many users are unlikely to visit the Atlas because of this; however, we expect that the students' curiosity will grow as they are exposed to the Atlas more. We expect that this awareness plan will help students learn about the Atlas and, with this, become more engaged in their studies.

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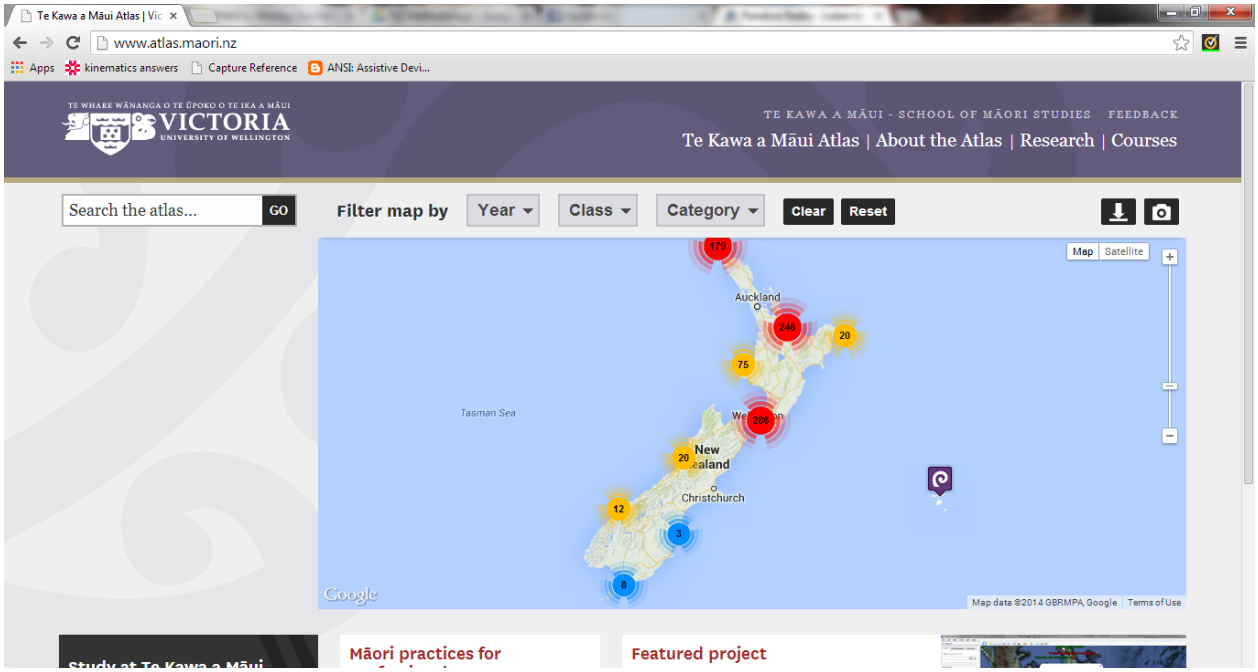
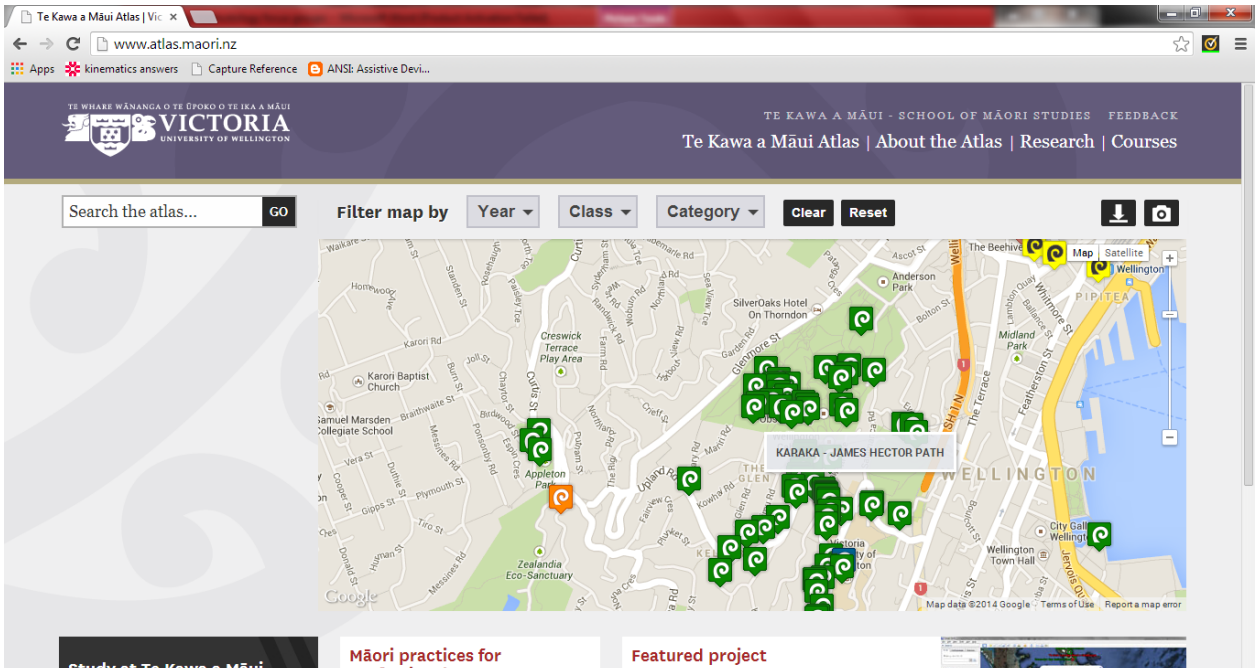
Appendices

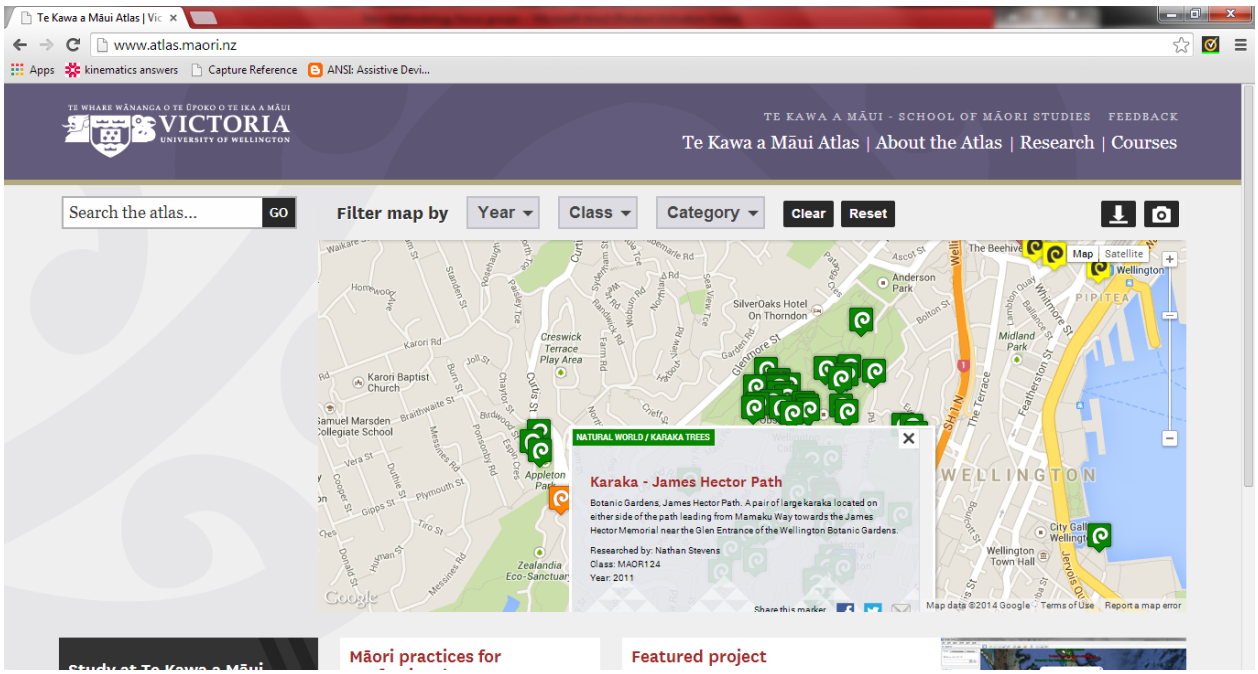
Appendix A – Glossary of Commonly Used Report Terms

Term	Definition
Interactive Technology	A device or software that engages the user by giving immediate feedback which allows the user to respond further ("ITLC Online," 2012).
***Te Kawa a Maui* Atlas** 	An online, map based, geo-biographical atlas which is powered by a database of student and professor research ("Te Kawa a MÄui Atlas About the Atlas," 2013).
Augmented Reality 	Technology that uses a device to superimpose digital layers on to reality.
Marae 	A traditional Maori meeting place which enhances the teaching and research, learning and cultural needs of Maori ("Victoria University of Wellington,").
Iwi	Group of Maori people bound together through common ancestry, similar to a tribe.
***Te Reo* Maori**	Traditional Maori language

Appendix B – *Te Kawa a Maui* Atlas as of February 2014






Te Kawa a Māui Atlas | Vic
www.atlas.maori.nz
Apps
kinematics answers
Capture Reference
ANSI: Assistive Devi...
TE WHARE WĀNANGA O TE ŪPOKO O TE IKA A MĀUI
VICTORIA
UNIVERSITY OF WELLINGTON
TE KAWA A MĀUI - SCHOOL OF MĀORI STUDIES
FEEDBACK
Te Kawa a Māui Atlas | About the Atlas | Research | Courses
Search the atlas...
GO
Filter map by
Year
Class
Category
Clear
Reset
Map
Satellite
NATURAL WORLD / KARAKA TREES
Karaka - James Hector Path
Botanic Gardens, James Hector Path. A pair of large karaka located on either side of the path leading from Mamaku Way towards the James Hector Memorial near the Glen Entrance of the Wellington Botanic Gardens.
Researched by: Nathan Stevens
Class: MAOR124
Year: 2011
Share this marker
Map data ©2014 Google
Terms of Use
Report a map error
Māori practices for
Featured project

Appendix C – Objective Mapped Questions

The reason for this chart is to ensure that the survey questions fulfill all of the information that needs to be found. Mapping objectives to important topic, which will be mapped to corresponding survey question numbers, will do this.

Objective	Topics that Need to be Covered	Survey Question #
1) Define the most engaging aspects of the current Te Kawa a Maui Atlas from a student perspective.	Engaging students	8.4
	Student usability	8.7
	Appearance to student	8.11
	Relevance to Maori Studies	8.9
	Student Interest	8.5
	Why do you use it	8.2
2) Analyze the biggest challenges and areas needing improvement for students using the atlas.	Challenging aspects	8.4
	Areas needing improvement	8.4
	Student usability	8.8
	Appearance to student	8.12
	Relevance to Maori Studies	8.10
	Student Interest	8.6
3) Represent the professors' view on the use of TKAM in the classroom.	Do they use the atlas in course material	5.2
	Frequency of use	5.1
	How the atlas is used	5.2
	How comfortable using the technology of the atlas	5.3
	What problems are encountered	5.3
	What could improve the atlas	5.3
	What would make the atlas more valuable/education	5.4
5) Evaluate the hypothetical use of augmented reality and other pedagogical tools in the classroom.	Could AR be affectively incorporated into courses	3.1
	Would it strengthen locational awareness	3.8
	Would professors use it	7.7
	Would students want to use it	9.7
	What are the best attributes of AR	9.12
6) Ascertain the public interest in augmented reality to improve awareness of Maori place-based history.	Would they be interested in learning about Maori Culture	2.7
	Would an app be more interesting than travel guide/book	9.11
	Do you have the necessary technology	2.1
	Can you use smartphone effectively	2.2

Appendix D – Survey Questions

Inside Digital Maori World Survey

Q1.1 Kia ora and welcome to this two-part survey of the *Te Kawa a Maui* (TKAM) Atlas online, which can be viewed here at "http://www.Atlas.maori.nz, as well as a survey regarding Augmented Reality and its potential use in academia. Your response will contribute to the ongoing development of the Atlas as well as the possible development of an Augmented Reality application. Data from this survey will contribute to a journal article and technical report. To find out more, please email Maori-studies@vuw.ac.nz. This survey is completely anonymous unless you provide information that may identify you. All data will be treated with strict confidentiality. This research has gained ethics approval (#19954) from the Victoria University of Wellington Human Ethics Committee. By completing this survey you consent to participate in this research. As part of completing this survey, you will be entered into a draw for one of five $50 supermarket vouchers. See details on how to enter at the end of this survey. Thank you for your participation. Nga mihi ki a koe.

Q1.2 In 2014, you are a _____?

- ❍ Non School of Maori Studies student
- ❍ 1st Year Maori Studies Student
- ❍ 2nd Year Maori Studies Student
- ❍ 3rd Year Maori Studies Student
- ❍ 4th Year or more Maori Studies Student
- ❍ School of Maori Studies academic staff
- ❍ School of Maori Studies general staff
- ❍ All other non School of Maori Studies staff

Q3.1 What type of smartphone or tablet do you own or use?

- ❍ Apple (eg. iPhone, iPad, iTouch)
- ❍ Android (eg. Samsung, Nexus, LG)
- ❍ Both Apple and Android
- ❍ Other (eg. Blackberry, Windows)
- ❍ I do not own or use a smartphone or tablet

Q3.2 Rate your ability to interact with your smartphone or tablet.

- ❍ 1 (most comfortable)
- ❍ 2
- ❍ 3
- ❍ 4
- ❍ 5 (least comfortable)

Q3.3 This section is about a location aware Augmented Reality application.

Q3.4 Please watch the 20-second video explaining Augmented Reality.

Q3.5 Have you used or heard of an application similar to that in the video?
- ❍ Yes, I have used an application like this. List below. _____
- ❍ Yes, I have heard of an application like this, but never used one. List below. _____
- ❍ No, I have never heard of an application like this

Q3.6 Rate your experience using this type of application.
- ❍ 1 (very positive)
- ❍ 2
- ❍ 3
- ❍ 4
- ❍ 5 (very negative)

Q3.7 Would you use this type of application to learn about Maori knowledge and history?
- ❍ Yes
- ❍ Maybe
- ❍ No

Q3.8 Do you think this type of application could enhance locational awareness of the Maori knowledge and history?
- ❍ Yes
- ❍ Maybe
- ❍ No

Q3.9 What are your thoughts and opinions on an Augmented Reality application for education?

Q87 Please include email below if you would like to include yourself in a raffle for a $50 supermarket voucher. Your responses will not be linked to your email. It is for raffle purposes only.
- ❍ Yes _____
- ❍ No

Q2.1 What type of smartphone or tablet do you own or use?
- ❍ Apple (eg. iPhone, iPad, iTouch)
- ❍ Android (eg. Samsung, Nexus, LG)
- ❍ Both Apple and Android
- ❍ Other (eg. Blackberry, Windows)
- ❍ I do not own or use a smartphone or tablet

Q2.2 Rate your ability to interact with your smartphone or tablet.

- ❍ 1 (most comfortable)
- ❍ 2
- ❍ 3
- ❍ 4
- ❍ 5 (least comfortable)

Q2.3 This section is about a location aware Augmented Reality application.

Q2.4 Please watch the 20-second video explaining Augmented Reality.

Q2.5 Have you used or heard of an application similar to that in the video?

- ❍ Yes, I have used an application like this. List below. _____
- ❍ Yes, I have heard of an application like this, but never used one. List below. _____
- ❍ No, I have never heard of an application like this

Q2.6 Rate your experience using this type of application.

- ❍ 1 (very positive)
- ❍ 2
- ❍ 3
- ❍ 4
- ❍ 5 (very negative)

Q2.7 Would you use this type of application to learn more about Maori knowledge and history?

- ❍ Yes
- ❍ Maybe
- ❍ No

Q2.8 Rate your likeliness of using this type of application for personal interest about the Maori.

- ❍ Very Likely
- ❍ Likely
- ❍ Undecided
- ❍ Unlikely
- ❍ Very Unlikely

Q2.9 What are your thoughts and opinions on an Augmented Reality application for educational purposes?

Q4.1 For what purpose did you use the Te Kawa A Maui (TKAM) Atlas? (Tick all that apply)

- ❑ Assignment (worth 5% or less)
- ❑ Research project (worth >20%)
- ❑ Personal interest
- ❑ I've heard of TKAM Atlas but never used it
- ❑ I don't know what the TKAM Atlas is
- ❑ It was presented in a lecture
- ❑ Project (worth 5-20%)

Q4.2 How many times have you used the TKAM Atlas?

- ❍ 1
- ❍ 2-3
- ❍ 4-5
- ❍ 6-10
- ❍ 11+

Q4.3 Rate your experience with using the TKAM Atlas.

	Excellent	Good	Fair	Poor	Very Poor
Level of engagement	❍	❍	❍	❍	❍
Ease of use	❍	❍	❍	❍	❍
Relevance to Maori Studies	❍	❍	❍	❍	❍
Aesthetics / look of the site	❍	❍	❍	❍	❍

Q4.4 What particular aspect(s) of the TKAM Atlas makes it interesting?

Q4.5 What particular aspect(s) of the TKAM Atlas is uninteresting?

Q4.6 What particular aspect(s) of the TKAM Atlas makes it easy to use?

Q4.7 What particular aspect(s) makes the TKAM Atlas difficult to interact with?

Q4.8 What particular aspect(s) of the TKAM Atlas makes it relevant to Maori studies?

Q4.9 What potential aspect(s) would make the TKAM Atlas relevant to Maori Studies?

Q4.10 What particular aspect(s) of the TKAM Atlas is aesthetically pleasing?

Q4.11 What particular aspect(s) makes the TKAM Atlas aesthetically displeasing?

Q4.12 Any additional recommendations for the TKAM Atlas.

Q4.13 What is your general impression of the TKAM Atlas?

Q5.1 Approximately how often do you use the Te Kawa A Maui (TKAM) Atlas in the classroom?

- ❍ Often
- ❍ Sometimes
- ❍ Rarely
- ❍ Never

Q5.2 How have you utilized the TKAM Atlas in the Classroom? (Tick all that apply)

- ❑ Assignment
- ❑ Research Project
- ❑ Lecture
- ❑ Recommended Resource on Blackboard
- ❑ Recommended Resource in Course Outline
- ❑ Other _____

Q5.3 Rate your experience with using the TKAM Atlas in the classroom.

	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree	Additional comments or recommendations
Students become engaged when presented with the TKAM Atlas.	❍	❍	❍	❍	❍	
Students produce excellent work for the Atlas.	❍	❍	❍	❍	❍	
The TKAM Atlas is easy to incorporate into my curriculum.	❍	❍	❍	❍	❍	
The TKAM Atlas has high educational value.	❍	❍	❍	❍	❍	
Generally, maps are an important feature of my lectures.	❍	❍	❍	❍	❍	

Q6.1 What has prevented you from using the TKAM Atlas in the classroom?
- ❍ I have heard of it but have not used it because: _____
- ❍ I do not know what this is

Q6.2 Do you plan to use the TKAM Atlas in the future?
- ❍ Yes
- ❍ Maybe
- ❍ No

Q6.3 What purposes in the classroom might you use the TKAM Atlas for? (Tick all that apply)
- ❑ Homework Assignment
- ❑ Research Project
- ❑ Lecture
- ❑ Recommended resource on Blackboard
- ❑ Recommended resource in course outline
- ❑ Other _____

Q6.4 Additional comments or recommendations for the use of the TKAM Atlas in the classroom.

Q6.5 What would you change or add to the TKAM Atlas to motivate you to use it in the classroom?

Q7.1 What type of smartphone or tablet do you own or use?
- ❍ Apple (eg. iPhone, iPad, iTouch)
- ❍ Android (eg. Samsung, Nexus, LG)
- ❍ Both Apple and Android
- ❍ Other (eg. Blackberry, Windows)
- ❍ I do not own or use a smartphone or tablet

Q7.2 Rate your ability to interact with your smartphone or tablet.
- ❍ 1 (most comfortable)
- ❍ 2
- ❍ 3
- ❍ 4
- ❍ 5 (least comfortable)

Q7.3 This section is about a location aware Augmented Reality application.

Q7.4 Please watch the 20 second video explaining Augmented Reality seen below.

Q7.5 Have you used or heard of an application similar to that in the video?

- ❍ Yes, I have used an application like this. List below. _____
- ❍ Yes, I have heard of an application like this, but never used one. List below. _____
- ❍ No, I have never heard of an application like this

Q7.6 Rate your experience using this type of application.

- ❍ 1 (very positive)
- ❍ 2
- ❍ 3
- ❍ 4
- ❍ 5 (very negative)

Q7.7 Would you use this type of application to teach Maori studies courses?

- ❍ Yes
- ❍ Maybe
- ❍ No

Q7.8 How easily could you include this type of application into coursework, lectures, projects, etc.?

- ❍ 1 (very easily)
- ❍ 2
- ❍ 3
- ❍ 4
- ❍ 5 (very difficult)

Q7.9 Do you think this type of application could enhance locational awareness of Maori knowledge and history?

- ❍ Yes
- ❍ Maybe
- ❍ No

Q7.10 What are your thoughts and opinions on an Augmented Reality application for education?

Q8.1 What is your major?

- ❍ Maori Studies
- ❍ Te Reo Maori
- ❍ Maori Resource Management

Q8.2 For what purpose did you use the Te Kawa A Maui (TKAM) Atlas? (Tick all that apply)

- ❑ Assignment (worth 5% or less)
- ❑ Research project (worth >20%)
- ❑ Personal interest
- ❑ Heard of TKAM Atlas but never used it
- ❑ I don't know what the TKAM Atlas is
- ❑ It was presented in a lecture
- ❑ Project (worth 5-20%)

Q8.3 How many times have you used the TKAM Atlas?

- ❍ 1
- ❍ 2-3
- ❍ 4-5
- ❍ 6-10
- ❍ 11+

Q8.4 Rate your experience with using the TKAM Atlas.

