

**Persuasion via Gamification:
Mobile Applications for Supporting Positive
Behaviour for Learning (PB4L) Pedagogy**

By Lou Reddy

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Dedication

This thesis is dedicated to my mother – Grace Reddy and my wife - Rebecca Reddy

Attestation of Authorship

I hereby declare that this submission is my own work and that, to the best of my knowledge and belief, it contains no material previously published or written by another person (except where explicitly defined in the acknowledgements), nor material which to a substantial extent has been submitted for the award of any other degree or diploma of a university or other institution of higher learning. The thesis work was conducted from January 2017 to August 2018 under the supervision of Associate Professor Nilufar Baghaei (Computing) and Professor Hayo Reindeers (Education) at Unitec Institute of Technology.

Abstract

Teachers in New Zealand schools are faced with a lot of paperwork for teaching and managing behaviour through the Positive Behaviour for Learning (PB4L) initiative. PB4L was created by the Ministry of Education (MoE) of New Zealand after the Taumata Whanonga behaviour summit in 2009. PB4L pedagogy requires teachers to record and reward behaviour as part of its seven essential features. This creates more paper work for teachers as they are required to reward and correct positive and negative behaviour at a 4 to 1 ratio. The problem is the limited amount of time that teachers have to learn and implement PB4L. What is more challenging is that teachers are expected to create reward and record systems that are ubiquitous and accessible.

Teachers at Wesley Intermediate School have been looking for a fast and efficient way to reward and record behaviour since 2014. The teachers also wanted to create a digital tool for PB4L, to reinforce the use of school values based on Te Reo Māori and pro-social behaviour school-wide, but were limited in terms of technical knowledge, resourcing and research capability. We present “Ka Pai” in this thesis, a gamified mobile application prototype that uses game play mechanics in a non-game context. Gamification was used to persuade participants to use PB4L pedagogies and strategies instead of punitive ones. Ka Pai translates to “well done” in Te Reo Māori, the indigenous language of New Zealand.

Ka Pai was evaluated with ten teachers at Wesley Intermediate School over a two-week period. The findings reported are based on user metric and qualitative feedback collected via indigenous research methodology called Talanoa - a form of research that enables authentic qualitative research with Pasifika people. The results show that Ka Pai was a success. The teachers used the app extensively, to grow in their knowledge of using Te Reo Māori, were recording and reporting behaviour through the app and enjoyed the use of PB4L more in their classrooms. Further research is suggested to show the impact of the Ka Pai on behaviour outcomes over a longer trial period. Future considerations for research could include, student participation, whanau (family) consultation and comparative studies with a control group/similar app for education.

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Other lecturers also played a huge part, such as, Dr Falaniko Tominiko (Director of Pasifika Success at UNITEC) who gave feedback and advice on the use of Talanoa research methodology and methods. He was pivotal in guiding me to use Talanoa to gain authentic qualitative feedback from the participants. Also, a special thanks to Jo Mane, who guided me on responsiveness to Māori and respecting the use of Mātauranga Māori.

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Chapter 1

Introduction

“Don’t try to fix students, fix ourselves first. The good teacher makes the poor student good and good student superior. When our students fail, we as teachers, too, have failed”

Marva Collins

1.1 Background

I completed my studies at the University of Auckland in the Bachelor of Education programme in 2010 and was recruited as a beginning teacher on my last practicum school to Wesley Intermediate School. As of 2017 this school had a roll of 175 students, is a decile 1 school, with 65% Pasifika (from Pacific Island ethnic heritage), 12% Māori and 23% Pakeha and other ethnic groups (Education Review Office, 2016b). During the first provisional years (2010-2012) of registration at the school, I attended several courses on student behaviour management, including a one-year course called the ‘Incredible Years Teaching Programme’ or IYTP (Ministry of Education, 2015a). As a provisionally registered teacher, I took the IYTP course because I needed to learn how to manage behaviour better. IYTP was the first step in the wider PB4L training offered by the MOE (Ministry of Education, 2017), which I have been involved with. In 2012, I was mentored by Jason Murray (former Deputy Principal) to use the Wesley Intermediate School’s behaviour management system, which was focused on rewarding the positive behaviour displayed by students and reporting negative behaviour through incident reports. Some of the staff would use the behaviour management system precisely as described to me by my mentor teacher. While other teachers only used the punitive responses to negative behaviour and often inconsistently.

Around 2013, Wesley Intermediate school was approached by the Ministry of Education to undertake the PB4L programme as part of its whole-school professional

learning. The training programme was facilitated by educational psychologists and PB4L practitioners from behaviour management backgrounds. The training involved a cluster of schools within local community, to encourage collaboration and sharing of intellectual property around programme design, collateral and exemplars of best practice. During 2014, I was nominated to attend the monthly management-level training sessions held at the Ministry of Education office in Auckland, and I gained the title of Team Leader for PB4L within the school. The Team leader training focused on leading a PB4L team of teachers, implementing the seven essential features of PB4L and using the PB4L manual (Ministry of Education, 2015). During the training phase through to the implementation phase, I found two key themes that enabled PB4L to be implemented well at Wesley Intermediate and at other schools. These themes were accessibility, consistency of practice and collection of data to improve PB4L pedagogy. I was validated in my viewpoint, as I helped conduct several audits called “School-wide Evaluation Tool” or SET surveys (R. Horner et al., 2004; Wesley Intermediate School, 2016), which indicated the need for accessible rewards, consistency and better data collection across a school.

Teachers at the school were given targeted professional development in the use of PB4L – school wide (SW) reward strategies based on the results of the SET surveys. A paper-based reward system was re-introduced and a clear procedure for use in staff handbooks and induction guides was implemented by the PB4L leadership team (including myself). The teachers were encouraged well before this study took place to actively use the paper-based reward system named “gold cards”. In Figure 1.1 we can see an example of a gold card that teachers had to collect from the school office (around 50 per week), to give out to students for “good behaviour”. The first part of the system had no way of tracking how many were given out by individual teachers, or if teachers were giving it out freely and frequently as suggested by the PB4L manual (Ministry of Education, 2015).



Figure 1.1 Paper based- reward token known as a “Gold Card”

The paper-based gold card rewarding system was very simple and one where a teacher gave a student, a gold card when the student exhibited one of the three school values, “respect self, others and the environment”, as shared on the school website (Wesley Intermediate School, 2015). The second part of the behaviour management process was incident reporting (negative behaviour) in Figure 1.2, where by teachers needed to complete an incident report (Tobin, Sugai, & Colvin, 2000). These type of reports are common in PB4L schools as suggested by the PB4L manual for recording and responding to harmful behaviour in a school (Ministry of Education, 2015).

App. C

Wesley Intermediate: Incident Report
(Please return completed form to AP/ or AP pigeon tray)

Students Name: _____ Class: _____

Date: _____ When: _____ am / pm

Referring Staff Member: _____

Location:

<input type="checkbox"/> Admin Areas	<input type="checkbox"/> Classroom/including Tech	<input type="checkbox"/> Corridor
<input type="checkbox"/> Crossing/entrances	<input type="checkbox"/> Fields and Courts hall	<input type="checkbox"/> ICT/online
<input type="checkbox"/> PE Lesson	<input type="checkbox"/> Play-ground	<input type="checkbox"/> Toilets
<input type="checkbox"/> Tuck Shop	<input type="checkbox"/> Van	<input type="checkbox"/> School trip

Others involved:

<input type="checkbox"/> Non-teaching staff	<input type="checkbox"/> None	<input type="checkbox"/> Other/ Unknown
<input type="checkbox"/> Peers	<input type="checkbox"/> Reliever	<input type="checkbox"/> Teacher

Major Behaviour	Minor behaviour	Motivation	Action Taken Minor	Action Taken Major
Harmful Contraband <input type="checkbox"/>	Banned items (gum) <input type="checkbox"/>	Gain Adult or Peer attention	Loss of Privilege/Item <input type="checkbox"/>	Refer to AP <input type="checkbox"/>
Major Defiance <input type="checkbox"/>	Minor Defiance <input type="checkbox"/>	Gain Adult or peer attention	Re-direction, Prompt and use strike system <input type="checkbox"/>	Refer to AP <input type="checkbox"/>
Major Disruption <input type="checkbox"/>	Minor Disruption <input type="checkbox"/>	Avoid Task or peer attention	Re-direction, Prompt and use strike system <input type="checkbox"/>	Refer to AP and withdrawal (1-2 spec) <input type="checkbox"/>
Lying <input type="checkbox"/>	Spreading rumours <input type="checkbox"/>	Avoid task or Obtain item	Prompt, Discussion, Re-teach, Re-direction, strikes <input type="checkbox"/>	Refer AP and inform Teacher <input type="checkbox"/>
Incorrect uniform (3X) <input type="checkbox"/>	Incorrect uniform <input type="checkbox"/>	Avoid activity or peer attention	Prompt, Discussion and then use strike system <input type="checkbox"/>	Teacher to Contact parent <input type="checkbox"/>
Abusive language <input type="checkbox"/>	Inappropriate language <input type="checkbox"/>	Avoid or Obtain peer attention	Use strike system and Restorative chat <input type="checkbox"/>	Parent Contacted and refer to AP <input type="checkbox"/>
Violent contact <input type="checkbox"/>	Inappropriate contact <input type="checkbox"/>	Avoid or gain peer attention	Timeout and use strike system and Restorative <input type="checkbox"/>	Refer All and contact parents <input type="checkbox"/>
Sexual act or behaviour <input type="checkbox"/>	Inappropriate behaviour <input type="checkbox"/>	Other motivation	Prompt and Discuss with AP <input type="checkbox"/>	Refer AP and SENCO <input type="checkbox"/>
Vandalism <input type="checkbox"/>	Tagging (minor) <input type="checkbox"/>	Obtain peer attention	Prompt and use strike system <input type="checkbox"/>	Refer All and contact parents <input type="checkbox"/>
Theft <input type="checkbox"/>		Obtain item		Refer AP/Contact parent <input type="checkbox"/>
Truancy <input type="checkbox"/>	Late/Skip class <input type="checkbox"/>	Avoid task	Prompt, Discussion, and then use strike system <input type="checkbox"/>	Refer to SENCO and contact parents <input type="checkbox"/>

Any Comments/Description of the incident other than what has been stated:

Figure 1.2: Paper based Incident Report form - Wesley Intermediate School 2015

The gold card rewards and incident reports were not completed due to time and accessibility. Therefore this research study aimed at designing, trialling and evaluating a mobile application to improve PB4L practice at Wesley Intermediate School. This was achieved by making PB4L pedagogy more gamified using a persuasive technology. The Ka Pai app was trialled across all staff and had ten participants who allowed usage data and feedback to be collected. The research

evaluated the current theories of practice around the use of persuasive technology use through gamification in a mobile application by teacher participants at the school. Also, around 2014, the school values which were five different values, changed to fit into three “respect” values with strong alignment to Te Reo Māori. The English version of the values were “Respecting self, Respecting others and Respecting the environment” and these have now become Rangatiratanga, Manaakitanga and Kaitiakitanga. Therefore, the PB4L values of the school underpinned the rewarding activity undertaken by teachers and reinforces expectations that students and whanau understood.

1.2 Identifying the problem statement

Engaging students and teachers with PB4L in New Zealand could be done more effectively as it is still predominantly paper based, non-ubiquitous and hard to implement school wide with consistent and accessible data tools for rewarding and reporting behaviour.

In New Zealand ninety percent of schools, use applications and online learning tools to teach reading, writing and maths, with increasing levels of positive educational outcomes (McNaughton & Gluckman, 2018). Yet the teaching of behaviour is heavily based on each school’s level and type of engagement with the Ministry of Education’s PB4L initiative; and its ability to embed professional learning which is responsive and meets the needs of new teachers (Savage, Lewis, & Colless, 2011). According to the Ministry of Education, PB4L Tier One (first level of universal interventions) (Boyd & Felgate, 2015; Elder & Prochnow, 2016) is being implemented in over 600 schools (primary, intermediate, and secondary). PB4L is primarily implemented non-digitally unless a school uses a School Wide Information System called SWIS (Savage et al., 2011) but there is limited research data on how many schools actually track behaviour data using SWIS or whether it makes a difference to behaviour outcomes or teachers’ practice. School leaders also struggle to meet the needs of their teaching staff when there is a lack of data and professional development (Dhaliwal, 2013).

Where there is disengagement from education and learning, so too are the adverse effects on learners’ outcomes. An example of the current lack of engagement, in the

Ministry of Education data shows that Pasifika and Māori learners are overly represented in low literacy and numeracy, stand-downs and suspensions (Education Review Office, 2012; Ministry of Education, 2016). In New Zealand the youth suicide rate has been increasing and as a response to this the Ministry of education is slowing improving its systems to cater for the needs of learners through interventions including support for creating safer learning environments (Gluckman, 2011).

As a response to the increase in reported suspensions, mental health issues and behaviour management concerns, the Ministry of Education held the Taumata Whanonga Behaviour Summit in 2009 (Ministry of Education, 2015a). It identified the need for better evidence-based practices from around the world for managing students' behaviour (Ministry of Education, 2015a) to create safer learning environment for learners. The Ministry created a wide range of support services for schools through Positive Behaviour for Learning School Wide (PB4L- SW) and is often referred to as simply PB4L. PB4L Professional learning material and support interventions were adopted from the American behaviour management system called Positive Behavioural Interventions and Supports or PBIS for short (Boyd & Felgate, 2015; Elder & Prochnow, 2016; Lewis & Sugai, 1999).

PB4L requires schools to implement behaviour management using the following approach within four key interactive elements (Ministry of Education, 2015b):

- Outcomes of social competence and academic and extra-curricular achievement
- Systems supporting staff
- Data supporting decision making
- Practices supporting students

However, in reflecting on the earlier problem statement, there is still a gap in how schools enable rewarding and reporting behaviour, as teachers still need “systems for supporting staff, decision making and practices for supporting students’. Some critical theorists of PB4L like Savage et al., (2011) state that new and older teachers within PB4L schools need professional development to make shifts in long held beliefs around behaviour management. This issue is also reflected by Reveley (2016) who suggests, that the concern is how to get the whole school involved and to be gathering accurate data, “in order to foster efficacy of these programs”(Reveley, 2016). Reveley also suggests that further engagement with the unique culture of

Aotearoa is needed in comparison to the PBIS (Reveley, 2016), which could relate to the use of values of Te Reo Maori.

Although the outcomes for PB4L implementation has been improving (Boyd & Felgate, 2015), there still needs to be better training of new staff, data collection and communication to support teacher's decision making whilst using PB4L (Elder & Prochnow, 2016; Catherine Savage et al., 2011). Teachers need simpler and efficient ways of accessing Professional Learning in the use of digital tools for behaviour management. Between 2007 to 2016 a study on digital technology use by Rachel Bolstad and the New Zealand Center for Education Research showed that not a single teacher or school in their study was using digital technology in the teaching of behaviour (Bolstad, 2016). Therefore, to bridge the professional learning gap of PB4L's data collection, communication and engagement with teachers and their students via digital technology needs to be well supported. Boyd's research found that teachers wanted – new ideas to “keep School-Wide fresh”, opportunities to network and problem solve with peers, support or resources to make “adaptive breakthroughs” that address challenges (Boyd & Felgate, 2015).

PB4L has seven features in total which will be discussed further in the literature review, however two features needed innovation at Wesley Intermediate School, which are the use of strategies for rewarding of expected behaviour and recording negative behavioural incidents. The evaluative research by Boyd and Felgate (2015) concluded that most primary school coaches expressed that their staff effectively used acknowledgement and consequence systems to encourage positive behaviour. However, in contrast, around a quarter (24%) of secondary/intermediate coaches in the study stated that they still needed support to implement similar systems at the higher levels of schooling, due in large part to a lack of training and resources (Boyd & Felgate, 2015).

In 2013, the research identified that teachers at Wesley Intermediate needed to be supported to deliver PB4L with targeted professional learning and development. The research shows that teachers' perspectives towards implementing behaviour management are heavily influenced by their beliefs, understanding, professional development and prior education (Dhaliwal, 2013; Johansen, Little, & Akin-Little, 2011). Teachers' approaches to behavioural management need to create positive

learning outcomes (Helen Timperley, Wilson, Barrar, & Fung, 2007) and is often not linked to their behaviour management practice. Research shows that teachers need professional development with effective behaviour management strategies to support student’s social skills (Dhaliwal, 2013; Savage, Macfarlane, Macfarlane, Fickel, & Te Hēmi, 2014; Timperley, Wilson, Barrar, & Fung, 2007). In the New Zealand school curriculum, schools use the Key Competencies with learners, which encourages “metacognitive thinking skills needed for planning, making good choices and decisions, and monitoring one’s own learning and social behaviour” (Ministry of Education, 2015b). The Key Competencies provides a pedagogical foundation to guide schools and teachers regardless of their involvement with “PB4L” pedagogy, to teach pro-social behaviour.

In 2015, Wesley Intermediate School’s PB4L procedures and frameworks needed improving as teacher’s voiced concerns through evaluative feedback. An example of this was Wesley Intermediate School’s self-evaluation tool called SET (R. Horner et al., 2004) in Figure 1.2.1. This enabled the school leaders and staff to gather data to improve on the features of PB4L through action planning and inquiring into its PB4L practices (pedagogy) as suggested by Rohan (Rohan, 2017). Along the years of doing SET surveys, which included student and staff, audits of PB4L procedure, the school showed a trend which is shown in the Figure 1.2.1 whereby the performance of implementing PB4L has greatly improved.

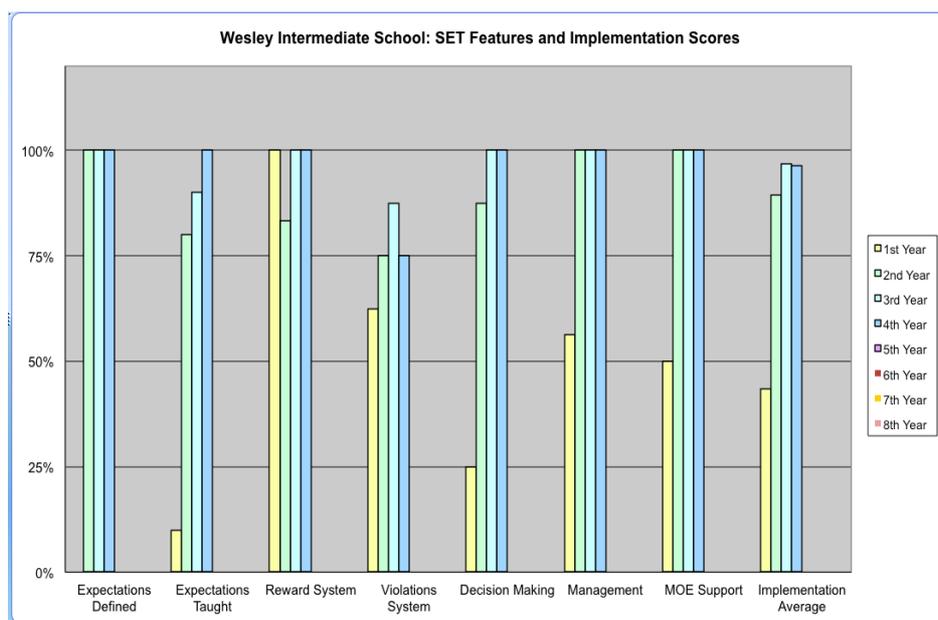


Figure 1.2.1: SET Survey results 2013 to 2016 (Wesley Intermediate School, 2016)

Even though the school had carried out an action research approach in 2015, it still needed to address the concerning behaviours of students as seen in Figure 1.2.1 where “violations systems” still needed to be improved to increase positive behaviour (Johansen et al., 2011; Parsonson, 2012; Simonsen, Fairbanks, Briesch, Myers, & Sugai, 2008). In 2016, leaders and teachers at the school completed an Effective Behaviour Survey (EBS), which analysed the perceptions of staff (n=10). The EBS in Fig 1.2.2, showed that staff wanted PB4L leaders to create an improved non-classroom reward system for students. This was the highest concern or priority for staff and as research suggests, a school wide reward systems should be free and frequent, ubiquitous, easy to access and in all school environments, and not just in a classroom (Ministry of Education, 2015; Savage, Lewis, & Colless, 2011).

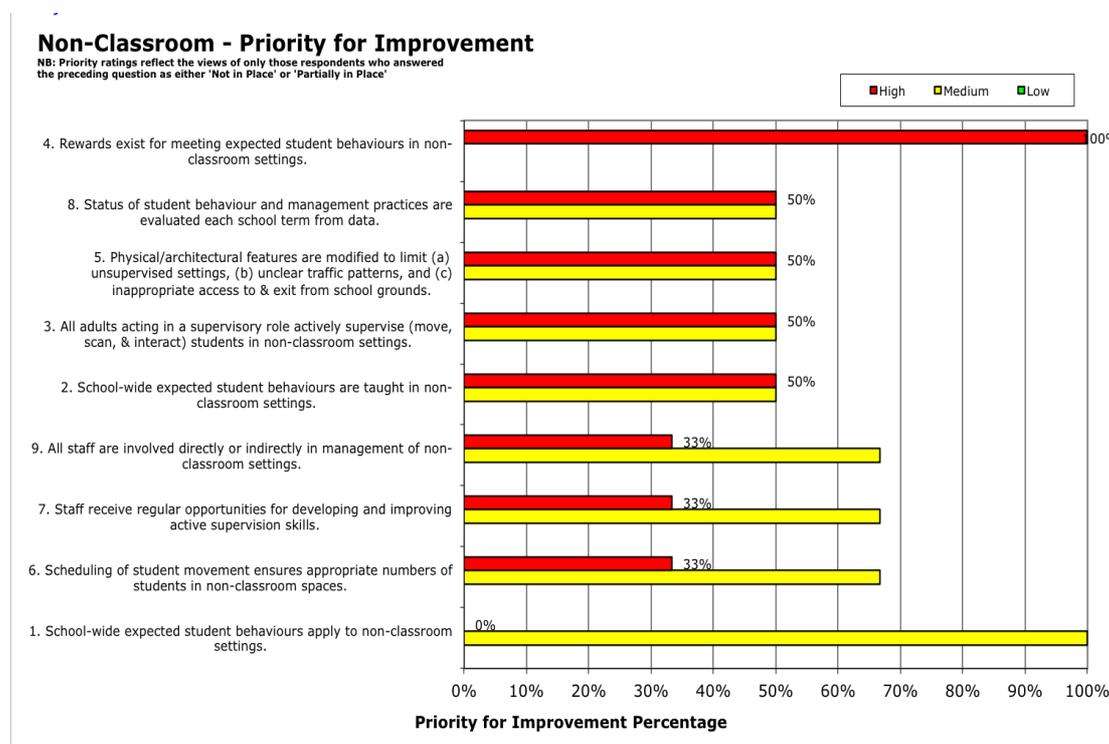


Figure 1.2.2: Wesley Intermediate School EBS 2016

During 2015, I started a postgraduate certificate at the Mindlab in Applied Practice, with a special focus on digital and collaborative learning. This helped a Wesley Intermediate colleague (Gerhard Vermeulen) and I to create a “LEAN Canvas” (Onken & Campeau, 2016) of an app for meeting our school’s PB4L needs. The purpose of the LEAN Canvas was to help with pitching an idea to staff and the principal to innovate the paper-based gold card reward system and create a very consistent data collection method for PB4L at our school. Therefore, without a formal

research process, we had used a form of practitioner research (Anderson, Herr, & Nihlin, 1994) approach, with the staff to address a work based problem, through the use of mobile tools to support PB4L. However, as the research continued within practitioner research, we redefined a unique problem with all paper-based reward and reporting systems, put simply: a teacher may forget to have copies of reward tokens or incidents reports, but they would most likely always have their phone on them. Hence a solution of a mobile tool was validated and therefore designed, developed and researched with the teachers of Wesley Intermediate.

The prototype of the app was called the 'MyPB4L app', but after consulting the Ministry of Education, and the PB4L coordinators for Auckland, it became clear that a major conflict of interest could exist in appropriation of PB4L brand name which could limit further research. It was later renamed Ka Pai, and for the remainder of this thesis the mobile application referred to is the Ka Pai app.

1.3 Research design

This study aimed to design, implement and evaluate the trial (non-comparative study) of the Ka Pai application based on the framework of PB4L (Ministry of Education, 2017). The participants (n=10 teachers) at Wesley Intermediate School, trialled the application and gave feedback on its effectiveness in supporting their implementation of PB4L through the Ka Pai app and incorporation of Te Reo Māori values. The evaluative (qualitative) feedback was gained through Talanoa and user metric (quantitative) data from participants during the trial. The Ka Pai app used in the intervention included forms of gamification and persuasive technology use (Deterding, 2013; Muntean, 2011), to help improve teachers attitude and behaviour towards implementing PB4L.

The first part of the research design draws upon the Talanoa methodology (Vaiotei, 2006) for conducting research in a participatory manner with Pasifika peoples (Polynesians such as Māori, Samoan, Tongan) and is well supported by decolonisation research methodologies under the indigenous research phenomenological umbrella (Farrelly & Nabobo-Baba, 2014; Vaiotei, 2006). By using Talanoa qualitative research it was hoped that a more empathetic research approach would yield authentic feedback about the app that supported their PB4L practice.

The research design is based on practitioner research (Menter, Elliot, Hulme, Lewin, & Lowden, 2011) and draws on the principles of Kaupapa Māori (Robertson, Robertson, Bishop, & Bishop, 1999). Practitioner research was interwoven with the use of indigenous research practice such as Talanoa (Vaiotei, 2006) in a similar design to teacher led inquiry (Babione, 2015; H. Timperley, Kaser, & Halbert, 2014). Critical writers of practitioner research support the use of a post positivistic research approach (Anderson et al., 1994; Menter et al., 2011) and as shown in this study to create a better PB4L behaviour management system based on research. Carolyn Babione describes the use of inquiry is “grounded in the realities of educational practice as teachers investigate their own questions and facilitate classroom change based on the knowledge discovered” (C. Babione, 2015). An example of the “investigation and change” referred to by Babione shown in this study is the design and inquiry process (Figures 3.1 and 3.2), which could be regarded as “evidence-based app development” (Hirsh-Pasek et al., 2015). This research study was created

through practitioner research where by “teachers as inquirers adapt and modify designs and methodologies to effectively study not as outsiders but as insiders in schools” (Babione, 2015).

1.3.1 Research Aims and Research Questions

- 1) The research study aims to evaluate how teachers are trying to implement PB4L in their classrooms and school-wide via Ka Pai app.

RQ1: How does the app compare with existing methods of PB4L pedagogy in place at the school?

- 2) Evaluate whether the Ka Pai application provides teachers a positive experience through analytic data and teacher feedback.

RQ2: How successful was the intervention regarding teacher’s enjoyment and effectiveness for meeting their PB4L pedagogical needs?

- 3) Prototype the inclusion of Te Reo Māori values in the application and gauge whether teachers valued this feature.

RQ3: How well was Te Reo incorporated in the PB4L features of the app and what can be done to better integrate Te Reo?

1.3.2 Research Setting

Wesley Intermediate School, where the research was set, is a mainly Pasifika (Polynesian population) school as over 50% of staff and 70% of students are from a Polynesian background and the main researcher is Fijian-Indian. The school has been named in the research and is publicly known as lead school in PB4L, due to the researcher being a Deputy Principal and a Sector Coach contractor for a cluster of schools for the Ministry of Education. The school is based in Mount Roskill, Auckland, is decile 1 (lower socio-economic area) and has a predominantly Pasifika and Māori student population.

The school roll at the time of the study (2017) was 170 students and it has strong partnerships with whanau, MOE and community organisations in the Mt Roskill, Auckland area. The school is often hosting, visiting schools who want to see what good PB4L practice is about and is also a fully digital school where there is one to one device access for the students. The school works in partnership with the Ministry of Education to implement PB4L-SW and is well supported by PB4L Practitioners.

The board and leaders work with the Ako Hiko Trust to provide the devices for e-learning within the school, that the students used to access the Ka Pai app online, however they did not participate in the feedback of the app. Both the provision of digital devices and PB4L resources are embedded in the school's charter and strategic goals as supported by evidence based research (Boyd & Felgate, 2015; Manaiakalani Education Trust, 2017).

1.4 Guide to the Thesis

The research study is divided up into 7 chapters and is described by the following chapter summaries. The first chapter of the thesis focuses on the outline of the research undertaken, some background information is provided about the researcher, the motivation for focusing on mobile technology is introduced, what is PB4L and what does it mean for teachers pedagogical practice. The rationale for the thesis is presented and an outline of the research aims, questions and settings are stated at the end.

Chapter two focuses on the literature review of current themes identified around the research topic. This chapter covers themes such as Punitive vs PB4L pedagogy and ways to foster better teacher to student relationships which contribute to positive learning outcomes. The second section focuses on what is mobile applications and its links to gamification and persuasive technology use to create behaviour change. The fourth theme is on the use of second language learning such as Te Reo Māori values in gamification. The final section presents the arguments against the use of PB4L, mobile applications and gamification and responds with justifications for its use from supporting literature.

Chapter three provides an overview of what the Ka Pai application is, how it was created, the interface design, the back end of the app and how it works for teachers. The application's persuasive mechanics via gamification of teacher behaviour while implementing Positive Behaviour for learning is also shared.

Chapter four explains research methodologies such as practitioner research and methods used to collect data links this back to co-designing, practitioner research and indigenous research methods. An overview of how the data was collected and

analysed and how the researcher approached the ethics of conducting the study, close this chapter.

Chapter five, firstly presents the findings and analysis of the participant responses based on the two Talanoa sessions held before and after the intervention. Secondly, user metrics is presented for gauging engagement and effectiveness of the application to implement PB4L within a two-week period with 10 participants. The headings for each section are divided into the following parts; Comparison of the Ka Pai application to previous forms of implementing PB4L within the school, Evaluation by teachers in terms of qualitative feedback and user metrics accessed through the database as teachers trailed the application and lastly the use of Te Reo Māori values and teachers' responses to this.

Chapter six further unpacks the findings gained through the research method in chapter four and results presented in chapter five. Evaluating the success of the Ka Pai application is analysed in greater detail with examples of literature that validate and negate some of the user metrics, qualitative and thematic analysis of participant feedback. The discussion also presents some issues, limitations and concerns around the findings of the research study. Finally, the research points towards answering the research questions in response to the aims of the study.

The last chapter of the study reflects on the three research questions and provides overall conclusions as to outcomes of the research. The findings are summarised, and validation is provided for the outcomes of the study based on the in-depth analysis of the findings and propose some considerations and suggestions for future research which conclude the study. The appendices also include the feedback from the n=10 participants of the study.

Chapter 2

Literature Review

“Insanity: doing the same thing over and over again and expecting a different result”- Albert Einstein

This chapter outlines existing literature on the following areas: behaviourist paradigms, punitive vs proactive behaviour management systems, mobile technology gamification via persuasive technology us. This chapter also presents research on increasing teachers’ use of Te Reo Māori values and second language learning through mobile applications. Lastly the counter arguments to the use of mobile applications and Positive Behaviour for learning are also presented which provide a rounded evidence base for the intervention presented in Chapter Three – Ka Pai app. The implications of the research based on the identified areas provided a foundation for theoretical and practical arguments, which will be explored in the Discussion (Chapter 6) of this study.

2.1 Behaviourist Paradigms

The behaviourist paradigm is fundamental to PB4L training and development and is a paradigm that is actively used and generalised by educators in New Zealand. The behaviourism paradigm, is best facilitated “through the reinforcement of an association between a particular stimulus and a response” (Naismith, Lonsdale, Vavoula, & Sharples, 2004), which research suggests that teachers must learn to use in their classroom practice for improving student learning outcomes (Dhaliwal, 2013; Yeung, Mooney, Barker, & Dobia, 2009). Therefore, the following research is presented to validate the use of behaviourist paradigms in this study.

One of the founding aspects of managing behaviour is behaviourism, which was developed by theorists through a positivistic (Aliyu, Bello, Kasim, & Martin, 2014) world view of behaviour management in psychology (Skinner, 1967). The foremost theorist was B.F Skinner and his theory of operant conditioning which states that all

behaviour can be learned through reinforcement either positive or negative (Skinner, 1967). Skinner theorised that operant conditioning can be observed to identify the functional aspect of human behaviour. This helps behaviourists to identify how all human behaviour is learned and develops. Operant conditioning can occur when an antecedent (what happens before behaviour presents) and the consequence reinforces or negates a targeted behaviour to repeat itself. Skinner's theory therefore, is that all behaviour can be observed, studied and repeated if required by a behaviourist using a similar method of operant conditioning.

In operant conditioning, the strength of the behaviour (pro-social or anti-social) can be increased or decreased using reinforcement (positive or negative) or through punishment (Jacobs & Eccles, 2000). The purpose of all behaviour is therefore to avoid or obtain an activity, peer/adult attention, an item or in some cases stimulation as current theorists from the PBIS model of behaviourism believe (Bradshaw, Koth, Bevans, Ialongo, & Leaf, 2008). The notion that desired behaviour should be rewarded (reinforced), created a shift in the education system similar to Albert Bandura's Social Cognitive Theory or SCT (Bandura, 1971). In SCT, Bandura suggested that learning happens when a learner observes others, often through a triadic set of causes which is triggered by either personal, behavioural and environmental catalyst or stimuli (Bandura, 1971). Skinner and Bandura provided the foundation for the behaviourist paradigm.

The behaviourist paradigm has continued to evolve since Skinner and the PBIS framework was created in America. PBIS has become a widely accepted method of applying behaviourist approaches into schools and is supported by research from theorists such as Colvin, Horner, Lewis and Sugai. PBIS researchers have conducted numerous research studies across thousands of schools to support educators in managing behaviour (Horner, Sugai, & Anderson, 2010; Lewis, Sugai, & Colvin, 1998; Sugai & Horner, 2008). Similarly, PB4L practitioners in New Zealand have fostered the PBIS framework since 2010 (Boyd & Felgate, 2015) and view that all behavior has two major functions: to obtain or seek something and someone, to escape or avoid something or someone (Alberto & Troutman, 2013). The behaviourist paradigm is fundamental to all educators as they need to understand how to use behaviourist strategies to reinforce behaviours that are wanted or expected (Dayan & Balleine, 2002; Sugai, 2009).

2.2 Punitive vs proactive behaviour management systems (PB4L)

New Zealand has predominantly used punitive punishment focused such as detentions, suspensions and exclusions. The previous forms of behaviour management tools, until recently a shift in the last 15 years, saw a shift towards preventive and proactive instructional interventions for classroom teachers through PB4L (Boyd & Felgate, 2015; Reveley, 2016). A recent national data shows that Māori and Pasifika students are disproportionately represented in stand-downs and underachievement (Education Review Office, 2012; Ministry of Education, 2016). Other researchers into Pasifika and Māori learners suggests that a positive relationship helps learners feel motivated and experience better learning outcomes (Bishop, 2017; Hawk & Cowley, 2002). Therefore, relationships built around punitive means create a barrier to positive relationship and is the antithesis of Pasifika and Māori student's engagement with learning (Catherine1 Savage, Macfarlane, Macfarlane, Fickel, & Te Hēmi, 2014).

Punitive systems can be unlearned by teaching staff and students as seen in the master's study conducted by Dhaliwal (2013), which showed that by improving practice around teacher's ability to use rewards it could strengthen relationships with their students and thus learning as suggested by behaviourist researchers (Lewis, Sugai, & Colvin, 1998; Simonsen et al., 2008; Yeung, Mooney, Barker, & Dobia, 2009). In reviewing literature, behaviour systems outside of PB4L, in New Zealand, have been mainly punitive, with the focus on disciplining students after the behaviour has occurred (Catherine Savage et al., 2011). Punitive approaches to behaviour management are generally ineffective in facilitating desired student behaviour or teaching students' appropriate ways of behaving (Parsonson, 2012; Catherine Savage et al., 2011). In support the Ministry of Education PB4 SW manual (Ministry of Education, 2015b) suggests that to reduce punitive outcomes that lead to youth violence in schools they should provide:

- a positive, predictable school-wide climate
- high rates of academic and social success
- formal social skills instruction
- positive, active supervision and reinforcement
- positive adult role models
- multi-component, multi-year school, whānau, and community effort

Positive Behaviour for Learning School Wide (PB4L-SW) implementation is focused heavily on the educators (Teachers and managers) facilitating the 7 essential features of PB4L with 80 percent of all staff and 100 percent of student population (Elder & Prochnow, 2016). Seven features stated in table 2.2.1 enables teachers to implement PB4L in their schools (Ministry of Education, 2017). Essential features such as acknowledging expected behaviour are heavily influenced by theories of operant condition as stated in the previous section.

Table 2.2.1: Seven Essential Features of PB4L

Adapted from page 22 of PB4L Manual 2015 (Ministry of Education, 2015b)

Essential Feature	Description
1. Sustaining principal commitment	The principal and senior management agree to be champions of PB4L– SW and to provide resources, support, and strong leadership in its implementation.
2. Setting up for success	Staff align the school charter, annual plan, and PB4L–SW purpose statement; the newly formed PB4L–SW team leads the planning for systems, practices, and data, uses an action planning process, and establishes ongoing communication.
3. Identifying positive expectations	The PB4L–SW team develops a list of expected behaviours for students and staff in collaboration with the school community.
4. Teaching expected behaviour	All staff explain, model, and guide the practice of expected behaviours across multiple school settings.
5. Acknowledging expected behaviour	Procedures for specifically, positively, and frequently acknowledging expected behaviours are developed and implemented.
6. Discouraging inappropriate behaviour	Procedures for consistently responding to minor and major behavioural errors are developed and implemented.
7. Monitoring and evaluation	Information is used to understand current behavioural patterns and to assess the effectiveness of the implementation of PB4L–SW.

When reviewing the links between behaviour management research and gamification (presented in the next section), research defines two key factors in why human behaviour is closely linked to motivation. It is in two forms either intrinsic or extrinsic motivation. Intrinsic motivation is about doing something that is meaningful and rewarding to you personally and doesn't require an external reminder, prompt or reward to make it worth doing. Whereas extrinsic motivation is very dependent on the external stimulate or reinforcement of behaviour and outcomes (Dayan & Balleine, 2002; Hanus & Fox, 2015; Paquette & Ryan, 2001).

For the purpose of focusing on research, the central feature of PB4L–SW is that positive behaviour should receive more attention (reinforcement) than inappropriate behaviour which can be addressed by praising proximally where a student next to misbehaving student is praised for prosocial behaviour (Horner et al., 2010) or ignored or re-taught as a whole group. A school-wide focus on giving students high rates of positive performance feedback, helps to create a positive climate and strengthens relationships between students and staff (Reinke, Herman, & Stormont, 2012).

Lastly by collecting data for a School wide PB4L system, helps teachers in their monitoring and evaluation of PB4L as stated in Table 2.2.1 – as teachers will be using discipline referral data for putting in support for students (Tobin, Sugai, & Colvin, 2000), specially for students who present severe behaviour that is showing a pattern based on a trigger or antecedent. Often resource teachers of learning and behaviour (MoE support role for high behaviour needs students) require a Basic Functional Behaviour Assessment or FBA (O'Neill & Stephenson, 2010) to be completed to help create individualised behaviour plans. Without data around the types of incidents a student is having, it is very hard to know what behaviour needs to be observed and how to best support it using operant conditioning techniques such as reinforcement.

2.3 Mobile applications, gamification and persuasive technology

Mobile Applications (apps) for gamification and persuasive technology use is the central innovation that needs to be investigated through literature. Some gamification and mobile application research are represented by phenomenological research i.e. the study of phenomenon that is validated through the practitioners use of it (Finlay,

2008a). In defining the phenomenon of mobile apps and gamification, research states the apps are installed in “mobile devices” that are personal, portable and shared as stated by recent literature on apps for education (Naismith et al., 2004). Whereas gamification is the use of game based mechanics in a non-game context (Deterding, 2013), which doesn’t always include mobile devices or apps.

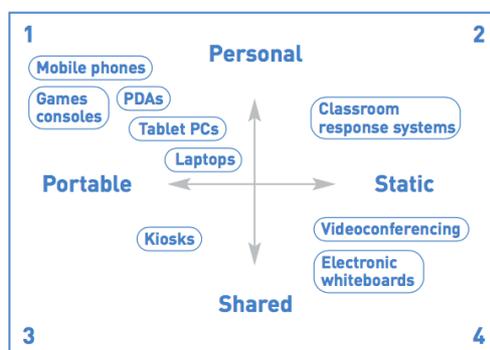


Figure 2.3.1: Classification of Mobile Technologies (Naismith et al., 2004)

The term “mobile devices” (Figure 2.3.1) encompass devices such as phones, tablets and laptops (Naismith et al., 2004) and can include apps or software to be used within the mobile devices. However not all mobile devices or apps within the device are inclusive of gamification as Malamed (Malamed, 2012) and Kapp (Kapp, 2012) suggest that the use of gamification is not necessarily always applied to mobile and digital technology. Kapp (2012) uses the concepts of operant conditioning where by extrinsic and intrinsic reinforcement through gamification could help educators. Kapp also uses examples of game design which helps build problem solving and social skills. Therefore, gamification can used within mobile technologies but is not limited to it (Malamed, 2012).

The current use of applications and mobile learning tools in New Zealand is high as reflected in research by Bolstad (Bolstad, 2016). Other research suggests that the digital use is around the 90% immersion rate for all learners in New Zealand schools through e-learning, mobile technology and social media (McNaughton & Gluckman, 2018). Bolstad (2016) suggests that many teachers are not engaged in digital tools to enhance students learning with only “62 percent of teachers share teaching resources online and only 50 percent take part in online learning activities”. More teachers could be using online resources like mobile applications, sites, and online tools which suggests more tools and research into what teachers might find useful in their practice

is needed (Bolstad, 2016; Bolstad, Mcdowall, Bull, Boyd, & Hipkins, 2012; Jesson, McNaughton, & Wilson, 2015).

The following section will elaborate on gamification and persuasive technology use via applications which can influence a user's attitude or behaviour. There are some limitations to connecting the term persuasive technology to the Ka Pai application as the research on the use of PB4L within a mobile application is still new. The following literature research on broader topic of persuasion via gamification could be applied as "hard evidence and practical advice to support the design and use of innovative learning tools" (Naismith et al., 2004) is needed.

The term gamification means the application of game elements to non-game settings (Deterding, Khaled, Nacke, & Dixon, 2011). As Kapp, one of the foremost theorists on gamification of learning, describes it as an interactive learning event based on game, gamification or simulation. Kapp's research in Gamification of Education (Kapp, 2012) alongside other researchers such as Cohen (2011) and Deterding (2011) shows us that educators as well as a lot of corporates, designers and market companies have used gamification to increase engagement with their users (Cohen, 2011; Deterding et al., 2011). Kapp has conducted research for over 20 years for educators to try to implement gamification in a practical and easy to follow process. Kapp (2012) suggests that often people implementing gamification can get it wrong and often – "blame the delivery vehicle— games don't teach, or gamification is just a gimmick— neglecting that the biggest single contributor to failure is undertaking the initiative for the wrong reasons. In second place are poorly or hastily designed games, gamification, and simulations..." (p68 in Kapp, 2012).

Research into gamification can be categorised into the following areas "behavioural change, challenging the students, engagement, improving learning, mastering skills, producing guidelines and encouraging socialisation mechanics" (de Sousa Borges, Durelli, Reis, & Isotani, 2014). Three key studies of gamification and persuasive technology use the systematic mapping method to analyse and present research currently available for the area of study i.e. systematic mapping study provides a categorical structure for classifying the published research reports and results (Dicheva, Dichev, Agre, & Angelova, 2015).

1. Gamification in Education: A Systematic Mapping Study by Dicheva et.al, which suggests that there is limited research into gamification use within education – “empirical research is needed to determine whether both extrinsic and intrinsic motivation of the learners can be influenced by gamification” (Dicheva et al., 2015). Dicheva reviewed over 1000 publications and research articles with only 34 being defined as research into the gamification of education, Dicheve et.al, then took the 34 reviewed case studies and reviewed the following game mechanics: points, badges, levels, progress bars, leader boards, virtual currency, and avatars. (Dicheva et al., 2015).
2. *A Systematic Mapping on Gamification Applied to Education* (de Sousa Borges et al., 2014) suggests there is limited empirical research with systematic mapping, they reviewed 357 papers on gamification with 48 related to education and only 26 included in the research review. Their study categorized the available research into percentage of the total out of 26 studies: Higher Education 46.15%, Non-specific 23.08%, Training and Tutorials 11.54%, Languages 7.69%, Elementary Education 7.69% and Lifelong 3.85%. The actual number of studies within Elementary Education at the time of the review (2014) was only two. As 24 out of 26 focused on engagement and majority on Higher Education.
3. Publication trends in gamification: A systematic mapping study (Kasurinen & Knutas, 2018) which encompassed 1164 gamification studies which showed that most of the researched e-learning and proof-of-concept studies in the ecological lifestyle and sustainability, assisting computer science studies and improving motivation were the favoured areas of research. One of the key concepts from this study is based on Deterding explanation of gamification (Deterding et al., 2011), who believes that gamification can be described as gameful interaction (artefacts affording that quality), gamefulness (the experience and behavioural quality), and gameful design (designing for gamefulness, typically by using game design elements).

Similarly, Nehring et.al., asks that researchers should “study the effectiveness of different gamification features on long-term behavioural changes, motivation level and increased knowledge of participants and propose a set of design guidelines” (Nehring, Baghaei, & Dacey, 2017). Another study suggests the use of leader board

points, levels, rewards or badges to increase engagement (Dicheva et al., 2015). A common theme within gamification research is that a form of operant conditioning (reinforcement) is key in keeping users engaged (Hamari, 2017). In the systematic mapping study of empirical research into gamification by Dicheva et.al (Dicheva et al., 2015) the following themes appear in how game design is built on the following mechanics:

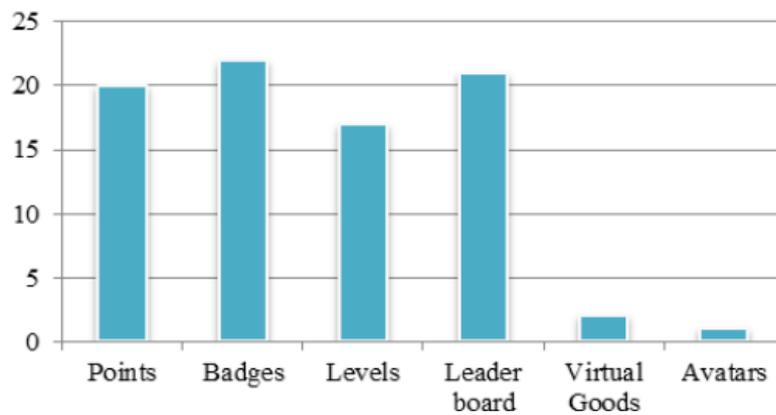


Figure 2.3.2: Work Distributions by game mechanisms (Adapted from Hamari, 2017)

Similarly, in Hamari’s literature research in figure 2.3.1 suggests that from qualitative research, users wanted points, badges, levels, leader boards more than virtual goods and avatars (Hamari, 2017). In Hamari’s study showed that a large cohort (n=1579) of users were introduced to a gamification mechanics such as “badges” (points: accumulated digital reward based on a levels), and they showed increased user engagement when compared to pre-implementation group (n=1410).

The recent literature review of gamification of education (Nah, Zeng, Telaprolu, Ayyappa, & Eschenbrenner, 2014) describes that majority of the available research focuses on engagement, motivation and participation. Yet increase in motivation and engagement does not necessarily result in academic outcomes as argued by a study by Dominguez et al., (2013) that, “Students who completed the gamified experience got better scores in practical assignments and in overall score, but our findings also suggest that these students performed poorly on written assignments and participated less on class activities, although their initial motivation was higher”.

Furthermore Hanus (2015) supports the notion that gamification could increase intrinsic motivation however care must be undertaken when implementing the use of gamification into education as it could have dramatic effect on learning outcomes. In their study “Assessing the effects of gamification in the classroom: A longitudinal study on intrinsic motivation, social comparison, satisfaction, effort, and academic performance” (Hanus & Fox, 2015) shows the results found that students in the gamified course showed less motivation, satisfaction, and empowerment over time than those in the non-gamified class (Hanus & Fox, 2015).

Considering the presented views towards the risks of gamification, Lee and Hammer (Lee & Hammer, 2011) suggests that educators understand what gamification is, how it functions, and why it might be useful. They present an approach which has been heavily referenced by researchers in gamification of education sector which focuses on building on the already gamified aspects of schooling for example, points that students gain for good behaviour, or a gold star or certificate attained for completing a task. Incorporating this into a digital or gamified approach does take time and can be built upon some basic principles which Muntean (Muntean, 2011) outlines as following:

- Game mechanics type: Progression, Feedback, Behavioural
- Benefits: engagement, loyalty, time spent, influence, fun, Virality
- Personality types: explorers, achievers, socializers and killers.

Muntean goes on to conclude that gamification of education should be fun and increase engagement with learners “without undermining its (education’s) credibility” (Muntean, 2011). The research into gamification suggests it can be used to increase social and cognitive outcomes in for learners in the education context is a powerful reason to apply the game mechanic suggested by researchers like Lee and Hammer (Lee & Hammer, 2011), who conclude that – “Gamification will be a part of students' lives for years to come. If we can harness the energy, motivation and sheer potential of their game-play and direct it toward learning, we can give students the tools to become high scorers and winners in real life”.

The use of gamification research within a school Primary or middle school (age 10-12) is limited (de Sousa Borges et al., 2014), however the researcher Burger, conducted a study on the implementation of a gamified behaviour management tool called “Class Dojo” in a school context, with the application having millions of users worldwide (Burger, 2015). Burger’s study showed that in a middle school, students and teachers were engaged in their implementation of PBIS (Reinke, Herman, & Stormont, 2012), Similarly New Zealand based research by Bolstad and New Zealand’s Ministry of Education PB4L-SW (Ministry of Education, 2017) shows a growing need for researching into the tools that teachers use for behaviour management and teacher training (Bolstad, 2016). These types of applications could be identified as computer-supported collaborative learning as suggests by Bourges et.al, as “computer-supported collaborative learning (CSCL) is suited to develop applications that help students to socialize and organize themselves in groups” (de Sousa Borges et al., 2014).

The current research also leads behaviourist practitioners to consider the use of persuasive technology (PT), which could be used to support teachers in New Zealand implement PB4L. PT is a sub-discipline of Human–Computer Interaction (Mintz & Aagaard, 2012). PT is the careful design of technology such as games or applications which can change attitudes or behaviours of the users (Gram-Hansen, Rabjerg, & Hovedskou, 2018; Mintz & Aagaard, 2012). A foremost theorist in use of PT is B.J Fogg who has created the Fogg Behaviour Model to explain that, “behaviour is a product of three factors: motivation, ability, and triggers, each of which has subcomponents. The Fogg behaviour model asserts that for a person to perform a target behaviour, he or she must (1) be sufficiently motivated, (2) have the ability to perform the behaviour, and (3) be triggered to perform the behaviour” (Fogg, 2003, 2010; Franchimon, 2006). Fogg and other PT theorists show strong links to Skinner’s behaviourist paradigm and could be very helpful to practitioners in PB4L.

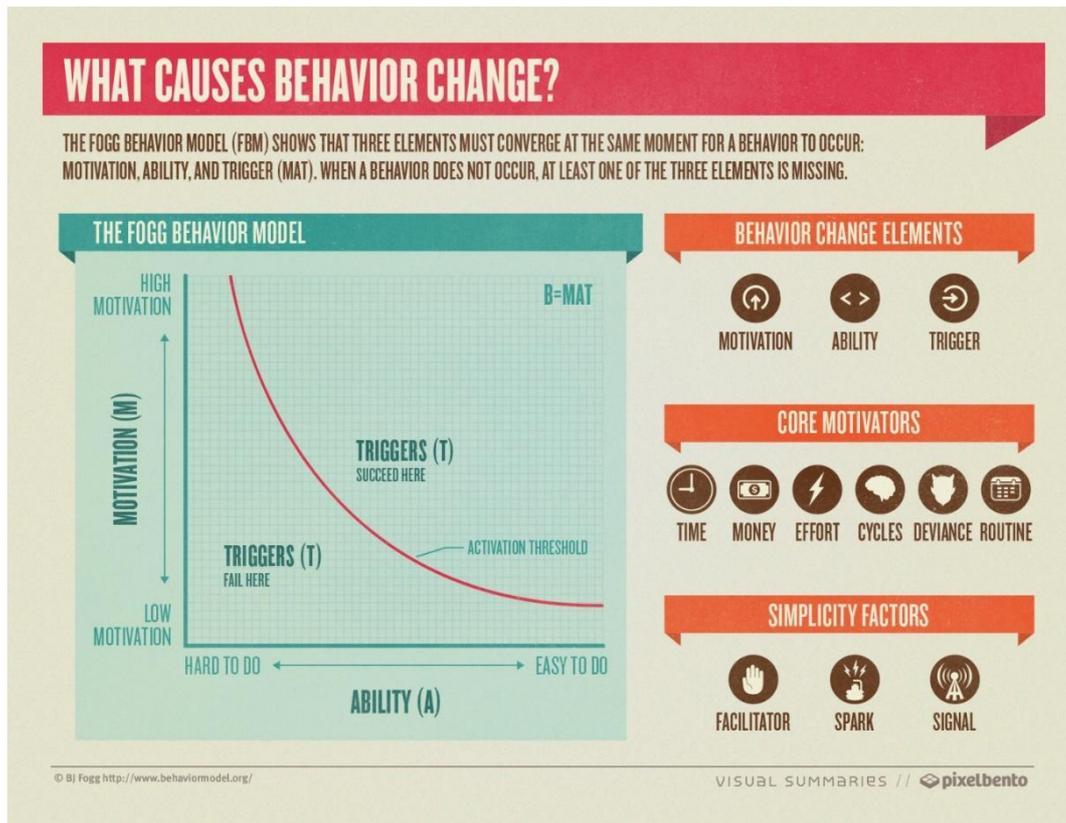


Figure 2.3.3: Fogg Behaviour Model adapted from FBM 2003 and 2009 (Fogg, 2010)

Research shows that PT can be used to effectively change a person’s behaviour in a range of areas including education and health in New Zealand for example the “Mario brothers” game to teach children about diabetes (Chen et al., 2011). Also, PT has been used to support youth with depression as seen by the formative study on the serious game “SPARX” (Merry, 2012). We can see the value of gamification in New Zealand as the results of the randomised control trial showed that SPARX (Merry, 2012) was equivalent in its treatment when compared to trained therapists who delivered treatment in more normative face to face session. In summation the use gamification and PT is more engaging to the learner to hook in the player/user (Mintz & Aagaard, 2012), however there is a need for more empirical evidence on increasing education outcomes through gamification (Hamari, 2017; Seaborn & Fels, 2015).

2.4 Use of Te Reo Māori and gamification

Another area of research is around second language learning and building on values principles from the PB4L framework into New Zealand’s second official language Te Reo Māori and is also mandated by the Treaty of Waitangi as Taonga (treasure to be valued) by educators and researchers alike (Hudson & Russell, 2009). With the

framework of PB4L exists an underpinning core value of inclusive language use which acknowledges diverse perspectives and different ways of behaving, feeling, and knowing (Rohan, 2017).

Scholarly frameworks for working with Te Reo Māori in education reveal several complexities but a strong need to be informed by Kaupapa Māori theory is informed by its indigenous underpinnings and is defined and controlled by Māori (Pihama, Tiakiwai, & Southey, 2015). In Pihama's presentation Kaupapa Māori approaches, teachers may significantly improve outcomes for learners by building a better understanding of student's cultural backgrounds (Reveley, 2016), building trust and positive relationships between teachers and students (Dhaliwal, 2013). A recent example of an initiatives that supports schools to improves behaviour outcomes for learners is Huakina Mai, where Māori students are mentored and coached in their Language – Te Reo and relationships skills for an extended period of the school year (Catherine Savage, Macfarlane, Macfarlane, Fickel, & Te Hēmi, 2014) which has a positive impact on the student's behaviour and learning outcomes.

There are a few mobile applications in New Zealand for teaching Te Reo Māori, Firstly namely Kura app which is “a cross-platform language learning game, featuring competitive play and customisable avatars” (Victoria University, 2015). Secondly online games created by Maru Nihoniho and Metia Interactive (Metia Interactive, 2018) – which includes games that have the use of Te Reo Māori built into them such as Ka Pai babe and Guardian which helps learners understand Mātauranga Māori (Māori knowledge). Considering these well used and reported learning tools, there is still limited research conducted on digital or mobile learning tools incorporating Māori language learning.

Research conducted in the integration of Te Reo Māori area of learning is limited to a handful of studies. Some literature supports the use of mobile applications and gamified learning tools and the use of Te Reo Māori (Nand, 2012; Nand, Baghaei, & Casey, 2014; Reinders, 2010). Nand (2012) explains how there are effective characteristics which can be used through an educational tool to enhances children's learning (game designed to engage and teach learners). The following game attributes were most appealing “Challenges: having different levels in the game, Feedback:

knowing how many points were scored and Graphics: having realistic graphics” (Nand et al., 2014). There is also a strong emphasis by Nand (2012) to assess whether the educational tool was enjoyable and engaging to the students.

To test the use of effective characteristics, Nand (2012) created a game (like “who wants to be a millionaire?”) to get students to respond to questions in Te Reo Māori. In the study, the methodology Nand used T tests (Glen, 2016) to confirm that there was a difference between a control group and test group. The game which used also had features which incorporated game mechanics such a progressions, feedback and benefits such as fun and time (Muntean, 2011), which can be seen by the screen capture below of the game.

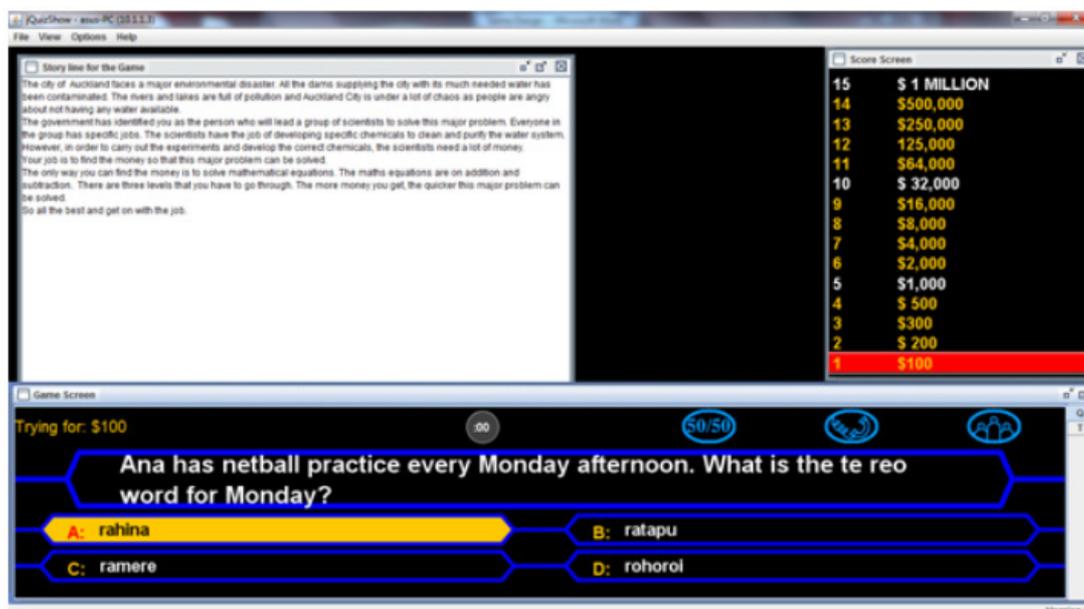


Fig 2.4.1: Modified Game Screen Shot - a sample integrated narrative aspect on the top right corner for a Te Reo learning task. page 30 (Nand, 2012)

One of the features of the game or learning tool described is the increasing levels of difficulty which also created a challenge for the students to attain the overall praise. However, Ronimus et.al., (Ronimus, Kujala, Tolvanen, & Lyytinen, 2014) who conducted a similar study on reading, argue that the challenge characteristic of an effective gamified learning tool has having little impact on engagement. Nand’s (Nand, 2012) study therefore clarifies that student’s enjoyment based on their feedback and learning outcomes were higher in the Te Reo Māori version than Numeracy learning programme, as Te Reo featured game had five times higher

scoring across participants (n=120). Nand attributes this to the content recall necessary in language learning and the game reinforces this over the course of the gameplay. In comparison to the numeracy tasks which required applying the content knowledge into strategies which the game may not have been designed to do. The enriched Te Reo game had features including sound effects, the visual effects, the level of challenges in the game and the feedback messages which is well supported by game-based learning research (Ifenthaler & Eseryel, 2014; Reinders, 2012; Ronimus et al., 2014).

Research in Language learning through games and game-based learning (Ifenthaler & Eseryel, 2014; Reinders, 2012; Ronimus et al., 2014) is also emerging in the gamification of education space and is very persuasive for learners. One of the studies conducted by Reinders and Wattana (2014) suggests the use of gamification and game-based learning should include research into how games can be used to support learner's willingness to communicate in a second language (also known as L2) when typically, English is the L2. Their study in 2014 with English language learners, shows that where there is a reluctance to engage or willingness to communicate, this can be overcome through in game communication used to increase engagement between non-English speakers (Reinders & Wattana, 2014). Similarly, other apps or games for education should include opportunities for learners to engage with second language through willingness to communicate strategies suggested by Reinders and Wattana (2014) such as informal questions or chat during games.

The approaches suggested by game based and gamified learning research encourages further research to be undertaken especially towards finding empirical research. The comparative methodology used by Nand showed that a feature enriched game achieved better learning and engagement outcomes than a feature devoid game for students (Nand et al., 2014). This meant that improved language learning could be made through gamified learning tool– especially as the use of points or badges, challenges, visuals and sounds were all incorporated into the game (Malamed, 2012; Nand et al., 2014).

2.5 Pedagogy and methodology of practitioner researcher

In grouping the themes of this literature review, the last theme is the relevance to practice and support of the application. This review identifies teachers who have buy-

in through stakeholder feedback and supporting the development of the digital reward system, will result in more consistency in acknowledging students (Elder & Prochnow, 2016). The two key forms of current research practice for teachers is practitioner research and action research methodology, a collaborative approach to the research project, where by teachers are participants in their inquiry of teaching (Cox, 2012). Typically, teachers do conduct research by way of identifying a problem, putting in an intervention and reviewing its success or failure and replicating again (Anderson, Herr, & Nilen, 2007). In other studies of practitioner research in New Zealand we see challenges and barriers are overcome through collaborative practice and problem solving. Examples of this are the spirals of inquiry model often used in New Zealand schools (H. Timperley et al., 2014) and The Teacher Inquiry model where inquiry and knowledge-building cycle is used to promote valued student outcomes as presented in the Best Evidence Synthesis (Helen Timperley et al., 2007).

2.6 Alternative Views and Perspectives

Some alternative views make it clear that there are risks within the digitalisation and gamification of teaching behaviour as it is only recently started to be researched, however this further justifies the need for this work-based research project (Simões, Redondo, & Vilas, 2013). Some teachers may struggle to connect with the best practice and this is where the leadership of the project will determine the approach to take (Robinson, 2007). An example of this is the varying levels of acceptance of social media within the use of digital tools and gamification in the context of learning at school (Boulet, 2012; Schoech, Boyas, Black, & Elias-Lambert, 2013). Students using mobile applications could be adversely affected by the mobile applications introduced to their school, where by students are bullied because of their positive performance academically and behaviourally (Bradshaw, 2013).

Positive Behaviour for Learning (PB4L) is an effective intervention, (Boyd & Felgate, 2015) however the issue is that teacher efficacy of implementing it is low due a range of factors around professional development (Johansen et al., 2011). One of the major reasons why new teachers and some experienced teachers struggle to implement the effective instructional behaviour management strategies is due to a lack of professional development and support from school managers.

As a solution schools need to have clear procedures and systems to consistently train staff. For example, acknowledgement systems fall over throughout the school, due to a lack of shared ownership and professional development opportunities (Elder & Prochnow, 2016; Ministry of Education, 2015b).

The Literature Review “Mobile Technologies and Learning: Report 11” (Naismith et al., 2004), raises an issue that “students may abandon their use of certain technologies if they perceive their social networks to be under attack”. Therefore, any use of social media within gamified mobile applications needs to include safety controls to avoid online bullying. Naismith also states that learners and teachers could avoid using mobile devices when reinforcing and addressing the student’s behaviour which effectively goes against the PB4L concept to address all behaviour either through positive or negative reinforcement (Dayan & Balleine, 2002).