	Excellent	Good	Fair	Poor	Very Poor
Interest level	❍	❍	❍	❍	❍
Ease of use	❍	❍	❍	❍	❍
Relevance to Maori studies	❍	❍	❍	❍	❍
Aesthetics / look of the site	❍	❍	❍	❍	❍

Q8.5 What particular aspect(s) of the TKAM Atlas makes it interesting?

Q8.6 What particular aspect(s) of the TKAM Atlas is uninteresting?

Q8.7 What particular aspect(s) of the TKAM Atlas makes it easy to use?

Q8.8 What particular aspect(s) makes the TKAM Atlas difficult to interact with?

Q8.9 What particular aspect(s) of the TKAM Atlas makes it relevant to Maori studies?

Q8.10 What potential aspect(s) would make the TKAM Atlas relevant to Maori Studies?

Q8.11 What particular aspect(s) of the TKAM Atlas is aesthetically pleasing?

Q8.12 What particular aspect(s) makes the TKAM Atlas aesthetically displeasing?

Q8.13 Any additional recommendations for the TKAM Atlas.

Q8.14 What is your general impression of the TKAM Atlas?

Q9.1 What type of smartphone or tablet do you own or use?
- ❍ Apple (eg. iPhone, iPad, iTouch)
- ❍ Android (eg. Samsung, Nexus, LG)
- ❍ Both Apple and Android
- ❍ Other (eg. Blackberry, Windows)
- ❍ I do not own or use a smartphone or tablet

Q9.2 Rate your ability to interact with your smartphone or tablet.
- ❍ 1 (most comfortable)
- ❍ 2
- ❍ 3
- ❍ 4
- ❍ 5 (least comfortable)

Q9.3 This section is about a location aware Augmented Reality application.

Q9.4 Please watch the 20-second video explaining Augmented Reality.

Q9.5 Have you used or heard of an application similar to that in the video?
- ❍ Yes, I have used an application like this. List below. _____
- ❍ Yes, I have heard of an application like this, but never used one. List below. _____
- ❍ No, I have never heard of an application like this

Q9.6 Rate your experience using this type of application.
- ❍ 1 (very positive)
- ❍ 2
- ❍ 3
- ❍ 4
- ❍ 5 (very negative)

Q9.7 Would you like to use this type of application in your Maori studies courses?
- ❍ Yes
- ❍ Maybe
- ❍ No

Q9.8 Would you like to be involved in a focus group regarding this topic? Your responses will not be linked to your email.
- ❍ Yes (provide email below) _____
- ❍ No

Q9.10 Would this application enhance your locational awareness of Maori knowledge and history?

- Yes
- Maybe
- No

Q9.11 Rate your likeliness of using this type of application for personal interest about the Maori.

- Very Likely
- Likely
- Undecided
- Unlikely
- Very Unlikely

Q9.12 What are your thoughts and opinions on an Augmented Reality application for education?

Appendix E – Survey Data

Maori Studies Staff

Last Modified: 02/10/2014

Filter By: Report Subgroup

Q1.2. In 2014, you are a _____?

#	Answer	Response	%
1	Public (Students)	0	0%
2	Maori Studies Student	0	0%
3	School of Maori Studies academic staff	6	86%
4	School of Maori Studies general staff	1	14%
5	Public (Educators)	0	0%
	Total	7	100%

Statistic	Value
Min Value	3
Max Value	4
Mean	3.14
Variance	0.14
Standard Deviation	0.38
Total Responses	7

Q87. Please include email below if you would like to include yourself in a raffle for a $50 supermarket voucher. Your responses will not be linked to your email. It is for raffle purposes only.

#	Answer	Response	%
1	Yes	1	50%
2	No	1	50%
	Total	2	100%

Yes
(Not provided on this copy)

Statistic	Value
Min Value	1
Max Value	2
Mean	1.50
Variance	0.50
Standard Deviation	0.71
Total Responses	2

Q5.1. Approximately how often do you use the Te Kawa A Maui (TKAM) Atlas in the classroom?

#	Answer		Response	%
1	Often		0	0%
2	Sometimes		2	33%
3	Rarely		1	17%
4	Never		3	50%
	Total		6	100%

Statistic	Value
Min Value	2
Max Value	4
Mean	3.17
Variance	0.97
Standard Deviation	0.98
Total Responses	6

Q5.2. How have you utilized the TKAM Atlas in the Classroom? (Tick all that apply)

#	Answer		Response	%
1	Assignment		3	100%
2	Research Project		2	67%
3	Lecture		2	67%
4	Recommended Resource on Blackboard		0	0%
5	Recommended Resource in Course Outline		0	0%
6	Other		0	0%

Other Statistic	Value
Min Value	1
Max Value	3
Total Responses	3

Q5.3#1.

#	Question	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree	Total Responses	Mean
1	Students become engaged when presented with the TKAM Atlas	0	1	2	0	0	3	2.67
2	Students produce excellent work for the Atlas	0	2	1	0	0	3	2.33
3	The TKAM Atlas is easy to incorporate into my curriculum	1	2	0	0	0	3	1.67
4	The TKAM Atlas has high educational value	1	2	0	0	0	3	1.67
5	Generally, maps are an important feature of my lectures	0	3	0	0	0	3	2.00

Statistic	Students become engaged when presented with the TKAM Atlas	Students produce excellent work for the Atlas	The TKAM Atlas is easy to incorporate into my curriculum	The TKAM Atlas has high educational value	Generally, maps are an important feature of my lectures
Min Value	2	2	1	1	2
Max Value	3	3	2	2	2
Mean	2.67	2.33	1.67	1.67	2.00
Variance	0.33	0.33	0.33	0.33	0.00
Standard Deviation	0.58	0.58	0.58	0.58	0.00
Total Responses	3	3	3	3	3

Q5.3#2.

Default - Students become engaged when presented with the TKAM Atlas
Additional comments or recommendations

Default - Students produce excellent work for the Atlas
Additional comments or recommendations

Default - The TKAM Atlas is easy to incorporate into my curriculum
Additional comments or recommendations

Default - The TKAM Atlas has high educational value
Additional comments or recommendations

Default - Generally, maps are an important feature of my lectures
Additional comments or recommendations

Statistic	Students become engaged when presented with the TKAM Atlas	Students produce excellent work for the Atlas	The TKAM Atlas is easy to incorporate into my curriculum	The TKAM Atlas has high educational value	Generally, maps are an important feature of my lectures
Min Value	-	-	-	-	-
Max Value	-	-	-	-	-
Total Responses	-	-	-	-	-

Q6.1. What has prevented you from using the TKAM Atlas in the classroom?

#	Answer		Response	%
1	I have heard of it but have not used it because:		0	0%
2	I do not know what this is		0	0%
	Total		0	0%

I have heard of it but have not used it because:

Statistic	Value
Min Value	-
Max Value	-
Mean	0.00
Variance	0.00
Standard Deviation	0.00
Total Responses	0

Q6.2. Do you plan to use the TKAM Atlas in the future?

#	Answer		Response	%
1	Yes		2	67%
2	Maybe		1	33%
3	No		0	0%
	Total		3	100%

Statistic	Value
Min Value	1
Max Value	2
Mean	1.33
Variance	0.33
Standard Deviation	0.58
Total Responses	3

Q6.3. What purposes in the classroom might you use the TKAM Atlas for? (Tick all that apply)

#	Answer		Response	%
1	Homework Assignment		1	33%
2	Research Project		1	33%
3	Lecture		1	33%
4	Recommended resource on Blackboard		2	67%
5	Recommended resource in course outline		2	67%
6	Other		0	0%

Other Statistic	Value
Min Value	1
Max Value	5
Total Responses	3

Q6.4. Additional comments or recommendations for the use of the TKAM Atlas in the classroom.

Text Response
Thinking how it can be used to promote Māori language learning
Student assignments to add to the atlas.

Statistic	Value
Total Responses	2

Q6.5. What would you change or add to the TKAM Atlas to motivate you to use it in the classroom?

Text Response

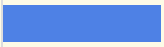
Statistic	Value
Total Responses	0

Q7.1. What type of smartphone or tablet do you own or use?

#	Answer		Response	%
1	Apple (eg. iPhone, iPad, iTouch)		2	67%
2	Android (eg. Samsung, Nexus, LG)		1	33%
3	Both Apple and Android		0	0%
4	Other (eg. Blackberry, Windows)		0	0%
5	I do not own or use a smartphone or tablet		0	0%
	Total		3	100%

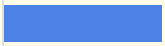
Statistic	Value
Min Value	1
Max Value	2
Mean	1.33
Variance	0.33
Standard Deviation	0.58
Total Responses	3

Q7.2. Rate your ability to interact with your smartphone or tablet.

#	Answer		Response	%
1	1 (most comfortable)		1	33%
2	2		1	33%
3	3		0	0%
4	4		0	0%
5	5 (least comfortable)		1	33%
	Total		3	100%

Statistic	Value
Min Value	1
Max Value	5
Mean	2.67
Variance	4.33
Standard Deviation	2.08
Total Responses	3

Q7.5. Have you used or heard of an application similar to that in the video?

#	Answer		Response	%
1	Yes, I have used an application like this. List below.		0	0%
2	Yes, I have heard of an application like this, but never used one. List below.		2	67%
3	No, I have never heard of an application like this		1	33%
	Total		3	100%

Yes, I have used an application like this. List below. Statistic	Yes, I have heard of an application like this, but never used one. List below. Value
Min Value	2
Max Value	3
Mean	2.33
Variance	0.33
Standard Deviation	0.58
Total Responses	3

Q7.6. Rate your experience using this type of application.

#	Answer		Response	%
1	1 (very positive)		0	0%
2	2		0	0%
3	3		0	0%
4	4		0	0%
5	5 (very negative)		0	0%
	Total		0	0%

Statistic	Value
Min Value	-
Max Value	-
Mean	0.00
Variance	0.00
Standard Deviation	0.00
Total Responses	0

Q7.7. Would you use this type of application to teach Maori studies courses?

#	Answer		Response	%
1	Yes		3	100%
2	Maybe		0	0%
3	No		0	0%
	Total		3	100%

Statistic	Value
Min Value	1
Max Value	1
Mean	1.00
Variance	0.00
Standard Deviation	0.00
Total Responses	3

Q7.8. How easily could you include this type of application into coursework, lectures, projects, etc.?

#	Answer		Response	%
1	1 (very easily)		1	33%
2	2		1	33%
3	3		1	33%
4	4		0	0%
5	5 (very difficult)		0	0%
	Total		3	100%

Statistic	Value
Min Value	1
Max Value	3
Mean	2.00
Variance	1.00
Standard Deviation	1.00
Total Responses	3

Q7.9. Do you think this type of application could enhance locational awareness of Maori knowledge and history?

#	Answer		Response	%
1	Yes		3	100%
2	Maybe		0	0%
3	No		0	0%
	Total		3	100%

Statistic	Value
Min Value	1
Max Value	1
Mean	1.00
Variance	0.00
Standard Deviation	0.00
Total Responses	3

Q7.10. What are your thoughts and opinions on an Augmented Reality application for education?

Text Response
My only concern with it would be the accuracy of the information placed on that, and how that would be framed.
If it works for students - they use it, then teachers should explore how to use it to teach
If this technology was available, it would be very useful in the courses I teach.

Statistic	Value
Total Responses	3

Maori Studies Students

Last Modified: 03/03/2014

Filter By: Report Subgroup

Q1.2. In 2014, you are a _____?

#	Answer		Response	%
1	Public (Students)		0	0%
2	Maori Studies Student		36	100%
3	School of Maori Studies academic staff		0	0%
4	School of Maori Studies general staff		0	0%
5	Public (Educators)		0	0%
	Total		36	100%

Statistic	Value
Min Value	2
Max Value	2
Mean	2.00
Variance	0.00
Standard Deviation	0.00
Total Responses	36

Q8.1. What is your major?

#	Answer		Response	%
1	Maori Studies		20	57%
2	Te Reo Maori		8	23%
3	Maori Resource Management		7	20%
	Total		35	100%

Statistic	Value
Min Value	1
Max Value	3
Mean	1.63
Variance	0.65
Standard Deviation	0.81
Total Responses	35

Q8.2. For what purpose did you use the Te Kawa A Maui (TKAM) Atlas? (Tick all that apply)

#	Answer		Response	%
1	Assignment (worth 5% or less)		4	13%
7	Project (worth 5-20%)		5	16%
4	Heard of TKAM Atlas but never used it		5	16%
2	Research project (worth >20%)		5	16%
3	Personal interest		9	28%
6	It was presented in a lecture		10	31%
5	I don't know what the TKAM Atlas is		13	41%

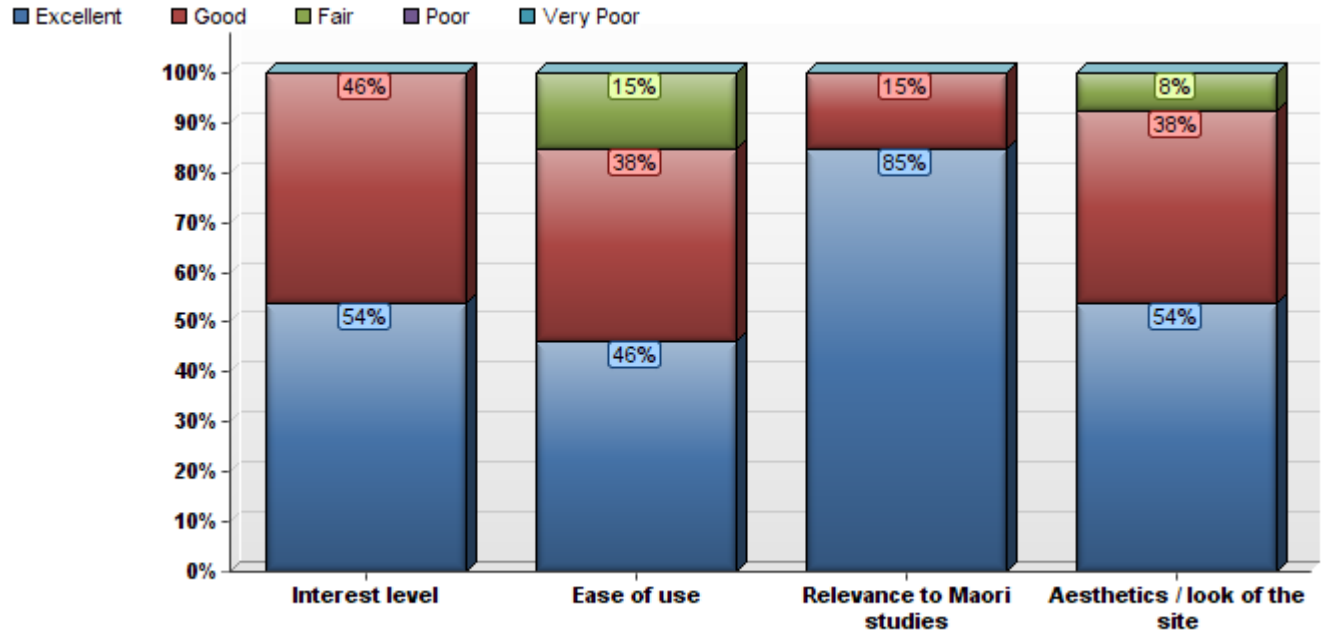
Statistic	Value
Min Value	1
Max Value	7
Total Responses	32

Q8.3. How many times have you used the TKAM Atlas?

#	Answer		Response	%
1	1		2	13%
2	2-3		8	53%
3	4-5		4	27%
4	6-10		1	7%
5	11+		0	0%
	Total		15	100%

Statistic	Value
Min Value	1
Max Value	4
Mean	2.27
Variance	0.64
Standard Deviation	0.80
Total Responses	15

Q8.4. Rate your experience with using the TKAM Atlas.



#	Question	Excellent	Good	Fair	Poor	Very Poor	Total Responses	Mean
2	Ease of use	6	5	2	0	0	13	1.69
1	Interest level	7	6	0	0	0	13	1.46
4	Aesthetics / look of the site	7	5	1	0	0	13	1.54
3	Relevance to Maori studies	11	2	0	0	0	13	1.15

Statistic	Interest level	Ease of use	Relevance to Maori studies	Aesthetics / look of the site
Min Value	1	1	1	1
Max Value	2	3	2	3
Mean	1.46	1.69	1.15	1.54
Variance	0.27	0.56	0.14	0.44
Standard Deviation	0.52	0.75	0.38	0.66
Total Responses	13	13	13	13

Q8.5. What particular aspect(s) of the TKAM Atlas makes it interesting?
Text Response
1. Switching between Map and Satellite mode. 2. Ease of navigation. 3. Category filter enables material to be found easily. 4. Placemarks show the number of projects submitted for different areas. 5. Colour symbols for different years
I enjoy viewing the historical pa sites. Very interesting and informative.
Stories specific to New Zealand and our histories. Use of student work. Aesthetically very pleasing to use
Taha maori
that it collects information for the tauira and by the tauira
The information at each placemark
The international information that is linked back to New Zealand and Māori
The local areas of interest that you don't hear about any other ways
The mapping of places of history, allowing a more visual view of where it happened in the past.
The map shows lots of stuff relevant to my studies and interests
The visual cues to a wealth of relevant information

Statistic	Value
Total Responses	11

Q8.6. What particular aspect(s) of the TKAM Atlas is uninteresting?
Text Response

Statistic	Value
Total Responses	0

Q8.7. What particular aspect(s) of the TKAM Atlas makes it easy to use?
Text Response
Graphics make it easy to see what I'm l
The fact that the markers are clearly placed and coloured, plus the scrolling action.
I like to work visually, so find the visual aspect easy to use
It's clear and well set out
the filters
Filters and the search function. It easy to use, which makes it appealing
the ability to click on a place and to in NZ and to have it quickly identified.
Flat plane layout (as opposed to the spherical layout in Google earth) and the tick boxes which can narrow down the information you are looking for
Unsure

Statistic	Value
Total Responses	9

Q8.8. What particular aspect(s) makes the TKAM Atlas difficult to interact with?
Text Response

Statistic	Value
Total Responses	0

Q8.9. What particular aspect(s) of the TKAM Atlas makes it relevant to Maori studies?
Text Response
The information it shows is good for finding other relevant information on other sites
The fact that it marks places of Māori interest, e.g. historical sites, places of cultural significance, the presence of areas of interest for Māori science, etc.
All of the information is relevant towards Māori Studies
It locates stories and knowledge to place that is significant to Maori studies
Relevant to know where there is information on certain areas
It is a growing living map of experiences and observations, that has layers of history. not like a map fixed in time and place
the fact that it displays maori landmarks
The projects are all relevant to M. Studies. It covers a diverse range of subjects relevant to historical and present contexts. National and international collaborative research.
It has a great overview of many historical Māori sites. More importantly these sites have been researched and in some cases visited by students only a few years ago. Their importance by Māori as well as the academic world is still being appreciated even today.
Cultural stories, histories and the incorporation of student work from Maori Studies classes
All

Statistic	Value
Total Responses	11

Q8.10. What potential aspect(s) would make the TKAM Atlas relevant to Maori Studies?	
Text Response	
Statistic	Value
Total Responses	0

Q8.11. What particular aspect(s) of the TKAM Atlas is aesthetically pleasing?
Text Response
Graphics
The maps all around the world.
Being able to visualise information and locate it to have relevance
The map
Nothing un particular.
the adjustability of it
The map Colour, symbols, placemarks. The page layout is standard. The good thing is that you don't have to keep clicking on links to take you to the information that is relevant to the place as the descriptions are detailed
I enjoy the initial hotspots which highlight a significant place. then once your zoom in you very quickly realise how many sites are in a particular area. Very Cool.
Flat plane layout and use of colour (not too overpowering)

Statistic	Value
Total Responses	9

Q8.12. What particular aspect(s) makes the TKAM Atlas aesthetically displeasing?	
Text Response	
Statistic	Value
Total Responses	0

Q8.13. Any additional recommendations for the TKAM Atlas.
Text Response
Give a link to a page of instructions for the use of the Atlas, and maybe the uses that the Atlas provides to an user.
I haven't used it enough to have given this much thought. I wondered about additional links but that can get messy
proof read the information before its posted
no :D
I think it works very well. It's easy to use and is very accessable to anyone wanting info on particular Māori sites.
N/A

Statistic	Value
Total Responses	6

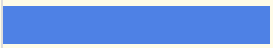
Q8.14. What is your general impression of the TKAM Atlas?	
Text Response	
It looks awesome - would love to be able to use it.	
Its great!	
Statistic	Value
Total Responses	2

Q9.1. What type of smartphone or tablet do you own or use?

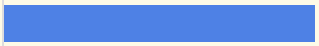
#	Answer		Response	%
1	Apple (eg. iPhone, iPad, iTouch)		13	42%
2	Android (eg. Samsung, Nexus, LG)		9	29%
3	Both Apple and Android		2	6%
4	Other (eg. Blackberry, Windows)		1	3%
5	I do not own or use a smartphone or tablet		6	19%
	Total		31	100%

Statistic	Value
Min Value	1
Max Value	5
Mean	2.29
Variance	2.35
Standard Deviation	1.53
Total Responses	31

Q9.2. Rate your ability to interact with your smartphone or tablet.

#	Answer		Response	%
1	1 (most comfortable)		14	56%
2	2		4	16%
3	3		4	16%
4	4		3	12%
5	5 (least comfortable)		0	0%
	Total		25	100%

Statistic	Value
Min Value	1
Max Value	4
Mean	1.84
Variance	1.22
Standard Deviation	1.11
Total Responses	25

Q9.5. Have you used or heard of an application similar to that in the video?				
#	Answer		Response	%
1	Yes, I have used an application like this. List below.		3	10%
2	Yes, I have heard of an application like this, but never used one. List below.		7	24%
3	No, I have never heard of an application like this		19	66%
	Total		29	100%

Yes, I have used an application like this. List below.	Yes, I have heard of an application like this, but never used one. List below.
QR Codes	Only generally, haven't heard of a specific app.
Roadside Stories	I couldn't open the app despite downloading the flash player
	apps for blind people shopping
	PS3 and PSVita augmented reality, apps such as Star Walk

Statistic	Value
Min Value	1
Max Value	3
Mean	2.55
Variance	0.47
Standard Deviation	0.69
Total Responses	29

Q9.6. Rate your experience using this type of application.