Creating mobile applications may provide more consistency but teachers ability to implement PB4L may be limited to their professional training around pedagogical practice of good behaviour management (Dhaliwal, 2013; Johansen et al., 2011). Some research argues that teachers do not feel confident in their ability to manage student’s behaviour because of a lack of knowledge, strategies and are not effectively supported by their managers (Dhaliwal, 2013; Johansen et al., 2011). Therefore, teachers must be taught how to use PB4L first, before the use of any new technology as it could limit the research data’s fidelity if a teacher doesn’t already understand the basics of PB4L.

In summary, a critique of study by Naismith et al., (2004), is that when it was written in 2004, digital devices were not as common for students in the New Zealand intermediate education system and this has dramatically increased to around 90% of learners are using mobile applications-eLearning and social media (McNaughton & Gluckman, 2018). Also, the increase of the new initiatives in schools such as “Bring you own devices” (BoYD) requires educators to use mobile technology more frequently with learners (Bolstad, 2016). A solution to the arguments raised, is that in New Zealand, we have good examples of using digital devices to increase learning outcomes and therefore we shouldn’t be hesitating simply because of possible negative outcomes (Jesson et al., 2015). Many studies suggest a link between

effective behaviour management and learning outcomes through digital means (Muntean, 2011; Yeung et al., 2009).

Chapter 3

Ka Pai Application

“Positive behaviour can be learned, and difficult and disruptive behaviour can be unlearned” – PB4L School Wide Practitioner

This chapter describes our proposed app, Ka Pai, and provides an overview of what the intervention is and how it works.

3.1 Ka Pai app design and development process

Since 2014, Wesley Intermediate has adopted the Ministry of Education framework named, Positive Behaviour for Learning (PB4L) as reflected in the school’s Education Review Office (ERO) reviews. In 2016, teachers at the school, completed an Effective Behaviour Survey (EBS), for PB4L which showed that 100% of respondents prioritised the need for improving the non-classroom acknowledgement systems for students.

Since 2016, the researcher has been involved in the delivery of professional development PB4L for two Auckland Clusters and has witnessed it being a struggle for a lot of lead teachers to create PB4L systems that are consistent, transparent and easy for teachers to use to help change student’s behaviour. As researched in the Wesley Intermediate school’s SET survey there was a lack of PB4L expectations being taught and acknowledgement systems being embedded.

The Ka Pai app was primarily based on giving teachers quick, easy access to rewarding and reporting tools via mobile application. PB4L implementation is focused heavily on the educators (teachers and managers) facilitating the 7 essential features of PB4L. One of those features was rewarding systems - which varies from school to school but has an inconsistent factor, that the researcher had observed which

was that most schools still use tactile forms of reinforcement i.e. physical/verbal rewards, paper based-tokens or cards.

3.1.1 Build and testing

Our aim was to investigate the use of digital applications in supporting teachers to implement PB4L rewards and incident recording through the co-design and testing of a gamified behaviour app.

The concept was created through a LEAN business model (Armstrong, 2017). A LEAN canvas was created as a way of proposing a concept with lecturers and supervisors to validate the concept. The final LEAN canvas was essential in supporting the researcher gain support and funding to design and build the application. The LEAN design process helped the to create a minimum viable product which has been reviewed and pivoted since 2015 and has gone through many versions or iterations. It represents over two years' worth of critiquing, reviewing and validating to create a minimum viable product. The following themes have been areas were outlined in the LEAN canvas as suggested by one of the key proponents and writers regarding LEAN business model Eric Ries (Worth Books, 2017).

Following the validation of the LEAN Canvas from colleagues, we used the vision from the LEAN to create the process for developing the Ka Pai app. This is best viewed through Figure 3.1, which starts with a Master of Applied Practice (MAP) work-based problem (developed in the LEAN process). In the LEAN canvas, the main problem that needed to be addressed was that staff at Wesley Intermediate wanted a school wide reward system, and the use of mobile technology posed some possible solutions. Therefore, two streams of work-based problem solving started to occur, as one focused on creating the solution and the other focused on research on how the solution went. In the strand labelled 2a the research spoke was built upon the LEAN Canvas for a mobile application, which allowed for a development team to be set up. In part 2b of Figure 3.1 – the researcher conducted stakeholder engagement to create a solution based on the feedback of staff. The same staff who gave feedback during 2.b and 3.b of Figure 3.1, became participants who trailed the finished prototype and participated in the study. This could be seen as examples of collaborative practice (Barron et al., 2009) and also supports the use of practitioner

research throughout the design process (Menter, Elliot, Hulme, Lewin, & Lowden, 2011).

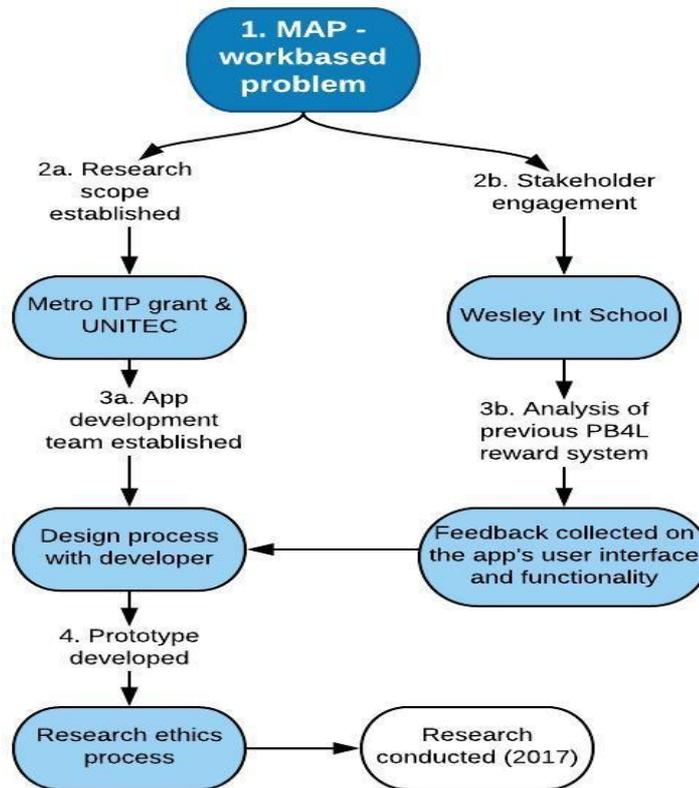


Figure 3.1: Design process pathway for Ka Pai app

The designing and creation process also included key stakeholders such as the participants of this study, the school board, Ministry of Education of New Zealand, UNITEC sponsors including the Metro ITP grant. During 2017, the researcher met with Head of Enterprise Development Gregor Steinhorn of UNITEC and applied for funding to help get the application built by a developer (as can be seen by Figure 4.2). The research component was reliant on a minimum viable product or prototype that could be trailed with participants. The design included features which the participants had informed the researcher about before the start of the study through initial stakeholder feedback.

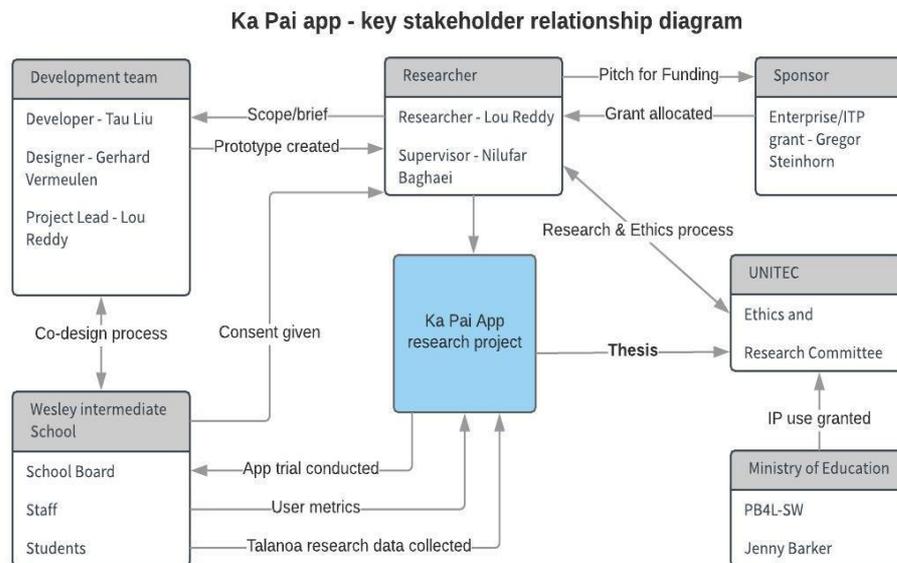


Figure 3.2: Ka Pai App – key stakeholder relationship

The other key stakeholders included the school, who had to give consent for the research and prototype to be co-designed. Once a basic prototype was created, the researcher requested ethics approval from the Ethics committee, who informed the researcher to get approval from the Ministry of Education for use of IP, such as PB4L. However, Jenny Barker (MoE – PB4LSW Practitioner) suggested that the applications name be changed, so we decided on the word Ka Pai, meaning well done in Te Reo Māori (indigenous language of New Zealand).

The final part of the design process for the application was to do some beta testing and collect feedback from participants before the application was launched and trialled. The use of screen shots was utilised, and a beta version shared with the school’s PB4L team. The feedback and usage took close to four weeks to collate and the final application was shared with staff at the first Talanoa Session to introduce the trial on December 4, 2017. The application went live, and participants were able to use it for two weeks of the trial.

3.2 Ka Pai Application prototypes

The feedback collected in Figure 3.1, allowed the researcher to show to the staff at the school some possible concepts of the applications. The following designs depict what

was shared by the staff and created by the development and research team between 2015 to 2017¹ through stakeholder engagement in the co-design process.

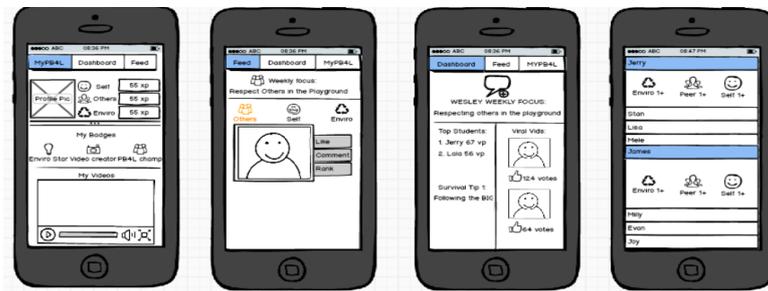


Figure 3.3: First draft concept – Ka Pai Application (2016)

The initial brief presented to the development team included the first draft concept in Figure 3.3, which encompasses the use of a dashboard for both students and teachers. This concept was shared with students and teachers alike in 2016 and most of the feedback validated the creation of a Minimum viable Product (MVP).

3.3 Ka Pai user interface and functionality

The following section shares the actual Ka Pai application, and its functionality for a user (participant) of the study conducted. The following Figure 3.4 describes screenshots taken from the dashboard, this has a leader board for top teacher and class.

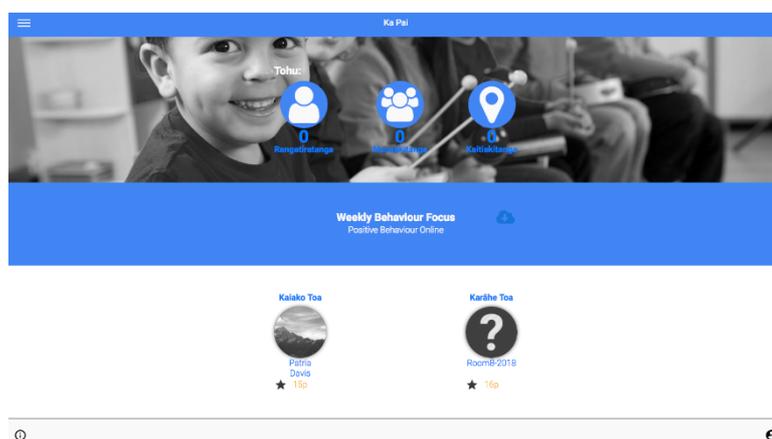


Figure 3.4: Home Screen/dashboard Ka Pai App

At the top of Figure 3.4, we can see the school values with a number indicating how many of those points the user has achieved (zero for the demo account). Below this is

¹ For further reading about stakeholder engagement around the Ka Pai Application between 2015 to 2017 please visit the blog <https://louandgerhardsapp.blogspot.com/>.

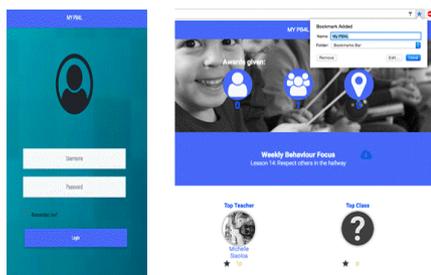
a button called “Weekly behaviour focus” that can be downloaded by teachers and students alike with useful tips and lesson plans for being safe online. It was intended that the weekly lesson could be changed via the admin login page. Below the Weekly Behaviour focus is the leader boards for the top teacher and the top class which is calculated based on the number of rewards each participant (teacher) and classroom gains. Everything that a user does in the app is recorded and accessible through the main administration page, such as, the down loads of the weekly lessons, the number of awards given, and the incident reports recorded (see Figure 3.10).

Research shows that technical learning barriers or professional development is needed for teachers encountering new digital technology (Bolstad, Mcdowall, Bull, Boyd, & Hipkins, 2012), therefore designers and researcher created a help feature for training users. For example, in Figure 3.5, the Ka Pai application had a built in “how to use” page. This was done to avoid participants needing to be adept mobile app users. The sections were also useful for students participating to learn how the application works for example to get to the Help screen the user would access by clicking (i), then go into the appropriate section they needed help with.

Saving the page and passwords

1. First click the link or write it into browser <http://dochyper.unitec.ac.nz/pb4/app/>
2. Then you will see a login page -

Enter the login and password for your account (you will be able to change this later), click remember me and add to your bookmarked list.



Once you are in there are a couple of areas that you can go into - firstly on the left hand side there is a option menu. This menu has the links to the rewards, adding incidents, settings and logging off.

On the bottom right - there is your profile page where you can change and upload your photos as well.

Figure 3.5: Screenshot of “How to use” page of Ka Pai App

In Figure 3.4, we can see how the main page includes a board, which signals the top teacher and top-class leader. The information for recording each of the values a Ka Pai is linked to the following values - Rangatiratanga (respect for self), Kaitiakitanga (respect for the environment) or Manaakitanga (respect for others). Each value was assigned a symbol for easy recognition, so a participant could quickly see the student

rewarded. In Figure 3.6, we see the screenshot of rewarding page and information for participants.

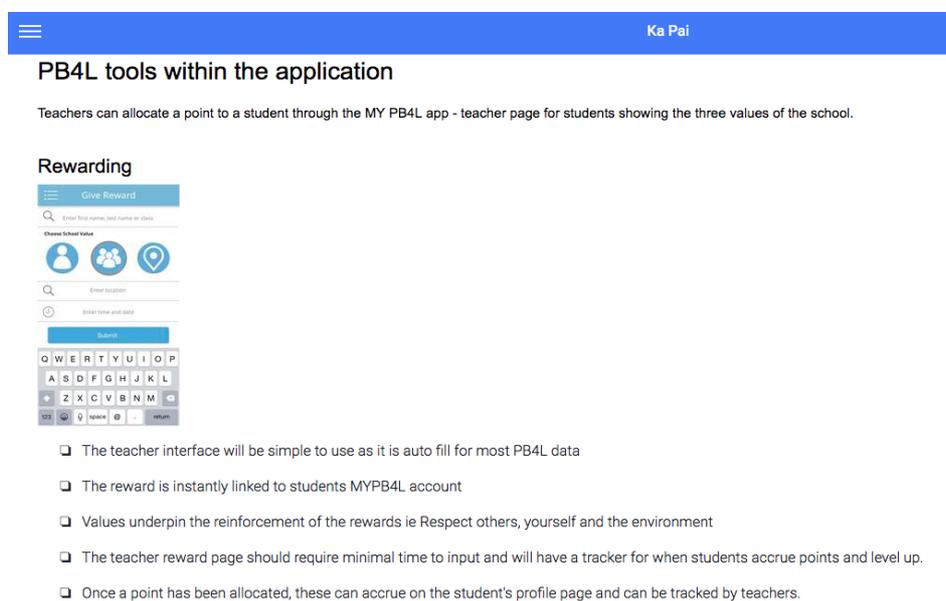


Figure 3.6: Rewarding feature– Ka Pai App

The Ka Pai application was designed to encourage participants to reward students, when they observe positive behaviour based on the school values. The application was built on the principles and theory as suggested by MOE PB4L training (2017) and persuasive technology and gamification theorists such as Hamari (2017) and Kapp (2012). In figure 3.6, the ability to reward quickly requires roughly 20 to 40 seconds to input from entering the student's name (which can be auto filled) and the value awarded for. This may seem like a minor process, but before the addition of the Ka Pai application, it was very hard to track the number of points/awards (Gold Cards) given to students. PB4L practitioners recommend a 4 to 1 ratio of positive acknowledgements to one corrective action by a teacher. If teachers were not able to calculate and reflect on their practice based on data then no real behaviour change was possible.

In Figure 3.7, participants were able to document the student's behaviour based on the Pehea or an incident report that the teacher submitted. Some PB4L practitioners call the incident report record a discipline referral as it requires higher levels of intervention depending on the severity of the behaviour presented. For example, a

situation may need Principal or parent intervention depending on the severity or whether children were emotionally or physically harmed because of the incident.

- Teachers can enter the same actions as on the original incident reports - type in the first few letters and a list will appear.
- The data will automatically be loaded to an excel document for the admin to collate and graph.
- An alert will be sent to admin and PB4L Leader to advise them of any major or repeated minors.

Figure 3.7: Reporting Incident in Ka Pai App

Figure 3.8 shows an example of the rewards available for staff and students as they attain higher levels of the points through the Ka Pai App. The rationale for using badges and points within a reward system is that it provides an extrinsic reward. Then students are further reinforced as their positive behaviour is displayed on their dashboard. PB4L theorists (R. H. Horner, Sugii, & Anderson, 2010; Lewis & Sugai, 1999; Schultz, 2006) strongly support the use of operant conditioning with students and teachers where reinforcement of desired behaviour is rewarded “freely and frequently”. Teachers also need to be acknowledged for rewarding their students, for them to continue with implementing PB4L. The following grid shows what the students will receive when they attain certain level of points, and similarly the teachers also are acknowledged through a leader board. Both the use of badges and leader boards is strongly supported by gamification research (Hamari, 2017).

Badge Tiers/Stages concept:

This points system is based on the assumption that a student could be enrolled at Wesley for two years (80 weeks) and could attain 10 gold cards per week and therefore 10 points per week and 800 total points for any given value of the school. We may need to trial this number logic and change accordingly as the intervention is used this year. The prizes can still be purchased on the Friday.

Badge level	Points needed total	Prize at leveling up
Respect Yourself level 1	25	Badge to be students online profile
Respect Yourself level 2	50	Prize (\$2), 1 upgrades for profile, badge to be on student's online profile and Certificate at Assembly
Respect Yourself level 3	125	Prize (Small Lego set), 2 upgrades for profile and badge to be on student's online profile Certificate at Assembly
Respect Yourself Top Prize	Top overall high score student on the school's leaderboard per year (Calculated in December)	Presentation at end of year prizegiving - linked to Maharaj award of a smart phone and certificate.
Top Class Badge	Total of the specific classes badges attained per week (by adding all of the students in a specific class - total)	Class certificate presented at assembly and also shared on News letter and Facebook page.



Figure 3.8: Badges and reward schedule

Translation of values into Te Reo, introduces the use of Te Reo within the Ka Pai app, at a simple level to teach the students about the school values. The words described in the list below is also in the explanation section of the app, so that participants and learners can review it if they forget. In Figure 3.9: it briefly shows the ways in which Te Reo could be used in a value-based behaviour management programme.



Translation:

English	Te Reo
Respect yourself	Rangatiratanga
Respect others	Manaakitanga
Respect the environment	Kaitiakitanga
Awards	Tohu
Top Teacher	Kaiako Toa
Top Class	Karāhe Toa
Behaviour Report	Pēhea

Figure 3.9: Use of Te Reo in Ka Pai

The final feature of Ka Pai is its ability to record the data from the participants and create excel sheets and reports for analysis. The following Figure 3.10 shows that ‘admin’ (the researcher and or PB4L coach in the school in 2018), can pull data in

several easy to view reports. The reports are based on Tohu (rewards given based on Māori values), Pehea (Incident reports), user logs and behaviour report (activity within app) and login. In the example of Figure 3.10, a report has been downloaded to show user behaviour reports.

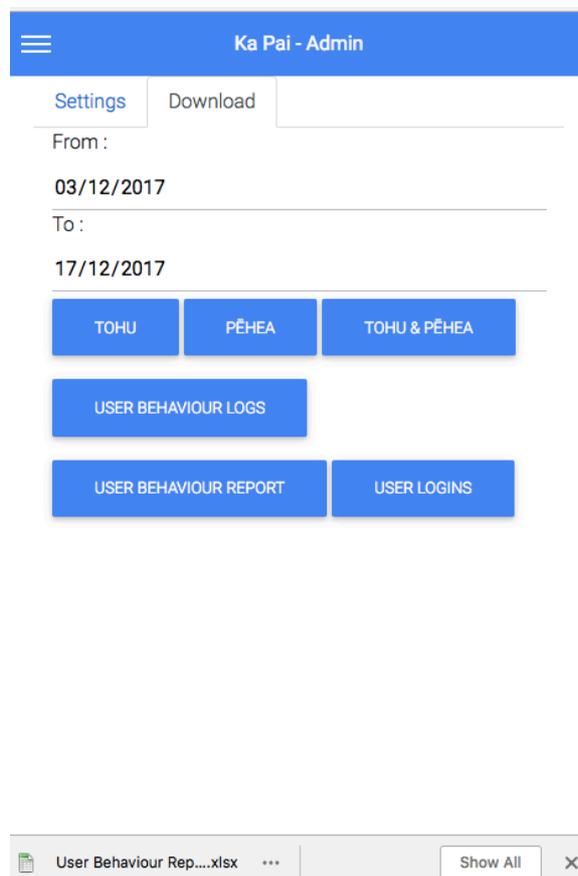


Figure 3.10: Data capturing feature of Ka Pai app

An example of the report is shown in Table 3.11 which was downloadable by the administrator (currently the coach of PB4L at the school) for the Ka Pai application. The report covers all aspects of the possible activities a user can access within the app. This is an important feature to work out user metrics over time. The other downloadable reports through the app, include reports for student incident's which is often needed quickly and urgently by MoE specialists or on request by the Principal. The app's ability to have this accessible online via a mobile phone or web accessed device, is becoming common practice in student management systems (SMS) with EDGE New Zealand also incorporating a similar feature in its 2018 SMS.

Table 3.11: Behaviour report generated in Ka Pai

User Name	Download Weekly Focus Document	Logged in	Logged off	Open Dashboard page	Open Give Award page	Open info page	Open Personal Profile page	Open Report Incident page	Open Settings page	Submit a GiveAward request.	Submit a new profile picture.	Submit a Reportincident request.	Upload a new class picture.
T1	1	3	0	10	20	0	1	0	5	9	1	0	4
T2	3	3	0	18	28	1	6	3	1	19	4	0	0
T3	0	6	3	0	18	0	8	1	1	8	1	0	0
T4	7	13	5	33	102	7	43	10	8	55	2	0	1
T5	2	3	0	15	11	2	4	4	8	1	13	1	16
T6	0	1	0	5	5	0	2	0	1	1	0	0	1
T7	2	13	1	1	18	2	2	1	1	8	0	0	0
T8	0	2	1	3	2	2	1	1	3	1	2	0	0
T9	1	2	1	1	0	0	2	0	1	0	1	0	0
T10	4	17	5	34	92	5	15	16	6	72	1	3	3

In concluding this chapter, the overview of the Ka Pai application presents the design process that was undertaken for the study trial to be conducted. The designing process outlined in the Figure 3.1 and relationship diagram in Figure 3.2, shows a brief explanation of how the Ka Pai app was created in a collaborative manner. The Ka Pai application is still being developed further by the school and saw some exciting results for engagement in the first half of the 2018 school year. Once completed and trialled, a comparative study could be conducted with the Class Dojo application (Burger, 2015) with two participant groups, however this will be expanded and justified in the Discussion chapter. Further suggestions for improving and innovating the application can also be seen in the Talanoa feedback from the Participants in the Analysis of Findings chapter. The suggestions have helped direct the future considerations for the study and the Ka Pai apps ability to support teachers implementing PB4L.

Chapter 4

Evaluation

“We have a process in Fiji called Talanoa. At one level it means storytelling, at another level it means dialogue, and at another level it means the forming of relationships.” Nazhat Shameem (Former Fijian Judge)

The research design that has been used to evaluate the Ka Pai app used qualitative feedback in unstructured interviews called Talanoa: Tui Kalala (Vaioleti, 2006). The feedback from Talanoa was further analysed via thematic analysis. Secondly the research design used quantitative data which was collected via user metrics. The quantitative data showed engagement by analysing the participants activities on the Ka Pai app.

4.1 Practitioner Research

The premise of researching the use of mobile applications could be studied as a viable means to change practice. This type of research is defined as practitioner research (Menter et al., 2011) and links into action research (Kothari, 2012). Teachers in New Zealand are already encouraged to use a teaching inquiry model in Figure 4.1 (Timperley et al., 2007) into their professional learning to improve student outcomes. Therefore, the evaluation of practice was needed to show whether PB4L implementation improved because of the Ka Pai application. An example from research is seen through the qualitative data which forms the reflective research approach suggested by Finlay (Finlay, 2008). This could be participatory, as the teachers who have helped to design the intervention evaluate its success and areas of improvement through their reflective feedback pre and post-trial.

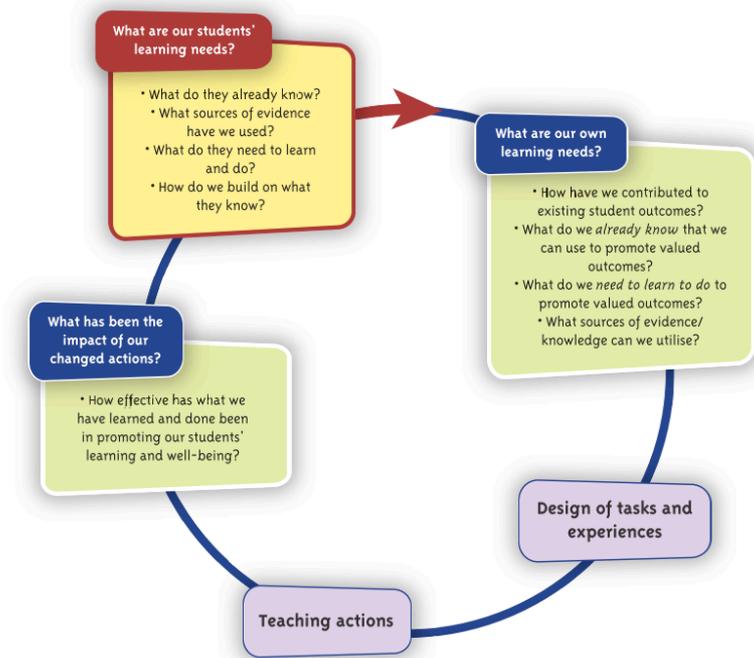


Figure 4.1: Teaching as inquiry process (Timperley et al., 2007)

By using a synthesis of Talanoa (Vaiolati, 2006) and practitioner research theory (Menter et al., 2011) research can value the teacher's voice and making sure teachers are valid practitioners in leading the change in their own theory of practice. Throughout the length of the Ka Pai App research project (Reddy, Baghaei, Vermeulen, Hilton, & Steinhorn, 2017), the method has drawn on the qualitative indigenous research methodologies as part of practitioner research. There are examples of practitioner research within PB4L already in New Zealand, such as the PB4L evaluation by Boyd et.al, (Boyd & Felgate, 2015). However, these are not examples of indigenous research approaches as they follow a Eurocentric model of research. PB4L has some emerging gaps around cultural inclusiveness as suggested by research of school's incorporating PBIS (Proquest & Dunlop, 2013) pedagogy into the PB4L New Zealand context (Reveley, 2016). In response the Ka Pai research study has aimed to mitigate the lack of indigenous research approaches, in PB4L and mobile application through its inclusion of Talanoa and qualitative research.

4.2 Talanoa and Kaupapa Māori Research

In consultation with Dr Falaniko Tominiko (Director of Pacific success–UNITEC), the research methodology of Talanoa was validated. Dr Tominiko and the researcher identified that the cultural background of participants was an appropriate reason to use the Talanoa methodology as a decolonising research approach.

This research study is based on qualitative and non-comparative, which draws on the principles of Talanoa (Vaioleti, 2006) an indigenous research methodology, which fits under the phenomenological research umbrella. The approaches in research methodology for Māori and Pasifika have been Eurocentric and not allowing for collectivist, relational and fostering of other indigenous approaches (Hawk & Cowley, 2002). Linda Smith, who is a prominent theorist in indigenous research suggests - "Western research has been instrumental in the marginalization of indigenous peoples' knowledge and as such has contributed in key ways to the maintenance and perpetuation of colonization" (Smith, 1999 in Pihama, Tiakiwai, & Southey, 2015 p.8).

Therefore, the use of research methodologies which are Eurocentric only further fosters solutions that cater for non-Māori and further disenfranchises Māori and Pasifika peoples (Robertson et al., 1999). In acknowledging the Treaty of Waitangi and the special place of Māori as Pacific Island people (Hudson & Russell, 2009), this research aimed to validate the interventions attempted by using an indigenous research approach.

Not every aspect of indigenous research is included in this study. However, the research draws upon the principles of Kaupapa Māori and moves closer towards indigenous methodology and further away from the 'Positivist Approach to Research' (Aliyu et al., 2014). Kaupapa Māori and Talanoa approaches fit within the phenomenological research umbrella, because it uses qualitative methods of research (Groenewald, 2004; Vaioleti, 2006). By using Talanoa methodology the research supports the learning community further as it reinforces another indigenous principle of self-determination. As suggested by critical authors of indigenous research that the indigenous participants should determine how well the research and interventions catered for the tikianga and use of Te Reo (Pihama, 2010).

4.3 Method and Research sample

The use of Talanoa and storytelling as a data collection method encouraged the stakeholders (participants) to offer more authentic and real solutions regarding their PB4L implementation. The Tui Kalala method was chosen with guidance and support from Dr Falaniko Tomoniko (Director of Pacific Success at UNITEC), who suggested that Vaioleti's model based on metaphor for creating a Tui Kalala (flower lay) would help new researchers using indigenous research methodologies. This approach has been chosen as a method of data collection as needed for a first-time researcher using Talanoa and simplifies the Talanoa process into easily understandable stages. Talanoa helps form a relationship basis to research and provided an empathetic approach to problem solving (Farrelly & Nabobo-Baba, 2014). Talanoa was more authentic in dealing with participants work-based problems as suggested by theorist Timote Vaioleti, who believes Pasifika people can be engaged in academic research through indigenous methodologies (Vaioleti, 2006). The participants/stakeholders therefore experienced a more collaborative approach to research and design (Barron et al., 2009) as seen with the design process of the Ka Pai app in Figure 3.1 and 3.2.

Talanoa has many meanings and methods in Pasifika cultures, however this study has used the Tui Kalala (flower lei) method of Talanoa as described by Timote Vaiioleti's (2006). To facilitate the Talanoa sessions the researcher used a set of guiding questions, but generally allowed the group to discuss their ideas freely (see Appendix 3). The focus groups of Talanoa was facilitated in the school's staff room between 4 December 2017 and 14 December 2018. This was during normal work hours for the staff at the school. The Principal had approved the trial of the application in school (see the Board letter in Appendix 4). Training sessions for using the application were already in place before the start of the Talanoa sessions and through training within the app as seen in Chapter 3 (Figures 3.3 to 3.10)

During the final phase of qualitative analysis, the researcher used thematic analysis (Braun & Clarke, 2012) tools to work out which areas the teachers wanted to feedback on based on word frequency. A visual word cloud was created for each of the total Talanoa conversation per session. This is further explained using the summary of findings sections and the word clouds in Chapter 5 – Analysis of Findings.

4.4 Participants and recruitment

The study aimed at collecting feedback and user metric data from a minimum of six classroom teachers, however there were a total of ten participants . The participants included non-classroom staff on a case by case basis e.g. teacher aides, PE teacher, Principal and Assistant principal. In the stakeholder engagement meetings held earlier in the year, there was a strong consensus for participation by all classroom teachers and all senior leaders.