#	Answer	Response	%
1	1 (very positive)	0	0%
2	2	2	67%
3	3	1	33%
4	4	0	0%
5	5 (very negative)	0	0%
	Total	3	100%

Statistic	Value
Min Value	2
Max Value	3
Mean	2.33
Variance	0.33
Standard Deviation	0.58
Total Responses	3

Q9.7. Would you like to use this type of application in your Maori studies courses?

#	Answer	Response	%
1	Yes	21	72%
2	Maybe	5	17%
3	No	3	10%
	Total	29	100%

Statistic	Value
Min Value	1
Max Value	3
Mean	1.38
Variance	0.46
Standard Deviation	0.68
Total Responses	29

Q9.8. Would you like to be involved in a focus group regarding this topic? Your responses will not be linked to your email.

#	Answer		Response	%
1	Yes (provide email below)		9	35%
2	No		17	65%
	Total		26	100%

Yes (provide email below)

(not provided in this copy)

Statistic	Value
Min Value	1
Max Value	2
Mean	1.65
Variance	0.24
Standard Deviation	0.49
Total Responses	26

Q9.10. Would this application enhance your locational awareness of Maori knowledge and history?

#	Answer		Response	%
1	Yes		20	69%
2	Maybe		8	28%
3	No		1	3%
	Total		29	100%

Statistic	Value
Min Value	1
Max Value	3
Mean	1.34
Variance	0.31
Standard Deviation	0.55
Total Responses	29

Q9.11. Rate your likeliness of using this type of application for personal interest about the Maori.

#	Answer	Response	%
1	Very Likely	14	48%
2	Likely	11	38%
3	Undecided	0	0%
4	Unlikely	2	7%
5	Very Unlikely	2	7%
	Total	29	100%

Statistic	Value
Min Value	1
Max Value	5
Mean	1.86
Variance	1.41
Standard Deviation	1.19
Total Responses	29

Q9.12. What are your thoughts and opinions on an Augmented Reality application for education?

Text Response
Interesting and opens up more of Te Ao Maori
Great opportunity! It enables a huge amount of information to be a available that often is hard to find/is not present in many people's lives.
Sounds like a good idea!
I know everybody learns differently - in my case this app would not be very useful. However, if people wanted to use it then it would be very beneficial.
I think it's a good idea to help educational practises evolve with technology. It seems like a good way to create interest.
I would need more information to form an informed opinion. But from what I have seen in this survey, it seems to be very important and useful.
Great as a tool or resource. Potentially very useful for assisting students overcome shyness of public speaking in te reo classes.
It brings the teaching style into the millenium. Apps on tablets or phones are already utilised in a Wananga setting and although it can be over prescriptive, it also makes learning more enjoyable.
It has potential to convey information that will garner interest from multiple facets of groups and will broaden the way in which information and education is disseminated
Sounds good, if you can get it to work how you described.
I think it’s a great idea and I would certainly use it and recommend it to others.
Such a good idea! So many people have smartphones and tablets, it will make the information more accessible for a wider range of people.
Its a great way ... however the information you will get need to be good and verified...
When I first learned french I got small cards and put them up all over the house, so that I could learn the french names of everything. It really worked because the image and the word were linked. I used the same approach learning the basic vocab for Maori 125, and will do so for 101 which I am starting in a month. I almost always have my phone on me, so being able to see

something and think about the meaning and significance at the time, is so much better than thinking, "I will look that up later"
I like the idea of it I just wouldn't rely on it when it comes to education
AR apps can be embraced positively as it keeps the human element within the digital application. Resistance to this stuff assumedly is due to a belief that people may lose the human context.
Personally I believe to use this type of App for Marae and Pa sites diminishes the intergrity of our Māori traditions. To sit down and share a story about a meeting house takes the listener on a journey that no software would be able to convey. Oral traditions and kōrero about our houses of knowledge need to be shared and experienced personally, not through a phone or App.
Once the database is set up and a substantial amount of information programmed, I think that a Augmented Reality app would be very beneficial in certain areas.
It would be a helpful tool if it is accurate and reliable. And if it can be used without being continually connected to the internet that would be even better.
I think it could be a useful way to gather information about your surroundings.

Statistic	Value
Total Responses	20

General Staff at Victoria University

Last Modified: 03/05/2014

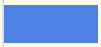
Filter By: Report Subgroup

1. In 2014, you are a _____?

#	Answer		Response	%
1	Public (Students)		0	0%
2	Maori Studies Student		0	0%
3	School of Maori Studies academic staff		0	0%
4	School of Maori Studies general staff		0	0%
5	Public (Educators)		55	100%
	Total		55	100%

Statistic	Value
Min Value	5
Max Value	5
Mean	5.00
Variance	0.00
Standard Deviation	0.00
Total Responses	55

2. What type of smartphone or tablet do you own or use?

#	Answer		Response	%
1	Apple (eg. iPhone, iPad, iTouch)		21	38%
2	Android (eg. Samsung, Nexus, LG)		13	24%
3	Both Apple and Android		9	16%
4	Other (eg. Blackberry, Windows)		1	2%
5	I do not own or use a smartphone or tablet		11	20%
	Total		55	100%

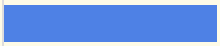
Statistic	Value
Min Value	1
Max Value	5
Mean	2.42
Variance	2.28
Standard Deviation	1.51
Total Responses	55

3. Rate your ability to interact with your smartphone or tablet.

#	Answer		Response	%
1	1 (most comfortable)		17	40%
2	2		11	26%
3	3		10	23%
4	4		4	9%
5	5 (least comfortable)		1	2%
	Total		43	100%

Statistic	Value
Min Value	1
Max Value	5
Mean	2.09
Variance	1.23
Standard Deviation	1.11
Total Responses	43

4. Have you used or heard of an application similar to that in the video?

#	Answer		Response	%
1	Yes, I have used an application like this. List below.		6	12%
2	Yes, I have heard of an application like this, but never used one. List below.		21	43%
3	No, I have never heard of an application like this		22	45%
	Total		49	100%

Yes, I have used an application like this. List below.	Yes, I have heard of an application like this, but never used one. List below.
At a technology conference I went to last year, they had an app that you could use in a similar way to help you to find your way around the campus.	google glass...??
Starwalk, Photo pills	Ingress
Night Sky 2	I do not have the administrator privileges to plug in the Adobe Flash so I can watch the video, sorry
Google glasses	cant remember name
	Sky Walk

Statistic	Value
Min Value	1
Max Value	3
Mean	2.33
Variance	0.47
Standard Deviation	0.69
Total Responses	49

5. Rate your experience using this type of application.

#	Answer		Response	%
1	1 (very positive)		3	50%
2	2		0	0%
3	3		1	17%
4	4		2	33%
5	5 (very negative)		0	0%
	Total		6	100%

Statistic	Value
Min Value	1
Max Value	4
Mean	2.33
Variance	2.27
Standard Deviation	1.51
Total Responses	6

6. Would you use this type of application to learn about Maori knowledge and history?

#	Answer		Response	%
1	Yes		21	44%
2	Maybe		21	44%
3	No		6	13%
	Total		48	100%

Statistic	Value
Min Value	1
Max Value	3
Mean	1.69
Variance	0.47
Standard Deviation	0.69
Total Responses	48

7. Do you think this type of application could enhance locational awareness of the Maori knowledge and history?

#	Answer		Response	%
1	Yes		35	73%
2	Maybe		11	23%
3	No		2	4%
	Total		48	100%

Statistic	Value
Min Value	1
Max Value	3
Mean	1.31
Variance	0.30
Standard Deviation	0.55
Total Responses	48

8. What are your thoughts and opinions on an Augmented Reality application for education?

Text Response
Seems great for this purpose, particularly if it was well-integrated into a specific Maori studies course. I could also see it being good for other history or natural sciences courses. Not sure how it would work for the courses I teach in psychology.
There is huge potential here as augmented reality can be incredibly engaging for students
Looks quite good...
I think that this would be great for public education. I can really imagine taking my son around wellington and taking advantage of this type of technology to teach him about his environment. Very cool.
Excellent way of disseminating information.
I would love to develop a religious sites map of wellington using this technology for students
Not something I would have the creativity to imagine, or facility to develop, but I can see that it could be an exciting development worth pursuing. As with all technological enhancements, integration into teaching is key - needs to have a clear niche in the learning environment, and clearly be more than a gimmick tool.
I've seen a fair number of these demonstrated and used more than a few for brief periods. UC Berkeley has an app like this for use in biology courses. Unfortunately, I have yet to see the payoff in terms of development costs, teaching integration, and student use that justifies these sorts of apps. They fall in the category of edutainment. Some might find them clever, and they make nice things to show at dog-and-pony shows and presentations for legislatures, etc, but in terms of effective learning tools, they don't do the job.
I think it is a useful approach to education. Given the presence of such devices, it seems a natural extension to what we can do.
Used as a component in a well planned digital pedagogy, AR can provide an engaging and effective learning medium.
Has some potential - possible benefits - engagement and information sharing Ensuring information was accurate could be an issue. Also security of that information - i.e. could not be hacked. Potential also for too much information or data overload as probable would be general and not specific to the person
There are larger problems with educational programs in general, than a lack of technology.
It would be very useful for visitors to the country who are keen to get an explantion of the various Maori sites they visit. It might also be useful for school students, especially when visiting such sites as part of their education. I think for University students, however, it will not offer the kind of depth and detail that they require.
I do not really understand the question, possibly because I could not run the video because it required me to install software on my computer and I do not have administrator privileges that

would let me do that (though I did try). If the "application" here is an "app", meaning mobile-telephone software, I infer from the question with the pictures and its narrative that you are suggesting having local Maori history information and pictures pop up when someone is passing a relevant place with their telephone. If so, I'd say that for the sort of person that has that sort of telephone and looks at it a lot, it could be quite informative. However, if they weren't interested they would probably turn it off or ignore it, and if they are interested they will only be so the first time. People tend to pass the same spots habitually, and it could get annoying to be constantly told the same thing.
I think it's OK, but it also reduces human contact, and that's a potential liability. If people think they can learn everything without contact with the tangata whenua it's too bad.
I can't see how it would be useful
adding useful, relevant and managable amount of information on a place / person of interest could be useful
Could be a really useful tool. Likely to keep people interested and is a different way of learning.
useful
Useful, particularly in a child's education (kindergarten, primary, secondary). Not so convinced about tertiary level study. See a huge tourism market for it.
I have often thought that it would be rather cool if things could talk...especially if I am somewhere going around and see something and wonder what it means, why it is there etc. I think an Augmented Reality application for education purposes would be awesome.
I've seen ones for museums. On one hand it might get people interested, but on the other, might make people focus on their phones rather than the actual objects or area. Plus...who is this aimed at?
They can be very useful in a wide range of fields.
An excellent idea. It will also help connect with the future generations as they are often "glued" to electronic devices. Seems like a great way to excite and help these people learn more about Maori culture.
interactive, engaging, visual so easier to remember
education of who? It seems handy for tourism, but I'm not sure there is a use in tertiary education
I wonder if people would be excited using the app for education, when the app can be applied to more 'fun' stuff (like in your example, restaurants/places to visit etc.)
Could be useful for somethings
I think augmented reality puts a new spin on engagement with items. whether they are historical buildings, taonga, awa, maunga, marae etc.
I am doubtful regarding augmented reality being all that useful on a smartphone, with the risk being that viewing things through a device actually detracts from the experience a user should be having. A device like google glass on the other hand suits augmented reality applications.
Often the level of information presented in an application like the one proposed it very brief and lacks the depth needed. Such an application would need to act as a stepping stone to finding more information and should work in conjunction with local guides and signs, rather than replacing them
is not the technology must be interesting and consider the needs.
Video was hard to follow - too small.
I'm unlikely to be a user, as I don't use smart or iphones or ipads. I'm not interested in it personally as I prefer to rely on my own knowledge or ask people. But for tourists I could see its use.

It could have some role to play - in education we talk about low level of gathering facts and information in Blooms' taxonomy - this would fulfill that. As in all technology, it is how people USE that information and sift it, critique and apply it that counts. This could have some level of superficiality and commodification of culture about it.
seems an excellent idea but great for travellers as well
Valuable and informative learning tool
That could be a good way to introduce basic notions, information, etc. (but for a more thorough/better knowledge, textbooks, attending classes and talking to people is still necessary).
I support initiatives that are likely to engage people more in learning and help them apply abstract theories to their own experiences and practice. That said, I would also recommend treating Maori knowledge and concepts with care and sensitivity, including how they are used in an augmented reality app.
An Augmented Reality application has the potential to exponentially enhance learning experiences
Exciting possibilities for sharing knowledge that can come directly from communities, whanau, hapu, iwi and all learning institutions. Great for marae to capture their own korero. Would love to learn more
Excellent idea for historic buildings and landscapes

Statistic	Value
Total Responses	42

9. Please include email below if you would like to include yourself in a raffle for a $50 supermarket voucher. Your responses will not be linked to your email. It is for raffle purposes only.

#	Answer		Response	%
1	Yes		34	76%
2	No		11	24%
	Total		45	100%

Yes
(Not provided on this copy)

Statistic	Value
Min Value	1
Max Value	2
Mean	1.24
Variance	0.19
Standard Deviation	0.43
Total Responses	45

Statistic	Value
Total Responses	0

General Students at Victoria University

Last Modified: 02/11/2014

Filter By: Report Subgroup

Q1.2. In 2014, you are a _____?

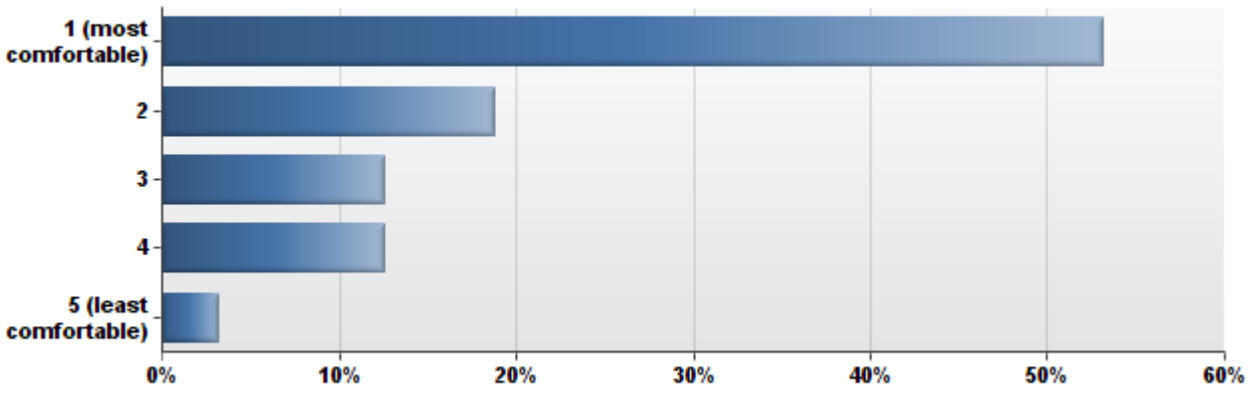
#	Answer		Response	%
1	Public (Students)		36	100%
2	Maori Studies Student		0	0%
3	School of Maori Studies academic staff		0	0%
4	School of Maori Studies general staff		0	0%
5	Public (Educators)		0	0%
	Total		36	100%

Q2.1. What type of smartphone or tablet do you own or use?

#	Answer		Response	%
2	Android (eg. Samsung, Nexus, LG)		14	39%
1	Apple (eg. iPhone, iPad, iTouch)		14	39%
3	Both Apple and Android		4	11%
5	I do not own or use a smartphone or tablet		3	8%
4	Other (eg. Blackberry, Windows)		1	3%
	Total		36	100%

Statistic	Value
Min Value	1
Max Value	5
Mean	2.03
Variance	1.40
Standard Deviation	1.18
Total Responses	36

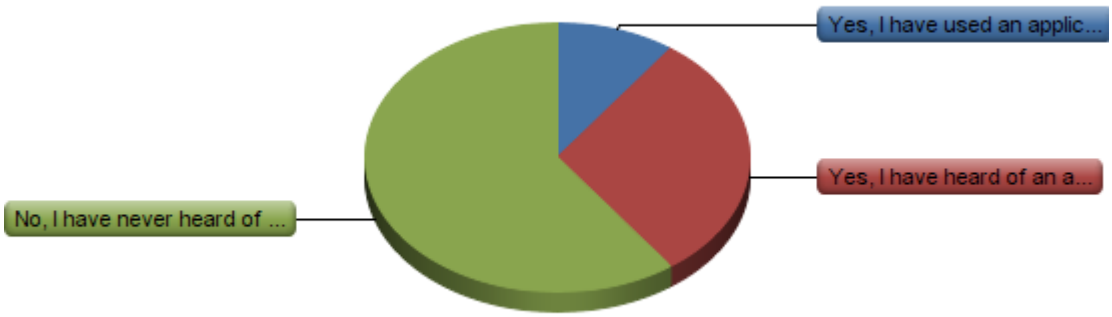
Q2.2. Rate your ability to interact with your smartphone or tablet.



#	Answer		Response	%
1	1 (most comfortable)		17	53%
2	2		6	19%
4	4		4	13%
3	3		4	13%
5	5 (least comfortable)		1	3%
	Total		32	100%

Statistic	Value
Min Value	1
Max Value	5
Mean	1.94
Variance	1.48
Standard Deviation	1.22
Total Responses	32

Q2.5. Have you used or heard of an application similar to that in the video?



#	Answer		Response	%
3	No, I have never heard of an application like this		18	60%
2	Yes, I have heard of an application like this, but never used one. List below.		9	30%
1	Yes, I have used an application like this. List below.		3	10%
	Total		30	100%

Yes, I have used an application like this. List below.	Yes, I have heard of an application like this, but never used one. List below.
Google Sky	google glasses, samsung and sony glasses, oogle goggle
Around Me	I have heard of the capability, but not a specific application by name.

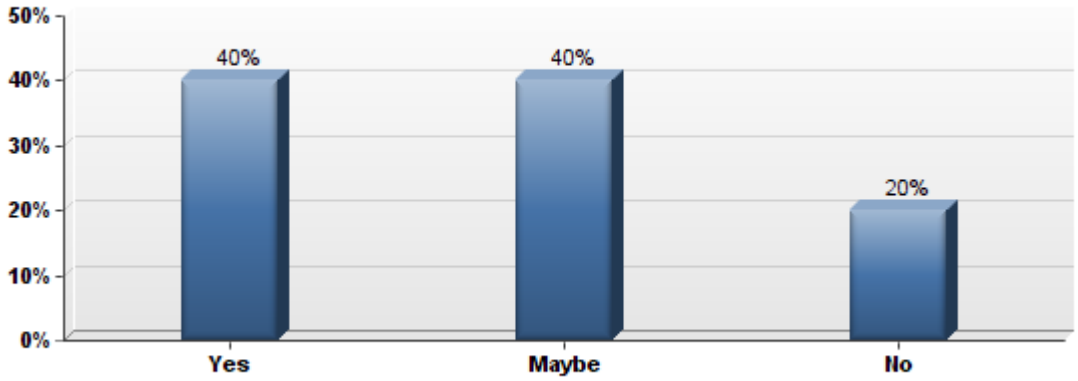
Statistic	Value
Min Value	1
Max Value	3
Mean	2.50
Variance	0.47
Standard Deviation	0.68
Total Responses	30

Q2.6. Rate your experience using this type of application.

#	Answer		Response	%
1	1 (very positive)		1	33%
2	2		0	0%
3	3		1	33%
4	4		1	33%
5	5 (very negative)		0	0%
	Total		3	100%

Statistic	Value
Min Value	1
Max Value	4
Mean	2.67
Variance	2.33
Standard Deviation	1.53
Total Responses	3

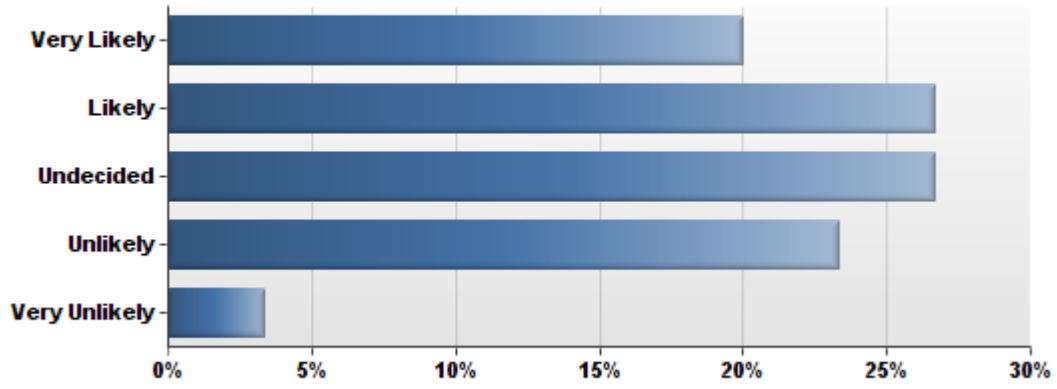
Q2.7. Would you use this type of application to learn more about Maori knowledge and history?



#	Answer		Response	%
3	No		6	20%
2	Maybe		12	40%
1	Yes		12	40%
	Total		30	100%

Statistic	Value
Min Value	1
Max Value	3
Mean	1.80
Variance	0.58
Standard Deviation	0.76
Total Responses	30

Q2.8. Rate your likeliness of using this type of application for personal interest about the Maori.



#	Answer		Response	%
2	Likely		8	27%
3	Undecided		8	27%
4	Unlikely		7	23%
1	Very Likely		6	20%
5	Very Unlikely		1	3%
	Total		30	100%

Statistic	Value
Min Value	1
Max Value	5
Mean	2.63
Variance	1.34
Standard Deviation	1.16
Total Responses	30

Q2.9. What are your thoughts and opinions on an Augmented Reality application for educational purposes?

Text Response
Sounds promising
Very handy
In general, excellent. Personally I tend to use papers and books more for research, but also websites. But the current generation of students expects to get information instantly and through mobile devices so I would expect these apps to be very popular.
A study on mobile phones in education showed that users of phones for seeking information / taking photographs of art did worse in post-tests than those who just looked at the painting. This is one of quite a few along the same lines. I am skeptical of its ability to teach new knowledge that is able to be recalled later - I see it more of a passing interest when I am there. As such, while information about the tekoteko and whakairo would be interesting it would also be forgotten quite quickly. If the app was used to teach protocol, which was then used correctly in action, that would be more memorable, i.e., learnt.
huge potential for phone-addicted Gen-X students
interesting way of learning. I guess not boring
I think it would be a lovely idea to learn more about the culture
awesome idea!
Seems like a really good idea, helps to make learning more interactive
I think it's a good idea, advantage should be taken of newer technology to maximise learning
I imagine there are some amazing ways such technology could be used and a great many people would be very adept at using it. One challenge would be to promote and maintain interest in a crowded market ... ie the availability of many other apps
It could be really useful, but perhaps more so for people studying the subject for which the app was designed, rather than general interest?
I think it is an extremely useful, integrated and easy approached to spreading awareness and education about Maori culture.
I think they have an important place as another tool in the toolbox. However, I also think that they will be competing with other forms of information capture and learning. Use of any of these tools requires "time", and spending time going down one path will necessarily be at the expense of time spent doing other activities. I am unlikely to use such an application -- not because it isn't interesting or exciting -- but because my schedule is already full. I have even removed the TV from my flat as I don't have time for that distraction, either.
It is an interesting idea, but I am unlikely to ever use this type of app unless I was a tourist
A quick way to get information about historical sites instead of googling it on the internet. So could work
If done right, it could be valuable -- but I feel like AR is at the very early stages, and at that

"apply to ALL the things!" stage.
Having just been introduced to AR I can only comment hesitantly. I would be excited to see it integrated into place-based educational practices. That said, I would always opt for a face-to-face, verbal story as a primary avenue for 'coming to know' about something or somewhere. There are valuable customs and protocols for approaching people where they are and I'd hope something like this isn't just offering an easy way out..
I think it will become more common but of little use beyond a novelty for most purposes.
I think Maori histories and experiences are, sadly, not given the recognition they deserve - I would personally really enjoy using an app like this for educational purposes
Nothing will beat personal experiences and stories told by kaumatua, however this would be a great resource tool. If you are to use it for Maori artifacts and places, how are you going to ensure the integrity of that area, how are you going to maintain access to this information. The National Library are currently working on digitization of Maori readings and are facing these sorts of questions. How will this affect iwi.
Good idea.
I think that’s a great idea
Could be really helpful to internation students and younger students as technology is everywhere.
It would be very useful for certain topics - like history, geography, architecture
it would be great for people to get to know New Zealand Maori history in basic terms. Especially for people who are just starting to learn.

Statistic	Value
Total Responses	26

Appendix F – Victoria University of Wellington Interview Questions

- Experiences with TKAM.
  - Use/why (in class, outside of class, etc)
  - Why do you like using it?
  - Adding/accessing info (filters/organization/links/instructions)
- Challenges using it?
  - Integrating into coursework (ease/use/how)
  - Accuracy of information (how to maintain accuracy/ address concerns)
  - Relevance in the future?
- Have not used in Course:
  - Why haven't you used it
  - Changes that would encourage you to use it?
- Increase student awareness/use (why/how to improve)
  - Over half of students have never used it
  - 42 percent have never heard of it. Surprised?
- Augmented Reality Prototypes
  - How would you use this type of app? (Personal interest, lecture, HW)
  - Best features for expected use(s) (Ex: this would be good for such HW assignment)
- Additional features
  - Other technologies in the classroom
  - What tech do you currently use?
  - Comfort/familiarity with new technologies

Appendix G – Interview Transcriptions

Transcription of the 5 Lecturers' interviews

Arama Rata Interview

Lecturer at the School of Maori Studies

Emily: so let's go ahead and get started um we'd like to talk to you about TKAM Atlas, kind of see what you're experiences with it are, have you used it before or…
Arama: I've only like looked around on it, I haven't like used it a lot but um yeah from what I saw it was pretty amazing. I don't think we probably use it as much as we could or um draw attention to it as much as we could. I think it deserves a bit of higher profile that it has um yeah… and I know that Ocean has been um presenting it at a lot of talks and stuff but I almost feel like we should be pushing it a bit more with the school as opposed to just Ocean giving talks about the work that she's done um… I'm sure that it is linked to our sites and things like that but um you know we could be pushing it even more like we could have you know lots of different things I guess like you know your email signoffs and things you could have the school website and the Atlas site you know just to get people to like oh, what's that and kind of clicking on it a bit more and yeah… but yeah, I haven't actually use it that much but I feel like its growing and growing, and
Emily: yeah… you just use it for your own interest not for like courses or anything like that
Arama: I haven't yet but I'd really like to and that's probably cause I guess I probably started at the school after they'd already started it um started with the Atlas so maybe I wasn't there for a lot of the initial talks around it but I feel like maybe as a school if we all did kind of get behind it a bit more we could use it more um I mean it's so it would be so useful especially for those first assignments that you usually have in a course where you get students to write you know 500 words on something
Eric: yeah to get things going
Arama:; yeah um… yeah so I'd definitely like to build it into the courses that I teach
Eric: do you think it would be easy to do or..
Arama: very easy yeah certainly um yeah
Eric: what class do you teach?
Arama: uh 123 and 216 that's like the intro cultural paper um where you just learn about all things about Maori society really and then um 216 which is the treaty paper and I see that on the there's actually a treaty history section or something like that on the Atlas so building into that section would be really easy and um actually useful not just for students or assignments but with teaching as well because from what I saw on the Atlas, it's actually got all the different sites where the treaty was signed so I think that would be really useful to use you know in lectures when I'm talking about the treaties going around the country and being signed that would be a useful teaching resource but I guess I haven't like scanned everything on and thought about how I can build it into my courses but that's another thing we should all be doing here
Emily; do you think that it would be beneficial to have almost like a seminar that you did go to like I know you mentioned that you weren't here when it first started but we don't actually know if there was one … would you like to go to something like that?
Arama: yeah and you could really help the staff here as well or staff from other schools as well anyone who was interested by you know making suggestions about what types of assignments

you could do with students or how you could use it in your teaching and um yeah go through the different ways of using it I think that would be really helpful yeah so not just says here's how you use it but this is what you could do or you could do this or you could do that
Emily: yeah… um have you had any major challenges or like difficulties when you have been using it? Like I know you haven't used it much
Arama: Um… not really but I guess um… I guess when you first look at it, there's a lot on there and as it loads more there's more and more and… and I guess the content is quite different from pin to pin so maybe there could be… cause I think when you first go on the site, everything shows up so maybe it could be on some kind of filter from the start I suppose um… especially the ones that are you know with the trees where the trees are all mapped out and things like that I think if you fist look at it and you just kind of scan your way and look at what the different pin points are and a lot of them just say a tree name or something like that so um I mean, that's useful but maybe if it was formatted in a way so that when you first looked at it, it was….
Emily: a little less overwhelming
Arama: a little less overwhelming and just maybe if it had a standardized format just for that first page you look at where everything you click on pretty much has a bit of information
Eric: and then you could click somewhere and be like I'm a teacher, I want to look at treaties, click there and everything pops up
Arama: yeah and that's easy enough to do just I think maybe the first glimpse you get of the Atlas could maybe be on a filter
Emily: when you say the content is really different pin to pin, is that like as far as accuracy, as far as in depth kind of things, like what do you mean by that?
Arama: yeah, just in terms of the depth like some pins seem to just be saying oh there's a tree here and others will have 500 words describing something… which is fine but you asked me what could be done *laughs* you know, so just problems suggestions
Emily: yeah definitely so um would it surprise you to learn over half the students in the school of Maori studies have never ever used the Atlas and 42% have never even heard of it?
Arama: umm… no that doesn't surprise me
Emily: No? Okay. What you to think some of the best methods to kind of like counteract that, have more students hear of it, I mean besides obviously teaching with it in the courses
Arama: I think it definitely all starts with getting the lecturers on board to actually use it in their courses to be sure that students are not just aware of it like it probably says it in most peoples' course outlines that that's another resource they can go to look at
Emily: actually in our survey, we asked if people put it there, no one checked that one off so…
Arama: well it might be there because I know a lot of the times when it says you know extra resources, you kind of you read through them, you check them but you don't really *laughs* always, you're not always aware of what exactly is on there
Emily: yeah but that was something that we asked professors not students so the professors said that they hadn't listed it on there
Arama: yeah I know, but I am, I don't know if it's there on mine
Emily: oh *laughs* okay okay
Arama: um because you know I'm here at the course of someone else, read through it and go yep, those all look great and then you know, but I'm not actually sure if it's on there but I mean this right now is the time when if we wanted to change the course outline, we could just send an email right now and say could everyone please just include this
Eric: and make it more of a highlight or something

Arama: um just you know if we sent to everyone who's preparing course outlines right now and just said oh please just add that or even Jeremy, our admin, could just do it… or you know you could definitely tell all the lecturers that that's a good thing to do but I think that could be useful. Um… yeah, having everyone include it on their course outline and um and as I said, we have that kind of forum about how we could use it and then have everybody actually sit there in that forum and learn how to use the Atlas in their courses. Actually sit down and brainstorm on what could I potentially do and then make a bit of a plan around it, you know instead of just saying this is great, see ya! and then people kind of forgetting about it. And then, I guess there could even be um kind of collaboration between classes so if Ocean's teaching a 100-level or any level really um paper in a certain trimester well we could actually join our classes together for the project you know and say this other class is will be doing that and that's probably a good way to kind of unite the students within your class as well because we'll be wanting to present ourselves well you know against these other classes and things so that could be something fun to do.
Emily: well now we wanted to talk to you about the augmented reality app that we've been working with. Um, so this is just a prototype, when you actually use it, it would be on your phone and you would be physically at the site, for this instance it's just the Marae back there, but you could like be there looking through your camera app with your gps and kind of looking around um so feel free to go play with that um some of the links are active, the ones with arrows you can click on and it'll take you to the next screen… I think we actually started at the last page… anyway, so this would be how the menu looks that we've kind of developed as a prototype um so yeah just kind of looking for your general impressions of this of like things that you think would be working really well or you know ways that you think you could use this whether just for your own personal interest, for your classes, whatever kind of whatever your impressions are
Arama: so I just… click through there
Emily: um so you can like it's supposed to be so you can click on the buttons so if you wanted to like click on that one, you could but then like that would take you back to the menu and then like you can click on the little bit more information as well
Eric: we just want to get this out there to see like the general impression of using it for Maori education
Arama: I see….
Emily: yeah, we haven't put any sound bites in there yet but uh
Eric: everyone loves the sound bites though
Emily: I know, everyone wants to click on them *laughs* but we were thinking um that would be useful for like language courses so like you could use that kind of as pronunciation or like if you were someplace else um that you could kind of like hear about it in Maori as opposed to in English, that type of thing
Arama: yeah… I guess um I guess kind of… I think that's fantastic but um just something like a Marae, I just find really personal you know like, it's kind of like opening up your family album or something in a way and so although I think this is fantastic um there is just the element of who gets to see this and who would have access you know and those kind of questions start to come up and who would be the people putting the content on and you just that kind of stuff is stuff that does come to mind but I mean, I think the augmented reality would be really useful for teaching and Maori but not just teaching, the students I think would find it bigger than the classroom in terms of public education and engaging with *iwi* and things like that would be really useful

Eric: and hopefully we can get um Ocean to. Ocean will ultimately be the one deciding what kind of content, because obviously we don't really what the content is
Arama: oh yeah
Eric: we're just dealing with the augmented reality but content is, that's one of the good ideas to bounce around like what kind of stuff goes on there like if AR is good then how do we make it most successful, do you do stuff like this or is it more tourism thing like is it just personal interest um that's one of the big questions too
Emily: yeah and I definitely think that from all the feedback we got from just our survey that like having accuracy of information, like filtering out some of the less good information, kind of proof reading it better was something that we would be um keeping a close eye because there were several comments about the Atlas, that there are that aren't quite up to par with the rest as well
Arama: that's yeah I guess that's the um that's the interesting thing about the site what makes it useful is that it's student a lot of it is student content and yeah as long as it's I guess consistently student content, you know just as long as it's not 'this is the opinion of Maori Studies' you know and then oh, one of our students is crazy *laughs* yeah, I guess, as long as it's clear that this is student work and maybe it should be something that's restricted to student access if it's going to be like that you know well there could be different layers to it I suppose one with the student work and then you could more of a kind of edited version or something that's actually for the public or you know or just being clear that these are people's personal opinions and stuff as opposed to the position of the school you just that type of thing um yeah and then you know we're looking at a Marae it's all about ownership and I'm sure Ocean is doing all of this but um you know if like a student wanted to do a project as was like oh we'll find this significant site write about it and they add it to the Atlas and if someone said the student went to Marae that they didn't have a relationship with and they just took pictures of it and they started building content for it then that would be a question of ownership and property you know those type of things, those issues would be raised
Eric: yeah, like a lot of yellow tape or like caution tape around things like that
Emily: we're also looking at this um as potentially used in an archaeological standpoint so we're talking to Bruce a little bit and like going to a down to you know just a site where there aren't anything left anymore but having it so like you could kind of see what the village used to look like, that type thing. What do you think about that application?
Arama: Um I think that's probably more the type of thing that I would use it for in my courses um you know when you go to NZ history um I see a huge potential for it to be used there um specifically one thing I'd like to do there um with my treaty class is look at battle sites in NZ because you drive past them here and there and you don't even know that they're there if you're lucky there might be a tiny little plaque… people always joke that if it was in the US there'd be kiosks and you know you'd be charged to go there and all that kind of stuff um and you know there are places where people are rebuilding Maori pas (?) and villages and things like that but that's kind of out of reach for a lot of Maori groups that might be wanting to share their history and have people stop and pay their respects and things but um you know you could just use an AR resources there so that you could go to a battle site and you could see what the built up fortification looked like and you could even have the battle being reenacted or something and have local people like that and I think that's the key to a lot of this, is having local people be involved and getting their permission and participation and having the local people describe the events that took place there and stuff I see a huge potential for that, but not just in our major sites

of significance but everywhere, um you know around wellington, you could live in wellington and never understand that there were Maori people that lived there *laughs* and that there are Maori people who live here because we are a different people with a different culture but we live on top of each other you can not see it and that's where I think augmented reality is really useful because it allows you to actually see through people's eyes you know and it is, it's a different reality that we exist in even though it's in the same physical space and so being able to look around wellington and see oh wow there's so much history here, it's so layered I think that'd be really awesome and even New Zealanders in general don't have much of an awareness of our own history. You know like in the states, from the impression that we get from watching TV, there's all these battles being reenacted all the time and we don't really do that with our own battles here you know our New Zealand wars are largely forgotten and our street names and things like that like I'd love to see on the Atlas all the street names kind of histories of Grey St you know who was Grey you know some heroes and villains of our history could be yeah
Emily: that'd be really cool
Eric: we actually do have a lot of reenactments
Emily: down south, yeah
Arama: is that like, would you have been to one of them?
Emily: no
Eric: I've been one in Lexington where like
Emily: well see I live in Kansas so there's nothing from there, there was like a shack in Kansas when all of that happened *laughs*
Eric: where in Boston, my family lives near… (Skipping this part, just about Boston for a while) Boston reenactments, traveling war memorials
Emily: we actually have one more question, just about the technology that you currently use in the classroom, you know PowerPoint, blackboard anything like that that you are currently using?
Arama: yeah, not much just um really blackboard, PowerPoint, Prezi, um.. Occasionally I'll use Google maps but really just to show people things in classes and I don't really talk about how to use it and upload content and things, um yeah, online tests on blackboard…
Eric: but you'd definitely feel comfortable with AR, like it's just another smartphone app
Arama: yeah if um, I guess the challenge would just be paying for the use of it working that type of thing out but the students yeah I think that would be really good
Eric: that's awesome
Arama: um yeah I mean I guess there are issues around if that's disadvantaging your students that can't afford some of the technology or um or lecturers that can't afford it *laughs* so that's yeah just having that type of technology available um you know Ocean has good tutorials that are like labs you know for people to learn how to use different types of technologies, we tend not to do that so much in a lot of the other courses so I think we'd have to build it into our tutorials and ensure that there was a lot of teaching time around how to actually use the technology and you know making sure there's lots of support for our mature students who you know sometimes they'll I mean I was supporting students well before I was a teacher um a student asked me oh could you just help me with something for a second I was like 'yep no worries' I just need to know how to do something on a computer I was okay what is it oh you wanting to know how to change you margins or something like that so I came over and he was like how do I open a word document, you know? I'm just like holy shit, dude you are in trouble you know, can't open a word document? You know and then it's like one-finger typing and it's um I guess it's part of what we're talking about is kind go equipping students with the skills to get them to that level

but doing it in a way that's holding their hand and helping them through it and even we can think about that I guess in our courses about building students' technology capabilities up so that maybe we don't hit them over the head with AR, especially with the courses that have a lot of mature students maybe don't hit them on the head with augmented reality on week 1 *laughs* maybe opening a word document on week 1 and then later moving into this type of thing
Eric: do you think is um cause the students that I guess answered our survey outside the school of Maori studies, I think a lot of them were very comfortable with smartphones and I'm assuming if they're comfortable with smartphones then you can open a word document but do you think that case of not being able to open a word document is prevalent or is that not…
Arama: I don't think it's prevalent but it is amongst our mature students… which I guess group work is probably a good way to get around that so pairing people up who have, you could even get students to fill out either something just on blackboard or whatever just a few little questions and one of them could be around how comfortable are you with using technologies and stuff and uh then you could create groups of students with a mixed level of ability
Emily: How much of the School of Maori Studies are part of the more mature students, like a very small portion or?
Arama:; Um I'm not talking about Maori Studies, I'm talking about Maori students yeah so when I say this, the Maori people um we have a higher percentage of mature students in the Maori student population that the non-Maori so um when I was talking about this guy that couldn't open a word document that was actually, he's actually a white person in psychology but um yeah so I think it's an issue for all mature students but we have more Maori mature students than non-Maori mature students so I don't know about Maori studies but I know in terms of Maori students across the university
(end)

Bruce McFadgen Interview

Honorary Research Associate at the School of Maori Studies

Chris: How familiar are you with the Atlas
Bruce: I've been online and looked at it. It's extremely interesting, and I think it's an extremely good exercise for students. Because it gives them a certain amount of training in the past that I've been involved with anyway but essentially what's on there is their ideas, their interpretations and their impressions.
Chris: So you think that's the valuable thing
Bruce: Yes it's their work and they can see some sort of outcome for their efforts. It's something freely available
Chris: What aspects about the usability, graphics, visual aesthetics? Have you run into any trouble?
Bruce: I was looking at it on the iPad, and I had a wee bit of difficulty with it not as easy as I expected, the map kept on doing funny things. Certainly when it's in landscape format, in portrait format it wasn't quite so bad and every so often it would suddenly jump out at me. But that may have been me.
Chris: No that's good information because we will soon be having a sprint with a company where we can address issues like that. Any other concerns about it
Bruce: At this stage not really, I think the important next step is going to be the augmented reality, the AR.