Most participants in this study took part in the co-design of the application since 2016 in developer led design thinking sessions around improving the way that PB4L has been implemented in the school. However, this is a limitation to be addressed in the future considerations section of the Discussion chapter. This study originally identified a small sample size of participants (six teachers minimum) and four other ancillary staff. The school roll of teaching staff was relatively small with 12 total teaching staff, therefore having six main participants was within terms of scope and feasibility as suggested in practitioner research guidelines (Murray Thomas, 2005).

The participants were self-selecting but not limited to classroom teachers, however for the purposes of evaluating classroom practice and schoolwide, it was limited to participants who were rewarding and reporting using the paper-based gold card system.

The whole school student population trialled the application but only the data from teachers who were consenting participants was collected for this study. PB4L suggests that for consistency of using its interventions that it must be shared at a school wide level through the classroom teachers with a minimum of approximately 80 percent uptake (Elder & Prochnow, 2016). Students were not able to participate in the qualitative and quantitative data analysis, as it was limited by the ethics process, and is further expanded in the future considerations for research in the Discussion chapter.

The exclusion criteria limited the school's admin staff, who were excluded from the data collection process, as they do not engage with students every day and in a limited capacity. Lastly another exclusion criterion was if the participant did not complete the consent form, however every teacher participant completed the consent form, so no participants were excluded.

There were the following stratification of cultures/ethnic background of researcher and participants within this study: 1 Māori, 4 Polynesians (2 Niuean and 1 Samoan, 1 Indo-Fijian) and 3 European. This is an important factor in the research methodology of Talanoa, as it aligns for authentic qualitative feedback for all cultures but for Pasifika participants.

Participant contribution and relationship to researcher

Participants used the Ka Pai application as they wished, and on a voluntary basis. This had already been scoped in the stakeholder feedback sessions with all participants motivated to trial over a two-week period.

An early identified conflict of interest, during the initial stakeholder engagement, was the professional relationships between employer and employee. There is evidence which shows that power relationships could cause a research project to not be authentic (Menter et al., 2011). The reason for this is mainly based on the role of the

researcher at the school (Deputy Principal) and most staff normally following the traditional employee reporting line to the Deputy Principal and later to the main Principal in the education context. This concern has been addressed through an empathetic approach within the Talanoa research method (Farrelly & Nabobo-Baba, 2014) and by modelling a Kaupapa Māori approach of Manaakitanga (caring and respect).

4.5 Data collection and analysis

User metric data (Tullis & Albert, 2013), such as the number of times the app and the activity was used, how many rewards given, incident reports made, and the total time was captured to create frequency and show patterns in user metric data participant pool. The app automatically collected user data and specifically captured the teacher's use in terms of frequency of log in, awards given, and incidents reported. While students (170) are not participants and are providing no feedback on the use of the app, the app was used by them during the trial. Teachers usage time, number of points awarded, and reports completed were used to evaluate a percentage of the group. This is essentially the same info that is being captured now by the current EDGE system for gold cards. This type of collection of data is a normal PB4L or PBIS process in schools implementing PB4L (Elder & Prochnow, 2016).

First stage of Talanoa research design is based on the concept of Toli - "Toli involves deciding on, selecting and picking the different flowers and leaves required for making the Kakala" (Vaioleti, 2006) and Vaioleti explains that in traditional research, Toli is where a problem is identified, "the research is decided on, the participants are chosen and the initial data is collected and analysed" (Vaioleti, 2006). The Talanoa was facilitated in a focus group style setting and was qualitative in its approach. The first stage was also a chance to train participants on the app and gather their feedback before the trial. To ascertain whether the application could be compared to anything, the researcher posed the following question in the toli of the first Talanoa session, *"How does the existing methodologies of PB4L support you and how are they being implemented in the school, what are the pros and cons of what we are already doing?"*.

The second stage of research design is called Tui – "is the process of making or weaving the Kakala" (Vaioleti, 2006) and is where the data will be collected and

shared when comparing to the traditional Eurocentric research methodologies. This is where the Ka Pai application was trialled.

Third stage of research design is the Luva, "is the giving away of the Kakala to the wearer" (Vaioleti, 2006) and is where the analysis will drive the findings of the study. Later in this thesis some discussion and suggestions for future considerations are also summarised. Another form of Luva is when learning from this study are shared in presentations at conferences, via academic journals and a thesis of the findings.

The data from the first Talanoa session was gathered via an audio and video recording process and included key areas of focus including historical needs based on individual participants perceptions of PB4L implementation that was currently used in the school, which was analysed through a table of findings. Also, the feedback collected from the Second Talanoa session was analysed by grouping the feedback into similar areas or themes. The research questions were used to group the participant answers initially, then coded by themes using thematic analysis and reported on based on the participants' transcripts:

1. How does the app compare with existing methods of PB4L pedagogy in place at the school?
2. How successful was the intervention regarding teacher's enjoyment and effectiveness for meeting their PB4L pedagogical needs?
3. How well was Te Reo incorporated in the PB4L features of the app and what can be done to better integrate Te Reo?

The research questions were further shaped and unpacked via the Talanoa method, however the only way to collect and analyse the Talanoa data was in the form of a sound recording for each session. The researcher was therefore able to collect the teacher's prior feelings and thought regarding the Ka Pai app and then post trial was authentically validated through their feedback. The analysis was grouped into thematic codes which related to gamification and PB4L themes such as accessibility and consistency. This approach is labelled as thematic analysis and commonly used in psychology (Braun & Clarke, 2006), however as the method of collecting data was relatively new to the researcher, a framework for analysing qualitative feedback was needed.

A broad explanation of thematic analysis (Braun & Clarke, 2012) is that it looks at the patterns or themes formed in qualitative database and presents a view of subjective data. This approach encouraged the researcher to reflect on the participants' experiences and their views about PB4L as a group. Braun and Clarke describe the following approach to Thematic Analysis, which involves a six-phase process:

1. **Familiarisation with the data:** Listening to the voice recording of the Talanoa sessions creating transcripts and becoming aware of what each participant said.
2. **Coding:** Although a statistical approach to coding was not used in this study, the researcher did code words with nodes through the NVivo software (Bazerley & Jackson, 2013) to help create word clouds to search for themes.
3. **Searching for themes:** This phase involved examining the codes and key words (potential themes). It then involved collating and linking it to the theme of discussion (see participant views, alongside the themes in Table of Findings in Appendix 1 and 2).
4. **Reviewing themes:** This phase involved checking the participants themes against the user metric data, to determine that they tell a convincing story of the data from the results. Some of the themes were split, combined, or discarded (see the Evaluation Chapter as quotes are grouped into themed sections).
5. **Defining and naming themes:** This part of the thematic analysis involved naming the themes and putting them into groups for evaluation. The researcher created an informative name for each theme as seen by sub headings of the Evaluation Chapter.
6. **Writing up:** This final stage involved using the Talanoa feedback and user metric data and creating some rationalisation to support the outcomes found in the results to existing literature (see the Discussion Chapter).

Within the coding section of the thematic analysis, the researcher created Word clouds as seen by Figures 5.1.1 and 5.3.1 (Bazerley & Jackson, 2013) to examine at a broad level what the themes in the transcripts were based on. The visualisations of the word cloud frequency gave the researcher the ability to search for themes and helped to present findings from the Talanoa feedback in Appendix 1 and 2. Words such as “the, a, this and that” which are referred to as high frequency words, were removed from the database of words for coding within the word cloud software. The researcher

made the choice to omit such words, simply to focus on words with a relationship to the research question.

Thirdly, the user metric data was also collected and analysed by graphing the Ka Pai app's automatically collected data, specifically to capture the teacher's use in terms of frequency of use, awards and incidents reported. The data was analysed via an excel sheet and graphed to view trends around times used, values rewarded, and types of behaviours reported. The main instruments needed for the quantitative research was the Ka Pai app's user behaviour logs, with user metrics data such as activities used, awards given, incident reports and changes made with the participants dashboard.

The data was evaluated and compared to the Talanoa data to see if the Ka Pai app achieved what the teachers wanted and whether it supported them in implementing PB4L. The Talanoa and user metric data will be further examined in the Analysis of Findings Chapter, however it is based around that the rewarding and reporting activities of the app (See Figure 3.10 and Table 3.11).

4.6 Ethical issues, consent and conflicts of interest

There were three risks identified in this study, with the first focused on the failures of the Ka Pai application to improve PB4L practice within the school. Some changes did occur during the trial with participants, namely delayed implementation due to ethics process, and that students could refuse to take part in a new system for acknowledging behaviour. In response, however, teachers affected by adverse effects of the trial could leave the study at any stage and were supported by the management team as suggested by Dhaliwal (Dhaliwal, 2013). No participants said that students were adversely affected or stop participating during the trial.

A second issue identified was that participants might be alienated because of the research not being inclusive or supportive enough in line with the practitioner research approach. To mitigate this, the researcher had acknowledged the participants were key stakeholders of the study. The stakeholders had already been involved in stakeholder engagement process from early 2015 and indicated their awareness of the project being proposed. The participants all believed the importance of needing to

improve their behaviour management system and its relevance to the PB4L practices and systems with the school context.

Lastly the participants could have been overloaded with extra work and therefore not have a positive outcome. To mitigate this risk, the researcher had worked with their Board of Trustees and the Principal to create as little extra work as possible and added no extra meetings to the participants' already busy schedule. In the Analysis of Findings Chapter, one participant did express they did not participate in the trial as much as they would have liked to, however did not feel this caused them any harm.

4.7 Addressing limitations of research, confidentiality and consent

The researcher identified some areas of limitations of the research study including protecting the anonymity of participants, confidentiality, impartiality and consent. Firstly, the issue of anonymity of participant was a limitation of researching within the school because of the Talanoa method itself. The school had a small sample to start with (170 students total with 10 teachers); therefore, participants were not anonymous to each other and not anonymity was not viable through Talanoa. However, the Talanoa table of findings and user data did not name participants in the Analysis of Findings Chapter. For example, the participants were identified as T1 or teacher one (See Appendix 1 and 2). Also, where possible the participants were based on percentages of total participants without their names listed.

Confidentiality was another aspect to address in the limitations of this research in that the Talanoa data (voice recording) were collected via audio recording and kept on a secured device. The recording and transcript were only shared with the Master of Applied Practice supervisors as per participant consent at Unitec. The user metric data was kept secure on Unitec servers. Also, participants were assured that if they chose to opt out of the research or withdraw from the trial, they could do so for any reason and at any time in writing to the lead researcher.

In responding to the impartiality of the researcher, some practitioners of PB4L evaluation suggested the use of an external auditor as reflected in the SET reviews (Elder & Prochnow, 2016). However indigenous research based on Talanoa and Kaupapa Māori approaches encourage the concept of Whanaungatanga (Ministry of Health, 2017). By using a more empathetic approach, the researcher uses

Whanaungatanga to have kinship or relationship as the center of the research (Bishop, 2017; Farrelly & Nabobo-Baba, 2014). This negated the need to have an external auditor collect the Talanoa feedback data as seen by the open feedback shared by participants in the Analysis of Findings Chapter.

Before the start of the Talanoa sessions, consent forms were signed, and a procedure explanation was provided to participants of the research process, sent to the supervisor Nilufar Baghaei and held in the offices of Unitec. The only people to have access to data is the researchers involved and the supervisors for this thesis. The consent forms, sound recording was stored on a secure Wesley Intermediate School device and the numerical data stored on the UNITEC server will be disposed of within a year of this master's thesis publication or as advised by Ethics committee. No health data was collected.

4.8 Conflicts of interest and mitigation

Early in the research it was recognised there were some conflict of interests, such as the use of intellectual property, power imbalances in research and ownership of the app/financial liability. The following sections focus on how these conflicts of interest were responded to and addressed before and during the study.

Late in the ethics process an issue identified by the Ethics committee was the need to get approval regarding the intellectual property use from the Ministry of Education and approval to create tools such as apps to help teachers facilitating PB4L. The Ministry of Education owns the intellectual property of PB4L and has commissioned research into PB4L implementation through NZCER (Boyd & Felgate, 2015). In response to this request, the researcher requested support from MoE PB4L-SW practitioner Jenny Barker to mitigate this conflict of interest. Jenny Barker wrote a support letter (see Appendix 5) outlining this study and creation of an app to support PB4L implementation. The researcher was also suggested to remove the intellectual property (IP) of the word "PB4L" from the previous title of the app "MyPB4L" and hence changed the name to Ka Pai. By doing so, negated the potential conflict reflected in the original research proposal and ethics application, as suggested by supervisor and ethics committee.

Further to mitigating the risk of appropriating a brand name, another risk was that PB4L had to be properly implemented and authentically represent PB4L with the Ka Pai app. In response to this, the researcher also consulted on early papers for the Ka Pai app research with Jenny Barker (PB4L-SW Practitioner) to validate the scope of the project. One of the papers shared about the Ka Pai App (Reddy, Baghaei, Vermeulen, Hilton, & Steinhorn, 2017) had input from Jenny Barker as it scoped the research project and validated the use of PB4L pedagogy. Jenny Barker also suggested that in section 6 of the PB4LSW Tier 1 manual - acknowledging expected behaviours (Ministry of Education, 2015), there is a reference to work by George, Kincaid & Pollard Sage (George, Kincaid, & Pollard-Sage, 2009), on creating reward systems for schools which states -

“Developing a reward system is a critical component in that it increases the likelihood that desired behaviours will be repeated, focuses staff and student attention on the desired behaviours, fosters a positive school climate, and reduces the need for engaging in time-consuming disciplinary measures.” Section 6 P1, (Ministry of Education, 2017).

Also, whilst reading Section 6.4 on p8 (Ministry of Education, 2017), states that *“To be effective, a school-wide continuum for acknowledging expected behaviour should include: Level 1 acknowledgements: free and frequent – for everyday use by all staff in all school settings”*

The justification for using PB4L pedagogy has already been covered in the literature review and further expanded on, in the discussion chapter, however this initial conflict of interest was mitigated, and the app is owned by the school.

Another conflict of interest which was addressed is the power dynamics within relationships between the researcher and the participants (employees). There was a risk of coercion as the researcher is a senior leader in the school. In consultation with Dr Falaniko Tominiko, who encouraged the researcher to fully embrace the Talanoa method of research to mitigate this. The feedback was honest and frank, as seen in the participants’ qualitative feedback and gave the opportunity for participants to be constructive and critical as well. The goal was to co-design and evaluate via the Talanoa research approach to reduce power imbalance as seen in Eurocentric research (Smith, 1999). The researcher could have been, seen as knowing more about PB4L

and the participants not being involved in the participative aspect of the research, however this was not reflected in the feedback. As the lead coach of PB4L in the school, the researcher has developed a strong relationship with the staff through the co-development of PB4L framework within the school.

Lastly, the researcher has explicitly highlighted in the formal consent process (see Appendix 4) and during the trial that the participants were not being assessed as PB4L practitioners. The participants were informed that gathered data was to measure how well the, Ka Pai application supported the participants in implementing PB4L. As stated in the co-design aspect of the research study, teachers are already good practitioners of PB4L and they themselves have highlighted the need for digital tools to reinforce behaviour throughout the school (see appendix for the copy of the publication on this work, presented at ICCE 2017).

The researchers also could be viewed as attempting to make a personal financial return on investment through the Ka Pai app and therefore opted to gift the Ka Pai application to Wesley Intermediate School, to reduce any conflict of financial interest. The current agreement with the Wesley Intermediate School board outlines that the application created for the study belongs to the school. Any new applications created with new schools or other parties will be outside of the Wesley Intermediate School's intellectual property and will need further consent from the Ministry of Education.

4.9 Māori responsiveness and cultural inclusiveness

Since some of the students and teachers at the school are Māori and the research question were on providing access to Te Reo Māori, a special acknowledgment is made through the research practice and intervention as it is based on the principles reflected in the Treaty of Waitangi (Hudson & Russell, 2009). The Ka Pai application and PB4L pedagogy draws on a Kaupapa Māori approach and the implementation of Te Reo, in its aspirational aim to be more inclusive of New Zealand's second official language. The researcher also sought advice from the education community, and consulted with Unitec Lecturer, Doctor Jo Mane. The advice used was around research of Kaupapa Māori and Tikanga as it is uniquely led by Māori and for Māori (Mane, 2009). Doctor Mane's background is in educational research and her primary approach is Kaupapa Māori. The advice gained from Doctor Mane, guided this

researcher to review further literature such as Pihama's Kaupapa Maori theory (Pihama, Tiakiwai, & Southey, 2015) and Smith's Decolonising methodologies (Smith, 1999)

The theory for decolonising research by Smith (1999) led the researcher to find Talanoa method as more reflective and responsive to the participants. The staff at the school were predominantly from a Tongan, Samoan, Māori, European and Niuean background. Although the Ka Pai application prototype does not have a cause for concern for raising cultural issues, in the context of this study, all participants were shown respect and especially in consideration of their specific cultural backgrounds. A careful understanding of protocols, values, and principles was needed by the researcher. For example, some considerations were made due to the differences in male and female relationships and customs of individuals titles and roles. The approach was empathetic towards the participant's needs and during the sessions of Talanoa, we addressed any concerns early in the study.

Chapter 5

Analysis of Findings

“Success has to do with deliberate practice. Practice must be focused, determined and in an environment where there is feedback” – Malcolm Gladwell

This chapter presents our findings from the first Talanoa interview session (Toli) with ten participants before the trial of Ka Pai, and a second Talanoa interview session after the trial (Tui and Luva). The chapter includes large parts of conversations based around themes analysed from the Talanoa transcripts. The quoted text has been included as per guidance from Dr Falaniko Tominiko, who suggested that the Talanoa research results includes each participants feedback as much as possible. The third part of this chapter presents the user metric data based on quantitative data analysis of the participant’s usage of the app. The trial took place over two weeks (4th to 14th December 2017). The participants were self-selecting teachers, principal, physical education teacher, and one teacher aide at the Wesley Intermediate School. All participants were currently employed as teachers at the school at the time of the study. All participants had at least one year of experience of implementing PB4L via a paper-based programme before the launch of Ka Pai and four out of ten participants had been at the school since the initial school-wide implementation phase of PB4L in 2014.

The findings are divided into the following parts: comparison of the Ka Pai application to previous paper-based methods of implementing PB4L within the school, and evaluation by teachers in terms of qualitative feedback and the applications use of Te Reo Māori. The research questions are analysed in their respective responses from the participants’ feedback and referred to in the table of findings in Appendix 1 and 2:

1. How does the app compare with existing methods of PB4L pedagogy in place at the school? Which features of PB4L did the staff member prefer to use before the trial and after the trial?

2. How successful was the intervention regarding teacher's enjoyment and effectiveness for meeting their PB4L pedagogical needs?
3. How well was Te Reo incorporated in the PB4L features of the app and what can be done to better integrate Te Reo?

The findings presented demonstrate the complexities of implementing PB4L within a school, based on the feedback before the start of the trial. The teachers' responses are described as T1, T2, etc (see Appendix Chapter 3 for evaluation methods and appendix 1 and 2 for thematic analysis of each participant's responses). The researcher also used thematic analysis and tech clouds to present themes gleaned through analysis of the transcripts for the two Talanoa sessions. Also, user metric data was analysed using graphs based on a database set up to collect the participants' usage of the app over the course of the trial. This included their usage, number of times a reward (token/point) was awarded through the application and their use of other features, as shown in more details in Table 3.11.

5.1 Initial findings

In the first Talanoa research session the first step was the Toli: the responses are collected to the following question to ascertain where we are at now and where we will need to go next. The participants responded to research questions such as:

“How does the existing methodologies of PB4L support you and how are they being implemented in the school, what are the pros and cons of what we are already doing?”

The themes analysed were visually grouped together in the word cloud in Figure 5.1.1 which showed the teacher's views of implementing PB4L before the start of the trial based on the transcript of the first Talanoa session. The initial feedback was that the gold card system (tokens) that was set up in the last few years, did have draw backs and a mobile app could help make things faster, more efficient and easier to track. In Figure 5.1.1 we can see a few key words from the participant's feedback that reoccur in the Talanoa transcript:

- Incident - reports
- Gold Cards – giving
- Feedback – negative and positive
- Data - share

on them for the reward system to work, and that there was a limited supply of gold cards. They believed the previous paper-based system lacked the ability to reinforce student's behaviour in a timely manner and they perceived that the Ka Pai app would offer them better accessibility.

Participant T1 described it as:

T1 - The only issue with that is that we don't always have gold cards on hand, so that you must remember who you have rewarded and try and get them the gold when you can. We have also been limits to number of gold cards at certain points of the year.

Participant T5 also gave feedback around the lack of accessibility of the previous paper-based reward system:

T5 - the feature, where we can select multiple students at once is good (current gold cards you cannot do this) ... when you are doing fitness, selecting students and click it in. Or even incident reports, it's good that you can do that all at once,".

This viewpoint was also echoed by Participant T2 statement that:

T2 - "as soon as you notice a student doing what they are meant to be doing and you want to reward that behaviour, you can instantly give a point and reward them" (via the app).

The constraints around accessibility outlined by the participants T2, T1 and T5 above is an issue captured by Talanoa feedback that the Ka Pai app addressed and as seen by the feedback from the 2nd Talanoa session.

5.2.2 Lack of data on positive reinforcement

The second theme of the findings was that there is a lack of data collection on the rewarding of behaviour by the school's paper-based reward system. Participant T2 and T7 shared that when using the previous PB4L system of a paper-based reward system for reinforcing positive behaviour, it was very difficult to track and that there was no data available to see who was receiving the gold cards and for what. Further themes identified was capturing PB4L data for rewarding behaviour by teachers including, the number of times rewards were given, to whom and for which school value they represented. Participant T2 gave an example of how the current system does not have good data collection regarding students and teachers use of PB4L within the school:

T2 – *“I think that there has been a lack of data with the gold cards, we haven’t had any data for identifying different students and how many gold cards that each student has and for what particular reason (targeted value, Respect others, yourself and the environment). So, I think by using this app, it is going to give us solid data, on where we are actually giving rewards and who is getting them specifically”*.

Participants T2, T7 and T6 later affirmed the belief that within PB4L when rewarding, a teacher explicitly gives a positive reinforcement for an observable target behaviour. Within the context of Wesley – these behaviours are the school values, so a teacher’s rewarding data needed to be captured according to the participant. Another Participant who agreed with this was Participant T7 who states:

T7- *“the app helps us track positive behaviour, more than we are actually doing (currently). At the moment we are looking at the negative (incident reports), it will bring that data in I think”*.

Participant T6 gave the example that the paper-based system had an end of term reward based on the negative reinforcement (incident reports) a student received, and she pitched for the data from the positive reinforcements from the Ka Pai app to be used as long-term reinforcement:

T6 stated that the previous system was *“highlighting those children that didn’t get to the good day trip because of a negative reason, we can reward the kids who got the positives and that’s why they are going.... So that you could highlight that it was for positive behaviour and not negative.”*

In contrast, participant T10 gave feedback on how as teachers need to be using the paper-based system more authentically:

T10 - *“I would like to look at it as authentic rewarding, being compared to incident reports to gather and collect that data to determine how what our next steps will be.”*

This type of behaviourist approach to reinforcement is a key part of the PB4L framework of implementation and is a cornerstone to effective practice, i.e. the reflections from the participants around the theme of data collection and how it is used is further expanded in the post-trial section. Some of the applications suggested were not able to be fully test, as this trial only lasted for two weeks.

5.2.3 Reporting negative incident data

Reporting negative reinforcement data, raised some concerns as it showed that the paper-based system of incident reports (Figure 1.2), could be well adapted within the Ka Pai app. Participant T7 gave a supportive rationale to the paper-based system as it enabled the school to seek funding and wanted to make sure that the app had this feature within it:

T7 - “the negative (incident reports) we use to get funding for kids. So, if everything is tracked (via Ka Pai) we could then go to the Ministry (MOE), or RTLB or whoever, this is our own data rather than wait for them to come for 6 to 8 weeks to come and get it themselves”.

Another factor which this participant thought was applicable to good data collection was around accountability for teachers:

T7 - “if a teacher says so and so (student) is always naughty and or is bad or whatever, we can actually go, that is actually not the case, where is the incident report?”

Followed by Participant T4 who explained that there needs to be a balance of praise and negative reinforcement by teachers using the Ka Pai app:

T4 - “from a kid’s point of view yeah they love the praise. It’s smart to involve them in what they like, and for our own piece of mind but we have to have the negative things are that could make or break a class. So, both of them (as Ka Pai had rewarding and reporting features)”.

Based on this feedback, some participants mentioned the use of incident reports being an important feature of the Ka Pai app and suggested ways of how it could be used within PB4L e.g. funding, accountability and consistency of four to one ratio.

However, as the user metrics will show, only two participants used this feature of the app and they were not participant T4 or T7. Therefore, a review of incident reporting research is provided in the discussion section.

5.2.4 Consistency

Another theme of the findings was the lack of consistency across the school in the usage of the paper-based reward system. Within PB4L an overall indication of eighty percent compliance to the PB4L procedures, including rewarding systems, is expected by the MoE. Therefore, the findings from the participants' responses which indicate a lack of consistency across staff needs to be shared and unpacked. One of the participants gave an example where a staff member is currently not engaged with the paper-based system as they could have been left out of training (loop), as seen by participant T3 statement:

T3 - "I think other people like office staff and say Lxxxx, who has contact with our kids all the time, need to be pulled into that loop".

This was also agreed upon by Participant T1, as they said the following about the Ka Pai application:

T1- "It provides consistency, which I think is key."

Participant T10 also spoke to the lack of consistency in the current paper-based system-

T10 - "I think it really depends on how we use the incident reporting vs how much rewarding we are doing because I am sure not all of us ask about gold cards"

The concern raised by participant T3, T10 and echoed by participant T1 is a matter of school wide implementation of PB4L and relates closely with the notion that all staff need to be included in new initiatives. The notion that "everyone needs to be on the same page" makes an impact on consistency of implementation of PB4L within the school.

5.2.5 Gamification and persuasive technology

An ongoing theme of gamifying and digitalising, the paper-based reward system was also identified by the findings. Participants T6 and T4 shared about how they saw the use of gamification and the Ka Pai app as a powerful tool not evident in the previous paper-based reward system. The following statements are examples of how participants felt about the introduced gamified application to reward students and track their own implementation of PB4L rewarding strategies.

Participant T6 shared that the new Ka Pai application meets her learners needs to gamify their learning as they like video gaming and could be addicted to using apps. This aspect was not as readily visible in the previous paper-based reward system:

T6 - *“the app will work for us that is their world, as you know it’s almost like a video game for them, they could get addicted to it”*.

Furthermore, Participant T4, explains that one of their students didn’t want any more of the gold cards as they were waiting in anticipation of the digital reward system– Ka Pai app:

T4 - *“I have got Cxxxxxx who doesn’t want gold cards or my class points, he wants his to go on the app”*

5.2.6 Individualisation and ownership

Individualisation is a core theme mentioned by a few participants and is also an important part of genuine feedback that teachers give to students. The ownership gained by students for PB4L and how teachers perceive this was key to improving the previous reward system. Individualisation of rewards is to value the students’ progress and affirm their specific behaviour based on their teachers’ feedback. In the previous system students had no way of tracking their gold cards, once they handed them in for a prize, e.g. how many they earned in a week, month or year. Ka Pai allowed students to track this. Participant T1 argued that the trading of the gold cards in the previous paper-based system prevents the teacher from individualising feedback to a behaviour and if it not valued than it no longer is reinforcing for positive behaviour.

T1 – *“Gold Cards can get traded (con) and this app will stop that trading from going on because it is individualised to a person.”*

Another participant gave a rationale that individualised behaviour tracking was a feature not seen in other Student management systems –

T2 – *“I have used Kmar which is another high school SMS and students aren’t able to see what is happening on their own profile, so this is apart from other systems that other schools use”*.

The findings for this section affirmed the Ka Pai app’s ability to have individualised

pages for students and teachers to go into and view how well they were tracking in terms of their points.

5.2.7 Whanau/Parent engagement

Another issue for teachers raised in the finding is that teachers should be able to show parents how well their students are doing in their behaviour goals. This theme is important for all students but in particular for schools that struggle to engage their parents on the positive things that are happening for their children. Participant T2 best explains it as sharing the specific positives and not generalised positive feedback with parents:

T2 - “Especially in like parent interviews, we can actually pull out what their child has been showing (behaviours) with parents and things like that.”

Also, participant T6 agreed with this later in the Talanoa and said:

T6 - “I think using it at home is pretty cool and share it with their parent.”

This is also linked to the data collection, as without good data, the teachers would not be able to share how well the students were doing. Also, the home engagement was a proposed feature of the new digital app which came out in the Talanoa and was not expected at the beginning of the research study.

5.2.8 Concerns regarding Ka Pai application (pre-trial)

A few participants explained during the Talanoa that the new digital application could have some issues, as the paper-based gold card system of rewarding behaviour did have some benefits. Participants T4 and T6 explain that students need tangible rewards (paper based) and stated:

T4 - “the ability of the teach saying “here you go Rxxx” (actioned the giving of a gold card), is the tangible thing for him (student) and to take that away is yeah and how that may affect him”.

The notion that students wanted tangible rewards was also echoed by participant T6 who believed that the paper-based system was more effective for some students than a digital version via the Ka Pai app:

T6 – “there is also students who, that’s not going to work for them, they like

the tangible (pro). One student in particular, his thing is to count his gold cards every day and that's his kind of carrot to keep him going and keep him on task and keep him coming to school".

Therefore, in terms of using extrinsic motivation of reinforcement via tangible rewards is well liked by the teachers for its effectiveness in rewarding their students. Participants T4 and T6 had a strong belief in the notion of tangible rewards over digital reinforcements such as points on the Ka Pai app, this was an authentic piece of feedback which is further expanded in the post-trial Talanoa – specifically for these participants.

Lastly the researcher had also asked for feedback about the research method and trial. This is an intrinsic aspect of Talanoa and specific to Toli where the participants and the researcher create ways of collecting and informing their research together: How can we use the Talanoa approach to help you express your opinions, is there anything else that we could do in this approach or is there anything missing to consider for the next session on how to use Talanoa?

Some of the feedback around the trial and proposed suggestions for improving the research method included responses from Participants 2, 4, 6 and 7. They are best summarised as focusing on collecting student feedback and the suggestion or help feature of the Ka Pai app to help improve it during the trial. Participant T4 stated:

T4 - "Will we do separate activities to the kids; will they have surveys.... could we do our own google survey and bring that to the next session?"

At this stage the researcher had to explain that they were not able to collect direct student feedback as there was no ethics approval for the student feedback. The participants were allowed (approved by the school principal) to collect their own data, but it was not submitted as part of this study. Participant T7 suggested the participants as researchers could collect it for themselves through a google survey. However, the researcher reiterated that the feedback would not be collected for the research study.

Lastly the participants T7 and T2 suggested effective ways of improving the error reporting of the app through a help and feedback button.

T7- "if we were using it and we wished that it was in there (app), such as a

button where we say, next prototype can we add this?"

T2 - *"Maybe add who we can contact, if the system is down."*

The researcher explained that should there be any software issues, that can be addressed directly to the design team, including the researcher and Gerhard Vermeulen via email. The participants understood how to access technical support and the recording was stopped and further training was given to the staff for technical operation of the application i.e. login details and how to use the app.

5.2.9 Summary of the first Talanoa Session

The conversation ended with this part of the Toli of the Talanoa and was well received by the staff. The overall approach had a good participation rate from all teachers apart from one participant who was not intentionally engaged. The Toli also served to provide an authentic way for the participants and the researcher to engage in a participatory research and trial. The feedback also covered some perceived concerns about the previous PB4L reward and reporting paper-based system. It also gave some clear feedback on how the participants felt about the new Ka Pai app and is validated by the findings table in Appendix 1 and the use of thematic analysis (Figure 5.1.1). The following section covers the second Talanoa session and provides feedback post trial.

5.3 Themes from the second Talanoa session

After two weeks of completing the trial, on the 14 December 2017, the participants were invited to attend the final Talanoa session. Some of the participants had emailed and spoken to the researcher giving feedback during the trial, however it was not part of the approved data collection, so the participants were advised to share it during the Talanoa Session. Some initial findings from the feedback can be seen through the following Word Cloud in Figure 5.3.1 below, which suggests that participants spoke about:

- Students and PB4L
- App (not named as App)
- Gold cards and incidents reports
- Talanoa and researcher
- Incidents, reports, points and data

This showed that the participant could access their Ka Pai app in a range of contexts and still reward students, as compared to the paper-based system, which was limited to when one had the paper copies of the gold card, pen and time to complete each one. The majority of the participants used the application through their phones (Participants T1, T4, T5, T6, T2, T3, T8, T7), whilst Participant T10 used the laptop browser, as their phone was older “my phone would not have handled the app”.