Chris: And you're familiar with that id assume?
Bruce: Oh yes, I'm looking forward to seeing something coming out of AR, and that can be tied into the Atlas quite readily, I think it will extent the application of Maori studies is doing to the general public arena
Chris: so you're interests in the public?
Bruce: I think it's very important yes, because it's one way of getting across what Maori history and culture is about which is not really appreciated in my experience the reasons I say that is I have people I know in the business field for example who have never been in a Marae and don't really know any Maori and I think this is something that needs to be got out in think there's a lot of people out there who live in this country and they have a history which is not the same as European history and it should be got out there and ultimately I think it would be good for the people
Chris: How do you think it pertains to students?
Bruce: I think it helps them as well. Particularly since some of them are going to be having input into this, it gets them thinking because what I've found with students in the field and I've been dealing with archeology. They don't know much about it when they start and it getting out in the field is somewhat strange to them, they've never been in the field and then suddenly here they are confronted with these archaeological sites. The shell mittens the tresses the park and that sort of things. It's wonderful to see the change they're really interested. And field work, they love field work
Chris: do you think you would incorporate something like hating the curriculum, or a professor could easily incorporate them
Bruce: Um, I think it's more a result of what would come out rather than necessarily be apart of it. This is an end product, and they will be familiar with it. They will be able to see what's already been done
Chris: So it's more motivational?
Bruce: Yes its motivational, then they can go and realize that it was part of the class work
Chris: well we have a prototype that you can take a look at and see what you think
Bruce: Oh good
(Explains prototype)
Bruce: Yes that is the sort of thing; the other thing is the facts, when you hit those it brings out information. That's the sort of thing
Chris: That's what you're interested in?
Bruce: Yes I can see that it's a very interesting, useful application used to motivate students. Definitely motivational
Chris: are the speakers also important to you?
Bruce: It's a matter of getting information across to the viewer, they may know actually nothing about it, and interested in knowing more and that way they could find out easily what might otherwise take a great amount of research. Particularly if they aren't familiar with it doesn't matter whom they are.
Chris: so yes, this is just a rough idea of how it would tend to navigate.
Yes this is the point, that would come up when you are here, and if you were done at Taranaki street it would bring up that place there, or if you're out somewhere in the field it would bring up a place near by.
(Shows timeline)
Bruce: Yes, how about videos? Short video clips could be very useful in certain circumstances

Chris: okay, oral and visual at the same time
Bruce: Yes
Chris: are there any other features you'd like to see?
Bruce: Not at this stage but maybe as it develops other things could come up. What would the base map be?
Chris: what would you envision it as?
Bruce: I would envision it as something like Google earth. A photograph of the landscape, aerial photography as the basis rather than a strait map. Because it gives a much better impression on what the landscape is like, and I'm talking here in terms of archaeology but it would also apply in many other circumstances as well.
(Describes prototype 2)
(Shows map view)
Bruce: That's a strait street map
Chris: so you would like it more 3 dimensional?
Bruce: Not 3D as such, instead of just the roads, the actual hills and things. It doesn't have to be 3D.
Chris: (describes timeline)
Bruce: I think that's actually a very good idea because it brings it out that what we are seeing out there today is not constant, its changing, and this is how it has changed over time, and I think this is something that a lot of people don't really realize.
Chris: (describes lack of knowledge)
Bruce: I would see the AR as a very good step toward the Atlas, rather than the other way around. This is what you're seeing in the field and if you want more information you can go onto your computer and go onto the Atlas for more information. Rather than going from the Atlas to the AR, it's the other way around.
Chris: (describes advertising and people knowing about it to being effective)
Bruce: One comment on that, having looked through the Atlas it is very much how the individual thinks, and what the individual thinks is not necessarily what the situation is, it's how they have interpreted. And that is something that I'm not quite sure how we address that. Do we ensure that everything is correct or are we more interested in how people view it for themselves, understanding that it may not actually be quite like that.
Chris: So how would we get around that?
Bruce: Well how I was thinking of getting around this is taking the Atlas as a starting point now for certain things and, and I'm talking here in terms of archeology, because that's what I'm interested in dealing with, and have another class of students and say this is what's in the Atlas now, now you go out and work on this and see if the answers you get, are they the same? If not, why not? Because what I've found with students, teaching them, the main point that I want to get across to them is that they have access to the archaeological records, do not believe everything you read. Question it, and question it, and question it. And make up your own mind. And it's an assertive effect. Other students have gone out, they have looked at this stuff, and they have made up their minds. You can see how they made up their minds, what do you think? And challenge it. I think as students this is a very important issue.
Chris: That's a great point, we haven't heard that before. That's a perfect point
Bruce: Because I know from looking at certain parts of what students have said its not in fact accurate, its close but it's not, but when you think about what was going on, it was understandable, and they were asked to decide what they thought.

Chris: do you think it's worth having a disclaimer or make it clear that its student work?
Bruce: I think it might be more a matter of pointing out that a lot of this is student interpretation of what they are seeing and what they understand because even when they get stories handed down to them from family and those go on, that's not actually going to be how someone else sees it.
Chris: Thank you so much that was incredibly helpful.
Bruce: What I do want to find out later is how you get on down in Canterbury. I'm pretty interested in trying this out myself. Going through the motions of setting up and AR application on a cell phone and what is involved.

Te Ripowai Higgins Interview

Senior Lecturer, Former head of School

Chris: So I know you caught the back half of our presentation last week right?
Te Ripowai: Yes
Chris: So like I'm not sure if you got the beginning but essentially what we are trying to do is one make recommendations for the TKAM Atlas and two pretty much find out how a hypothetical use of an AR app would work in the classroom as well as outside the classroom.
Te Ripowai: I'm very interested in how it works outside the classroom
Chris: really?
Te Ripowai: Yes
Chris: ok great
Te Ripowai: My ulterior motive is actually is looking at how it can be adapted by our tribe.
Chris: ok
Te Ripowai: As a way of... because we just had our settlement our treaty settlement and one of the unique things about it which many of the tribes didn't do. Was that we never gave up and we've always fought them we never gave up authority and governance and sovereignty of our lands and the government took it over as a national park.
Chris: ok
Te Ripowai: But there was a special legislation at the time that our ancestors agreed and there was this sort of co-management of the national park because it's pristine native forests. But our people live there and live inside it and always you know. It's not like they've, it a park like in the south island like the south island tribes did.
Chris: right
Te Ripowai: recommend why are you fellows fighting why don't you just let the government run it for you and. we says, we don't live like that. We actually live inside. You know?
Chris: Right
Te Ripowai: We are not visitors into our own homeland. We reside in it. Whereas most of the tribes live outside of their territories or even if they live there they've actually sold off or leased away all their land to outsiders. So one of these is because to ensure that it stays pristine with the people still managing it. That there is an actual way of sharing it with the globe. And with the very small piece that I saw of your project. I thought this would be great for the people at home. and our people are great oral traditionalist so there is a lot of stories and families and we have more Marae in our tribe which is only in acreage it would be smaller than the whole of the south island we have more marae's than the whole of the south island. And so and each one belongs to

these family groups and they have all the histories and the stories that could be incorporated and could be developed by the next more. Shot time that I saw your…
Chris: Yeah definitely.
Te Ripowai: That got me excited.
Chris: Yeah no it is definitely an exciting... exciting thing. But I'm glad to hear that you think it would work outside the classroom as well.
Te Ripowai: Yeah.
Chris: And you mentioned about the oral aspect of it. So do you think that should definitely be included as well?
Te Ripowai: Yes I think so.
Chris: So rather than just words on pictures.
Te Ripowai: Yeah.
Chris: You'd like to see…
Te Ripowai: If you want more than you can press a button and you know…
Chris: Right.
Te Ripowai: And it would have the elders or the young people you know we have hunters who have been hunting in a traditional and sustainable way.
Chris: Right.
Te Ripowai: That sort of thing. You know that's you know I saw all these possibilities.
Chris: That's awesome if that's important to you guys then that's definitely something we want to focus on. Something we can bring up. What experiences do you have with the Atlas the current *Te Kawa a Maui* Atlas?
Te Ripowai: Apart from the feedback from the students on how much they enjoy it and because I am so busy and you know I've been told this year that… I was also teaching full time for TKAM so I was running one of the programs. So in another life I used to be an academic and I chose when I stepped down as head of school TKAM and peter took over after me. I went down to manage the marae, which was going through a crisis point. The university did a review and they decided to make in an events center and I fought against that and the only way to manage the whole process was I decided I'd call their bluff and I stepped down as head of school stepped down from an academic position and took over management. Applied for the job, I had to interview. For the job in something that I have been doing all my life and even when I've been here. And mine was to ensure that it remains an integral part of Maori studies discipline and the practice cause there are very few institutions that actually, apart from our own Marae but most of our people are urbanized so their cut off from their Marae. Many of them don't know how to manage, how to keep the stories, and all of those things. And so that is how I ended up over there.
Chris: Do you lecture still?
Te Ripowai: Yes and I do quite a lot of guest lecturing around campus at different facilities but also manage to get facilities to come and engage at the Marae. When they are looking at Maori knowledge it's become quite a buzz thing around campus. This week we just had school of architecture all of the staff and we spent 4 or 5 hours in there discussing what they were wanting to integrate into their program and how they can incorporate that knowledge into their teaching program
Chris: That's interesting.
Te Ripowai: So that's what keeps me busy.
Chris: Have you used the Atlas in your classes?

Te Ripowai: No. No. I mean that Ocean is probably the only one that's done that.
Chris: Cause I mean it's relatively new.
Te Ripowai: And the students love it. The feedback I get from the students and that's one of the things about the Marae they discuss all the things they are learning and things that excite them.
Chris: And what is the feedback like?
Te Ripowai: They've love it, they've absolutely loved it.
Chris: Any aspects that they like?
Te Ripowai: No I haven't. I don't have the spare time in the day. And I am also absolutely hopeless when it comes to technology but I know the capabilities and the possibilities that it actually holds. For me that's not my role I give it to my granddaughter and I says FIGURE this one out for me. She'll play around with it and come back. I feel my place in that is it promotes it to people in leadership roles and try to get them to engage. Because I think our generation are a bit stuck in the … they think the old ways are the best ways and I am thinking no there not. You have to listen to the young people. We've always been taught, our elders taught us that we must always look at the distance horizon. One of the things that we understood from it because being an oral culture and in my tribe we were the last to sort of be colonized. We were the last to allow anyone to come in. we lived quiet in an isolated area that, that we learnt and we listened from our own history. And how clearly the leadership of the time managed and so our very survival was managed on how they saw the distant horizon. We have all sorts of proverbs and things like that reminds us that there is things you have to do today but you mustn't forget the future and the distant horizon. It's a survival tactic. So when you're under siege like our tribe was we just wouldn't allow… we were the only tribe that actually had… we put up toll gates up. Can't come into the territory if you're foreign and that meant even other tribes. You had to seek admittance into our territory. Our elders set that up quite clearly. I come from that sort of mentality and it's not like we're not welcoming of people. The opposite to that is that we are…that when people come they are overwhelmed with all the hospitality. Many elders from other tribes were like oh gosh I was so terrified to come when were young then when we arrived the red carpet comes out. We hosted really well. I say yes well we do. we are quite suspicious of the all people outside here. And of their intensions. And I think that sort of builds and antennas go up. Whether you need to be going down that track or not. but we are always constantly exploring all the possibilities. And it actually the old people our generation our younger generations they don't think like that. We gather them and say what would you like in the future? Their still thinking about today they don't think about the future. So when we start saying well we're hoping that one day all we have to do is beam down stuff. Except for one of our little grandson… well he is no longer that young and Twos nephew and he was the youngest. We had a sort of like a seminar we call them Whanana. We had young people and our elders come together for a live in where we discussed issues for the future. They talked about their lives then we asked the really young ones they were tattlers. What would you like? Would you be prepared to sand up and do the oratory? Would you like to do the calling? Take on the more traditional roles? And he says 'no I don't' and I says what you mean? He says when it comes to my time I'm just going to beam up my grandfather. He can do it I'll just beam him up. We thought that's really out of the… and we were going that's actually a possibility. That we could be dead and they could still reimage us to do all those culture roles.
Chris: So this app could serve that purpose. That is very interesting.
Te Ripowai: These are the things I see. These are the possibilities.
Chris: Ok I see. What about… so you're…

Te Ripowai: And I'm hopeless at this. I can barely do my diary and my emails and that's it. But I know there are the people that can do all of that.
Chris: Do you think you would attempt to use it in a classroom setting as a lecturer?
Te Ripowai: Yeah
Chris: Do you think you will in the future?
Te Ripowai: Probably. You know with my thing in there… I do a lot of my teaching in the house. So I just use the house. I am hopeless with PowerPoint's and all the fancy… we got all the technology here. So I just use what was traditionally there I tell the students stories of the… rather than… sometimes we do need to sit back and hear stories.
Chris: Recorded stories and use the application…
Te Ripowai: And we know that down in the south island there is a very modern Marae. Cause people think this is a very traditional… it is based around traditional the whole structure but the whole concept is that. But way down at the very end of the south island there is a Marae there and it's a circular Marae. And you know all the images at Te Papa at the Marae area and all of the beautiful art work in there well the guy who did that came from a… we are sort of cousins tribally their just our next door neighbors. But they also think like us cause they… you see. It didn't stop them from having the great… the imagery. And he moved right away from traditional arts in the depictions and using modern materials. So he was the one that went down to the south island Marae and he's done the same he has the circular house and it's very modern got beautiful… and the ancestors are famous. And he's installed in them the possibilities of the females cause they… Maori was really a matriarchal society until Christianity arrived and switched that around cause our men altered into it so I keep pushing them back out again. And I keep reminding them where they come from. And the traditions. As so their bellies will open this thing and there's a computer installed in it so these ancestors all had their genealogies and all the descendent they can feed into all of that. And Professor Meed who built this house and when their tribe settled their treaty that was one of the deals that they had this beautiful carved house that was confiscated by the government and removed and taken to an exhibition down in the south island and then it got shipped to London. And it stayed there for years and then the museum in Dunedin had it returned and they installed it at the museum down there. So he fought for it and I happened to be down there teaching and Arwenwa was a lecturer down there so I had gone down to do some guest lecturing. And Prof. Meed arrived down he says 'oh I'm glad you here' and I says 'why?' he says well you can come and support me. Cause his tribe and my tribe our tribe their cousins their chief was the older brother of our tribal leader. He says you might as well come and support your elder siblings. We went to the ceremony when they handed the house back. Now that house now back in whakatani. And people can go in and there's all sorts of wonderful new technology. It's a very traditional house, its much older than this one but it has all this technology where people can go in and hear the stories, the history of the tribe, through the people that are lining around these walls.
Chris: I think we have a good opportunity to do that which is maintain the traditional Marae and if we did supplement it with an application it would serve the same purpose. But I mean if it is something that you think it would be useful for that's awesome.
Te Ripowai: That is what excited me about your project.
Chris: We have a prototype of what the application might look like if you would like to take a look. So essentially this is the menu … so if you took a picture of the Marae. You could get some facts about it. It would have the name tell you how to pronounce the name.
Te Ripowai: Oh great yeah, yeah!

Chris: And you can click on different aspects of it. So if you were to click on the top sculpture. Then it would tell you something about it.
Te Ripowai: The story.
Chris: Yup the story and we actually added the microphone already so if that would also tell about it or something like that, but we can also do something similar to this for every tribal sculpture inside the Marae. Just like you were explaining
Te Ripowai: And that would be wonderful that's the sort of thing that we would like. Shame thing that Two is leaving soon. Two is very good orator and he … when oratory is being performed and that's another thing in their cause a lot of our students … I teach them now when Twos dad was here was a professor up at waykotu(?) university but when he was here he and I would do all the culture. And he would be number 1 orator in New Zealand. He and another cousin of mine and an uncle of mine set up this very exclusive school where they train orators. So I sent Two there I says why should all of these people get all of you knowledge cause they opened it up and I says all of your knowledge cause that's the basis of where it comes from and while the school acknowledges it and get the student to go back and do research in their own tribes but mainly that their learning from members of my tribe so I said to Two then that's your staff development and I sent him off. And he graduated top 2 of their intake and to be top of the intake with some of the people that he was with was really cool and cause he came back here and had somewhere to practice. I said to him with all the group in that if they are not Maori groups I get him to practice on them cause they don't know what you're saying. But it is a good opportunity for him to extend… and this sort of thing and I can see the possibility of even extending those.
Chris: is there anything else you would like to see in an application like this? Other than hotspots where you could have blurbs like that? Definitely the speakers.
Te Ripowai: There are… cause we often have ceremonies with like tons of photographs cause university photographers come and we got our graduation ceremonies are huge ceremonies in that … and people prefer it to going down to the Michael Phelps center. Families get up and sing so when the member of the family gets called up to receive their degree families would get up and do the Hakka and the songs and celebrate while they are processing up whereas down at the Michael center people clap lightly if we go down there like two of them would do a Hakka from around the inside of the stadium. Would like to be able to put that in as well. Its just part of historical document as well. Cause we get so many great leaders come through and being able to capture them particularly on important occasions like graduation.
Chris: So maybe like historical…
Te Ripowai: Very shortly we are going to have the welcoming of our new vice chancellor. So the whole university gets invited to come here. The process here we fought for.
Chris: Yeah.
Te Ripowai: I've been under 5 vice chancellors now. About 3 vice chancellors ago. Then came out. When I was head of school they came and asked could people come up with something the university need to look at. Different way of interacting and you know how can we improve ourselves. Our public image and all. So I said with all these heads of schools they were like we need to have more scholarships our students get more accolades. And I say you know what's wrong with this place, it doesn't have a heart. Sometimes I feel embarrassed as head of school when I am invited to Victoria room which is in the vice chancellors office. It's next to his office. And I go there and there are these dignitaries and cause a lot of dignitaries come to wellington and they come here. And I feel quiet embarrassed there's nothing that actually shows our own

culture being in New Zealand you might as well be anywhere in the globe it doesn't tell you anything and I am even more embarrassed cause you give them little sandwiches. The vice chancellor asked me he says could you expand on that? He asked me to come back later. Well the only unique experience people would have a welcoming ceremony for them. So from that day on we all the dignitaries all the new staff and the new students. Very shortly they will start cause we are starting with the international students who are starting to arrive. We will be having all these Pofitti ceremonies. And our new vice chancellor be doing that. He is being brought down by our old vice chancellor who had the same thing. They get welcomed here before they even go to their office. The university staff and student population are all invited. That's another thing. You sort of make-work for yourself. For me in that the bottom line is it changes the culture of the place it becomes more inclusive it includes general staff and academic staff so the invitation goes out. The new chancellors got an exclusive list I've never worked on exclusive list but I know enough people that I know where they should be seated. So he settled this thing this is something he gave his officer. So I recon it's on the Marae so we cannot operate like that we will take on who ever arrives. The invitation should go out. We expect about 300 people. That's just on our side. And people are interested to know… and see it's the only time… many of our staff will never see the vice chancellor or never engage with him. But on his first day they should engage. They're there to see what he has to say… cause before there just used to be the senior management and a few of the senior academics would meet him over in their building over there. But over here everyone gets to meet him.

Chris: It would be nice to preserve that. We just had one more thing we wanted to ask you about because we found that a lot of the students don't know about the Atlas currently. Probably because a lot of the professors don't use it. What can we do from your point of view to get it more known and more widely used. It seems like people are excited about it if they do know about it. So how can we spread the word to reach the professors?

Te Ripowai: I was very surprised how very few knew about it but then it's because Ocean doesn't go out there and it's sort of for her and that's self-promotion and I haven't had time to sit down with ocean to actually really help promote it and even with our students they sort of look… what does that mean. But I know that the students that have been through they've really enjoyed it. Sometimes it just needs someone else to promote it.

Chris: Do you think that you could be that person?

Te Ripowai: Yeah I'm happy to promote it.

Chris: That's great cause we've found that's one of the trends that not a lot of people know about it. No matter how great it is if people don't know about it unfortunately it can't be taken advantage of. But if you could but a hand into that, that would be amazing for us.

Te Ripowai: I'm really happy to promote it I just haven't had time to see Ocean cause she is always busy or she is away

Chris: Yeah she is very busy.

Te Ripowai: And I know the demands on her from the other parts of the place. We nearly lost Ocean. Ocean when she came... I hired Ocean

Chris: I remember you telling us that story.

Te Ripowai: We could have lost her. She probably would have been a nerdy scientist. Mind you the science faculty is ones I engage quite a bit with because I do like people who think right out of the square. Yet I'm a traditionalist when it comes to a lot of things Maori.

Chris: Well you're still looking forward though which is…

Te Ripowai: I can see them and Ocean was… and I thought oh great we'll get her that was their loss. Although I did say to her that she has to stay in touch with her discipline because it's important. You can get swallowed up in places like this institution and its whole culture and having to produce research and having to write and having to publish
Chris: It's so hard for someone who developed something to advertise it themselves. A lot of times it is more effective with other outside factors doing it.
Te Ripowai: Even in our tribe and like the stuff that she does. The stuff on television and partly because it is one of our elders that works with her there and everyone knows he is very knowledgeable when it comes to bush law and things like that and all of our traditional knowledge. But we are very bad at self-promotion
Chris: I understand you're such modest people.
Te Ripowai: And yet compared to the rest of the indigenous groups in that they think that we are really out there. Yeah we go out and fight, fight in the streets
Chris: What mode of communication do you think would be best? Like how would it be through word of mouth or something like social network?
Te Ripowai: Social network I think it would be really great. I'm not on it but it seems like every one is on it except for me.
Chris: What would be the most popular? Facebook? There's Facebook, Twitter….
Te Ripowai: Probably Facebook. What is the difference between Twitter and…
Chris: Its similar.
Monica: Different URL that's about it.
Chris: So do you thing that would be a good way? We were thinking maybe seminars or if you had like faculty meetings
Te Ripowai: Faculty meetings…
Chris: Maybe there could be a presentation instruction presentation. Has that been done?
Te Ripowai: Actually that is something I could talk to Paul and even Petty about. Sometimes he listens. I had to sit him down and take him to a nice place in the past
Chris: Well that sounds great. Sounds like a very good sense of direction for us. That was extremely helpful.
Te Ripowai: And it's also getting her media exposure outside of the normal you know the stuff here at the university. One of we could have her do a presentation and advertise a lunchtime talk and even whether it is here at the Marae that goes wider than possibly Maori studies. I would need to sit down and talk with Awiniea about that
Chris: There is defiantly other resources as well that can help advertise. But just knowing that that is something we need to address is extremely helpful for us.
Te Ripowai: I know I've got the manager of the Maori television in as a former student because I pick up the phone and I go could you come down and be our keynote speaker for our … our graduation speaker. He says … they still call me Fiah. He goes 'oh what would you like me to talk about?' I say… you know they revert back to being students. I says you're a high flying executive now. And he was very good. That sort of promotion. And I have been trying to find a way of exposing it when we have huge ceremonies particular with our own people. And I know there are people I could talk to like Nata who has completed the settlement and they're movers and shakers. There actually one of the top companies in the country. But they don't promote it, well they do promote it but it's in a different sort of circle. It's something that you could sort of hook into and we could work with people from. Cause the chief negotiator and a very good

friend of ours daughter is (some name that is mumbled but sounds like avenyours) best friend. And she will see the possibilities. So it is just knowing who is out there
Chris: well you are a great resource as well
Te Ripowai: I never thought of it needs promotion it needs other people to take it up as an application. And they are in a position to do that and given the resources they have. I think it would be very good.
Chris: That sounds awesome and it was extremely helpful.
Te Ripowai: See you just made me think about all of this cause otherwise I'm not thinking about it
Chris: Hopefully we can spark all the lecturers' interest

Mike Ross Interview

Language Lecturer at School of Maori Studies

Emily: So to start it off, we kind of just want to know what are your experiences with using the TKAM Atlas, kind of like how's it been for you
Mike: I haven't used it at all.
Emily: At all?
Mike: No
Emily: Okay so you've never taught with it or anything?
Mike: No
Emily: Okay um. That's fine, that's fine that's actually what a lot of people have been saying. So do you have any general impressions of it, like if the students are interested in it or not so much?
Eric: Or from Ocean?
Mike: Yeah well I was I was interested in it because of the … I thought I could take it home to my own tribal area and make a sites of significance and then also write up you know bits of history 'cause I've done some um research around my own tribal area the people and events and all of that sort of thing so I thought it be also an application for that sort of thing
Emily: Mhmm
Mike My understanding from students is that they really enjoy it um using it, that sort of stuff too. Um, Hadn't thought about using it in class until uh I got your other survey and then I thought oh… yeah I could see how that would be or could be useful um if you. it would be designing sort of some language uh exercises around the locations
Emily: Right
Mike: But they, I mean,
Eric: Take some thought
Mike: Yeah it would take some thought but I thought that might be interesting for students too, to learn a little bit of, it either could be local history or they could choose other sites around the country or significant events happening in the Maori world so you know like tribes might have their own, might have particular battles they happened to have staged at different times of the year or celebrations or festivals that sort of stuff so um you could use you know which would link into what would be the news of the day because the news would follow that sort of stuff but also you could get some history as well. Yeah and that might be interesting help students connect back with their own tribes and stuff so yeah… but it would just take a little work.