Participant T4 also agreed that it was easy to use and that students learned how to use the app through the help logo, “I didn’t show them anything and I just said remember what mister said and pointed at the little man in the corner (help logo). They are more tech savvy than me”.

T4 also shared some reactions from their students around accessibility:

T4 - “I kind of give them a time limit and give them this much time as I wanted to see what it was like for my lower tech kids and gave them 2 min to see who could load up their pictures. I timed it and only 6 students who couldn’t get their photo up and those were the ones who needed a little help, so 6 out of 31 was not bad, but they kept fluffing around with their photos”.

The feedback above showed that the app was accessible for most teachers and students alike. Yet a limitation expressed by participant T9 was around the correct device and possibly the training needed to use the Ka Pai app through a Web browser as stated by participant T10. The feedback Participant 9 said that they were not able to access the app as they were away from students and did not have a phone. However, the application was available in a browser version accessible on the computer, which was shared at the start of the trial. Participant T9 said:

T9 - “I didn’t really get to trial it. That’s because of the nature of my job being a librarian, so was away from the students, and I don’t have a phone not being able to handle the app. So, when I was not able to reward the students on the spot around with the students, I wasn’t able to use the app that much”.

Therefore, in terms of good research practice the researcher should have been checking when the participants who were not able to access the trial due to technical difficulties. The issues identified from participant T9 dominated some of the Talanoa, but as part of the Tuli, the research accepted all feedback in its entirety – as the following section on concerns outline only one participant view.

5.3.2 Concerns raised about the Ka Pai app

During this part of the Talanoa, only three participants contributed to the discussion on concerns about the Ka Pai app, with the following key themes were found during their conversation.

Areas of concern:

- Consistency of data (also featured in Talanoa Session)
- Timeframe and timing of the trial
- Technical Issues encountered

Participant T9 was concerned about the consistency of the rewarding, as they did not want teachers to be only focusing on the rewarding competition more than actual praise of behaviour demonstrated by students. T9 said:

T9 - "I was just agreeing with the competition aspect with teachers, both T10 and T4 touched on as we are all really competitive and there is a tendency to, I don't know if deters from giving praise but if you look at your number and suddenly the motivation for giving out points is to raise your number but if that is making you genuinely spot good things in the students then that is a positive because that is making you praise more but if you are leaning into it to raise your number to make it up then that is not so good".

Participant T9 used the application the least (see user metrics in section 5.4 of this chapter) for several reasons. T9 raised a concern which mainly focused on the consistency of use by teachers not rewarding accurately and honestly and give labelled praise. The issue raised is around consistency of practice of a teacher as they moved to the digital way of rewarding:

T9 - "Another thing I thought of, which I don't think, it has been an issue here as we have staff are PB4L trained and also shortness of time but as it is rolled out in other schools is the tendency that I have, is to award points without praising a child, and the whole point of gold cards was it was a motivator to praise the child on the spot and give them that praise and one of the tendencies with digital is to go away from that one on one interaction and instead just give points".

When queried about how this could be addressed to improve the Ka Pai application the participant said:

T9 - *“I have no idea, it’s just something I have been thinking about the last few days, maybe someone else has any ideas, maybe one or two sentences”*.

Later in the discussion T9, also added that there needs to be consistency of how the incident could be reported in a fairer way:

T9 - *“Can I add one more, T8 just reminded me of something else that I have not shared, it’s only a minor with incidents report probably about one or two a week, we need to make it consistent within the school. Maybe something where a student has done something and lied about it, some teachers have recorded it as a minor defiance and some have said it has lying. So, the differences between majors and minors so something that needs to be built into the app that it can be made fair”*.

In comparison T4 states that to keep consistency, there adhered to the four to one ratio of rewards to correctives given, however struggled to keep up with participant T3:

T4 - *“I will be honest, I am pretty onto it and I like to keep a balance, you know, the 4 to 1 or 3 to 1 so I was really quite conscious of the amount I am giving genuinely and realistic to me and doing that I couldn’t believe that I couldn’t beat T3”*.

This showed that the participant found that using the Ka Pai more of a competition and consistent with their training of PB4L.

However participant T9, went on to explain that they were also concerned about the time frame of the actual trial and stated that following:

T9 - *“I think in terms of time, so it was ten days for the trial was short and the amount of feedback is awesome, it’s one of the things I love about this place but a longer trial and more feedback to come out”*.

Some participants raised concerns about the timing of engagement of the Ka Pai App as it was late in the school year and was delayed due to the ethics approval process. T5 explained that they had not engaged due to the limited trial period and timing of the year:

T5 - *“I admit I haven’t done it as much as I probably could’ve because of the time of the year, so our kids are not reaching their badges as other classes” and “I know it wasn’t done, it was my down fall in the last two weeks, as I have been too busy”.*

This showed that some participants and their classes were not able to fully engage with the trial and is a factor which will be addressed as a limitation of this study later in the discussion. It meant that some participants felt that they had not given the trial their full commitment due to timing, length of trial and technical issues.

5.3.3 Comparison to the previous paper-based PB4L system

Many of the participants contributed to this discussion except for participant T3. Some of the core features of the discussion focused on the following themes:

- Alignment of school’s digital goals
- Made no difference
- Training tool for new staff
- Student and Whanau engagement
- Making PB4L rewarding and reporting easier to do
- Reinforcing good PB4L practice
- Use of Gamification and Persuasive Tech through Competition and leader boards
- Operant conditioning

A participant inferred early in this discussion that having a mobile application, aligned with the schools’ strategic goals to become fully digital. The school had a goal to provide a mobile device for every student to access learning via a Chromebook in the school. Participant T2 explains:

T2 – *“I think the app is in line with the digital goals of the school in regard to the bigger picture, where the school is heading digitally”.*

One participant argued that the Ka Pai tool was the same as the previous paper-based PB4L system as T9 states:

T9 – *“It’s a similar system but using a different tool but essentially it’s the same it’s just whether you do it well”.*

However, in response another participant shares that it could help improve the induction of new staff and therefore an improvement to the current system as it builds consistency. The feedback provided by T1 and T9 could provide a pathway for future exploration which will be discussed further in the Discussion section, chapter 6.

Participant T1 responds to the Participant T9:

T1 – “I think its consolidating existing systems that were in place. All the framework is there, and we’ve be doing the frame for a long time, building consistent through ease of use and keep it going. If we lose staff or gain staff, it is one of those a stepping stone will help with helping new staff and the expectations that we need to achieve, it’s got all that we have been doing in an easy to find and easy to use place”.

Most (80 percent) participant’s shared that they had high levels of student’s engagement with the application. Participants T1, T7 and T10 said that their students responded well and said:

T1 – “Positive, I think they were keen to see what it was about”.

T7 said that they had students approach them to add their points:

T7 – “I had some kids email me, can we please have points on the app because we did this this and this”.

Participant T10 shared that their students were engaged in the app as they liked gaming and that the app was interactive for them:

T10 - “I found it more engaging, interactive and I really enjoyed it, as my kids like gaming and the kids liked checking up who had the highest points”.

T10 went on to explain that the when students started to get badges, it made other students feel motivated to get more awards to get their own badges:

T10 - “we had mad crazy competition and we had Mxxx who took it to a whole new level as she was the only one to get to three badges. She had the most badges in room 5 and she earned those badges. Someone else asked “how did she get those badges?” and it was really motivating to others (students)”.

The example shared above by T10, shows that students were engaged by their peers being praised and forms the basis for gamification as their awards create a leader board and create challenging goals to achieve a badge. Participant T4 said:

T4 - *“Like T10, my kids were really stoked when they saw how their (points) were growing over the week”*.

This showed that the students wanted to track their rewards as they were not able to do this in the previous gold card system, as their rewards were always collected and disposed of.

The next topic for improving PB4L implementation was raised by T7 and it was around better Whanau engagement through the Ka Pai application. T7 said:

T7- *“how many kids would take 27 gold cards home and show to their parents because most would leave it in their desks yet here (now) most take their chromebooks home and show their parents the comments and on their laptops, so it is putting PB4L into the parent community. Which we can do now but do it even better through the chromebooks”*.

Whanau engagement was encouraged by Participant T2 who said: “We could give them (parents) their own logins and eventually they will be able to see it” as a possible way to support their children and to improve the app. This suggestion will also be discussed in the future exploration section in the discussion chapter.

As the Ka Pai app was designed to make PB4L easier to implement the following section focuses on what aspects made it more accessible, and easier to use than previous system. An example of this is shared by participants T2, T8, T5 who state-

T2 – *“I think for me when I get home and I am like, I have to write that incident report, but now I can do it from home on the couch such as writing an incident report or giving praise to a child and nothing can get missed”*.

T8 – *“a lot of things that are good for the app- think having the data that you have entered, makes my job easier and the paperwork is live and having to need to get it and its already there and reduces losing the paper work and know what has been done”*.

T5 agreed that the application was a lot easier to use than the paper version, they go on to explain –

T5 - “I think the ease of use is definitely a draw card and its proved really easy to use. I think the kids came in from prize giving practice and came and sat down, it was so easy to put a whole group and a whole lot of kids rather than having to fill in individual gold cards and sign all the gold cards”.

This showed that participants had trialled the Ka Pai app to test the ease of use of it. The previous paper-based system that they referred to would have needed more time to complete i.e. fill in individual gold cards and incident reports therefore less. The participants were also asked if the Ka Pai app was quicker to use than rewarding via paper based and all participants said yes. Following this Participant T7 stated that it was also quicker to write an incident report as well:

T7 - “It was way quicker, and you could also do it in hindsight, you might not have your gold cards on you, but you just pull out your phone and done”.

T8 - “Probably for me the thing that makes it easiest to have a device and have the functions and its instant instead of doing the paperwork. And do it right there in regard to the paper that you have to fill it out, It used to be time consuming. It takes less time as we have our phones. The app takes the need to carry stuff around. Less time to do the work”.

Some of the participants also spoke about the how the application helped them embed good PB4L practice which could be a result of gamification and persuasive technology use. Participant T4 had shared some reluctance prior to the trial to be persuaded by competition or gamification. They also had justified the Ka Pai apps consistency to track the four to one ratio of positive to negative reinforcements in response to T9’s concerns as well. T4 also shared that they felt the app had helped to raise their level of implementation of PB4L by working smarter, be more accountable and improve on pedagogical practice.

T4 - “because we have always known to do PB4L, we do the weekly lesson and we look at the data, it certainly reinforces what we have practiced but to a better/higher level and we, in this job we got to be smarter, it helps us work smarter and it helps us be more accountable and it ticks a lot of boxes PB4L and what we need to do pedagogical teaching”.

Participant T10 stated similarly as they were motivated to win the teacher competition for top teacher for rewarding students (leader board in Figure 3.4). T10 suggested that a good way to see if the rewarding was consistent and improves practice was the leader board as T10 explains:

T10 - "I definitely get motivated to win but genuinely behind that I feel like wow, that these kids are doing the right thing, so I am going to reward. So my rewards don't stop at room 5, I have given heaps this term to other classes, I just have to type in the class or room 11 and the whole class comes up so I remember you did this or you did that, so yeah I want to win and I definitely want to win over room 3 and I want to win over T4 now, but genuinely I think the competition is a good competition and a real motivating factor".

T4 and T5 were also engaged by the Ka Pai as they were asked to feedback about the gamification aspect T4 said:

T4 - "Like T10, my kids were really stoked when they saw how their (points) were growing over the week. I think when I saw what T3 (teacher dashboard in Figure 3.1.1) had got, more points than me, I was like how I can beat that and thinking how I can be more positive and notice a lot more.

T5 - "I think they (T10 and T4) already answered it, yes especially through the competition".

T4 had shared in the first Talanoa session that the gamification based via the apps rewarding aspect was not a feature that would engage them or their students, however in the second Talanoa session they said:

T4 - "I didn't think the badges would matter so much, but when I got it I was like yeah, you got a badge and T10 got a badge first and I think it was interesting to see that".

T4 showed a shift towards wanting to reward via the Ka Pai app and being able to engage with PB4L personally through the gamification of receiving their own badges when their performance improved in rewarding students.

Lastly in respect to operant conditioning, most teachers become very engaged in the Ka Pai app's ability to incentivise their rewarding of their students. For example, T10 stated that:

T10 - *“I found it more engaging, interactive and I really enjoyed it, as my kids like gaming and the kids liked checking up who had the highest points, I also liked checking who was the top teacher. I found it fun, compared to other (reward systems) stuff we have done”.*

T10 relates strongly to the theme of motivation and fun in learning a new strategy or approach. This participant also said that they checked their scores and tally and compared it to other teachers. T10 also stated that the Ka Pai app motivated them to use the application to track the attainment of values and check in on incident reports –

T10 - *“I was going in to check it all the time and at home I was checking it mainly for the top student and top class as it was two classes in particular, so it motivated me to check if my class is there yet. So, it really motivated me, to see where my class was at, where my students were at and my incidents reports were at, also which value (Rangatiratanga, Kaitiakitanga and Manaakitanga) was leading the way in my class”.*

5.3.4 Use of Te Reo Māori in PB4L values

This is in response to the questions on how helpful having Te Reo in the application was and why the participants shared strong opinions about how the app should support them and some who said it was not needed at all and preferred Te Reo removed. Participants had a constructive dialogue; however the dialogue did lead to tangent ideas for the next iteration of the app including the use of other languages e.g. Tongan or Samoan which was countered by T7 and T9 who said the following:

T7 – *“I think they we all know what the pictures means, so it doesn’t matter what language is underneath”.*

T9 – *“I thought a bit about the language too, cos I have worked with the English language learners and I was thinking about it from their perspective. Also, for me, I am a Kiwi, Te Reo means quite a lot to me, and the terminology like Manaakitanga and rangatiratanga, I use those words in my normal everyday language. I know why the researcher used it in the app and justified the use but my question is how effective it for other learners is. It is actually impacting them and making the app more effective what about the middle eastern learners – and the weekly focus may only be applicable to kiwi*

learners. So, the weekly focus being in Te Reo so only those people will know that word. I recently started to identify as xxxxx (country of origin) person and travelled to xxxxxx (country) and if you were to translate that to xxxx (language) to me it would not make a difference. So, it was quite an interesting experience. Whether it is in English or xxxx (country of origin) it is not actually going to change my behaviour, but it does value my identity. For some of our kids it could be a barrier particularly ESOL and they are being thrown another language”.

This extended quote shows that the participant was heavily invested in teaching English to English Speakers of Other Languages (ESOL). Therefore, the Ka Pai application did not meet their need for teaching English to learners who are already behind in their L2 – English. Although the rationale stated by T9 for not using Te Reo in the application is the being culturally inclusive would not help them or their learners to learn English for example – *“Whether it is in English or xxxx it is not actually going to change my behaviour, but it does value my identity”.*

In contrast Participant T4, T5 and T10, share their experiences with the Te Reo PB4L features of the application, who all have several ESOL students in their class and also gave suggestions of how it could be developed further. T4 responds initially to T9 and states:

T4 – “I have really enjoyed listening to my ESOLs (students’ speakers of other languages) say the words and I actually love that they are learning to use Te Reo, Hxxx tried to say RRR Rangatiratanga and we worked it out and the meaning, now they are confident. I think it is an official language of ours and it covers a lot of expectations we should probably have and personally think I haven’t done much (Te Reo) in my class. Having them talk about and discuss it. I love it and having options for other languages too. Te Reo has to be at the forefront and I have it in poster form at the front of our office but can’t speak it as natural like it is for you (T9) as I didn’t use these until the app came out, so it made me have to learn more, which I think is great”.

T5 – “I think it’s called Ka Pai which is in Te Reo, I think its key that it stays in Te Reo. I like the idea of the language week”.

T10 – *“So just in line with the language and Te Reo being the official language of Aotearoa and it might be good if we could add a whakatouki and have a whakatouki aligns with respect or lesson or focus of the week could have a whakatouki on the home board”.*

The use of Te Reo Māori in the application was well received by most participants (80 percent). Some of the rationale for using it focused on a surface level of integration with PB4L values, however this led to most participants wanting additional languages added also such as Samoan and Tongan. T10 also suggested the use of whakatouki where the app could have a “saying or proverb” on the dashboard in Figure 3.1.1 related to a targeted value being taught in the school. The ‘for and against’ arguments will be examined in the Discussion chapter, both in responding to T9 and T7’s views and providing some next steps for the use of Te Reo in mobile applications.

5.3.5 Suggestions for improving the Ka Pai app

The feedback in this section of dialogue focused on suggestion for improving the Ka Pai application. The suggestions grouped in themes focused on:

- Accountability
- Improve dashboard and graphics to engage students
- Rewarding and reporting large groups
- Peer to peer – acknowledgement
- Targeted praise – written comments
- Including other languages
- Use of other rewards including access to games/ avatars

Accountability and consistency were common themes discussed in both Talanoa session as seen in examples from comments from T9 and T4. In response to this, Participant T5 suggested a way to make it more consistent across the school if some teachers were using it more than others:

T5 - "I think one thing to make it really successful in the future and next year is an add on to what they say is to make it somewhat consistent across the classes, it would be kind of unfair if someone is up to badge 50 and because the teacher of another class gives less".

Therefore, the re-design of the application needs to have accountability built into from the PB4L team to re-design it better for 2018. (All participants agreed with this statement through head nods, no one objected). Participant T2 suggested if we (development team) could use student voice to select the graphics and asked why there was a picture of a younger student on the page –

T2 - "I have some students ask me why there was a picture of a young child on the app, and not someone their own age".

This could help intermediate age students better engage with the application if the dashboard image was of their school or students of their age group. Also, Participants T1, T2 and T5 suggested that if the app had the ability to award a large group at once i.e. whole class, sports team, house. T1 suggested that -

T1 - "multiple selection of students while you are able to see them individually, so if you could tick and send that would be really handy for example so be able to give points at assembly and you have 170 kids waiting to get their points. You have to try and remember and so it would be awesome so that you could give it to all".

This was also agreed by T2:

T2 – "if you could have groups set up on the app, you know sports groups, classes and literally give to the whole group".

However participant T4 said they could already select four students at a time - "I thought that was still quite fast, I have just done the four cleaning the hall right now" (showed T1 their laptop and gave the example). However, T5 rebutted:

T5 - "It's like if you got a range of students and you got to give. Also, it would be good to see which ones you have done already. Because it doesn't come up with who it is. One time I was giving out points and it didn't show who it was".

The feedback was mixed regarding the aesthetic features of the application as the following responses show that the Ka Pai app could have room for improvement to help students engage with other students. For example, T4 stated that –

T4 - “I think maybe just the aesthetics of and if there was an option of how it looks like, rainbow green and a little bit more control” and T10 agreed with the following statement – “Would it work if they could use their points to purchase backgrounds?”.

Participant T2 shared some ideas about increasing peer-to-peer engagement with the application which we discussed by the other participants namely T1, T2, T4 and T10 went on to discuss how the Ka Pai app could help identify students who are not being rewarded by teachers it could be gamified through students being rewarded with ways of individualising their profile page (T4 and T10).

T2 - “I think a way of allowing the students to praise each other “–and T1 stated that could look like – “that ties in well with student award of the week, ties directly into that and you can see a kid that is actually being good and not a biased and a kid who is in the shadows”.

Participants T2, T4, T5, and T7 suggested ways to improve the gamified learning tools and use status profile page. T5 also suggested that, “it could be like an activity tracker so like who gave them the point and why, such as awarded Kaitiakitanga, Mr X, and date and it could be a drop down and what you don’t want to happen is to have to write a whole lot. Such as picking up rubbish could under Kaitiakitanga”. This discussion gave some clear feedback on how the teachers rewarding could be more visible to students and target to the reason why they were praised for example as T2 stated, it is where the students could view each other’s profiles as well –

T2 – “kind of like Manga high – when they can see how many the other child is getting”.

The same participants wanted a space where targeted praise could be given through the app. Some participants shared that they would like to have a feature in the application where there was an option to write a statement on why the student got the reward (Figure 3.6), if they wanted. Alternatively, if there were some generic values which the app already has, based on the three school values, the participants wanted generic comments under this. The following examples show why targeted praise was important to these participants.

T6 – *“I was a bit surprised as I couldn’t add a comment of why I was giving that. If it was written, cos you feel good about positive written comments about yourself and if they could see all the positive comments then they might try to do it”*

T4 – *“I think there are some generic reasons why we give out these points anyway. Maybe we could find those top three or five values and a section for other”*.

A reoccurring discussion with the Te Reo inclusion was the need to include other languages in the Ka Pai App. For example, some participants gave ideas on how the Ka Pai application could be more culturally inclusive to other ethnic groups, not just Māori as T10 states:

T10 – *“For our pasifika language weeks, could we have the Kopu have it changed into languages of other ethnic groups during our language weeks”*.

This was also supported by T6, who said:

T6 – *“could we change the language, or the students change the language e.g. Txxx is Tongan so could we change his one to Tongan so it’s all in his language. It would make it useful to them”*.

This was also further supported by participant T8 who wanted to include videos of students signing in to the app to support deaf learners:

T8 – *“Just while we are doing down the official language of NZ, we could have sign language. When asked the reason behind this, T8 suggested that - I was thinking, about the special school when you roll out to other schools”*.

Lastly some participants suggested the following rewards to the Ka Pai app to increase extrinsic motivation for teachers and students using the app. The following examples provide some valid suggestions that will be discussed further in the discussion. Participants T2, T8 and T5 gave the following feedback:

T2 – *“maybe if they got a certain amount of points, it could unlock a game and they could have a game as a prize”*.

T8 – *“or the prize could be a few gold cards”*

T5 – *“it could be like SIMS (avatar), it could be a house, change the colour, signs out, that could be gamified where they could see what other students are at – a competition against others”*.

5.3.6 Summary of Talanoa Session two

The final Talanoa provided feedback from the participants on whether the Ka Pai app was accessible, supported PB4L implementation, concerns for the study, use of Te Reo in the PB4L values and suggestions for further development of the app. Along with the feedback from the first Talanoa session, participants showed an increased willingness to engage with the Ka Pai application, apart from participant T9. However, after the trial in December 2017, the school continued to use the Ka Pai application through 2018. The analysis of the user data in May 2018 showed that Participant T9 became a high user of the Ka Pai app, as they awarded over 500 Tohu (tokens) through Ka Pai in the first four months of 2018, an average of 58 awards per week. This showed that 100 percent of participants eventually engaged with the app and is still being used at the school as of June 2018.

5.4 Analysis of user metrics

Data Analysis was conducted during January through to March 2018, with user metric data, the number of times logged in and the number of app activities recorded. Participants of the app account for six classroom teachers and four out of classroom staff, who were self-nominated to be part of the study.

The data was collected between the 4th to the 17th of December 2017, over a two-week period, which consisted of 10 school days and four weekend days. The quantitative data was analysed using an excel document, as the spreadsheet built behind the application and gave the admin the ability to download analytic data as needed, as seen in Table 3.11 in Chapter 3.

5.4.1 Initial responses to the research data:

- Overall good engagement of 80 percent of participants based on the first and second Talanoa feedback.

- User data was limited for three participants, due to the timing of the experiment. For example, participant T5 stated that they had not had enough time to trial the application. If the experiment would run again, I would have suggested extending the experiment to four weeks and possibly trial at the start of the year.
- The overall qualitative feedback is consistent with the quantitative data, however, with one exception as the user metric data from Participant T9 showed very low use but their Talanoa-qualitative feedback was the highest in content compared to other participants.

The findings of the data analysis have been presented below and are linked to the research questions. Where links are made to the first aspect of qualitative research through the Talanoa sessions, specific reference will be made to participant's feedback.

5.4.2 User metric research

The analysis of user metrics starts with the online interactions or activities used for each participant (n=10). The data showed that there were 2160 unique user interactions (activities accessed are shown in Table 5.4.3) with the Ka Pai application. Even though there is no comparison to gauge a shift in behaviour based on a pre-trial of the application (control group), the data sheds light on what was used by the participants and discussed in detail during the Talanoa session 2. The qualitative data collection showed that participants wanted individualised, accessible and consistent implementation of their PB4L reward system and this aligned well with the data analysis of user metrics.

The findings show that most participants engaged with the application at some stage during the trial. A direct relationship between frequency of use cannot determine the Ka Pai application's effectiveness in meeting pedagogical need. It does however show a direct link between the participants who used a wide range of application features, were the ones who gave more rewards and thus implemented PB4L more effectively. Table 5.4.3 explains the definitions and meanings of the application, which were analysed. The features of the application that collected data was based on the

following list of possible interactions which could be interpreted as possible ways of engaging with the application:

Table 5.4.3: Description of activities used for user metrics

<i>Name of online interaction with app</i>	<i>Description of online interaction with the app</i>
Download Weekly Focus Document	Participants could download the weekly focus lesson which was co-designed earlier in the year, around being safe online.
Logged in	Each participant was given a unique login for their individual profile which shows the total number of times the participant logged in.
Logged off	When the participant was no longer logged in on their device with their specific login.
Open Dashboard page	The dashboard - If a participant opened their dashboard they would be looking at their weekly totals for rewards given, top class and top student (see Figure 3.4 example of the dashboard).
Open Give Award page	Participants have a quick way to access the ability to give an award. This can be seen in Figure 3.6 – give reward feature of Ka Pai app. Figure.
Open Info page	This page is like the help page in Figure 3.5.
Open Personal Profile page	Going into the personal profile page allows the user to see their total over the whole trial, change their profile picture, and see the badges that they have acquired.
Open Report Incident page	This page allows participants to report incidents which go against one of the school values and is a necessary component of PB4L.
Open Settings page	This page allows for uploading of photos and resetting passwords.
Submit a Give Award request.	This interaction feature showed the participant was able to award a reward to a student and or many students – see Figure 3.6 for more detail.
Submit a new profile picture.	This interaction showed that the participant updated their profile picture which could show their ownership of their Ka Pai app.
Submit a Report Incident request.	By submitting a report, the participant showed that they could access the incidents quickly and report the incident as requested by the management of the school.
Upload a new class picture.	The feature to upload a class photo, personalised the class competition that the participants also contribute to.

5.4.4 Total user metrics (whole school)

The success of the intervention regarding student and teacher’s enjoyment could be measured by frequency of use, overall user metrics as well as subjective evaluation (Talanoa). The tables and figures in this section show the range of features that were available to the participants and their students. The total usage is a count i.e. every time a user or their student logged in/out, gave an award, updated their profile picture, or just reviewed a feature. This data was collected as to ascertain user metrics group and for each participant. Table 5.4.4 shows the total number of interactions used

within the application for all users including non-participants (other staff, students, researcher) was n=2152. It presents a comparison to the participants usage as a percentage.

Table 5.4.4: Count of all user interactions during trial.

<i>Description of online interaction with app</i>	<i>Whole school – total count per activity (all users)</i>	<i>Total Percentage of usage</i>
Download Weekly Focus Document	168	7.81
Logged in	287	13.34
Logged off	53	2.46
Open Dashboard page	314	14.59
Open Give Award page	341	15.85
Open Info page	61	2.83
Open Personal Profile page	357	16.59
Open Report Incident page	61	2.83
Open Settings page	149	6.92
Submit a Give Award request	184	8.55
Submit a new profile picture	146	6.78
Submit a Report Incident request	6	0.28
Upload a new class picture	25	1.16
Grand Total	2152	100.00

Interestingly the participants did not give as many incident reports as expected i.e. 4 to 1 ratio of positive to negative reinforcements. If the application results had showed the recommended ratio than the actual ratio for total incident reports submitted would have been 76.75 (currently 6 with 0.28 percent of total). The table also shows that the usage for profiles and setting new pictures accounted for 23% of total interactions (16.579 opening the profile page and 6.76 percent for submitting a new profile picture). These features of the app were designed to get all users to individualise their PB4L points.

Table 5.4.5: Table for activity usage by all users

<i>Activity</i>	<i>Nature of Activity</i>	<i>Percentage of usage</i>

A1	Download Weekly Focus Document	7.81
A2	Logged in	13.34
A3	Logged off	2.46
A4	Open Dashboard page	14.59
A5	Open Give Award page	15.85
A6	Open Info page	2.83
A7	Open Personal Profile page	16.59
A8	Open Report Incident page	2.83
A9	Open Settings page	6.92
A10	Submit a Give Award request	8.55
A11	Submit a new profile picture	6.78
A12	Submit a Report Incident request	0.28
A13	Upload a new class picture	1.16
	Grand Total	100

Figure 5.3.1 shows that Activities A5 and A10 account for a quarter of the total activities used by the participants during the trial. This does not show user data from students apart from Activities A5, A8, A10 A12 and A13 which were only accessible by the participants (teachers).

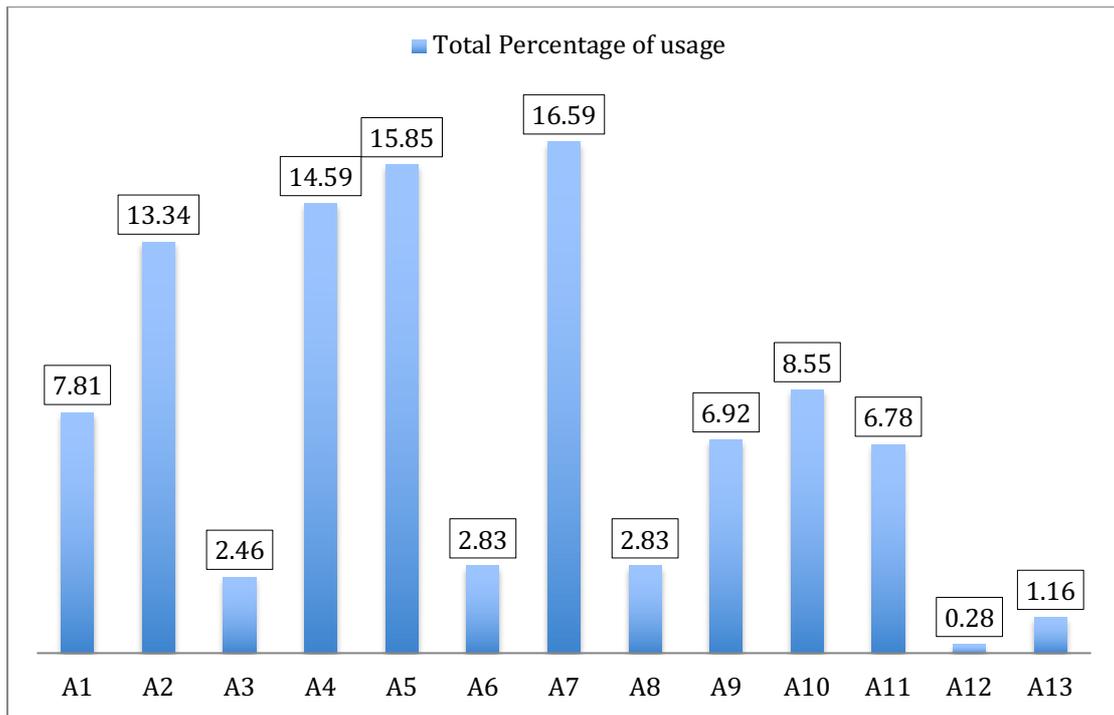


Figure 5.3.1: Whole school user interactions by activity in percentage

Table 5.4.6 presents the findings based on 917 user interactions conducted by the participants during the trial of the study. In comparison to the total 2152 user interactions in Table 5.4.4, which included the students (n=175) and other users (non-participants). There were 917 participant activities used, which accounted for 42 percent of the total overall (whole school) usage recorded by the application.

Table 5.4.6: Activity usage by participants only

<i>Activity</i>	<i>Nature of Activity</i>	<i>Frequency of activities used by participants (out of 917 TOTAL)</i>	<i>Percentage of activity use</i>
A1	Download Weekly Focus Document	20	2.2
A2	Logged in	63	6.9
A3	Logged off	16	1.7
A4	Open Dashboard page	120	13.1
A5	Open Give Award page	296	32.3
A6	Open Info page	19	2.1
A7	Open Personal Profile page	84	9.2

A8	Open Report Incident page	36	3.9
A9	Open Settings page	35	3.8
A10	Submit a Give Award request.	174	19.0
A11	Submit a new profile picture.	25	2.7
A12	Submit a Report Incident request.	4	0.4
A13	Upload a new class picture.	25	2.7
	Grand Total	917	100

Figure 5.3.2 shows that activities A5 and A10 were most used by the participants and accounts for 51 percent of the total usage of Ka Pai by the participants. This is a good indicator of the reward feature of the application being used the most.