Emily: Yeah, is one of the majors reasons why you haven't you know used it with like you said with the tribal aspects is because it kinds of new, you haven't really like, it hasn't been public for a long time.
Mike: I think I just haven't spent time.
Eric: Yeah messing around with it.
Mike: Yeah, and if I was like if I'd and I spoke to Ocean about this a couple years ago you'd just take one of those GPSs and you just go away and do it but I haven't done it yet
Eric: Yeah
Mike: If id' done that then I'd be familiar with it and then I'd be more likely to make that connection between that and class and that sort of thing so mm
Emily: Right…
Eric: do you want to talk about augmented reality (to **Emily**)
Emily: Yeah, so um we actually have a prototype working for incorporating the augmented reality side of it in here. So this is interactive that you can kind of play with it, um not all of the buttons work but um this part works and then like to the next screen, it'll work as well. So you're more than welcome to play around with it and as you're looking and there kind of just your general impressions, if this is something that like you might want to use either for class or just like for what you said with your own tribal um experiences and stuff like that. Um *laughs* it is quite rough and it doesn't have all the information in it yet
Mike: And it has a sound bite too
Emily: It will we're not quite there yet. But yeah we were thinking that um especially for people who may not speak the Maori language quite as well, you know, pronouncing some things or like talking about it a little bit more in depth maybe.
Eric: That's kind of the same gist but you think that would have any relevance in at least Maori Studies or it is more of a, is that kind of like a tourism thing , what do you think your general impression of something like this in, at least in the classroom or Maori education?
Mike: Yeah, I think that um you know some of the assignments that we've given to the students is that they might have to research a particular carving and because all of the carvings inside the house relate to the different tribal areas around the country that they could um you know a site like this they could just sort of access that and upload the general information for that ancestor and then if they had a couple of references that they could follow through and yeah that would be, that would be useful um so I'm mainly doing, I'm teaching the language part and so um and I think the text is in both Maori and English I can't remember now, the booklet.
Eric: Oh yeah
Mike: The actual physical booklet um it might be just in English but anyway I think it might be an exercise to have somebody translate those stories yeah.
Eric: Do you think um like obviously it will be developed more so you can go around to different tribes of course if you have your tribe you can go to that, take a picture or something and exactly what you said, this is where is war happened or this battle um do you if there's any way of incorporating that into the classroom or is that just a thing kind of like a tourism kind of thing how do you think, you mentioned like the research assignments and that sort of stuff but do you think there's any other way of doing that at least interactive or is it kind of like a supplementary tool or…
Mike: Well at the moment we use PowerPoint like if we're talking about um history I mean we'll put up PowerPoint so I don't know what the difference will be with what's been suggested and our presentation, how would that be different.

Eric: It's kind of just interactive it would be on a smartphone.
Mike: Oh okay.
Emily: So like if you were going to use it like the idea for this is like you would have your phone here with the camera and you could like take into this app and then have the camera view with your GPS and then you could just look at like oh this is this and this is this, you would be physically there
Mike: oh okay
Emily: um just looking at you know the different parts of the Marae say or something else we were also looking at this for an archeological purpose um which I think we're going to talk to
Bruce: about where you could like take it to a historical site and then like oh here's what it used to look like when there were actual villages here and that type of thing
Mike: Oh yeah.
Emily: so there are a variety of other applications that we could use this for
Eric: And of course we're not making it.
Emily: Yeah we're just telling people what they could do.
Mike: Yeah… yeah the possibilities.
Eric: Yeah.
Mike: Oh yeah, no I think it sounds good.
Eric: Yeah hopefully it's a big hit.
Mike: Yeah well I if you're able to do things like that I mean the students could do lots with it on their own time and so is that what they'd be able to do.
Eric: Yeah.
Mike: Alright. No I think it would be um that would be useful the… some of our readings uh and so we'll take a text and it might be a text of a particular like a famous life story and uh it's about a woman who swam across the lake to one of the islands to pursue her love and all that sort of stuff and um so something like that might be um help make it a bit more…
Eric: Interactive
Mike: Yeah interactive and (**Eric:** visual) help you understand maybe the distance and the…
Eric: What she actually went through.
Mike: Yeah… yeah and that sort of thing.
Eric: More hands-on.
Mike: Yeah an where it's situated in the country and that sorts of thing so that when they physically get to those places… (mumbles) so I think that might be um… I think anything that sort of um… sort of engages students more and so if you have at the moment, you might have just a text you know but if you're able to take pictures that means a lot to go along with that um and students could sort of look at that sorts of things you know so I think that would be useful.
Eric: In the classroom do you just use like PowerPoint or what kinds of technology do use in the classroom, I don't know what you guys have here.
Mike: Yeah we'd use PowerPoint and I'd use um some YouTube stuff you know… doing interviews and bits and pieces or use iTunes so yeah…
Eric: Awesome well that's pretty much it
Emily: Yeah anything else that you feel like you need to mention?
Eric: Oh I have a question actually, do you have um, how do you like reach out to students cause one of the things that we've noticed is that publicity around either Atlas itself and like getting students to know about it, is it like a matter of using it in the classroom then students see you

using it so everyone uses it or is there like, how do things become popular amongst students at least within the school of Maori studies
Mike: yeah… I think um yeah I think if we used it in class the it would um and then Maori students would be aware of it cause at the moment I think the students that go through Ocean's class know how it works.

Emily: Mhmm.
Mike: And… you know the rest of the staff know that there is this…
Eric: Thing out there.
Mike: Thing out there but we don't really uh use it.
Emily: Would it surprise you that 3 out of the 6 people, the 6 staff that we interviewed have used it in class?
Mike: Oh! Oh that's good
Emily: Yeah, that actually surprised us a little bit, Ocean thought that she'd would be the only one who'd use it.
Mike: Yeah, Oh that's great! I think… did any of the language teachers… ?
Emily: Someone mentioned that they were thinking about how to use it for language I believe…. We didn't break it down based on what subject they taught so…
Mike: Oh no I think that… I think if it's useful for the students then we should definitely use it … but like I said it just takes a little bit of thinking.
Emily: Right.
Mike: Around how we um might use it.
Eric: In a different way than actual maps that you're using audio and stuff and kind of stuff like that for language.
Mike: Yeah.
Emily: Do you think it would be beneficial; we were kind of tossing the idea around having like almost like session like learning oh here are like some different ways that you could incorporate it into your class.
Eric: Kind of like a seminar.
Emily: Do you think professors or like teachers would be interested in that?
Mike: Yeah, I think so.
Emily: Okay cool
Eric: I think… if you have any comments, questions.
Emily: Additional comments?
Mike: Not that I can think of.
Emily: Cool.
(end)

Meegan Hall Interview

Lecturer, Academic Development

Meegan: the story… a few years ago we had a meeting in the Maori studies staff room. And we were talking about recent research around ways to engage students and sort of high impact interventions and one of the ideas that was really sort of dominant was that students get frustrated and bored when they're just doing assignments for the sake of the assignment and they

know its not going anywhere and 100 people are handing in the same piece of work and then its being marked and its going to go into a pile somewhere and that's not very motivating.
Chris: we know how that feels like
Meegan: we know that too. We get bored marking the same thing over and over again as well. It's not the most exciting thing you can do. So we wanted to … so the research suggests that if you engage undergrad students in real research they are far more likely to be motivated and become engaged in the learning. Made perfect sense but then the challenge is well what kind of research project could you get a whole bunch of undergrads involved in that would actually be kind of meaningful and helpful but would kind of fit with what a bunch of academic staff would be interested in as well. And as I'm sure you picked up already, Maori studies are very multidisciplinary… interdisciplinary whatever term you want to use. So coming up with a topic that would interest the range of people and be useful and contribute something new and be accessible and relevant to undergrad students. Was quite a tall order at least it felt that way until Ocean piped up and said well actually I've been thinking about this idea of Atlases and we all kind of went 'Atlases?' thinking a book with maps and couldn't really see how that was dynamic, exciting, likely to engage undergrad students to all of us. And then she started describing this idea of having this online Atlas that had layers and it wasn't just about geography it was about history and also about visually representing experiences and being able to have language layers where you could collect a whole lot of information about Maori language, or places, or people and layer it up so it becomes a sort of resource and research tool for people to be able to drill down based on a period of time or across a certain area and how it would build and how you could target it toward the different topic of he course but still add more layers of information to the Atlas. it was just perfect. And that is where it all started from.
Chris: that was awesome. Glad we heard that. So are you, I'm sorry, are you a lecturer?
Meegan: yes I am a lecturer in the center for academic development. Though so I was saying to Monica that my students are the academic staff here at Victoria. So we teach them about teaching about kind of their academic careers and kind of how they can…
Chris: so you are the right person to talk to about this.
Meegan: oh really? Sure
Chris: well cause we want to find out who uses it why it's not used if it isn't used. Stuff like that. do you find that a lot of professors use it?
Meegan: I'm not aware of too many using it. Having said that I probably wouldn't have, as much I'm probably not the best person to ask that to I guess. Most of my work is with people that are new to the university. So for the first couple of years we help them develop new courses and FIGURE out the teaching practice in classrooms. I would expect it is the more experienced ones that are trying interesting new things. Having said that I've been at seminars that Ocean has presented where she's shown people the Atlas and given them the access to it and people have talked about the potential for it and they've been very excited about it so I would imagine at least some of the people in those rooms would have gone away and had a little play and may be using it but I'm pretty sure that is an area for a lot of further opportunity to develop
Chris: I know you said that older staff, or staff
Meegan: more established
Chris: Yeah more established staff would be more likely but what if the younger staff was initially introduced to it I think that would be great.
Meegan: yeah, you're right I guess it would be discipline specific so again separate example we've just done a 2 day orientation for academic staff but we had people from every discipline,

every faculty, not every discipline. In the context like that we certainly wouldn't normally be showcasing the Atlas we would be talking what its like to come to victoria some of our systems and processes around delivering courses. People who are coming from another university particularly another country, which is pretty common. 50% of our academic staff here at Victoria are not from New Zealand. There is quite a lot of transitional stuff to be done. Learning about the country and the place and the second day is more around teaching theory and how to apply that into your practice. in something like that you don't really drill down to 'oh and here is a really cool tool you can use with your students'. But having said that we do on our website have a whole lot of resources that we recommend to people that they can use or consult when planning their courses. Actually it would be a simple job for me to add in links to the Atlas, which I haven't done. And promote it as a tool for people to use to incorporate Maori material into their courses. So there you go. I should have thought of that already. That would be something that would be an appropriate way to promote it. To people who will be more likely to need it will be able to use it.

Chris: Do you use it at all yourself?

Meegan: I haven't used it as a research tool. I've certainly looked at it and I've watched the video that Ocean put up on A Te a Rowas website. She got some funding last year for a good practice location… you've seen the video. And also because I am an exec member for the Maori Association of Social Science its international but mostly New Zealand based. And I send out a monthly newsletter and I did promote it in that publication came out when it went onto the website and said here is a link to a really cool tool. So it's gone nationally at least. a little bit internationally

Chris: From that small exposure do you know or have you seen feedback from other people about challenges they've had with it or things they like about it.

Meegan: I haven't heard from anybody that they haven't been able to use it. I do get the odd email back with people saying 'oh it looks cool'

Chris: We've gotten a lot of that too.

Meegan: And I know when I was at a seminar that Ocean was at there was people in … I think it was history.. Trying to think … I'm looking that way I can see his face I just can't remember … definitely from the humanities. He was really keen I wonder if there is someway we could build something sort of similar and join them up' and they were going talk off line. So I've certainly seen people get excited about the potential

Chris: definitely exciting. We're just thinking how can we improve it and making it better. We've notice publicity is a factor in it, but outside of that like within the Atlas itself how can we make it better for everyone to use. Yeah we've heard all good things. That's great

Meegan: yeah, yeah. I mean I guess at the moment when I have looked at it … trying to think of the last time… probably would have been toward the end of last year. Its a great product already but if I go back to that initial story and the initial kind of vision for it is that it would be constantly be getting new information added and the layers would kind of give a depth to it and that eventually it would cover the whole country would have multiple layers and topics and we are definitely not there yet. So I guess in terms of how usable it is I think at the moment you would look through and click on things and have a look and it would be really interesting but I think we've sort of lay off it being the place that you would go to find out a whole lot of information about one place or one thing

Chris: the organization?

Meegan: eh I don't think its organization it's probably the quantity… that's probably not the right word but there's
Chris: so the content in general
Meegan: yeah it's got holes. It's not comprehensive yet and I completely understand that it's a work in progress. I see the huge values being in once its far more comprehensive people will see it as the place to go rather than just something sort of cute to look through not saying that's a bad thing either
Chris: no that is definitely good.
Meegan: I would like to see it develop become a research tool rather than an interesting app to play with. That make sense?
Chris: yeah definitely, definitely. One way to do that is probably through course work
Meegan: yeah, yeah
Chris: cause we don't know how easily it can be integrated into the course work. I mean from being a lecturer it's out of your element but do you think that the professors that do teach relevant stuff to this could integrate it easily?
Meegan: yeah well we have some certain rules around assessment programs a course will already have been approved with certain assessments worth certain values but there's a lot of wiggle room within that. So you can change the form of the assessment if you had for example an essay worth 30% you could change it and say instead its going to be an online project equivalent to the essay in terms of owls and things like that that's all worth 30% or you could break it up differently and have a short reflection essay based on an Atlas piece of work. So yeah there is the possibility of them doing that without requiring any significant approval
Chris: and you think they will?
Meegan: well some certainly have here in Maori Studies over the years. That is how it is currently being populated I don't know what their plans are now and into the future and I think it would be a shame if they didn't include Atlas projects in a number of courses cause otherwise the actual Atlas won't grow.
Chris: we would all like to see more people know about it. More people use it. so we are just brainstorming ways that.. To make that happen. All the information's awesome. Have you also heard the proposal? I think there was one last year that got denied. She is writing one now for an augmented reality application.
Meegan: I wasn't aware of it but I did do the survey the other day. Have you not had many people do it? I did it. I actually tried doing it on my phone first cause I was around I think it was on a weekend and I got up to the video clip and it drops out cause you can't play the video clip and you can't go on without it so I had to wait till I was on my laptop. It isn't a complaint but in case you didn't know it certainly wouldn't play on my iPhone. So you got a half answer. So I'm familiar with the concept
Chris: so we have something a little more in-depth.. I'm not sure if you saw this
Meegan: oh yep
Chris: you did see it.
Meegan: yep I did when I went through it the next time. That's cool
Chris: its a little more in depth what it would do is you could just choose it or take a picture and the layers would pop up it wouldn't look exactly like this its just a concept so there would be facts or information about it you could click on different parts of it. So if you were to click up there you would get a blurb about what it is and there would be a speaker for the orators
Meegan: ah yes audio as well very cool.

Chris: so it would obviously be more than that as it develops hopefully more information. But do you have a reflection on this?
Meegan: I've heard of things similar. I wasn't familiar with the term 'Augmented Reality' but I did know about apps. For example that you could put up at the night sky and it will tell you what constellation you are looking at things like that. Once I made the connection that that is what you were talking about. I thought brilliant, great, great idea. And I could see that again taking it to another level it would move it away from what I saw as being the research tool to just being information sharing and making it really accessible and that's just a whole other level of it. It would be amazing. The only I guess kind of qualifier to that answer is that I know when we were first talking about the Atlas project we did reflect for a while on the fact that for many of our students learning about things Maori is a very personal journey as well as a sort of academic scholarly one. And as part of that process they also want to study something deeply personal to their own family history their Whapapa their ancestry. And also they often become privy to knowledge of their family or their tribal groups that is not public knowledge its stuff that they are learning about because their related and its right that they know but they are only finding out now. A number of students when they write assignments they put all that stuff into it. And they are just writing it to the lecturer and it's not going anywhere that's fine we maintain their privacy there's no breach there. When they were considering creating the Atlas we had to think about how would you manage projects that are great projects but are not meant to be accessed by all ensendre. And I think, I mean they worked it through there is protocols now to make things private. I know the student were taught how to do that so only the lecturer can access it to mark it up and stuff like that. I would just again raise that as an issue with stuff that is going to go here. It's all about being accessible which is great but there are something's that we don't want to make accessible but figuring out how to protect that and make sure there is no oops moments. You know someone finds out that all their wahikapu, all their sacred sites are on a map for everyone to see or their gathering place for sea food or the sort of the tribal knowledge that is not meant to be popping up on someone's iPhone. Some tourists visiting Wellington some day can find out 'ah that's where you get the pipi'. Yeah that sort of thing.
Chris: That is good to consider. What about interface wise or other capabilities that you would like to see out of an app like this? So the important things you would want it to do.
Meegan: I mean I'm not overly tech savvy I would want it to be simple instructions you know point and it will do it kind of thing having said that the way the world going is that people are getting familiar with all kinds of different app formats and stuff like that so as long as it wasn't overly difficult I'm sure people could FIGURE it out. And I guess the other thing I get frustrated with is whether it can work on different platforms. I guess that's a technical thing and I certainly don't know how to work around that. It's always frustrating when you download something and it kind of works so far then it doesn't work anymore. If you are worried about people using it you would need to have it built so it could work on a range of smartphones range of app types.
Chris: Yeah they are already considering that. The person we are working with does it with iPhones and androids. So I think that would be considered.
Meegan: It's just one of the catches though, it's well beyond this project, but you know technology changes so much. You can build something that works perfectly right now but in two years' time it's going to be obsolete. I know there is nothing you can do about it but I think probably building it in to sort of realize that it's probably going to need on going work to keep it accessible. Only that I've been involved in other projects over the years, it's not my area at all but where they've been called out they built something that's worked really well for a couple of

years and two years later it doesn't work anymore and its gone dead. Because I have that vision being a long-term depository. I'd hate to see something really cool be invested and developed and just as it is kina really getting some traction it's not accessible anymore or compatible.
Chris: But as far as like, for example Fiah was really interested in the speaking part of this.
Meegan: Right… She would be.
Chris: But like things like that?
Meegan: Well I've been helping the web team develop a Maori at Vic website. And I know it is **kind of** a different context I know but… and that has been an interesting project to find out from them what you do and what you don't do. When we first went in we said we wanted on the home page for Maori at Vic to have some really cool graphic at the top. Some sort of interactive video thing maybe with sound. Just kind of have that whole wow moment when you get in there and all of the expert and web designers said you don't want that. Apparently it gets annoying for people. You got to build it in a way they can opt out of it because it just stops them from moving on to the next thing. That it's also really hard to design it in some way that is multi-platform it won't always work the way it's supposed to and people get annoyed with that and it can also date quite quickly too. So again I still like the sound thing and I completely agree that it could be really cool for this but I think there are probable other elements to consider in how it's done and what's done. Cause according to the people whose full time job it is to design websites they it's really hard to do that well.
Chris: Next week we are going to meet with the guy who might make it. So we will definitely bring that up cause we wouldn't want it to be frustrating for people to use or discouraging to use.
Meegan: Yeah well we are still working on the website cause what they ended up with this sort of stained back version is a bit boring so that's not going to do. So we will get there.
Chris: So that is about all that I have, but is there anything else you would like to add?
Meegan: I don't think so. I mean from my understanding this whole 'Augmented Reality' kind of development is certainly really… it's a growing area of tech development at the moment. Saying that as far from an expert but it does seem to me that's kind of the direction people are going in retail and other sort of commercial enterprises and other educational enterprises. So I think it makes sense. It does seem to be a good direction practically if the goal is accessibility and people using it. You've spoken with Ocean and that is a major outcome then it is good. I guess my only additional comment and it's not to negate it. But I am a strong supporter of the original intent and that is being a student engagement tool a student retention tool. A tool that was meant to give our students especially our undergraduate experience. And I would hate to lose that.
Chris: Yeah thank you.
(END)

Appendix H – Focus Group Questions

- **Experiences** with TKAM.
    - Use/why (in class, outside of class, etc)
    - adding/accessing info (filters/organization/links/instructions)
    - why do you like using it?
    - Challenges using it?
    - relevance in the future?
- **Compare other tools outside of TKAM**
    - Compare content (relevance/quality)
    - level of usability/engagement
    - exciting and engaging academic projects/tools
    - good features of other tools?
- **Increase student awareness/use (why/how to improve)**
    - Over half of students have never used it
    - 42 percent have never heard of it
- **Two prototypes**
    - Which aspects of each do they prefer? why?
    - attractive/unattractive
    - Easy to use?

Appendix I – Focus Group Transcription

Facilitator: what kind of stuff have you used it (the Atlas) for in general?

Student: inside of class was just to navigate the system and see what was really in there. see what we could add to it in terms of information.

Facilitator: have you added to it?

Student: not to that one specifically, but I've written up a report, a short essay for a subject, but whether or not it goes into that I don't know.

Facilitator: and was that a good experience? more so than writing a typical paper?

Student: Yea mainly because I'm more technical than I am at writing stuff down so I don't mind playing with systems and technology and stuff so I find it very interesting. Many people have already done the hardias())() like putting pictures of marae throughout the country, that you didn't even know was there.

Facilitator: isn't there some gps aspect to it?

Student: yes, a couple of her classes were, ya.

Facilitator: have you used it?

Student: I've used it earlier on and it looks a lot more stable than the last time that I played with it. a lot more information on it. I was on one of the trips where they did a lot of the gps searching. a little bit up north where they were reevaluating the coordinates and stuff of the places and that. Then I did a video for ocean on it so I got to see what all the other students were doing with it and seeing what their ideals were to do with it. which was pretty interesting. It's very valuable for a lot of the maori stuff and re-contextualizing as New Zealand as different from a European point of view.

Facilitator: have you used it?

Student: no so the culture that this first came in I was in my more senior years of my undergrad and they were using mostly 100 level students to go into all the mapping and stuff. but when I did go into it the first time it was really cool, I think the marae …… so a student who was also from teranai had gone and logged it all so you could literally look it up. and that got me thinking of my work as a language revitalization using a cultural atlas to log language online. a revitalization tool to access people on our iwi register and to log into our profile part of our iwi register. being able to access something like that online to learn about language and history of the area and stuff.

Facilitator: have you encountered any problems with the atlas?

Student: it used to be really laggy but if you've got a computer system that can handle all of the information
is it still based on just ipads? or is it on laptops

ya its live, on the internet

is there like a key for different colors?

ya there is but I can't remember

Facilitator: so you think that's something that can be improved?

Student: yes, for me I'm going like what do these colors mean, and when you push them you see. it'd be nice to have something down the side that tells you.

Facilitator: good, another person mentioned a link to instructions.

Student: yes

there are some international pins

oh yes, it comes up in numbers of how many in each region.

there's a bunch of museums. I work in a museum.

neat, this is cool

Facilitator: how does this compare to other things you might have used before? or is this one of the first atlas/map driven devices you've used

Student: for me personally I've used archeological maps a lot, you can put that sort of stuff in here. and there's also another one that shows you the marae and it pops up and tells you where it is.

It's not the no marae one, it shows the info of each marae

ya that's pretty cool

Facilitator: and you think this is effective in Maori studies? or is it just a novelty thing?

Student: I think if students were given, or is suppose it depends how they use it, for example, if you're given an area for peter ads' paper they have to pick an area and talk about the Maori history of the area, that would be good because you've got archaeological sites, marae, historical

information would be quite good for them to put.

in Maori 123 they have a thing where they have to give an explanation of one of the carvings in the fadinue so you could make all that kind of stuff, you could easily do that kind of stuff. I was in my senior years, the only reason I knew about the atlas is because I had to put a cover sheet and it says at the bottom “do you want this to submitted to the cultural atlas?” So I never checked yes but if I had known what it was I probably would have tapped yes. I guess at the beginning of the year each class needs to say “hey this is what's happening so get up on it”

Facilitator: great point because one of the things that we have noticed is that not a lot of people know about it

Student: no it’s still relatively new

Facilitator: so how do you guys think we can get the word out? what would you be most likely to see? to understand what this is

Student: within the university system?

Facilitator: yes

Student: within the university system it would be nice if they would include this as part of the class lecture and discussion on how to do research so that they would be directed to come to this sight and say “okay you're going to find a lot, not everything, but you'll be able to find some great leads on this place” they haven't really filled it out completely but there’s actually a lot of historical and geographical context of events that have happened here in aotearoa. also that this happened here and this happened over here I can see all of the movement that occurred and stuff and time frames and all of that. so this could be quite useful and quite kind.

what about all of the monitors that are around the university? could you like do an add or something?

Facilitator: so you think that something like that would work?

Student: I’ve done it before and they’re easy, you just send an email to a guy called Alex

he runs the monitors all over campus, and he's always asking for information and things to put up on the screen all the time.

Facilitator: so people know it well?

Student: they walk by and see it all the time, there’s one by there and two down there.

it'd be cool if they could get one or two of those monitors on this side of the road. Because as soon as you get off the bus the first thing you see are the buildings.

Facilitator: Maybe putting a desktop icon on the computers in the library?

Student: Ya so its there all the time

Facilitator: good because the publicity is kind of the big thing, weather the interface is good, no technology is going to be successful if no one knows about it

Student: Before you roll it out you need to have something that they can get at and go wow and cool so they want to stay on it. you don't wants something that's a little clunky, and say oh well this is kinda sucky.

Facilitator: do you guys know what AR is?

(explains AR in app)

Student: like what they're trying to do with these scanners and you put your iphone up to it and it all of the sudden it tells you the price and everything else on it.

Facilitator: yes exactly

Student: so this nacia city app, you go anywhere, and it doesn't work very well inside, but if you're outside you can just aim the camera and it will just log and tell you where different shops are are and you can just actually carry it around NZ.

Facilitator: have you used it?

Student: I've used it a couple of time but because I'm familiar with wellington I don't really need it. but everywhere else in the country it works fine.

Facilitator: how have your experiences been with it?

Student: awesome. it hasn't crashed which is good.

Facilitator: (explains AR prototype)
if this was in this form would it be effective?

Student: yeah I reckon like I'd imagine if I was to go to taranga id point my camera on my phone and just scan and I could see all of the history. Like that mountain

Student: yeah that'd be really cool
It would be very useful for the students out there doing research and stuff. or just the general publics who want to know a little history on the area

Facilitator: so used as a supplementary tool?

Student: id be good for field trips

Facilitator: (continues explaining links)

Student: there is tremendous storage space

yeah you're going to need a massive server

maybe just a couple of items for each place

Facilitator: do you think that would be effective for students?

Student: yes, I think one of the other cool things is like say someone didn't really grow up knowing what the marae is or something like that but they really wanted to know but taking that step to actually going there is a little bit out of beyond their reach. it would be really cool to just give them something to be able to go to those areas and just kind of learn and study and things like that before they go there, because that's a big step.

Facilitator: Have you guys used any augmented reality apps?

Student: no, my phone isn't good enough to use it.

I suppose like Google earth or that sort of thing.

Facilitator: is there anything else you'd like to see in an app like this?

Student: Well you'd probably have to go through a few prototypes before you actually get going, because the look itself has a lot to do with how people interact with it. placement of the buttons and stuff. Would you want it to look more Maori or would you want it to just me more ….

I was thinking bilingual, eh!

ya that's a good idea.

maybe we can use the speaker button to play both languages

that's cool

more language based too as well.

Yeah I like that idea.

Facilitator: (timeline description)

you can put maps overs maps, like different shorelines and things like that, I know we've got a lot of reclaim land.

I knew a fellow from here, he did a presentation and he overlaid two maps cleverly and it was amazing.

Facilitator: any other information you'd like to tell us?

Student: you're on the right track with it

it may take away some of the human element that is associated with going to find out some of this cultural information.

but then one of the way to use this AR, is that you'd have to be in that location to witness history and see all of that come up, and be engaged in the location.

engaged in the location but not necessarily the people.

I think that's a really good point and one of the things that I was thinking of before was about who gets access to the information and the way that its used. I had a chat with fiah about this a week or so ago and how it would need to be attached to an iwi database or something like that so there's a profile that you have to fill out and kind of join and register and you're part of that online database.

Facilitator: so apply to get access to preserve rights to information?

Student: yes, you don't want to give out too much information, or the wrong information

I know there's a bunch of sites on there that aren't open to the general public, and only to the iwi. in fact we couldn't even show it on the video, we had to take them off and use different imagery because its iwi based, maori based stuff and they don't want the access to the public.

at least if its part of an iwi database, then when you register to be part of the iwi database you're checked for your credentials. so when I joined mine I had a referee, someone who could verify my ancestry which is my uncle. And so I filled out the last four generations and I sent him that so he could verify that stuff. and fiah would want, to be more confident. and that way the people that are getting the benefit of the material are the people who can actually use it. and it also gives the iwi the right, the ability, to control what the public sees. We don't mind them seeing some stuff, but we don't want them to see the stuff about the hupa.
right

Facilitator: so you'd feel more comfortable with an app like this given that there is some control over it.

Student: the problem with culture is losing all control of their assets and information and stuff and they don't want that to happen here.

I completely agree with that.

Appendix J – Professor Mark Billinghurst Interview Topic Guide

- What are the possibilities with Augmented Reality from your experience?
- What are the Do's and Do Not's when developing an Augmented Reality application?
- How do you envision what Dr. Ocean Mercier's Augmented Reality application turning into?
- What are the difficulties from the technical side that Dr. Mercier may overlook?
- How do you best develop an Augmented Reality prototype?
- What kind of budget is necessary when developing an application such as this?
- From your opinion is this Augmented Reality application feasible and necessary for the School of Maori Studies?

Appendix K – Professor Mark Billinghurst Interview

Information Gathered from Interview and day with Mark Billinghurst at HitLabNZ
(Organized by time within interview)

Google glass demonstration using CityViewAR

High Street stories

- Audio based
- Example of "storytelling" feature we are looking for
- Able to not actively use the technology device ("put it in your pocket and walk around")

SUGGESTION: "people may feel a little bit stupid walking around looking at things like this" holding the phone* "but if they have some strong audio content you could actually present it in a very friendly way which is walk around with a headphone and start hearing stories being said around you."

Two parts of app: the user interface and the database (may be website)
May have to modify how you upload to TKAM to use it with an AR interface service.

Standalone Model

- Download, retrieves all of the data, everything is on device, don't need network, everything on device, not easy to update, better client server. Where you update the server and when they next used the app with connection it updates.
- There is a size restriction for applications to be able to sell on the app store. Example: CityViewAR
    - 50 MB is pushing the limit

Browser Model

- app on phone as browser
    - Uses location to FIGURE out what data to load.
- Most free ones like LayARs, Junaio, BuildAR
    - Free trial
    - Provides infrastructure you provide content
    - Recommends Junaio channel
        - Our data is already geo-tagged so it is half way there
    - BuildAR doesn't require programming knowledge
        - You upload map and information and it generates the code for you

Cashed Model

- Work in progress
- If network connection when app is started will retrieve latest data
- If not it uses the info from the last time you updated

Gung Lee

- Post Doc researching Augmented Reality

- Worked on High Street Stories

Current Apps
- High Street Stories-> $25,000
    - Android only
    - Audio based
- CityViewAR-> $20,000
- Bendigo Goldfields-> $50,000

Cost
- No maintenance if no changes are made
    - Programming cost
        - to pay masters or PhD student who will be doing the technical stuff
        - a bit to cover people like Mark or Gung
        - format database to link to Augmented Reality app
    - Content cost (minimal but building 3D models of buildings)
- Community contributor content. i.e. from *iwi*s and students
- Marsden
    - $750k
    - Custom App
- Low cost (crowd funding)
    - <$20k
        - Junaio public channel
    - Use the free trial to get users input
    - Use the app to create interest and use the interest to get more donations

Educational
- How to capture the content and gather the data
- Programming student experience

Rapid Prototyping
- Could make a basic app quickly (week or 2)
- Bi-lingual and battle scene as suggest uses from interviews
- Benefits
    - Show people of possibilities, to have them be able to evaluate and give feedback, wont get it right the first time
- Suggestions
    - Multiple views for people who don't know how to use the others yet
        - Map (top down),
        - List
        - Augmented Reality
            - Map and list good for distance Augmented Reality isn't
    - "Want to make sure even if people are not on location they still have access to the information"
- STEPS

- Story board
- Interactive prototype (PowerPoint)
- Prototype on device (proto.io)
- Live AR (Junaio.com , BuildAR.com)

Content Server

- The app and Atlas would use the same database.
- Database changed to format, make compatible with both

Challenges

- Differing *iwi* stories tribes used to fight
  - Could include note about differing opinions and the different stories
- Sensitive info
  - You could have a log in feature
  - Each *iwi* has log in and controls who sees it by who gets the password
  - Can control access of each post. I.e. family only, *iwi* only, public
- Bi-lingual
  - It can be presented in other languages and "you could make the menu bi-lingual if you want to"
  - Could have both on one screen if there is enough space.

SUGGESTION: Have a built in check and information gathering system.
There might be a button to add your story, if you do not agree with the one that is there.
A way for all sides to be represented

Prototyping

- Talk with proto.io
- "Layout tool that is basically PowerPoint"
- HITLabNZ has its own library
- Junaio
  - Can launch off of a QR code
  - Good way to get the app out there
  - Junaio is a relay and formatting server. It connects the phone to the content server.
  - All you need to do is upload the audio, video, text, and photo information to the content server in a way that the Junaio server could read it.
  - Junaio will only load the 40 closest points

Dos:

- Prototype and get user feedback from the prototype
- Don't underestimate work on the content side

Don'ts:

- Get locked into a particular tech path
- Oversell
  - Be sure to present to each stake holder in a customized way
  - Using buzz words is not a good idea when selling technology

Eric: “Do you think tech for Maori culture is very applicable from your stand point as more of the tech side?”
Mark: “I think the ability to tell the stories in location is really important. It depends on how well you present that.”

Appendix L – Deliverable: SQUIZ Meeting Recommendations

SQUIZ meeting recommendations for the *Te Kawa a Maui* Atlas:

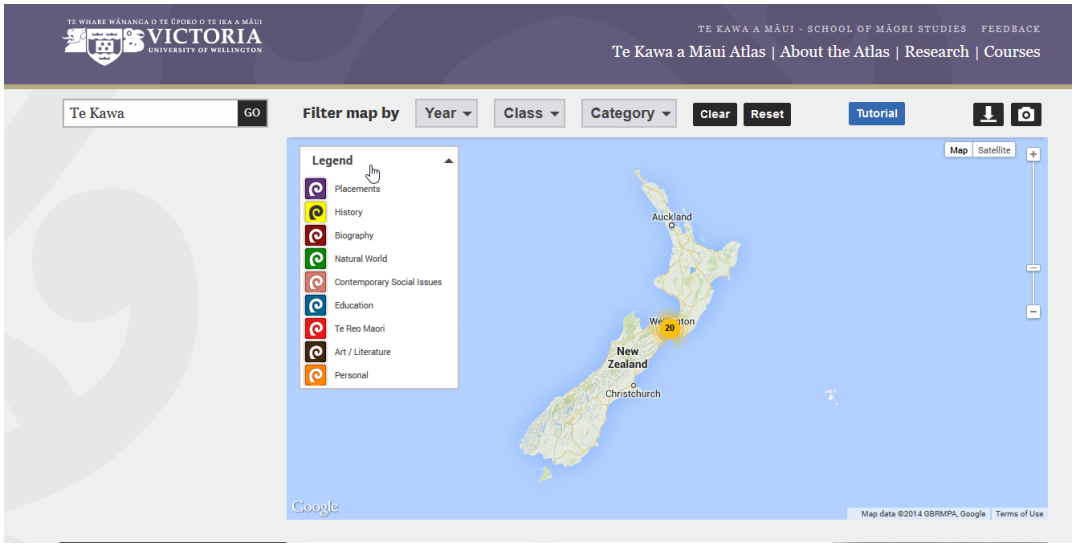
Main Concerns

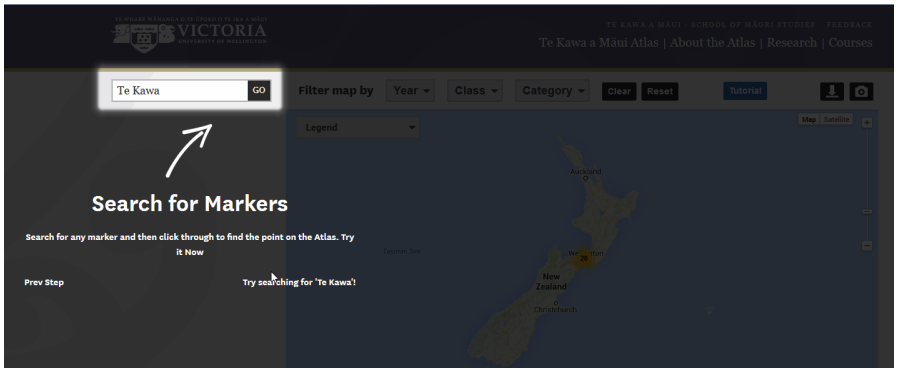
- Publicity of Atlas, any ideas from your side that could aid it?
    - More obvious ways of sharing information through social media
- Filters to ensure that only certain groups can see certain information (*iwi* privacy concerns)

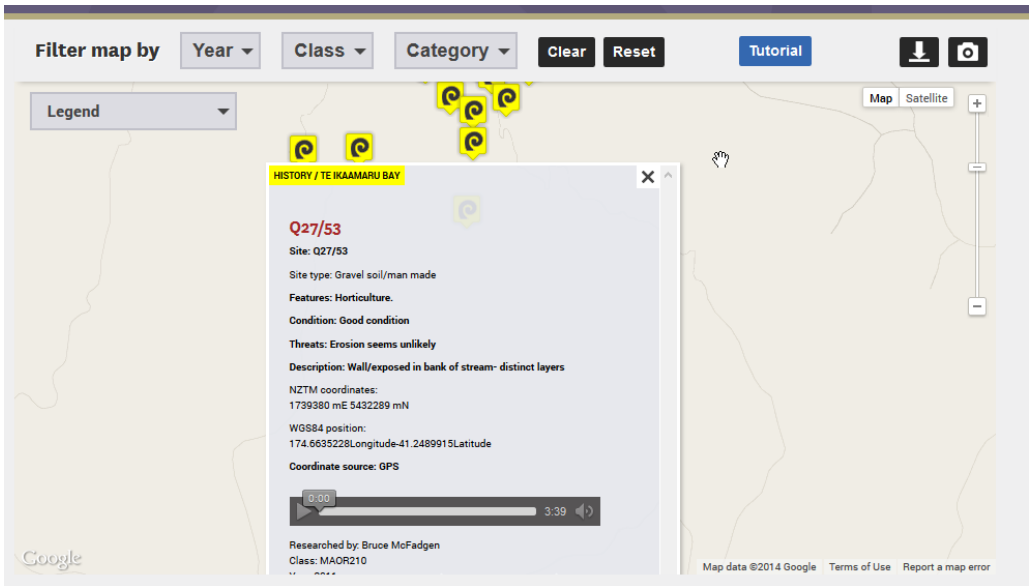
Secondary Concerns

- Clearer tutorial or a link for tutorial on homepage (or the first time you go to the page, it will take you through a tutorial on how but also why and the benefits)
- First screen of TKAM is overwhelming, too many pins show up
- Color legend on the side of Atlas
- iPad/landscape view issues (formatting and zooming problems)
- Standardize each entry to each pin to make it appear consistent.
- Bilingual design MAORI
- Incorporate audio more as well as video posting ability

Appendix M – Deliverable: SQUIZ *Te Kawa a Maui* Atlas Improvements







Appendix N – Deliverable: Marsden Proposal Conclusions

Claims and data regarding Augmented Reality for preliminary Marsden Proposal for Dr. Ocean Mercier.

Main Claims:

- Students and educators are capable of using smartphone devices with the potential to use Augmented Reality.
- Across all students and staff at Vic U, there is a positive reaction to an Augmented Reality app but many have never heard of such an app.
- People are excited about using this app in the classroom, for personal interest or for tourism. Some are interested in using it for all three of these.
- If this app reaches the Vic U student population,
- There are concerns about the loss of human interaction if an Augmented Reality app began to overtake face-to-face learning.
- Augmented Reality needs to be a supplementary tool in education however students still need traditional learning methods, such as lectures and books.

<u>School of Maori Studies students AR</u>

Maori Studies students are presently capable of using mobile devices with Augmented Reality capabilities.

- **81% (25/31)** have smartphones capable of using an Augmented Reality app (9.1)
- **72% (18/25)** are comfortable or most comfortable using their smartphones (9.2)

Augmented Reality is not well known amongst Maori Studies students.

- **66% (19/29)** have never heard of any Augmented Reality app (9.5)
- **10% (3/29)** have used any Augmented Reality app (9.5)

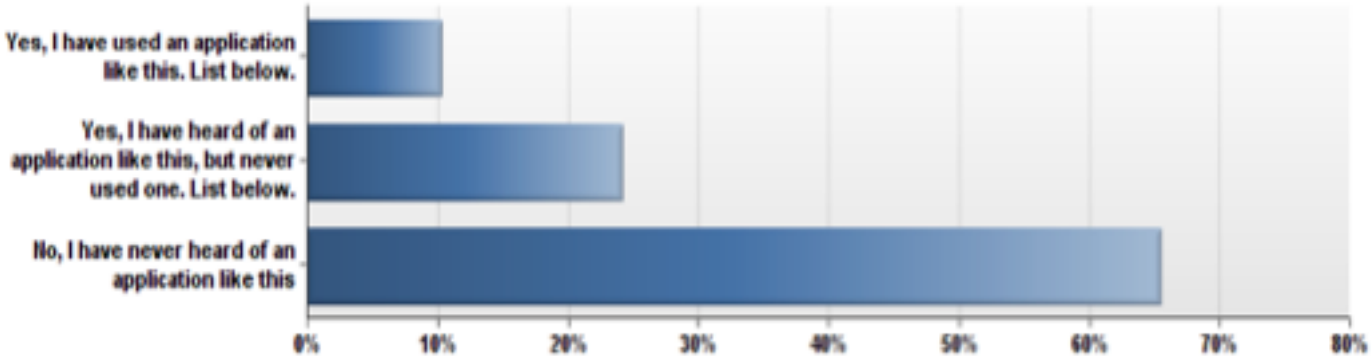


FIGURE 2: Have you used or heard of an application such as the one mentioned in the video?

Maori Studies students are genuinely interested in an Augmented Reality application inside and outside the classroom to learn about Maori culture.