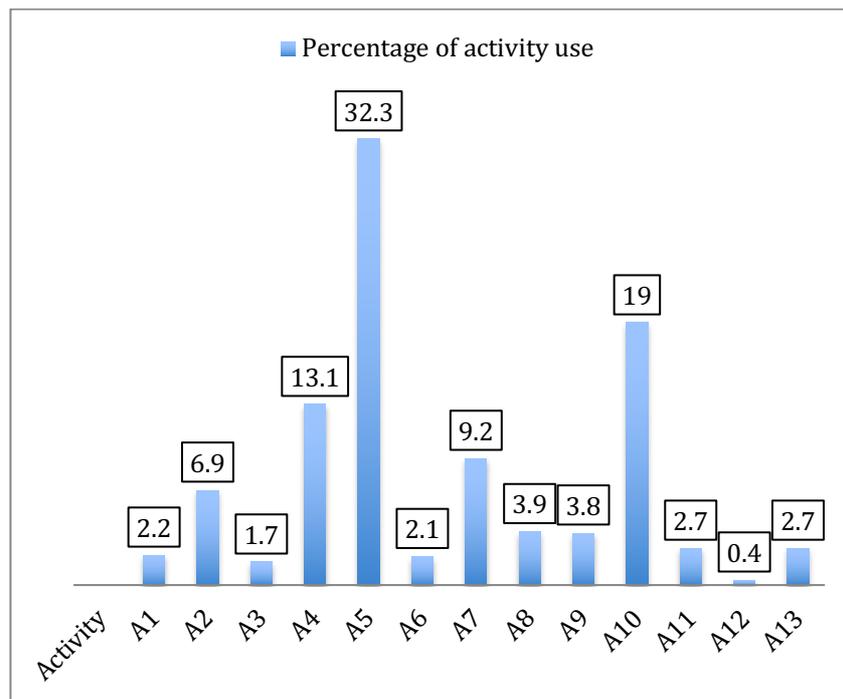


Figure 5.3.2: Percentage of activity use by participants

5.4.4 Individual participant engagement with Ka Pai activities

Table 5.4.7 shows what features each individual participant used during the trial. Overall the findings showed that the incident reporting was least used by the

participants at 0.4 percent with only Participant T10 and T5 submitting incident reports via the app. During the Talanoa session two, feedback from participants stated that both features of the application were necessary for good implementation of PB4L pedagogy. However, the data from Table 5.4.7 questions this viewpoint as only two participants used the report incident feature or activity.

Table 5.4.7: Individual participant activity usage

User Name	Download Weekly Focus	Logged in	Logged off	Open Dashboard page	Open Give Award page	Open Info page	Open Personal Profile page	Open Report Incident page	Open Settings page	Submit a GiveAward request.	Submit a new profile picture	Submit a Report incident	Upload a new class picture
T1	1	3	0	10	20	0	1	0	5	9	1	0	4
T2	3	3	0	18	28	1	6	3	1	19	4	0	0
T3	0	6	3	0	18	0	8	1	1	8	1	0	0
T4	7	13	5	33	102	7	43	10	8	55	2	0	1
T5	2	3	0	15	11	2	4	4	8	1	13	1	16
T6	0	1	0	5	5	0	2	0	1	1	0	0	1
T7	2	13	1	1	18	2	2	1	1	8	0	0	0
T8	0	2	1	3	2	2	1	1	3	1	2	0	0
T9	1	2	1	1	0	0	2	0	1	0	1	0	0
T10	4	17	5	34	92	5	15	16	6	72	1	3	3
Total	20	63	16	120	296	19	84	36	35	174	25	4	25

Table 5.4.7 also shows that participants who opened their app dashboard, moved onto the key features of the application such is to reward students via the reward page. Participants like T9 and T8 attempted to use the app the least according to Table 5.4.7 (with least number of activities used). The incident report data was not well represented as expected during the trial, with a total of 6 incidents completed by the researcher and participants. Only two participants completed incident reports during the trial (T5 and T10). During the Talanoa the feedback around this was inconsistent to the actual data as only two participants mentioned the need to keep a four to one ratio of positive to negative reinforcements. Further analysis and some justification are provided for this in the Discussion chapter.

Figure 5.3.3 shows the total count of user interactions with the Ka Pai application. Some participants showed higher levels of engagement in total user interactions, which was explained in the Talanoa session two of qualitative feedback as a timing issue. For example, Participants T6, T8 and T9 explained during the 2nd Talanoa session that they had time constraints within the last weeks of the year. Participant T9 said it was technical issues during the final Talanoa session as they were not able to access any of their personal or school-based devices. In comparison Participant T10,

T4 and T2 account for 70.4 percent of the total interactions (n= 645 unique user interactions).

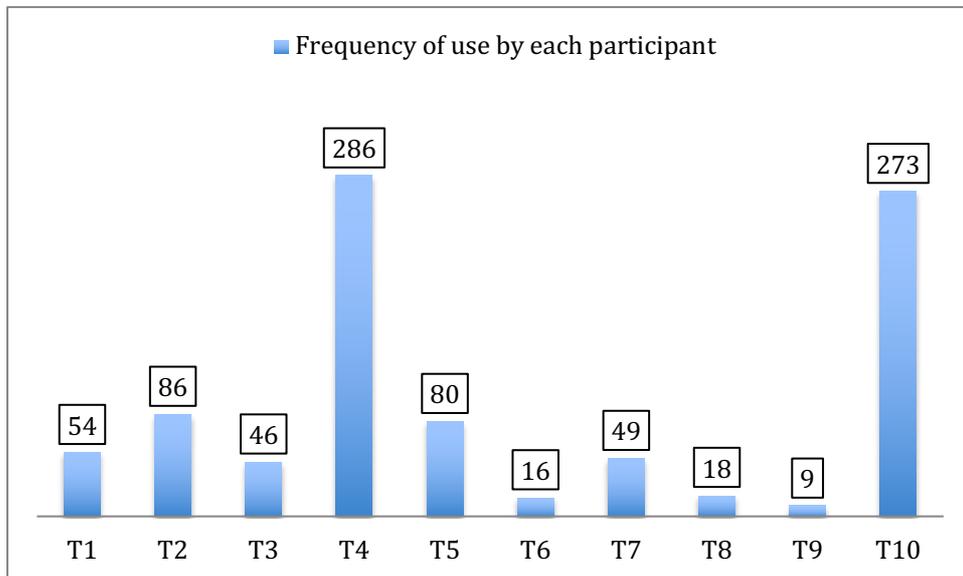


Figure 5.3.3: Participant user interactions with Ka Pai app

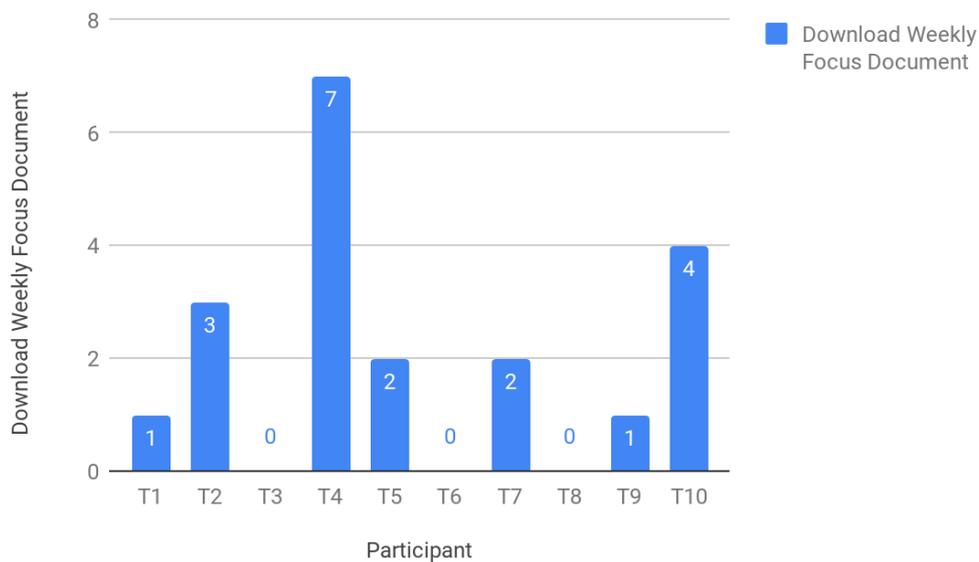


Figure 5.3.4: Participant downloads of weekly lesson

Figure 5.3.4 shows that most participants (70%) used the application feature to download a PB4L weekly lesson at least once, some downloading it several times. Even if the participant downloaded it once, this is still a positive outcome for the

application, as this feature of the application explicitly helped teachers in training their students about how to be safe online.

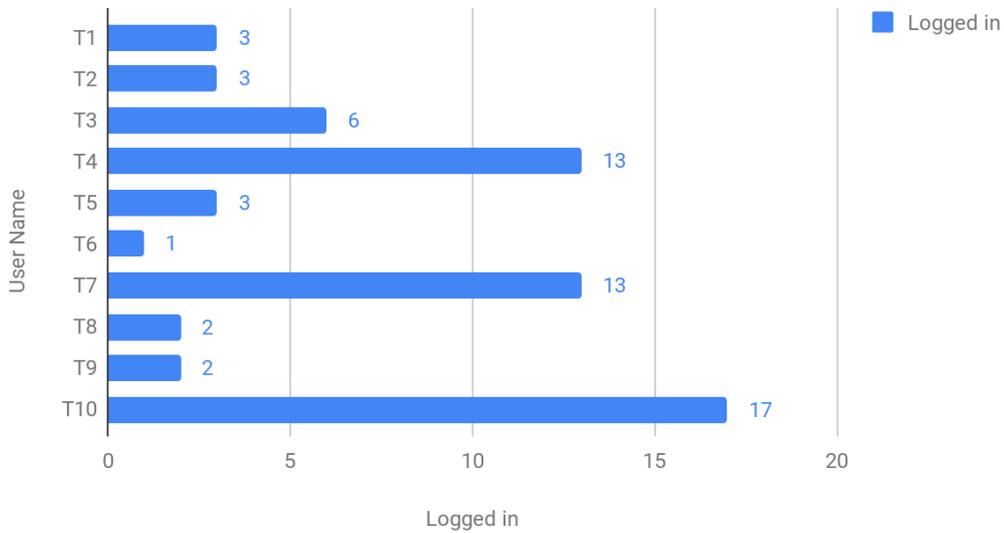


Figure 5.3.5: Number of logins per participant

Figure 5.3.5 shows the overall number of times a participant logged into the application. Overall the teachers were able to access the Ka Pai app via their laptop and mobile device. This data relates to the number of overall logins but does not directly show the actual interactions conducted per login. This graph also shows that all participants logged into the application at least once.

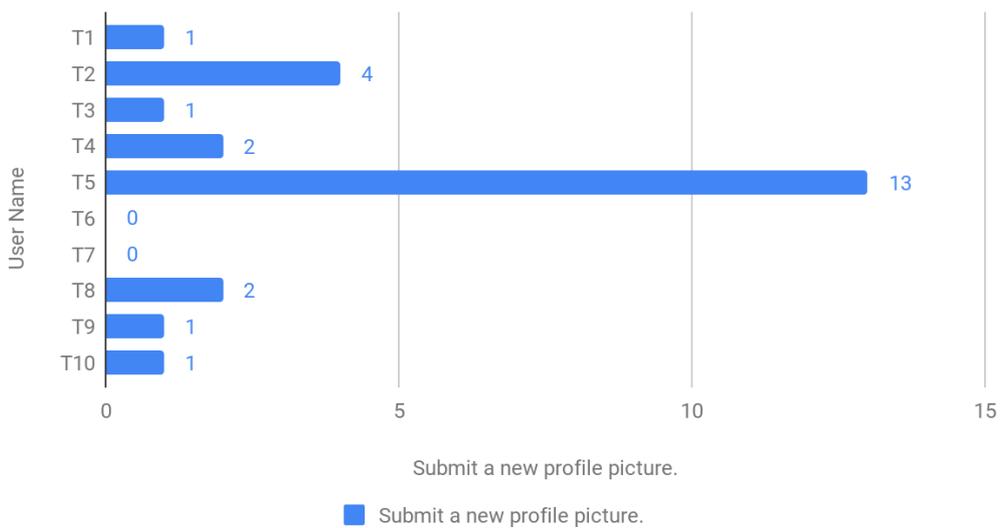


Figure 5.3.6: Number of submissions for profile picture by participant

Figure 5.3.6 shows that most (80%) of participants updated their profile pictures, with only two not engaging with this feature of the application. The use of the profile picture was intentional and a form of gamification, which this graph shows as being successful.

5.4.5 Participant engagement in rewarding feature

During the trial, the app automatically collected and displayed the top class (total awards received) and top teacher (total awards given). The gamified approach to the behaviour management tracking was well received and will be discussed further in the findings of the Talanoa second session - post trial. Figure 5.3.7 represents the data, collected for 307 awards given by participants and researcher as percentages.

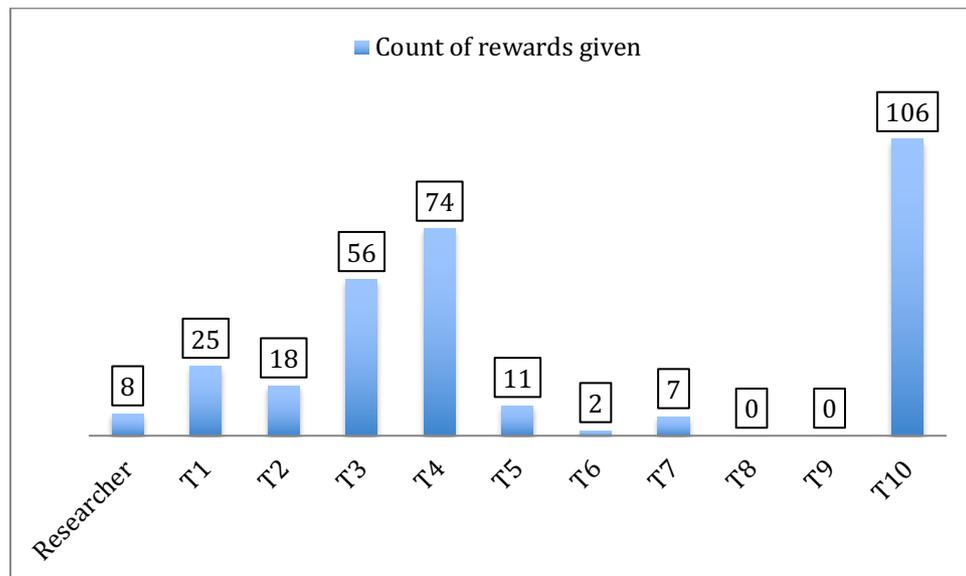


Figure 5.3.7: Count of total rewards given by participants

Figure 5.3.7 shows that an average of 27.90 awards was given by each participant, and that Participant T10 gave the highest frequency of awards with 34.5 percent of total rewards awarded through the Ka Pai App. Participant T6 (light green/smallest quadrant) gave two awards through the app which accounted for 0.7 percent of total awards given. Participants T8 and T9 did not give any rewards so are not represented in this Figure. The researcher has also included the awards given on behalf of staff who were not able to login. This makes the actual rewards at 296 points awarded by participants and shows a rough idea of the portions of the rewards given by each participant.

5.4.6 Concerns discussed during Talanoa

Some of the participants shared concerns that the Ka Pai app would not appeal to their learners, especially concerning the tangible nature of the previous gold card system. However, during the trial participants such as T4 showed that they wanted to use the application more than anticipated. Participant T6 also experienced concerns that the application would not be engaging for their learners i.e. this participant used the Ka Pai app the least and their class also had one of the lowest engagements. The analysis of awards given by participants showed that only two participants did not engage with the app; both participant T8 and T9 did not contribute to the rewards activity but did activity participate in the Talanoa sessions as seen in Table of Findings in Appendix 1 & 2.

5.4.7 Overall usage of rewards by class

One of the initial premises of creating the application was to create a tracking system to not only know what rewards were being given throughout the school, but also to gamify the competition of acquiring rewards. A total of n=307 rewards were awarded during the trial (which included a few entered who were not participants of the study). The total for the ten participants was n=296 awards given through the Ka Pai App. There was a range of participants giving rewards within their class and outside of their classroom.

Table 5.4.8 shows the total number of awards given by participants and acted as the ongoing tally on the dashboard (Figure 1 of the Ka Pai App). It gave a sense of class-based competition as stated within the Talanoa session 2 by several participants.

Table 5.4.8: Count of awards given to each class

Class	COUNT of awards given
Room 03	101
Room 04	47
Room 05	69
Room 08	35
Room 09	29
Room 11	26
Grand Total	307

Following the data from Table 5.4.8, we can see below the percentages of the rooms and how many rewards was given to each class. This could be a form of biasness from the participants as the highest overall users of the rewarding activities were participants who were teachers of the 3 top classes.

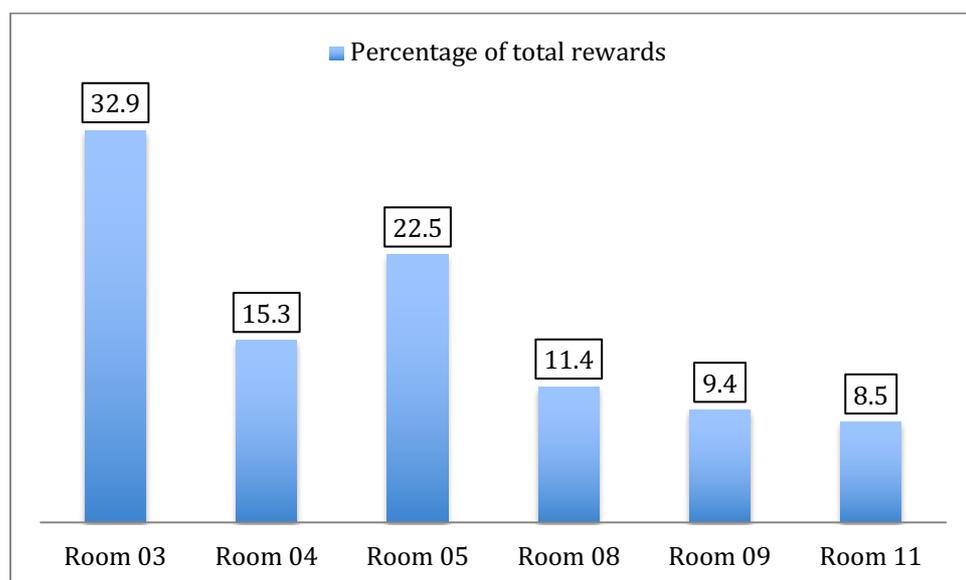


Figure 5.3.8: Percentage of awards per class

The graph in Figure 5.3.8, shows the total number of awards given by participants and the respective classes in total that awards were given to. The top 3 classes at the end of the trial were rooms 5, 3, 4 and average percentage 16.7 across the six classes. The data shows that Room 3 collectively gained the highest percent and number of awards across the school. The data does not necessarily correlate to a class room and participants as the participants could give an award to any student across the school.

5.5 Use of Te Reo in the Ka Pai app

The following graphs explain, how successful the app was in supporting PB4L pedagogy based on the number of awards given and percentage of staff who gave a reward based on the school values based on Kaupapa Māori values of Kaitiakitanga, Manaakitanga and Rangatiratanga.

Table 5.4.9 Count of values in Te Reo Māori given by class

Class	COUNT of School Value			
	Kaitiakitanga	Manaakitanga	Rangatiratanga	Grand Total
Room 03	20	34	47	101
Room 04	15	13	19	47
Room 05	21	17	31	69
Room 08	11	14	10	35
Room 09	5	14	10	29
Room 11	8	10	8	26
Grand Total	80	102	125	307

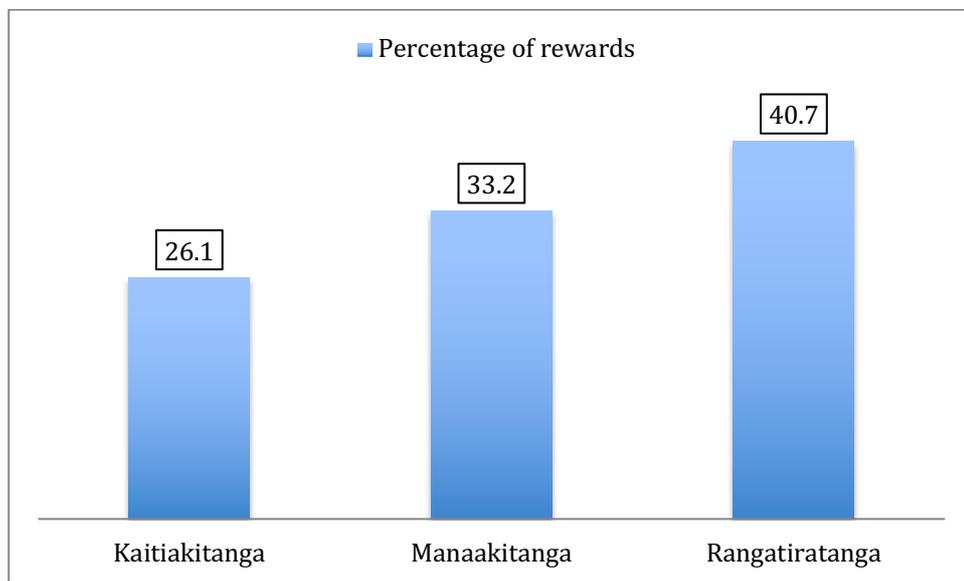


Figure 5.3.9: Percentage of awards by Te Reo Māori – value

Figure 5.3.9 shows that Rangatiratanga value also known as respecting self was the highest rewarded by the teachers. In the Talanoa feedback, this was also reflected, as participants stated that when a student was seen doing the behaviour they were rewarded for it e.g. when a student wore their helmet. On the opposite side Kaitiakitanga or respect for the environment was least used by the participants as a value to be rewarded at 26.7 percent of all rewards awarded through the app during the trial.

Some participants discussed the inclusion of Te Reo into the app. Those in support of Te Reo Māori tended to use the rewarding feature more such as Participant T10 and T4. Some participants argued that the theme of cultural identity and language use, had very little to do with the learning of behaviour as reflected by Participant T9 in the

Talanoa feedback. Lastly most participants challenged Participant T9's view point by raising their concern that Te Reo is New Zealand's official language. The app did support the use of Te Reo Māori values used in the app and was designed to support the teaching of behaviour through Te Reo Māori and Kaupapa Māori values. An example of this was when Participant T10 shared the following:

T10 – *“So, it really motivated me, to see where my class was at, where my students were at and my incidents reports were at, also which value (Rangatiratanga, Kaitiakitanga and Manaakitanga) was leading the way in my class and which was evident and visible in my class”.*

Unfortunately, the data from user metrics does not show whether the application increased Te Reo Māori use in the school nor did it intend to. However, it does justify through the Talanoa feedback and the user metrics that it was well used and constructive to teachers trying to implement PB4L through Te Reo and Kaupapa Māori values.

5.6 Summary of User metric evaluation

In summary, we can see that through the user metrics alongside the Talanoa feedback, most of the teachers were highly engaged and well supported with PB4L through the Ka Pai app. Some exceptions to this was participants T8 and T9, however their contribution during the Talanoa does show a lot of willingness to engage with the implementation of the Ka Pai app. One surprising result post research was that Participant became a very high frequency user of the Ka Pai in 2018 after the trial. In the next chapter, the results will be rationalised using evidence from literature and past studies on gamification, persuasive technology and PB4L research mentioned in the literature research. Some suggestions for limitations of the research will be explored and future considerations will be outlined.

Chapter 6

Discussion

*“Punishing students doesn’t teach them the right way to act” – George Sugai
(behaviour researcher)*

The Ka Pai app and analysis of user data (Tullis & Albert, 2013) informed whether the Ka Pai app supported teachers implementing PB4L and Te Reo in their classrooms. To the best of our knowledge, this is the first time that the analysis of the qualitative research has been conducted around a mobile application for implementing PB4L, whilst using indigenous research method of Talanoa. This discussion and evaluation attests that the Ka Pai app supported teachers’ use of PB4L pedagogy.

In addition to feedback collected from the Talanoa sessions, we collected quantitative data based on the number of positive rewards given, completing incident reports, usage of activities and badges gained. An initial hypothesis was that teachers would give positive opinions and beliefs about how the PB4L strategies and use of Te Reo were supported via the application. A secondary hypothesis was that the participants would also want to continue to use the applications with some improvements suggested by the end of the study, which they did into the following year (2018).

Before the intervention, two teachers at Wesley Intermediate school were using an American application called Class Dojo (Burger, 2015) which is not a PB4L school-wide tool and does not incorporate a use of Te Reo or PB4L strategies. However, this study provides some initial next steps of a phenomenological reduction investigation that could be used to evaluate the perceptions of teachers and students regarding the effectiveness of the Ka Pai app after a longer trial or in other schools.

6.1 Responding to research question one

To answer the first research question, the study aimed to design, implement and evaluate how teachers were trying to implement PB4L in their classrooms and school-wide via the Ka Pai app. The results showed that the Ka Pai app supported teachers better when comparing with previous paper-based methods of PB4L pedagogy in place at the school. The following areas were expressed in the Talanoa results as showing an improvement from the paper-based method of implementing PB4L:

- Alignment of school's digital goals
- Training tool for new staff and embedding PB4L
- Increase student, teacher and Whanau engagement through Gamification and Persuasive Technology
- PB4L rewarding, reporting and reinforcing practice

6.1.1 Alignment of school's digital goals

The use of the Ka Pai app provided alignment with Wesley Intermediate School strategic goals which would be further encouraged by using an online behaviour management tool digital practice. For example, Participant T2 said "I think the app is in line with the digital goals of the school in regard to the bigger picture, where the school is heading digitally". Similarly in literature, other researchers suggests that schools and teachers have to become more digitally inclusive in their practice and provide more opportunities for all learners to engage with digital forms of e-learning especially in low decile communities due to having less access to technology at home (Bolstad et al., 2012; McNaughton & Gluckman, 2018).

6.1.2 Training tool for new staff

PB4L is an effective behaviour management intervention used at Wesley Intermediate as seen by the SET data in Figure 1.2.1 and has proven results for supporting behaviour outcomes across many schools in New Zealand (Boyd & Felgate, 2015). However, the issue raised earlier in the problem statement, suggest that teacher efficacy of implementing it is low due a range of factors around professional development and ability to learn new teaching pedagogies (Johansen et al., 2011). The Ka Pai app was also seen to support effective instructional behaviour

management strategies, as a tool for professional development and training development. As suggested by Participants T1 during training: *“If we lose staff or gain staff, it is one of those a stepping stones, which will help with helping new staff and the expectations that we need to achieve, it’s got all that we have been doing in an easy to find and easy to use place”*. Studies show that teachers’ ability to manage behaviour has a direct outcome on students learning outcomes (Lewis et al., 1998; Simonsen et al., 2008; Yeung et al., 2009) and therefore training was provided during the design process in Figure 3.1 which helped to create a training and help page for teachers as seen in Figure 3.5.

A future area of consideration regarding teacher training could be to use the activity data to help identify which teachers need support. This could be shown through a lack of engagement with Ka Pai app, due to a lack of knowledge of PB4L, management strategies or not being effectively supported by their managers (Dhaliwal, 2013; Johansen et al., 2011). In Table 5.4.7, Participants T9 and T8 did not show as much engagement with the app based on their activity use, however upon questioning, they mentioned it was for technical reasons not a lack of understanding of PB4L. A possible innovation of the app or future research could be that user data could be made available to a PB4L coach or manager in a school, as they could intervene with support if a teacher is struggling with behaviour management. This is further supported by research in that schools need to have clear procedures and systems to consistently train and support staff (Dhaliwal, 2013). Theorists believe that any acknowledgement systems can fall over throughout the school, due to a lack of shared ownership and professional development (Elder & Prochnow, 2016; Ministry of Education, 2015b). Moving forward a pre-test of participants views and capabilities may have helped to create a T test (Glen, 2016) of improvement based on PB4L capabilities pre and post-trial of the Ka Pai App. Lastly the PB4L manual (Ministry of Education, 2015) suggests that teachers use their practice data and observations to discuss with their professional leaders and coaches on how to improve in their implementation including the use of SET, EBS and behaviour reporting data which could all be embedded via the Ka Pai app in the future.

6.1.3 Increase in student, teacher and Whanau engagement

Participants explained that they saw better students' engagement than the paper-based system. All participants suggested that the Ka Pai application was more engaging. Examples from the Talanoa include Participant T10 who said that- *“I found it more engaging, interactive and I really enjoyed it, as my kids like gaming and the kids liked checking up who had the highest points”*. Research suggests that it is important for PB4L practice as teachers are trained to build positive relationships with their students (Bishop, 2017; Savage, Macfarlane, Macfarlane, Fickel, & Te Hēmi, 2014). This was also reflected in the app user metrics as seen by students who engaged 1235 times via actual user interactions/activities as seen by Table 5.4.4, which showed that they had 57 percent of usage of the app compared to 43 percent by participants. Participants emphasized before the trial the need for tangible rewards but acknowledged that was the old-fashioned way of rewarding as stated by Participant T6 who said *“the app will work for students as that is their world, as you know it's almost like a video game for them”*.

In terms of teacher engagement, all participants at some stage mentioned that the Ka Pai app encouraged them engage in PB4L. Figure 5.3.2 showed that participants used the Ka Pai app with certain activities more than other rewards students such as activity A5- Open Give Award page and A10 Submit a Give Award request. This meant that 51 percent of rewarding behaviour was presented by participants as they were able to access these features. This can be seen as indication of a behaviour shift based on the Fogg behaviour model (Fogg, 2010), as participants felt motivated to give rewards as it had become easier to give the reward via the Ka Pai app. An example of this was Participant T1's comment during Talanoa session one that the gold cards are paper based and not accessible, “cards on hand” at all times, limited supply of gold cards, so “you have to remember who you have rewarded and try and get them the gold when you can”. Also, Participant T4 suggested that the ability of the teacher saying, *“here you go Rxxx” is the tangible thing for the student and to take that away ... may affect him*”. In terms of using extrinsic reinforcement (Jacobs & Eccles, 2000), T4 had a strong belief in the notion that tangible rewards (paper-based) were more ideal over digital points via the Ka Pai Application. The same participant was also concerned before the trial the app would negate the ability for a teacher to give a tangible reward as they said – “it does make it easier to track data but on the flip side,

the way we give gold cards quickly, is somewhat compromised by the app”. After the trial Participant T4, used the reward feature the second highest under Participant T10 as seen in Figure 5.3.7. Participant T4’s user metrics showed that with an easier method of entering rewarding data via the Ka Pai app so too, did their perspective and motivation for using PB4L via digital rewarding change (Filippou, Cheong, & Cheong, 2015). A key part of this was how some participants viewed the engagement with students and other participants during the trial as Participant T4 explains - *T4 “Like T10, my kids were really stoked when they saw how their (points) were growing over the week. I think when I saw what T3 (teacher dashboard in Figure 3.1.1) had got, more points than me, I was like how I can beat that and thinking how I can be more positive and notice a lot more”*. The gamification research supports this result as failure and competition are strong motivational factors to participate in tasks or activities (Deterding, 2013).

Being able to reward therefore became gamified and was the most engaging PB4L pedagogy compared to the paper-based system based on the Talanoa feedback as well. Participant T4 explained that - *“I didn’t think the badges would matter so much, but I when I got it I was like yeah, you got a badge and T10 got a badge first and I think it was interesting to see that”*. This type of engagement was achieved using gamification through the Participant leader board and provided competition amongst staff. An example of this from the Talanoa feedback was stated by Participant T10 - *“I found it more engaging, interactive and I really enjoyed it, as my kids like gaming and the kids liked checking up who had the highest points, I also liked checking who was the top teacher. I found it fun, compared to other stuff (reward systems) we have done”*. Some gamification research supports this change in behaviour/motivation as it is very persuasive for the participants to be in competition, or to see their own results reflected back to them through game mechanics such as progression and feedback (Muntean, 2011), gameful design (Deterding, Björk, Nacke, Dixon, & Lawley, 2013) and through the use of points, badges and leader boards (Hamari, 2017) in within the Ka Pai app.

Another ongoing theme from the analysis from both Talanoa sessions showed that participants wanted the Ka Pai app as a tool for engaging not just learners but their whanau/family as well. A power example of this was through a discussion about removing the paper-based system with a digital online reward system. Participant T7 states – *“how many kids would take 27 gold cards home and show to their parts because most would leave it in their desks, yet here most take their chromebooks home and show their parents the comments and on their laptops, so it is putting PB4L into the parent community”*. Another example from the Talanoa results was suggested by T2 who goes on to explain that the previous system does not have a way to communicate the student’s behaviour goals to parents and that the app could have a way to show parents – *“Especially in like parent interviews, we can actually pull out what their child has been showing (behaviours) with parents and things like that”*. This is also supported by PB4L practice around engagement with rewards and reporting incidents to parents (Yeung et al., 2009). Furthermore, practitioner research also suggests that whanau engagement is essential for meeting the Treaty of Waitangi principles (Carolyn. Babione, 2015; Ministry of Health, 2017) and stronger home school partnerships for improving social and academic outcomes.