- Of those who used an Augmented Reality app, **67% (2/3)** had a positive experience using the app (9.6)

- **72% (21/29)** would like to use this type of app in their Maori Studies courses (89% might like to or would like to) (9.7)
- **86% (25/29)** are likely or very likely to use this type of app for personal interest outside of class while only **14%** are unlikely to use it

		Rate your likeliness of using this type of application for personal interest about the Maori.					
		Very Likely	Likely	Undecided	Unlikely	Very Unlikely	Total
Would you like to use this type of application in your Maori studies courses?	Yes	14	6	0	1	0	21
	Maybe	0	5	0	0	0	5
	No	0	0	0	1	2	3
	Total	14	11	0	2	2	29

- Of the 21 students who ticked that they would like to use this type of app in their Maori Studies courses, **95% (20/21)** would also likely use this app for personal interest.
- **69% (20/29)** believe are Augmented Reality app would enhance locational awareness about Maori knowledge and history while only **3%** believe it would not

School of Maori Studies professors AR

Maori Studies professors are presently capable of using mobile devices with Augmented Reality capabilities.

- **100% (3/3)** Maori Studies professors use a smartphone or tablet. (7.1)
- **67% (2/3)** Maori Studies professors feel comfortable using a smartphone or tablet. (7.2)

Many Maori Studies professors are not familiar with using Augmented Reality applications.

- **100% (3/3)** Maori studies professors who responded have never used an AR application. (7.5)

Most professors in the School of Maori Studies have positive opinions about the hypothetical use of Augmented Reality in the classroom.

- **100% (3/3)** Maori studies professors answered yes that they would use this type of application to teach Maori studies courses (7.7)
- **100% (3/3)** Maori studies professors answered yes that an Augmented Reality application could enhance locational awareness of Maori knowledge and history. (7.9)
- " If this technology was available, it would be very useful in the courses I teach." (7.10)

There are concerns about the accuracy of information used within an Augmented Reality app.

- "My only concern with it would be the accuracy of the information placed on that, and how that would be framed" (7.10)

Vic U General Students Augmented Reality

General students at Vic U are presently capable of using mobile devices with Augmented Reality capabilities.

- **94% (32/34)** have a smartphone capable of using an Augmented Reality app (2.1)
- **71% (22/31)** are most comfortable to comfortable using their smartphone (2.2)

Augmented Reality is not commonly used amongst Vic U students.

- **60% (18/30)** have never heard of an Augmented Reality app (2.5)
- **10% (3/30)** have used an Augmented Reality app, but of these, only 33% rated their experience as positive (2.5)

Many students at Vic U support the use of Augmented Reality for Maori education.

- **80%** believe this type of app could help them learn about Maori in the future (2.7)
- **47% (14/30)** of non-Maori Studies majors are likely or very likely to use this type of app for personal interest to learn about Maori knowledge and history while **26% (8/30)** are unlikely to use this app (2.8)
- Of the **93% (27/29)** general students that use smart phones, **44% (12/27)** have heard of or used an Augmented Reality application (2.1/2.5)

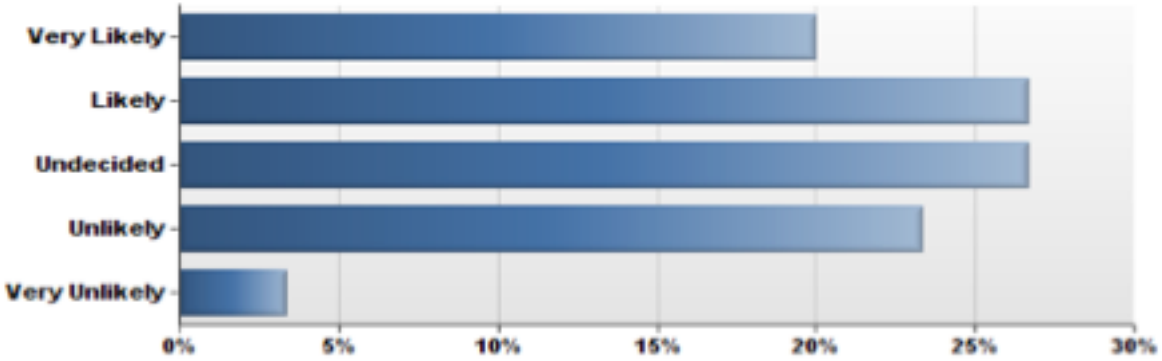


FIGURE 3: How likely are you to use this type of app for personal interest to learn about Maori knowledge and history?

Vic U general educational staff AR

Professors believe that a Maori Augmented Reality application would be valuable.

- **88% (42/48)** general professors would or might use Augmented Reality to learn about Maori culture and history. (3.7)
- **96% (46/48)** general professors think Augmented Reality would or could enhance locational awareness of the Maori knowledge and history. (3.8)

General educational staff at Vic U are presently capable of using mobile devices with Augmented Reality capabilities.

- **88% (38/43)** of educational staff at Vic U feel average or above in terms of comfortableness in using their smartphone or tablet, given a rating of between 1-5, 1 being most comfortable. (3.2)
- **92% (22/25)** of educational staff at Vic U that feel comfortable or most comfortable with their smartphone or tablet believe that an Augmented Reality application could enhance locational awareness of Maori knowledge and history. (3.2/3.8)

Augmented Reality is not highly used amongst educators at Vic U.

- **Only 12% (6/49)** of educational staff at Vic U have ever used Augmented Reality (3.5)

Answer	Response	%
Yes, I have used an application like this. List below.	6	12%
Yes, I have heard of an application like this, but never used one. List below.	21	43%
No, I have never heard of an application like this	22	45%
Total	49	100%

Even educators who have not previously heard of Augmented Reality support the hypothetical use of AR regarding Maori education.

- **96% (21/22)** of educational staff at Vic U who have never heard of Augmented Reality would consider using this type of app to learn Maori knowledge and history. (3.5/3.7)

Answer	Response	%
Yes	12	55%
Maybe	9	41%
No	1	5%
Total	22	100%

- **100% (22/22)** of educational staff at Vic U who have never heard of Augmented Reality believe the app would increase location based awareness of Maori Culture. (3.5/3.8)

Answer	Response	%
Yes	16	73%
Maybe	6	27%

No	0	0%
Total	22	100%

Popular types of responses

Comments by Vic U general educational staff regarding Augmented Reality /education Benefits

- "An Augmented Reality application has the potential to exponentially enhance learning experiences" (3.9)
- "Used as a component in a well planned digital pedagogy, AR can provide an engaging and effective learning medium." (3.9)

Challenges

- "That could be a good way to introduce basic notions, information, etc. (but for a more thorough/better knowledge, textbooks, attending classes and talking to people is still necessary). "(3.9)

Comments by Vic U general educational staff regarding Augmented Reality /engagement Benefits

- "I think augmented reality puts a new spin on engagement with items. Whether they are historical buildings, taonga, awa, maunga, marae etc." (3.9)
- "Interactive, engaging, visual so easier to remember" (3.9)

Comments by Vic U general educational staff regarding Augmented Reality /Maori

- "An excellent idea. It will also help connect with the future generations as they are often "glued" to electronic devices. Seems like a great way to excite and help these people learn more about Maori culture." (3.9)
- "Seems great for this purpose, particularly if it was well-integrated into a specific Maori studies course." (3.9)

Comments by Vic U general educational staff regarding Augmented Reality /Tourism

- "It would be very useful for visitors to the country who are keen to get an explanation of the various Maori sites they visit. It might also be useful for school students, especially when visiting such sites as part of their education. I think for University students, however, it will not offer the kind of depth and detail that they require." (3.9)

Appendix O – Deliverable: Awareness Plan

Step 1: Internal Promotion

- Faculty Seminars
    - Explain the why and how to use
    - Show sample assignments and ways to use in lecture
    - Encourage them use as a recommended resource
    - Brainstorm new assignment ideas

Step 2: Promoting throughout the university

- Email Signoff
- Library Desktop Icon
- Poster on Campus
    - QR Code for downloading AR application
- TV Screens on Campus
    - Picture or GIF of the TKAM Atlas
    - Easy to understand terms
    - Show prototype for the AR application

Step 3: Promoting on a large scale

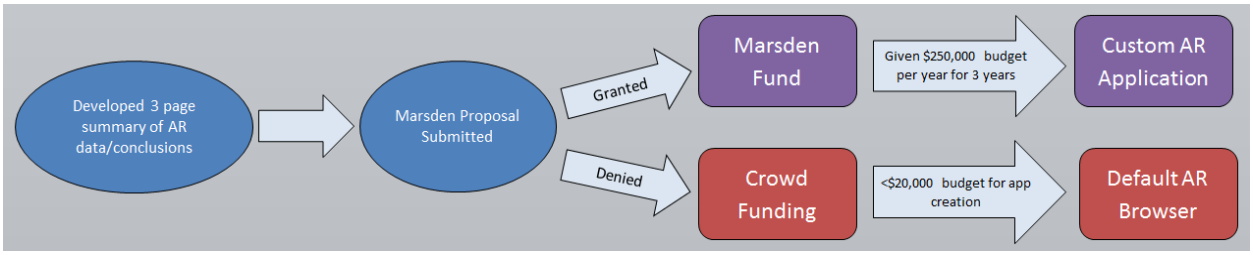
- Social Media
    - Create a twitter # (hashtag)
        - Ex: #maorihistory or #maoriAR
    - Create a Facebook page
        - Invite Maori Studies students to like it
            - Ask them to pass it on to their friends
            - Encourage word-of-mouth advertising
        - Potentially use to advertise other incentives
            - Trips to significant Maori sites

Appendix P – Deliverable: Augmented Reality Development Plan

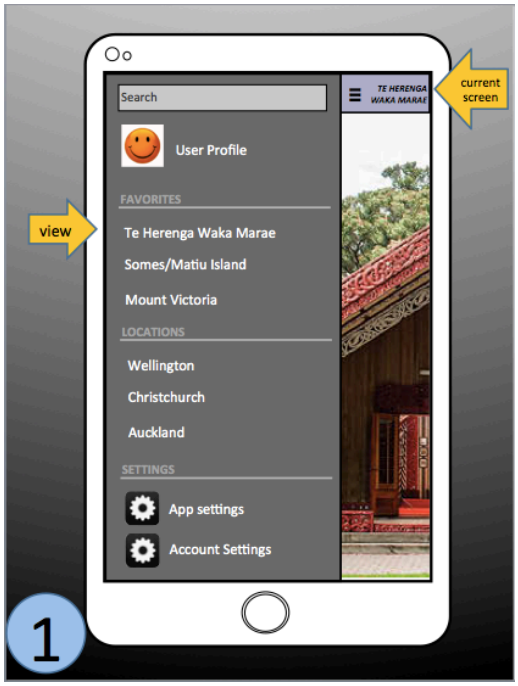
Augmented Reality Development Plan

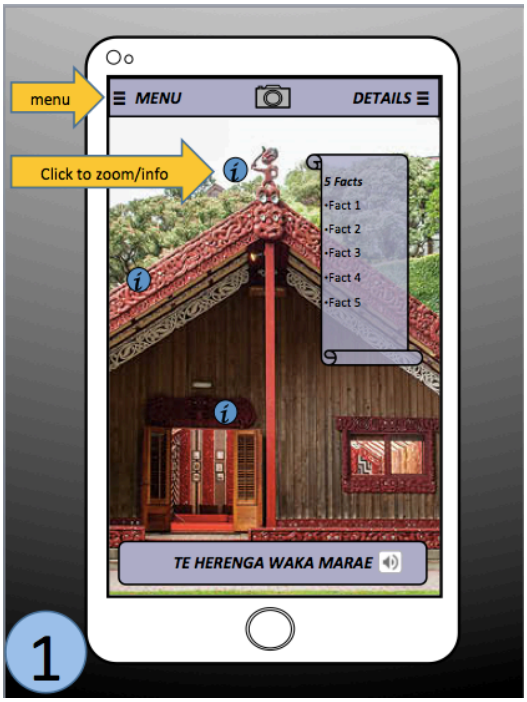
Step 1: Create a storyboard of pictures to demonstrate how the application should look
Step 2: In a tool such as PowerPoint, replicate these pictures and create prototype with basic functionality
Step 3: Using a tool such as proto.io, create a prototype that users can interact with on a mobile device, or device the application is intended to be used on
Step 4: Using feedback from prototypes, either create custom application or create channel in a default AR browser, such as Junaio or BuildAR

Augmented Reality Funding Plan

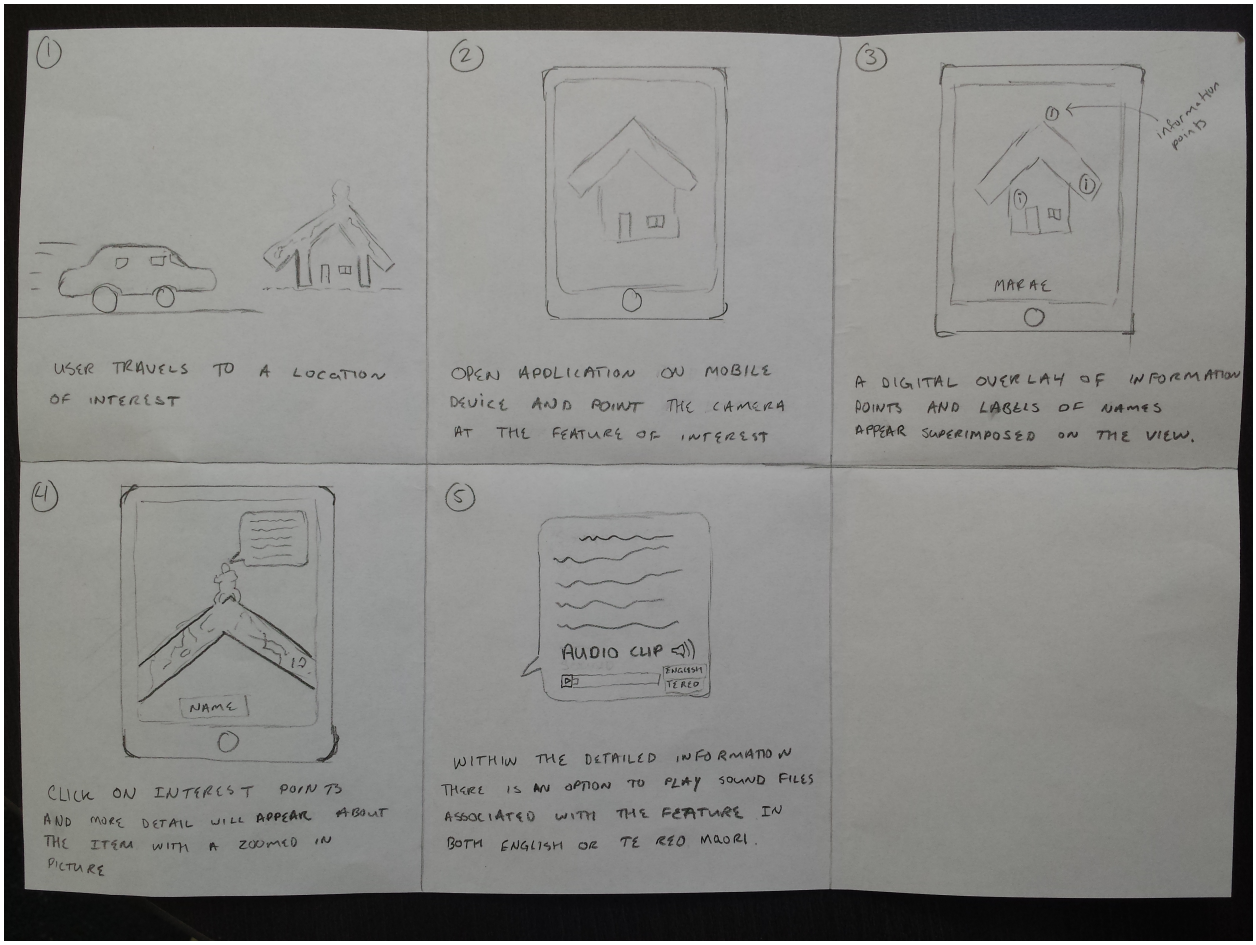


Appendix Q – Interactive Augmented Reality Prototype (PowerPoint)





Appendix R – Prototype Storyboard



Appendix S – Statement Regarding the Maori Language

Statement from post-graduate student, Vini Olsen-Reeder, studying language revitalization

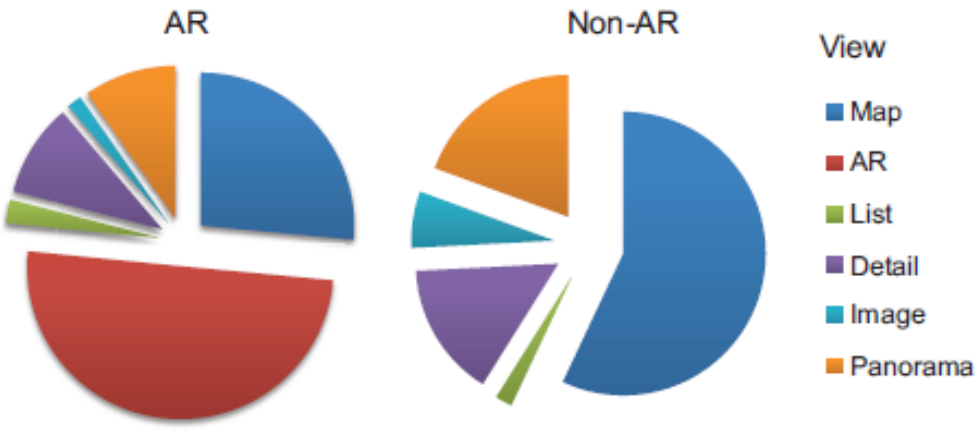
In terms of proficiency and numbers, the current status of the language is largely unknown. Te Puni Kōkiri (the Ministry of Māori Development) has established that while the Māori population continues to grow, the number of speakers isn't growing at the same rate. This means that on a national scale, the 'rate' of Māori people that can speak Māori is declining. Of those who identify themselves as being able to speak Māori, our most proficient speakers reside in the older age brackets, and are not sustainably being replenished by younger speakers of the same proficiency. So it is also likely that our national proficiency rate is also falling.

However, I don't think solely focusing on numbers is a proactive exercise, because it is not necessarily an accurate reflection of language health - 10,000 people who speak a language well and with pride are probably in a better position than 100,000 who are struggling to motivate themselves to use a language they are constantly being told is dying - this is tantamount to being told their efforts to speak it are pointless! Rather, the more critical issue is not one of numbers but of use. One of our most crucial issues at the moment is that not many of us use the language in normal, natural, spontaneous conversation. Although we might have the ability to use it in many spaces and contexts to discuss a variety of topics, the reality is we use English to service most of our daily lives. We rarely extend our language use beyond simple rote greetings, *waiata*, *karakia* and the like. There are a myriad of reasons as to why this is so, but focusing on increasing opportunities for use among those who know Māori (regardless of how much they know) is a crucial, much-needed area of attention. One possible solution at the moment would be to consciously promote the normalisation of the Māori language on a national scale, to be as normal a language as English. This would involve developing methods either to change the negative attitudes many New Zealanders hold towards *te reo* Māori, or to acclimatise ourselves more with those attitudes, so we can speak Māori despite them. Personally I like the second idea, preaching to the converted is easier than running the mission! I also feel that if you create the right environment for language use, the numbers and proficiency issues will correct themselves.

Appendix T – Augmented Reality CityViewAR Experiment

In order to gather data about the user perspective of the CityViewAR application, an experiment was conducted on Cashel Street in the christchruch city center. Of the twenty buildings that once stood on this street, only seven remain due to a serious earthquake in 2011. Forty two people, ranging in age from thirteen to fifty one, were asked to use a tablet, the Samsung Galaxy Tab, to look at the street through the CityViewAR application. Of these, half used the application with the augmented reality section turned off in an effort to compare the map-based experience and Augmented Reality experience.

The test recorded the distance traveled by each individual, and duration of time spent in each interface within the application. The distance traveled was incorperated into a measurement of active exploration, while the time spent using each interface was used to measure the level of interest in each interface. Non-parametric Mann-Whitney U-tests were used to analize the data because it was not normally distributed. The results showed that there was no significant difference regarding time and distance travelled when Augmented Reality was used compared to when it was not used. The participants which used the panorama feature spent more time on the application. Additionally, particiapants who were not present for the earthquake in 2011 also spent more time using the application. Below shows the time distribution between the different interfaces used by the participants in both the AR application and the non-Augmented Reality application. In the Augmented Realtiy-enabled graph on the left, a large portion of the time was spent actually using Augmented Realtiy. On the Augmented Reality-disabled graph on the right, the map and pannorama features were used more frequently instead. From these graphs we can tell that people prefer using some source of visual interface (Lee, Dunser, Kim, & Billinghurst). Moreover, augemented reality seems to take precedence over the map interface when both options are available.



The usability questions asked of the participants are shown below:

1. How was the overall experience with the app?
2. How helpful was the app for you to remember the buildings and the streets?
3. How useful was the app for understanding what has been changed/lost due to the earthquakes
4. How easy was the app to use?

Results from the questions above showed that the AR application consistently rated higher than the non-Augmented Reality application. Furthermore, the participants who experienced the earthquake tended to find the application more useful in understanding how the earthquake has changed the building landscape and the overall lay of the land (Lee et al.).

Appendix U – Mobile Interactive Technology Background

Many of the same methods for education are used on mobile devices as on computers. Because of this, many have tried to distinguish which method is more effective. One study that compared iPads and iPods to computers did so by teaching about pieces of art. Students took pretests, saw the paintings, learned about the pieces digitally, and then took a posttest. The mobile device group stayed in the museum while learning, but the computer group completed the same module on a computer in a lab. The results showed that students who used a computer as the educational tool scored higher on the posttest than those who used iPads and iPods (Martin & Ertzberger, 2013). This statistic was surprising, but it may be explained by distractions occurring while using a mobile device. However, in a survey of the students after the study, students who used the mobile devices reported having more positive attitudes during the study. When observing the two sets of data, the author reports that the "novelty of the device could have added to the lower scoring on the post test for the iPad/iPod (Martin & Ertzberger, 2013)." Even though mobile devices are incredibly portable and multi-functional, this may negatively impact the amount of information absorbed.