6.1.4 PB4L rewarding, reporting and reinforcing practice

The Ka Pai app made rewarding a lot easier to do, however the reporting of incidents was one of the lowest activities used based on the results. An early assumption in the hypothesis, was that participants would be more likely to reward using PB4L strategies if only they had the points always accessible through a mobile application. The example from Talanoa feedback (section 5.3.1) and user metrics post trial (Table 5.4.6) reflected this to a point, as it showed that 90 percent of participants accessed their PB4L online tools via their mobile device such as a laptop, phone or iPad and only 10% not accessing due to technical problems and device accessibility (had only access to desktop PC).

Research states that mobile apps need to be accessible, personal and portable (Naismith, Lonsdale, Vavoula, & Sharples, 2004) to increase uptake of mobile applications. Currently research indicates that teachers could do better to share and use online learning as reflected at 62 percent, in a study by Bolstad (Bolstad, 2016). With 90 percent of all New Zealand students accessing learning via digital means (McNaughton & Gluckman, 2018), the Ka Pai app did show some merit in making PB4L more accessible online. A limitation was the scale of this study and that it needs to be trailed in other contexts and a larger sample of participants in the study (Sandelowski, 1995) in order to gauge whether PB4L teaching learning was improved.

In terms of feedback about making PB4L easier to use via the Ka Pai app, participants made comments stating that it was time saving. For instance, Participant T3 reflected on the accessibility of the app *“when you are doing fitness, selecting students and click it in. Or even incident reports, it’s good that you can do that all at once”*. This goes on across all participants in various forms and affirms that the app made rewarding much easier to give and collect data. Therefore research supports the use of positive reinforcement for pro-social behaviour through the operant conditioning (Skinner, 1967).

Interestingly though the incident reporting was less used by the participants as shown by Table 5.4.7 with only 20 percent having accessed incident reports. Participant T7 stated during the Talanoa that *“the app helps us track positive behaviour, more than we are actually doing (in paper-based system). At the moment we are looking at the negative (incident reports), it will bring that data in I think”*.

Further questions could have been presented to the participants around their lack of use of incident reports, in Table 5.4.7. Behaviour incident data is essential for making decisions as teachers and leaders for putting in supports for students (Tobin et al., 2000). Interestingly the participants did not give as many incident reports as expected as seen by Table 5.4.7 or as suggested by the four to one ratio of positive to negative reinforcements (Sugai & Horner, 2008) for increasing pro-social behaviour outcomes. The incidents were also only completed by 20 percent of participants (n=2) which indicates that the participants were not engaged with incident reporting as much as rewarding via the Ka Pai app. Lastly this could have been because participants may have only had a limited number of incident reports as it was the end of the year, and or a lack of training to report. As it is, the results showed only 6 reports compared to the 70 plus needed to balance the rewards to negatives.

6.2.1 Responding to research question two

This study evaluated Ka Pai's effectiveness in providing teachers with a positive PB4L experience through analytic data and teacher feedback. The success of the intervention was shown through generally positive feedback on how the participants enjoyed the Ka Pai app's ability to meet their PB4L needs. The findings can be grouped into the following themes –

- Concerns raised pre and post-trial feedback
- Best and worst features
- Suggestions for improving Ka Pai

6.2.2 Concerns before the trial and feedback

90 percent of participants suggested that the Ka Pai app would help them improve their behaviour management pre and post-trial. Except for Participant T4 who strongly opposed the use on non-tangible rewards initially but became the second highest user of the Ka Pai in rewarding by the end of the study. The learning outcome for their class was also well supported with values-based reinforcement as shown by their user metrics in Figure 5.3.3. Studies show that teachers' ability to manage behaviour has a direct outcome on students learning outcomes (Lewis et al., 1998;

Simonsen et al., 2008; Yeung et al., 2009). Teachers who do not use effective behaviour management systems, could have a negative impact on the behavioural and learning outcomes of students within the classroom and school wide settings (Bradshaw, Koth, Bevans, Ialongo, & Leaf, 2008). Therefore, a good behaviour management intervention should consider socio-economic/environmental factors outside of the classroom. Whereas the traditional punitive systems of managing behaviour do not fully cover implications of ecological theory within the education system (Paquette & Ryan, 2001).

6.2.3 Best and worst features

The best and worst features of the Ka Pai app based on evidence from results suggest that strategies for rewarding was most favoured and reporting was least favoured. Overall the Ka Pai helped provide rewarding tool used by participants and improved their pedagogical approach regarding classroom management. Therefore, it is suggested that if replicated in a longer study should improve learner achievement outcomes (Guo, Connor, Tompkins, & Morrison, 2011). Some of the participants shared concerns that the Ka Pai would not appeal to their learners - especially around the tangible nature of the previous gold card system pretrial. However, during the trial participants such as T4 showed that they wanted to use the application more than anticipated. Participant T6 also experienced concerns that the application would not be engaging for their learners i.e. this participant used the Ka Pai application the least and their class also had one of the lowest engagements. The analysis of awards given by participants showed that only two participants did not engage with the application - both participant T8 and T9 did not contribute to the rewards activity but did activity participate in the Talanoa sessions as seen in Table of Findings in Appendix 1 & 2.

There were no stand downs or suspensions during the trail of the Ka Pai app, so teachers did effectively manage anti-social behaviour. Although there is a significant decrease in stand downs and suspensions in New Zealand Schools in the last nine years (Education Review Office, 2012), which the Ka Pai app was intended to reduce.

The overall qualitative feedback lines up with the quantitative data, however with one exception based on the user metric data in Figure 5.3.7 and Table 5.4.7 by Participant T9 showed very low use of any features but their Talanoa-qualitative feedback was

the highest in content compared to other participants but this had democratic validity they were empowered to participate in the problem solving via Talanoa (Oolbekkink-Marchand, van der Steen, & Nijveldt, 2014).

There was also expected request to have students' incident reports more visible for teachers by Participant 7 who said "the negative (incident reports), we use to get funding for kids. So, if everything is tracked we could then go to the Ministry (MOE), or RTLB or whoever, this is our own data rather than wait for them to come for 6 to 8 weeks to come and get it themselves". This is very important for the work of future research, as behaviour and learning data is becoming highly valued not just by practitioners or learning support staff but also for procurement of resources (Ministry of Education, 2016; Tobin et al., 2000).

6.3 Responding to Research question three

The last research question focused on how Te Reo Māori could be used in the PB4L practices and embedded into the Ka Pai and gauge whether teachers valued this feature. Te Reo was incorporated in the PB4L features of the app and majority of the participants reflected that it was important to include as it is the official language of New Zealand. Some arguments for and against the use of the Te Reo Māori was presented but mainly from a subjective point of view by the participants.

Participants liked the use of Te Reo in the Ka Pai app, for example Participant T4 said- "*Te Reo has to be at the forefront and I have it in poster form at the front of our office but can't speak it as natural like it is for you (T9) as I didn't use these until the app came out so it made me have to learn more, which I think is great*". This was further supported by Participants T5 and T10 who suggested that Te Reo Māori needed to be valued in the app as part of the schools' charter and supported by the Treaty of Waitangi (Waitangi Tribunal, 2013). Teachers need to find ways of engaging learners with regards to teaching Te Reo Māori and evidence suggests that game play and gamification could provide some valid pedagogical shift (Nand, Baghaei, & Casey, 2014). Some research also indicates that this position is very well validated in New Zealand, namely the work by Russell Bishop (Hudson & Russell, 2009).

In contrast Participant T9 and T7 stated if the Ka Pai app did not need to include the use of other non-English languages that it had should include their own language. Participant T9 said it would have very little impact on their behaviour management which counters current research around values based behaviour management system (Detrich & Lewis, 2013; Horner et al., 2010; Lewis et al., 1998; Ministry of Education, 2015). The Ka pai research showed that teachers perspectives towards implementing behavioural interventions are heavily influenced by their beliefs, understanding, professional development and prior education (Dhaliwal, 2013; Johansen et al., 2011). The Ka Pai app was set up to promote the use of Te Reo Māori values within the PB4L pedagogy, as it is a crucial part of learning the Māori values which can support all learners (Savage et al., 2014). The use of Te Reo Māori was designed within the Ka Pai app to foster understanding of Māori values is a core part of the New Zealand Curriculum goals for raising literacy as well as key competencies (Jesson, McNaughton, & Wilson, 2015; Ministry of Education, 2007). In response to Participant T9, evidence of good indigenous practice shows values and identity play a key part in building relationships with indigenous learners (Hawk & Cowley, 2002).

The use of Te Reo and Values could help educators exhibit a similar approach to what Russell Bishop describes as family-like relationships in their classrooms (Bishop, 2017). A feature of this approach is that students feel valued for the language that they bring to the classroom as well as English. Furthermore it is the use of shared values and Te Reo Māori that helps educators meet their obligations to the Treaty of Waitangi (Waitangi Tribunal, 2013). Some participant may not be aware of the need to address issues of colonisation (Smith, 1999) and language extinction, nor was it analysed before the start of the study. However, it could also be argued that the Ka Pai did not fully embrace the use of Te Reo Māori enough and gave only a taste of what values could be embedded in PB4L as to avoid cultural appropriation. Some theorist suggest that the use of Māori Tikanga – customs, values, protocol or Kaupapa which should be uniquely led by Māori for Māori (Mane, 2009). In response, further consultation with Mana Whenua and Iwi would help researchers work out ways to not only improve the cultural responsiveness but also to educate the educators who should be teaching Te Reo in their classrooms.

6.4 Suggestions for improving Ka Pai App overall

This section of the discussion focuses on what the participants suggested improvements for the app through the Talanoa conversations and reflects trends in the data collected through user metrics. The suggestions focused on making the app more PB4L consistent, technical and aesthetic changes, use of social media style interface for students and whanau and lastly the inclusion of other languages.

One of the main issues that the app aimed to eliminate was the guess work around how many gold cards were in circulation or how many a teacher had given out. As Participant T9 suggested in their Talanoa Feedback in Section 5.3, to put in guides for rewarding as they were worried some teachers were rewarding or reporting at higher levels of deviation to one another e.g. one teacher submits an incident report for a behaviour, but another doesn't for the same behaviour type. This could be an area of further questioning for raising the validity of behaviour data as suggested by PBIS theorists (Tobin et al., 2000). The app does have specific criteria for reporting, which was co-designed and agreed upon by the teachers before becoming participants in the trial in Figure 3. 2 and 3.7. Similarly, the PB4L manual (Ministry of Education, 2015) suggests that a matrix of behaviours is created based on the school values, which Wesley Intermediate School does have in place. A possible reason for the issues raised around consistency is caused by teachers not being part of applied professional development (Johansen, Little, & Akin-Little, 2011) and therefore becoming inconsistent in their pedagogy compared to trained teachers.

In the Talanoa data, Participants T4 and T2 suggested that the visuals could include a little more personalisation from the students and at their age level. This is affirmed by researchers of game-based learning, who suggest the use of sound effects, profiles, avatars, visuals and feedback messages (Ifenthaler & Eseryel, 2014; Reinders, 2012; Ronimus et al., 2014). Alongside the need for a more streamlined user interface, the Ka Pai did have its merits, to help teachers quickly access what they needed through the help tab. Participant T4 suggested that their students accessed it very quickly. Some limitations as a prototype could be argued as causing technical barriers to engagement (Naismith et al., 2004).

A few participants surprisingly wanted to have more social media style features for engaging their learners and each, for example Participant T5 suggested that a status page for students to share with one another about who got rewarded by a teacher and for what. This led to a conversation around targeted praise similar to other social media platforms, with personal profiles which some theorists argue could lead to harm or bullying (Naismith et al., 2004). However this suggestion does have merit in persuasive technology use as positive results from more recent studies showed positive social and health outcomes (Baghaei, Nandigam, Casey, Direito, & Maddison, 2016; Metia Interactive, 2018) through the use of social media.

Also any platform built to provide learners a place to feel safe and share their learning and behaviour success could have further research opportunities which could use a multi-tiered approach with observations, user metrics and surveys similar to Online peer group approach (Alrobai, Dogan, Phalp, & Ali, 2018). This could also apply to parents being able to access their child's page like other social media sites. Participant T5 gave the explanation as "it could be like an activity tracker so like who gave them the point and why, such as awarded 'Kaitiakitanga, Mr X'" which would be fairly easy to imbed into the Ka Pai app in the future.

Lastly in this section, the participants suggest that other languages should also be used in the Ka Pai Application. Some of the suggestions focused on using the school's variety of Pasifika languages like Samoan and Tongan, and sign language features. Participant T10 suggested that the Ka Pai app could include features to support learners from other cultures which was strongly argued by Participant T9. In comparison, second language research shares evidence that learners using gamified tools could increase to their willingness to communicate in English (Reinders & Wattana, 2014). An example of the qualitative feedback was from this study is limited to second language learning apart from the use of Te Reo and English but shows potential to be a valid tool for migrant learners for computer assisted language learning, CALL (Ifenthaler & Eseryel, 2014). With majority of the school population being Pasifika, it would be very likely that the next iterations of the Ka Pai application should include the use of more Pacific Island languages.

6.5 Limitations of the research

One of the key messages around the limitation of the research was the short trial and timing of the intervention and of student participation. The research data also needs to show that PB4L strategies used through Ka Pai app that it improved learner achievement outcomes (Guo, Connor, Tompkins, & Morrison, 2011). Specifically, if another study was completed on the Ka Pai app, a parallel piece of research needs to collect from student's perspective and their academic data. For example, some theorists suggest that teachers who are effectively using effective "high-quality classroom instruction may improve children's engagement, which in turn promotes their reading achievement" p8, (Guo et al., 2011). Therefore participants like T10 and T4 showed (Figure 5.3.3) in their activity use, that they were also able to foster positive relationships with their students which is encouraged for engaging Māori and Pasifika students (Bishop, 2017; Hawk & Cowley, 2002).

By moving away from a traditional behaviour management systems and more into relationship building approaches teachers can prevent learners falling through the gaps (Bishop, 2017). This can be done by using PB4L within a mobile form, which is both gamified and engaging for teachers and learners. A further study could examine the impact of this on engagement rates, as the incident report data from Table 5.4.6 showed very little use of early interventions based on behaviour incidents. PB4L theorists suggest if the data was used appropriately by school leaders, we should see could decreases in classroom disengagement (Tobin et al., 2000). Also, this is apriority for further research of innovative tools to address the Ministry of Education data which shows that Māori learners are overly represented in stand downs and suspensions (Education Review Office, 2012; Ministry of Education, 2016).

The study showed some limitations of evaluating the use of gamification of behaviour management and persuasive technology. As it was only starting to be researched, however this further justifies the need for PB4L tools to be researched worldwide (Simões, Redondo, & Vilas, 2013). Systematic mapping research analysis (de Sousa Borges, Durelli, Reis, & Isotani, 2014), supported the study but no current framework exists to validate its effectiveness or its challenges (Boulet, 2012; Schoech et al., 2013). However, there is more emerging research which supports the integration of social gamification (De-Marcos et al., 2016) as suggested by the participants of the Ka Pai research.

Lastly user data was limited for three participants, due to the timing of the experiment for example participant T9 and T5 stated that they had not had enough time or access to trial the application. If the experiment was run again it would be suggested to extending the experiment to four weeks and possibly trial at the start of the year. Since some of the participants did not participate fully in the trial so their user metrics were limited data. Future consideration would be to have an exclusion criterion if the participant doesn't use the Ka Pai app a certain number of times. Also some of the participants talked over others during Talanoa which goes against the philosophy of the method (Farrelly & Nabobo-Baba, 2014). A way around this could have been to show participants a video of a Talanoa happening in a non-research context or sharing the Tui Kalala method in more detail (Vaiioleti, 2006).

6.6 Future considerations

Using practitioner research, this research summarises some future considerations for the school and educators as some goals that were intended to be achieved are yet to be researched (Anderson et al., 2007). So, in consideration, the outcomes are to be made available to others (Menter et al., 2011) so that other researcher may continue to study the use of gamified apps for PB4L.

Teachers now use more effective behaviour management systems at Wesley Intermediate School and have less negative impact on the behavioural and learning outcomes of students within the classroom and school wide settings. The main reasons this has been imbedded is because the PB4L strategies are easier to use via a mobile app which was persuasive through gamification. It is also very clear that outcomes for learning and behaviour need to be compared – a possible avenue of study could be test whether a positive effect size (0.70) was shown during an extended trial over a year in the learning outcomes for students with instructional approaches to managing behaviour (Johansen et al., 2011; Helen Timperley et al., 2007) such as using the Ka Pai app.

Another area of development for research could be that the student engagement be more precisely measured and their Talanoa feedback be collected. This was an identified limitation of the research as the ethics proposal would not allow for this in time for the study and trial. Further research could find ways of engaging teachers and students in the PB4L content better (Savage et al., 2011). Student voice is a widely accepted form of evaluative research used by practitioner research like Timperley's Teaching as Inquiry model (Timperley et al., 2007) and Absolum's Assessment for Learning approach (Absolum & Gibbs, 2009).

PB4L will need further evaluation as it is launched in more schools and linked into classroom-based practice, so further study as suggested by New Zealand Council of Research (Boyd & Felgate, 2015). PB4L requires more research as it moves into the Mobile Apps for Education (Naismith et al., 2004) space as newer tools are already being trialled informally by teachers (Burger, 2015). Students should also have ownership of the design of the app: whereby the student's feedback could help them own and control their technology as suggested by the Participants Talanoa feedback. A practitioner research framework (Menter et al., 2011) still needs to be developed for apps for education such as Ka Pai to better work in other schools or repeated studies as there has been identified issues with the trial timeframe and accessibility.

In summary of the use of Te Reo Māori, there needs to be more consultation to incorporate it within the Ka Pai application for learners and teachers of PB4L. Two clear issues need to be addressed, firstly to research a pathway for gamifying Māori /PB4L values and L2 (Te Reo) learning could build on the research of Nand's use of Te Reo in literacy learning (Nand et al., 2014), Maru Nihoniho's serious games for learning (Metia Interactive, 2018) and the Kura app for learning Te Reo Māori (Victoria University, 2015). Secondly if this study was replicated a formal training session around the use of Te Reo Māori values embedded into the PB4L induction of staff as suggested by PB4L practice (Ministry of Education, 2015).

PB4L was made to be a more effective intervention than it is already through the Ka Pai app as suggested by 90 percent of Participants during the study. To provide empirical evidence of this, the app could be in a similar school implementing PB4L out of the 600 schools implementing it nationwide (Boyd & Felgate, 2015). In

considering future work, one of the issue remains, is resourcing, the development of mobile apps for PB4L or as K. Hirsch states apps that are “active, engaged, meaningful, and socially interactive learning” (Hirsh-Pasek et al., 2015). Furthermore Naismith’s review argues that educators may struggle to create apps for education due to limited resources or technical know (Naismith et al., 2004). Any future study into the apps for behaviour learning through gamification would need to include a funding model and partnerships with schools and researchers wanting to implement practitioner research.

Lastly it is hoped that the Ka Pai app will be one of many evidence-based tools that the vision of the Taumata Whanonga Behaviour Summit in 2009 (Ministry of Education, 2015a) identified. By providing a simple and effective rewarding and reporting PB4L app, teachers at Wesley Intermediate are now developing better pedagogical practices.

Chapter 7

Conclusion

*He kai kei aku ringa
There is food at the ends of my hands – (Maori Proverb)*

This study shared practitioner research conducted at Wesley Intermediate School for designing, implementing and evaluating, gamification via a persuasive mobile app. The research justified the implementation of PB4L using persuasion via gamification within the Ka Pai app. The findings and discussion answered three research questions and was supported by evidence from literature. The Ka Pai application also met the needs of participants around accessibility, consistency and effective data collection for implementing PB4L pedagogy.

This study presented a literature review of current themes identified around the research areas including mobile applications, gamification via persuasion and PB4L pedagogy. Evidence was provided for using proactive strategies of PB4L as opposed to Punitive pedagogy through mobile apps which were gamified and persuasive. Links to gamification research was also made through core theories of practice for mobile and persuasive via gamification technology use in education. The data showed that the Ka Pai provided ways to foster better connections for teachers with their student to build positive relationships via mobile app. The application is still in development phase and as a prototype gained a lot of constructive feedback through the Talanoa and user metric data. There is a valid need to make the incident reporting, more in line with what teachers need and to collect more feedback on why this feature wasn't used as much.

This thesis utilised evaluation research methodologies with an emphasis on the use of Talanoa and user metric analysis. Overall the Talanoa was well received by the participants as shown by the table of findings from two Talanoa sessions. 9 out of 10 Participants engaged in the application trial and all 10 participated in the Talanoa

sessions. The data collected and analysed also showed that teachers also wanted their student's data to be collected as well. In Chapter five, the findings and analysis of the participant responses was presented based on the two Talanoa sessions held before and after the intervention and user metrics for gauging engagement.

7.1 Outcomes from the research

In responding to the research questions around the previous rewarding and reporting system, the participants agreed that the Ka Pai had strong alignment with the school's charter and strategic goals, to become fully digital as a school. The Participants also stated that the application could be used in the future for training and development of new staff. There were also some suggestions for improvement such as including whanau engagement and culturally responsive features such as Whakatouki and other Pasifika languages. Gamification was strongly favoured by the participants who trialled the app and majority of the participants were persuaded to use PB4L more than the previous gold card system. Most agreed that the Ka Pai app would need improvements like the use of game rewards, social media and status updates for students and teachers to make it more gamified.

In responding to the research questions around PB4L pedagogy, some participants had raised concerns, pre and post Talanoa feedback. One participant raised concerns around the app's points system as being a non-tangible reward and therefore lacking in reinforcement, but as the user metric data showed. However Participant T4 (in particular) used the app more than other Participants even though they had a pre-misconception around gamification use in the app. Some participants who were also concerned about the consistency of data, however the Participants Talanoa feedback showed that the leader board helped them keep track of their rewards given and they felt motivated (persuaded) to give more rewards. This data fundamentally affirms the use of gamification and persuasive technology use for PB4L at Wesley Intermediate School.

Lastly a strong discussion highlighted the Ka Pai applications use of Te Reo Māori values and eight out of ten responded to it with support. However, two participants proposed that there was no need to include values in other languages in PB4L. Overall

the use of values and integration of Te Reo was well received by the participants and has gone a long way to further how learners can engage with Te Reo.

7.2 Implications for schools and recommendations for future research

One of the first implications is based on how schools can use practitioner research approaches with their staff. School's need more opportunities to validate and research their practices and procedures. Wesley Intermediate has undertaken a year long process to create, implement and evaluate an innovative tool. In many ways, Wesley Intermediate School, had a lot of supportive factors which made the trial a success such as high levels of digital access, digital fluency of staff and students and the resources to undertake a research project that involved majority of the staff.

If other schools and practitioners wish to take similar research on board, they must be aware that not all practitioners have the same level of digital fluency or understanding of PB4L. Therefore, for more empirical evidence to be gathered, other researchers may trial a similar app for gamifying PB4L with schools at early, mid and final stages of PB4L training or digital/mobile learning professional development. This would identify whether knowledge of PB4L pedagogy and digital fluency plays a part in participants' efficacy for using gamified apps for education purposes. Some possible research approaches could include the use of a control group where one group could use the application and another group that doesn't. Some possible research projects could be:

- Comparative study - What impact does 1 year, 2 year or 3 years of formal PB4L training have on teachers' perceptions of implementing PB4L via the Ka Pai in their schools?
- Control group study - What impact does the digital fluency of teachers, have on their ability to use PB4L apps for education such as Ka Pai?

Following on from this, future research should include some level of baseline measurement for practitioners undertaking a similar study. Whereby teachers at the start of the study should complete a series of questions based on a scale of their own PB4L practice (pre and post-trial). This would further support qualitative research around practitioners of PB4L. As this study showed, some participants had high levels

of engagement in the Talanoa research but limited engagement in the actual trial. Therefore, by having a baseline to compare to, researchers could find out whether there is a link between participants perceptions of implementing PB4L pedagogy and their actual practice through data collected through the Ka Pai app.

Another aspect of future research could include the use of gamification research for students and whanau, as this study was limited in engaging whanau or students, due to the ethics approval being so late in the school year. The students played a huge part in the research and accounted for over half of the total usage of activities in the Ka Pai app by using their dashboard, updating the profiles and checking their rewards. The student's feedback could be researched in several ways, including the use of Talanoa or evaluative questions like the SPARX game research approach. Some possible future research approaches and questions with whanau and student participants could be:

- Transcendental study approach - How does gamification in the Ka Pai app help students improve their behaviour? Or which features of the persuasive technology use were more effective for increasing whanau and student's engagement with PB4L?
- Comparative study – Persuasive via gamification applications that support whanau, teachers and students with their PB4L engagement: Class Dojo vs Ka Pai

Another area of possible study that could be researched and has implications for schools is the use of Second language learning such as Te Reo Māori through apps for education and gamification. The recent Kupu app shared by the SPARK corporation, shows that technologists are willing to create the tools that would help grow the use of Te Reo Māori. Therefore, it is recommended that further research is needed to include Te Reo Māori to find more opportunities for it to be used and taught in New Zealand schools. This study especially supports any apps that can persuade learners to increase their Willingness to Communicate as suggested by Hayo Reinders. Schools or researchers implementing new gamified or online Te Reo Māori programmes could research whether Te Reo Māori learning can be taught through gamification. Also, as suggested by participants, further research and innovation could be made to include other languages with the Ka Pai application to create a more culturally inclusive and persuasive learning tool.

Lastly the research conducted, lacked the merits of a longitudinal study, whereby trends in the user metrics could have been used for showing the impact of the Ka Pai on students learning outcomes. Therefore, a future research suggestion would be to conduct a similar study over a longer period, with data from the Ka Pai apps user metrics linked to student educational and behavioral outcomes. Some statistical measurements could be used such as effect size of students' academic achievement and T Test of participants' user metrics. The research scope might be to run a comparative study with a control group across several schools, over a year long period. Research questions could focus on the academic and behavioural outcomes for learners based on effect size and teacher perceptions of efficacy in implementing PB4L in their schools. The school has continued to use the application into 2018 and the researcher has been approached to improve on the Ka Pai and seek further research approval.

7.3 Concluding statement

This research study presented and discussed the findings of a small-scale study, which aimed to design, implement and evaluate PB4L pedagogy through gamification via persuasion. Participants were asked how did the app compare with existing methods of PB4L pedagogy in place at the school; which features of PB4L did they prefer to use before the trial and after the trial; How successful was the intervention in regard to their enjoyment and effectiveness for meeting their PB4L pedagogical needs; How well was Te Reo Māori incorporated in the PB4L features of the app and what can be done to better integrate Te Reo Māori. The participants user metrics was also analysed to see what aspects of the Ka Pai application they chose to use more frequently like the rewarding feature as compared to incident reports which was used the least.

Results indicated that teachers were concerned about rewarding and reporting consistently but most found the Ka Pai app, helpful in monitoring their consistency. Whilst most participants considered themselves to have improved in their PB4L implementation through the Ka Pai, only one participant it made no difference to their practice. Participants also liked the use of Te Reo Māori values and majority of them encouraged it to be developed in future iterations of the Ka Pai app. The most

frequent changes that the Ka Pai app needs to make it more persuasive and gamified stated by the ten participants was adding some additional features to the app for example the need for social media, games as prizes for learners, better whanau engagement, better graphics and pictures. These issues required more funding and further research to address participants needs. In response, sadly time and financial resources were a barrier and the researcher would hope that the Ka Pai application could continue to support school's like Wesley Intermediate implement PB4L.

Whilst the Ka Pai application used gamification mechanics such as badges, points and leader boards, its main purpose was to persuade teachers to use PB4L through a mobile app. The result of using the app helped participants who used it often develop positive relationships with their students and created a competition amongst themselves to improve on their PB4L practice. Ultimately the gamification of the teacher's behaviour for using PB4L was trialled and evaluated through a prototype app, which may or may not be developed further. It is hoped that practitioners of PB4L and gamification theory will find more opportunities to engage schools and educators through this study.

It is hoped that the tools like the Ka Pai app, will be researched further and improved through the hands of practitioners using PB4L - "He kai kei aku ringa".

Appendices

Appendix 1 – Table of Findings for Talanoa Session 1 (Pre-trial)

Participant (Individual)	Themes based on pros and cons of Ka App	Feedback from Talanoa
T1	Pros – <u>Reward systems</u>	T1 - relays that there is a current reward system to help implement PB4L in the school as they state, “using gold cards to reward students that’s the way we are running it at the moment”. T1 went on to explain that rewarding was more important than reporting incidents because the change in behaviour based on rewarding is huge. Incidents reports is the inverse side to that
	Cons – <u>Accessibility</u> Gold cards are traded between students and so not <u>individualised</u> <u>Consistency</u>	T1-Explains that the gold cards are paper based and not accessible – “cards on hand” at all times, limited supply of gold cards, so “you have to remember who you have rewarded and try and get them the gold when you can” and “as soon as you notice a student doing what they are meant to be doing and you want to reward that behaviour, you can instantly give a point and reward them” T1 – Stated that the trading of the gold cards prevents the teacher from <u>individualising feedback</u> to behaviour and if it not valued than it no longer is reinforcing for positive behaviour and compared the app to the previous paper-based system – “It provides consistency, which I think is key.”
T2	Pros –	
	Cons – <u>Lack of data</u> Reinforcement Parent engagement Individualised	T2 – explained that there has -been a lack of <u>data</u> with the gold cards, we haven’t had any data for identifying different students and how many gold cards that each student has. T2 also says that teachers need to know why the student is getting a reward and the <u>reinforcement</u> is linked to the behaviour with the statement “...for what particular reason.”. T2 goes on to explains that previous system does not have a way to communicate the student’s behaviour goals to parents and that the app could have a way to show parents – “Especially in like parent interviews, we can actually pull out what their child has been showing (behaviours) with parents and things like that.”
	Suggestions for research (Toli) Help button	T2- Maybe add who we can contact, if the system is down.
T3	Pros-	
	Con – <u>Consistent use across all staff</u>	T3 Stated that other staff also need to be included in the current reward system- “I think other people like office staff and say Lxxxx, who has contact with our kids all the time, need to be pulled into that loop”. Therefore, a reward system needs to be <u>consistent</u> across all staff to maintain the fidelity of data and practice. T3 – (the new app) Definitely is time saving, I am most probably be

	<u>Time saving</u>	the person that hasn't sat down with incident reports, but I am very keen to get stuck into this.
T4	Pros – <u>Tangible rewards</u> Intrinsic versus extrinsic motivation	T4 – Explains that students need tangible rewards (paper based) and stated – the ability of the teach saying “here you go Rxxx” (actioned the giving of a gold card), is the <u>tangible</u> thing for him (student) and to take that away is yeah and how that may affect him”. In terms of using extrinsic motivation of reinforcement, T4 had a strong belief in the notion of tangible rewards over digital ones. Participant for was also concerned the upcoming application would negate the ability for a teacher to give a tangible reward as they said – “it does make it easier to track data but on the flip side, the way we give gold cards quickly, is somewhat compromised by the app”.
	Digital applications are more engaging for students Balance praise and negative reinforcement	T4- also states that one of the students wanted the app version of the rewards system more than the paper based - I have got Cxxxxxx who doesn't want gold cards or my class points, he wants his to go on the app. T4 goes on to explain that there needs to be a balance of praise versus negative reinforcement “from a kids point of view yeah they love the praise. It's smart to involve them in what they like, and for our own piece of mind we have to have the negative things are that could make or break a class. So, both of them”.
	Suggestions for the research (Toli)	T4- “Will we do separate activities to the kids; will they have surveys.... could we do our own google survey and bring that to the next session?”
T5	Pros – Tangible	T5 states that the current paper based golds is tangible but also that the app could help them see it too, the students know “what they are getting rewarded for and their incidences and stuff like that and we will be able to track through that and I know that they can see their gold cards and stuff but it's cool for them to open up on the app”
	Cons – Accessibility Ease of use Data	T5- highlights that the new app will be more <u>accessible</u> and states that “the feature, where we can select multiple students at once is good (current gold cards you cannot do this)” in reflecting on the features of the Ka Pai app. T5 – reflects that the new app will have <u>ease of use</u> : “when you are doing fitness, selecting students and click it in. Or even incident reports, it's good that you can do that all at once,” also that data will be easier to report “it gives us that data for multiple students and you don't have to write out separate set of reports.”
T6	Pros – <u>Tangible rewards</u> <u>Extrinsic Motivation</u> <u>Positive reinforcement</u>	T6 stated that a student in their class was very motivated by tangible rewards and the paper-based system worked well for – “there is also students who, that's not going to work for them, they like the tangible (pro).” Another theme in this participant's responses was that the rewarding was focused on <u>extrinsic motivation</u> as a way to motivate students to stay on task. “One student in particular, his thing is to count his gold cards every day and that's his kind of carrot to keep him going and keep him on task and keep him coming to school.”
	Con – Gamification Data Negative reinforcement	T6- Shared that the new Ka Pai Application meets her learners needs to gamify their learning as they like gaming and could be addicted to using apps. This aspect was not as readily visible in the previous paper-based reward system as T6 states that – “the app will work for student as that is their world, as you know it's almost like a video game for them, they could get addicted to it.” T6 also agreed with T2 in sharing data with parents both positive and negative reinforcement – “The positives and not just

	Parent engagement	<p>the negatives”.</p> <p>T6- focused on how the data from previous system was used to not send students on their end of term trip – they wanted to see the new Ka Pai app data used as a positive reinforcement T6 – “highlighting those children that didn’t get to the good day trip because of a negative reason, we can reward the kids who got the positives and that’s why they are going.... So that you could highlight that it was for positive behaviour and not negative.”</p> <p>T6 – also states that- “I think using it at home is pretty cool and share it with their parent.” Which affirms the need for better parent engagement?</p>
	Suggestions for research (Toli)	T6- Agreed with another “Like a feedback” and wanted a feedback button.
	Feedback button	
T7	Pros –	This participant linked the tracking of negative reinforcement data to a must out of the two features that they preferred- “the negative (incident reports) we use to get funding for kids. So, if everything is tracked we could then go to the Ministry (MOE), or RTLB or whoever, this is our own data rather than wait for them to come for 6 to 8 weeks to come and get it themselves”
	Tracking of negative reinforcement data	
	Cons –	T7- explains that “the app helps us track positive behaviour, more than we are actually doing (currently). At the moment we are looking at the negative (incident reports), it will bring that data in I think.” which is an example of collecting data for the positive reinforcements given by teachers.
	Data for positive reinforcements	
	Suggestions to improve research approach –	T7- Is there anywhere on there, if we were using it and we wished that it was in there (app), such as a button where we say, next prototype can we add this?
T8	This participant was engaged in a number of other tasks unrelated to the Talanoa during the session – I have added their space as they did end up feeding back on the application in the second Talanoa and also trialled the application as well for two weeks. They made head nods not visible during the discussion but did not participate verbally and was also absent for parts of the conversation as they had to deal with students and parents near the staff room.	
T9	T9 part in the study overall and contributed to the testing and second Talanoa session. They did not share during the first Talanoa but gave a lot of feedback during the second session.	
T10	Pros- Data 4 to 1 ratio balance FBA Consistency	<p>T9- gave feedback on how as teachers they need to be using the paper-based system more authentically. “I would like to look at it as <u>authentic rewarding</u>, being compared to incident reports to gather and collect that <u>data</u> to determine how what our next steps will be.”</p> <p>The participant also went on to reference the PB4L approach of 4 positives versus 1 corrective.</p> <p>“So, I think it really depends on how we use the incident reporting vs how much rewarding we are doing because I am sure not all of us ask about gold cards.”</p> <p>The participant then went on to share the possible use of the data in the context of next steps which could be around the Functional Behavioural Assessment (FBA)</p>

	Cons- Consistency	Participant T9 also alluded to the lack of consistency in the current paper-based system “I think it really depends on how we use the incident reporting vs how much rewarding we are doing because I am sure not all of us ask about gold cards”
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	<p>Timeframe for the trial</p> <p>Technical issues</p> <p>Timing of the trial</p>	<p>suggestion to improve the application the participant said – T9 “I have no idea, it’s just something I have been thinking about the last few days, maybe someone else has any ideas, maybe one or two sentences”.</p> <p>Later in the discussion T9 also added that there needs to be consistency of how the incident could reported in a fairer way – “Can I add one more, T8 just reminded me of something else that I have not shared, it’s only a minor with incidents reports probably about one or two a week, we need to make it consistent within the school. Maybe something where a student has done something and lied about it, some teachers have recorded it as a minor defiance and some have said it has lying. So, the differences between majors and minors so something that needs to be built into the app so that it can be made fair”.</p> <p>T4 said in relation to consistency that “I will be honest, I am pretty onto it and I like to keep a balance, you know the 4 to 1 or 3 to 1 so I was really quite conscious of the amount I am giving genuinely and realistic to me and doing that I couldn’t believe that I couldn’t beat T3”. This showed that the participant found that using the Ka Pai as a competition but one that is genuine and consistent as well.</p> <p>Participant T9, was concerned about the time frame of the actual trial and stated that following – “I think in terms of time, so it was ten days for the trail was short and the amount of feedback is awesome, it’s one of the things I love about this place but a longer trail and more feedback to come out”. This meant that the participant felt that they would have given the trial a proper go had the intervention been used for a longer trial period. This was also echoed by T5 who said, “I know it wasn’t done in was my down fall in the last two weeks, as I have been too busy”.</p> <p>Participant 9 said that they were not able to access the app as they were away from students and did not have a phone. However, the application was available in a browser version accessible on the computer, which was shared at the start of the trial. Participant T9 said “I didn’t really get to trial it. That’s because of the nature of my job being a librarian, so was away from the students, and I don’t have a phone not being able to handle the app. So, when I was not able to reward the students on the spot around with the students, I wasn’t able to use the app that much”. Therefore, in terms of good research practice the researcher should have been checking when some is not able to access the trial due to technical difficulties.</p> <p>Some participants raised concerns about the engagement of the Ka Pai App. T5 explained that they had not engaged due to the limited trial period and timing of the year – “I admit I haven’t done it as much as I probably could’ve business of the time of the year, so our kids are not reaching their badges as other classes”. This showed that they felt their class was not able to fully engage with the trial, a factor which will need to be addressed as a limitation of this study.</p>
<p>How does the application compare to the previous paper-based version of regarding and reporting for PB4L?</p>		
<p>T1 T2</p> <p>T4 T5</p> <p>T7</p> <p>T8 T9</p> <p>T10</p>	<p>Alignment of digital goals</p>	<p>A participant mentioned that it aligned with the schools’ strategic goals to become fully digital by saying T2 - I think the app is in line with the digital goals of the school in regard to the bigger picture, where the school is heading digitally. This showed that moving away from paper-based version of PB4L the school is meeting its strategic goals.</p> <p>One participant argued that the tool was the same i.e. T9 said - It’s a similar system but using a different tool but essentially, it’s the same it’s just whether you do it well.</p>

	<p>No difference</p> <p>Training tool for new staff</p> <p>Student engagement</p> <p>Whanau engagement</p> <p>Made PB4L rewarding and reporting easier to do</p>	<p>T1 stated - I think its consolidating existing systems that were in place. All the framework is there, and we've be doing the frame for a long time, building consistent through ease of use and keep it going. If we lose staff or gain staff, it is one of those a stepping stone will help with helping new staff and the expectations that we need to achieve, it's got all that we have been doing in an easy to find and easy to use place.</p> <p>Most participant's shared high levels of student's engagement with the application. Participants T1 said that "Positive, I think they were keen to see what it was about" and T7 said that they had students approach them to add their points – "I had some kids email me, can we please have points on the app because we did this this and this". Participant T10 said that- "I found it more engaging, interactive and I really enjoyed it, as my kids like gaming and the kids liked checking up who had the highest points". T10 went on to explain that the when students started to badge it made other students feel motivated to get more awards to get their own badges – "we had mad crazy competition and we had Mxxx who took it to a whole new level as she was the only one to get to three badges. She had the most badges in room 5 and she earned those badges. Someone else asked "how did she get those badges?" and it was really motivating to others (students)".</p> <p>Participant T4 said "Like T10, my kids were really stoked when they saw how their (points) were growing over the week". This showed that the students wanted to track their rewards as they were not able to do this in the previous gold card system.</p> <p>A particular interest raised by T7 was around better Whanau engagement T7 said - I think part of it is, is the philosophy that we are going digital is kids being able to share through digital e.g. how many kids would take 27 gold cards home and show to their parts because most would leave it in their desks yet here most take their chromebooks home and show their parents the comments and on their laptops so it is putting PB4L into the parent community. Which we can do but do it even better through the chromebooks.</p> <p>This was supported by T2 who said - We could give them (parents) their own logins and eventually they will be able to see it.</p> <p>A feature of Ka Pai was the accessibility which was affirmed by the following participants: T2- I think for me when I get home and I am like I have to write that incident report, but now I can do it from home on the couch such as writing an incident report or giving praise to a child and nothing can get missed.</p> <p>T8- I know I haven't had a lot of input into hear but a lot of things that are good for the app- think having the data that you have entered, makes my job easier and the paperwork is live and having to need to get it and its already there and reduces losing the paper work and know what has been done.</p> <p>T5 agreed that the application was a lot easier to use than the paper version, they go on to explain – "I think the ease of use is a definitely a draw card and its proved really easy to use. I think the kids came in from prize giving practice and came and sat down, it was so easy to put a whole group and a whole lot of kids rather than having to fill in individual gold cards and sign all the gold cards". This showed that participant T5 had trialled the Ka Pai to test the ease of use in particular. The previous system they refer to would have needed more time to complete i.e. fill in individual gold cards and therefore less likely to be done by teachers.</p> <p>Researcher – also asked if it was quicker to use than rewarding via paper</p>
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	<p>Reinforcing good PB4L practice</p> <p>Use of Gamification and Persuasive Tech</p> <p>Competition and leader boards</p> <p>Operant conditioning</p>	<p>based and all participants said yes. Following this Participant T7 also that that it was quicker to write an incident report as well – “It was way quicker, and you could also do it in hindsight, you might not have your gold cards on you, but you just pull out your phone and done”. T8- “Probably for me the thing that makes it easiest to have a device and have the functions and its instant instead of doing the paperwork. And do it right there in regard to the paper that you have to fill it out, It used to be time consuming. It takes less time as we have our phones. The app takes the need to carry stuff around. Less time to do the work”.</p> <p>T4- because we have always known to do PB4L, we do the weekly lesson and we look at the data, it certainly reinforces what we have practiced but to a better/higher level and if we, in this job we got to be smarter, it helps us work smarter and it helps us be more accountable and it ticks a lot of boxes PB4L and what we need to do pedagogical teaching, well-done Lou.</p> <p>Participant T10 stated that they were motivated to win the competition for top teacher for rewarding students and suggested that a good way to see if the rewarding was consistent, it was worth looking at the range of students across classes that a teacher reward to. T10 explains – “I definitely get motivated to win but genuinely behind that I feel like wow, that these kids are doing the right thing, so I am going to reward. So my rewards don’t stop at room 5, I have given heaps this term to other classes, I just have to type in the class or room 11 and the whole class comes up so I remember you did this or you did that, so yeah I want to win and I definitely want to win over room 3 and I want to win over T now, but genuinely I think the competition is a good competition and a real motivating factor”.</p> <p>T4- was also engaged by the gamification aspect of the Ka Pai – they said “Like T10, my kids were really stoked when they saw how their (points) were growing over the week. I think when I saw T3 (teacher) had got, more points than me, I was like how I can beat that and thinking how I can be more positive and notice a lot more. T5- I think they already answered it, yes especially through the competition.</p> <p>T4 had shared in the first Talanoa session that the gamification based on digital rewards was not a feature that would engage them or their students, however in the second session they said – “I didn’t think the badges would matter so much, but I when I got it I was like yeah, you got a badge and she got the badge as G got a badge first and I think was interesting to see that”. This showed a shift towards rewarding and being able to engage with PB4L personally through the gamification of receiving badges when their performance improved in rewarding students.</p> <p>T10 Stated that said “I found it more engaging, interactive and I really enjoyed it, as my kids like gaming and the kids liked checking up who had the highest points, I also liked checking who was the top teacher. I found it fun, compared to other stuff (reward systems) we have done”. T10 relates strongly to the theme of motivation and fun in learning a new strategy or approach. This participant also said that they checked their scores and tally and compared it to other teachers. This particular participant also stated that the Ka Pai motivated her to use the application to track the attainment of values and check in on incident reports – “I was going in to check it all the time and at home I was checking it mainly for the top student and top class as it was two classes in particular, so it motivated me to check if my class is there yet. So, it really motivated me, to see where my class was at, where my students were at and my incidents reports were at, also which value (Rangatiratanga, Kaitiakitanga and Manaakitanga) was leading the way in my class”.</p>
How helpful was having Te Reo in the application and why?		

<p>T4 T5 T7 T9 T10</p>	<p>Te Reo Use</p>	<p>Participants had a constructive dialogue regarding the use of Te Reo Māori in the Ka Pai. Initially the discussion started with use of other languages e.g. Tongan or Samoan which was countered by T7 and T9 who said the following –</p> <p>T7– I think they we all know what the pictures means, so it doesn't matter what language is underneath.</p> <p>T9 – I thought a bit about the language too, cos I have worked with the English language leaders and I was thinking about it from their perspective. Also, for me, I am a kiwi, Te Reo means quite a lot to me, and the terminology like Manaakitanga and rangatiratanga, I use those words in my normal everyday language. I know why the researcher used it in the app and justified the use but my question is how effective it for other learners is. It is actually impacting them and making the app more effective what about the middle eastern learners – and the weekly focus may only be applicable to kiwi learners, So the weekly focus being in Te Reo so only those people will know that word. I recently started to identify as xxxxx person and travelled to xxxx and if you were to translate that to xxxx to me it would not make a difference. So, it was quite an interesting experience. Whether it is in English or xxxxx it is not actually going to change my behaviour, but it does value my identity. For some of our kids it could be a barrier particularly ESOL and they are being thrown another language.</p> <p>T4 - I have really enjoyed listening to my ESOLs (students' speakers of other languages) say the words and I actually love that they are learning to use Te Reo, Hxxx tried to say RRR Rangatiratanga and we worked it out and the meaning, now they are confident. I think it is an official language of ours and it covers a lot of expectations we should probably have and personally think I haven't done much (Te Reo) in my class. Having them talk about and discuss it. I love it and also having options for other languages too. Te Reo has to be at the forefront and have it in poster form at the front of our office and the speak can be natural like it is for you (T9) as I didn't use these until the app came out, so it made me have to learn more which I think is great.</p> <p>T5- I think it's called Ka Pai which is in Te Reo, I think its key that it stays in Te Reo. I like the idea of the language week.</p> <p>T10- So just in line with the language and Te Reo being the official language of Aotearoa and it might be good if we could add a whakatouki and have a whakatouki aligns with respect or lesson or focus of the week could have a whakatouki on the dashboard.</p>
<p>Any suggestions for improving the Ka Pai application?</p>		
<p>T1 T2 T3 T4 T5 T6 T7 T8 T9 T10</p>	<p>Keep it accountable</p> <p>Change the images on the dashboard</p> <p>Being able to reward a large group (ease of use)</p>	<p>T5 Suggested a way to make it more consistent across the school if some teachers are using it more than others – “I think one thing to make it really successful in the future and next year is and add on to what they say is to make it somewhat consistent across the classes, it would be kind of unfair if someone is up to badge 50 and because the teacher of another class gives less”. Therefore, the re-design of the application needs to have accountability built into from the PB4L team to re-design it better for 2018. (All participants agreed with this statement through head nods, no on objected).</p> <p>Participant T2 suggested that the students voiced why there was a picture of a young student on the page – “I have some students ask me why there was a picture of a young child on the app, and not someone their own age”. This could help intermediate age students better engage with the application if the dashboard image was of their school or students of their age group.</p> <p>Participants T1, T2 and T5 suggested that if the app had the ability to award a large group at once i.e. whole class, sports team, house. T1 suggested that “multiple selection of students while you are able to see them individually, so if you could tick and send that would be really</p>

	<p>Student's praising each other – peer-based rewarding</p> <p>Better profile pages</p> <p>Targeted praise</p> <p>Include other languages</p> <p>Other rewards and use of avatars</p>	<p>handy for example so be able to give points at assembly and you have 170 kids waiting to get their points. You have to try and remember and so it would be awesome so that you could give it to all". This was also agreed by T2 who said, "if you could have groups set up on the app, you know sports groups, classes and literally give to the whole group". However participant T4 said they could select four students at a time - "I thought that was still quite fast, I have just done the four cleaning the hall right now" (showed T1 their laptop and gave the example).</p> <p>T5 rebutted and said "It's like if you got a range of students and you got to give. Also, it would be good to see which ones you have done already. Because it doesn't come up with who it is. One time I was giving out points and it didn't show who it was" and after a discussion agreed that it was more of the technical aspect of the app's interface rather than the strategy being used.</p> <p>Participant T2 shared some ideas about increasing peer-to-peer engagement with the application which we discussed by the other participants namely T1 and T4. T2 suggested "I think a way of allowing the students to praise each other –and T1 stated that could look like – "that ties in well with student award of the week, ties directly into that and you can see a kid that is actually being good and not a biased and a kid who is in the shadows". They discussed how this would help identify students who are not being rewarded by teachers it could be gamified through students being rewarded with ways of individualising their profile page (T4 and T10).</p> <p>T4 stated that – "I think maybe just the aesthetics of and if there was an option of how it looks like, rainbow green and a little bit more control" and T10 agreed with the following statement – "Would it work if they could use their points to purchase backgrounds?".</p> <p>Other gamified learning tools use shared profile pages and as suggested by T2, the students could view each other's profiles as well - "kind of like Manga high – when they can see how many the other child is getting".</p> <p>Some participants wanted a space where targeted praise could be given through the app – T6 "I was a bit surprised as I couldn't add a comment of why I was giving that. If it was written, cos you feel good positive written comments about yourself and if they could see all the positive comments then they might try to do it". Participants T9, T6, T7 and T4 shared that they would like to have a feature in the application where by the teacher had the option to write a statement on why the student got the reward if they wanted or if there were some generic values that the award was linked (the app already has this feature based on the three school values). T4 – "I think there are some generic reasons why we give out these points anyway. Maybe we could find those top three or five values and a section for other". T5 also suggested that- "it could be like an activity tracker so like who gave them the point and why, such as awarded 'Kaitiakitanga, Mr E, and date and it could be a drop down and what you don't want to happen is to have to write a whole lot. Such as picking up rubbish could under Kaitiakitanga". This discussion gave some clear feedback on how the teachers rewarding could be more visible to students and target to the reason why they were praised.</p> <p>T10- "For our Pasifika language weeks, could we have the Kopu have it changed into languages of other ethnic groups during our language weeks".</p> <p>This was also supported by T6, who said "could we change the language or the students change the language e.g. Txxx is Tongan so could we change his one to Tongan so it's all in his language. It would make useful to them".</p> <p>T8- Just while we are doing down the official language of NZ, we could have sign language. When asked why, T8 suggested that - I was thinking, about the special school when you roll out to other schools.</p> <p>Some participants suggested the following rewards to the Ka Pai app,</p>
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		<p>T2- maybe if they got a certain amount of points, it could unlock a game and they could have a game as a prize</p> <p>T8 – the prize could be a few gold cards</p> <p>T5- it could be like SIMS (avatar), it could be a house, change the colour, signs out, that could be gamified where they could see what other students are at – a competition against others.</p>
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Appendix 3 - Talanoa method, outline and questions

Talanoa: Instructions for the researcher

Title of Research Project - Evaluating a prototype digital mobile application for the Positive Behaviour for Learning (PB4L) Pedagogy

Number of Participants: 10 teachers

Trial of Ka Pai Application prototype: 4 December 2017 to 14 December 2018

Lead researcher: Lou Reddy

Following Instructions are for the researcher are in standard print. Focus questions to be read out are in bold. Prompts are also provided, to be read out if and when needed (for example, if people do not understand a question, or to help encourage further discussion).

Running the Talanoa Sessions

Please refer back to these notes just before the group is due to meet.

Ideally have two people to facilitate the sessions - one to lead the session, the other to take notes and make sure the recording equipment is running properly.

Researcher will take a recording of the group session via their laptop.

The researcher has a goal to seek out and reach a group viewpoint as far as possible. The researcher will try to get everyone involved in the discussion. This does not mean that everyone must have the same view, but the discussion should lead to some conclusions. The researcher will need to record both majority and minority views via the recording device and by sharing the speaking if needed with a talking piece (only used if one-person states to dominate the conversation).

Also, as this focus group is using an application prototype – there will be planned training sessions in advance of the focus group sessions to help teachers and students learn how to use the application. A how to will shared how the application will work for students and teachers separately and shared before 16 November 2017.

Before the group assembles

Test the recording equipment to make sure it is working and that the sound is recording at an acceptable level.

Ensure you have any paperwork ready before the participants arrive, e.g. notes, name badges, and Participation Consent Forms (see below).

Preparing to start the session

As people assemble, researcher will offer them some refreshment.

Once people are settled, check with the group are aware of the time frame for the focus group and check in with each participant if they need to leave early. Researcher to draw a 'map' of where everyone is sitting to help with transcription but only if it discreet and not invasive.

Researcher to make sure that everyone is comfortable before starting and that everyone can see each other. Read out the statement on confidentiality:

Opinions expressed will be treated in confidence among researchers and supervisors. All responses will remain anonymous and you may leave the study at any time by writing to the researcher.

For ethical reasons participants should be asked to sign a Participation Consent Form, containing the following sections:

I have been given an explanation of the nature and purpose of the study.

I have the contact details for the staff involved.

I understand that I may withdraw myself and my data at any time, without consequences.

I am satisfied with the arrangements to ensure that it will not be possible for me to be identified when the results are made available.

Go through the consent form and information sheet with each participant and ask him or her to sign the form.

Check that there are no objections to the use of the audio recorder; then switch it on.

Introduction to the session

Researcher will start off by reiterating the purpose of the meeting. Using a statement such as:

I'm very grateful to you all for sparing time to talk about the Ka Pai app prototype. The purpose of this focus group is to gather your feedback on the following key questions and there are no right or wrong opinions, I would like you to feel comfortable in saying what you really think and how you really feel.

We will also collect user metric data throughout the trial such as number of times you logged in, points given, and reports completed. This is not an indication of your performance as teacher but rather how well did the application support you.

I will be using a Talanoa approach to lead my research with the following headings – Toli (introduction and training for the application), Tui and Luva (post trial and analytic data gathering). I have used this approach as it is more empathetic and caters for our diverse cultural backgrounds.

Proposed sessions (listed on the white board)

Toli (intro and training) - 4 December, 8am in Staffroom

Tui and Luva (final session for focus group) - 14 December in Staffroom

Discussion for first session: Toli on 4 December 8.15 am in the staffroom

Researcher will introduce the first session questions with:

A major area of interest to this study is how might the Ka Pai application support teachers in implementing PB4L. Thinking specifically about rewarding and reporting incidents, I would like to discuss with you the pros and cons of the existing method of PB4L pedagogy around rewarding and reporting incidents and also compared to the proposed Ka Pai app.

Q1 How does the app compare with existing methods of PB4L pedagogy in place at the school?

Use Prompt: write a pro's and con's list on the white board for the feedback for the existing methods and then share the application link with staff and do a training session on it.

Q1a In terms of reporting incidents and rewarding students, which is the most important feature to you and why?

Q1b In terms of how the research will be shaped, what advice can you give to the researcher about giving feedback, and how this can be done to best illicit your opinions?

Use Prompt: How can we use the Talanoa approach to help you express your opinions so that it will be heard and acted upon as we develop the application during the trial?

Ending the session

Finally, summarize the discussions and thank participants for their time and remind them about next session. If participants struggle with any aspect of the application, they can contact the researcher via reddey@wesleyintermediate.school.nz with a screen shot of the error or issue they encounter.

Researcher to collect the Participation Consent Forms.

Remind the participants about the second session on the 30 November- 8am.

Discussion for final session – 14 December – 8 am in the Staff Room

Researcher to use the same structure as first session and consent forms will have already been collected.

Researcher: This will be the final session for the participants and some may have already feedback to the researcher via email, but the focus group is where the Talanoa can come full circle, so let the participants share regardless of opposing opinions to the hypothesis.

Firstly, I would like to thank all the participants for their contribution to the research and acknowledge that it has been a huge time expense to learn a new tool and implement it. Secondly the next set of questions summarises your overall feedback for the Ka Pai app.

Tui is where we gather feedback about your experience. This is called “User experience” and is likely to have an impact on your current PB4L practices whilst using the application. Therefore, the needs identified in the first session can be evaluated in this session to see if you are supported by the Ka Pai application. Keeping in mind that the application is a prototype and may have some glitches, I would like to gather your feedback about the application and how it is supporting you with PB4L needs.

Q2 How successful was the intervention in regard to your enjoyment and effectiveness for meeting your PB4L pedagogical needs?

(Prompt: to support you in rewarding students and reporting incidents quicker).

Q2a What reaction did your students have about the application?

Q2b What suggestions do you have to improve the application?

Next set of questions are focused on using Te Reo within the Ka Pai application -

Q3 How well was Te Reo incorporated in the PB4L features of the app and what can be done to better integrate Te Reo?

Q3a In terms of Te Reo being used in the application, how helpful to you and your students was having Te Reo in the application and why?

Q3b What aspects of the application Te Reo incorporated in the Ka Pai application could be improved and how?
Luva

During Luva, we will be reviewing the entire study and also reflect on the analytic data that we have collected so far.

Q1 How does the app compare with existing methods of PB4L pedagogy in place at the school?

Q1a How did gamifying the badges and levels for attainment help motivate you and the students?

Q1b What aspects of the app would you change and why?

Q2 How successful was the intervention regarding your enjoyment and effectiveness for meeting your PB4L pedagogical needs?

Prompt: Share the analytic data – randomised data for total staff usage, time spent in app and number of rewards and incidents awarded. If the question is not being responded to try the following.

Q2a Comparing the data, from our initial feedback in the Toli session, do you feel like the app has increased your enjoyment?

Q2b Has it supported your PB4L needs and why?

Q3 How well was Te Reo incorporated in the PB4L features of the app and what can be done to better integrate Te Reo?

Thank you again for participating in the trial of the prototype and we hope that you have enjoyed in being the first to experience a new PB4L tool. We also encourage you all to follow the updates for the application and master's thesis via our blog <https://louandgerhardsapp.blogspot.com/>.

Finally, summarize the discussions and thank participants for their time and remind them to check in with you should they wish to continue using the application.

Appendix 4 - Information for Participants, Schools and consent forms



Information for participants

Research Project Title: Evaluating digital mobile applications for the Positive Behaviour for Learning (PB4L) Pedagogy

Synopsis of project

This study aims to validate the trial of the “Ka Pai app” prototype based on the principles of Positive Behaviour for Learning (Ministry of Education, 2017). The participants (teachers in an Auckland based intermediate school – Wesley Intermediate School) will trial the application and give feedback on its effectiveness in supporting them implement PB4L. The prototype has been created in consultation with Gerhard Vermeulen, current Wesley Intermediate School staff, UNITEC professors – Nilufar Baghaei and ex UNITEC computer science student – Tao Liu and METRO ITP vouchers.

What we are doing

Participants will evaluate a Ka Pai application that has been co-designed based on whether it provided effective ways of acknowledging and reporting incidents. The research design is based on Talanoa (Vaiolleti, 2006) and also on the use of Kaupapa Māori (Pihama, 2010) principle of Te Reo Māori in the New Zealand Curriculum. The research will be done through sessions of Talanoa (a Pasifika research approach similar to focus groups) and hopefully enable the researchers to record and collect your feedback about the app. We will also collect user metric data throughout the trial such as number of times you logged in, points given, and reports completed. This is not an indication of your performance as PB4L teacher but rather how well did the application support you.

What it will mean for you

Your involvement in trialing the prototype application is highly valued and we want to minimize any extra work needed to implement this new tool. We will be training participants during the normal PB4L training times on Thursday 8 am in the staffroom as to reduce any extra meetings in your busy schedule. All you have to do is trial the app over a four-week period and feedback during the Talanoa sessions. All data will be collected automatically through the app which includes number of times used, points and reports written and also via transcription, so you do not have to do any extra forms or surveys.

Key dates for Talanoa sessions –

Toli (introduction and start of trial) 4 December 2017

Tui and Luva (end of trial and final feedback) 14 2017

If you agree to participate, you will be asked to sign a consent form. This does not stop you from changing your mind if you wish to withdraw from the project at any time.

Your name and information that may identify you will be kept completely confidential. All information collected from you will be stored on a password-protected file and only you, the researchers and our supervisors will have access to this information.

Please contact me if you need more information about the project. At any time if you have any concerns about the research project you can contact my supervisor:

Researcher: Lou Reddy Mobile: 021767661 email:

lreddy@wesleyintermediate.school.nz

My supervisor is Nilufar Baghaei, phone 815-4321 or email nbaghaei@unitec.ac.nz

UREC REGISTRATION NUMBER: *2017 1081*

This study has been approved by the UNITEC Research Ethics Committee from *4 to 14 December 2017*. If you have any complaints or reservations about the ethical conduct of this research, you may contact the Committee through the UREC Secretary (ph.: 09 815-4321 ext. 8551). Any issues you raise will be treated in confidence and investigated fully, and you will be informed of the outcome.

Participant Consent Form

Research Project Title: Evaluating digital mobile applications for the Positive Behaviour for Learning (PB4L) Pedagogy

I have had the research project explained to me and I have read and understand the information sheet given to me.

I understand that I don't have to be part of this research project should I chose not to participate and may withdraw at any time by writing to the researcher.

I understand that everything I say is confidential and none of the information I give will identify me and that the only persons who will know what I have said will be the researchers and their supervisor. I also understand that all the qualitative feedback and user metric information that is collected and give will be stored securely on a computer at Unitec for a period of 5 years.

I understand that my discussion with the researcher will be taped and transcribed and generic user data from the application will be collected such as time in app and number of features used.

I understand that I can see the finished research document.

I have had time to consider everything and I give my consent to be a part of this project.

Participant Name:

Participant Signature: *Date:*

Project Researcher: *Date:*

UREC REGISTRATION NUMBER: 2017-1081

This study has been approved by the UNITEC Research Ethics Committee from 4 to 14 December. If you have any complaints or reservations about the ethical conduct of this research, you may contact the Committee through the UREC Secretary (ph.: 09 815-4321 ext. 8551). Any issues you raise will be treated in confidence and investigated fully, and you will be informed of the outcome.



22 November

To The Wesley Board of Trustees

Study for Organisation

My name is Lou Reddy I am currently enrolled in the *Master of Applied Practice* degree in the Te Miro Postgraduate programme at Unitec New Zealand and seek your help in meeting the requirements of research for a Thesis course which forms a substantial part of this degree.

The aim of my project is:

The research study aims to evaluate how teachers are trying to implement PB4L in their classrooms and school-wide via an already co-designed digital application called Ka Pai app.

Evaluate whether the Ka Pai application provides teachers a positive to negative ratio of rewards to incidents of 4 to 1 based on analytic data and teacher feedback. Prototype the inclusion of Kaupapa Māori principle of using Te Reo (Māori language) in the PB4L vocabulary for the application and gauge whether teachers valued this feature.

I request your permission in the following way: to allow me the opportunity to work with the staff at Wesley Intermediate School to trial the “Ka Pai” application and provide feedback during the normally allocated PB4L time on Thursday 8am in the school staff room. I will also collect user metric data for example number of times the app is used, points given, and reports completed automatically through the app’s analytics. All participants can withdraw from the study at any time, by writing to the lead researcher. The research design is based on Talanoa (Vaioliti, 2006) and is based on the use of Kaupapa Māori (Pihama, 2010) principle to value the use of Te Reo Māori in the New Zealand Curriculum.

Your organisation will be identified in the Thesis as a leader of PB4L and demographics of the school will be too hard to keep anonymous, but the participants will not be named. The results of the research activity will not be seen by any other person in your organisation without the prior agreement of everyone involved. You are free to ask me not to use any of the information you have given, and you can, if you wish, ask to see the Thesis before it is submitted for examination.

Please confirm in writing if you are able to allow me to conduct the research at the school during school hours with the staff. If you have any queries about this research, you may contact my principal supervisor at Unitec New Zealand.

My supervisor is: Nilufar Baghaei phone: 815-4321 or email: nbaghaei@unitec.ac.nz

Yours Sincerely

Lou Reddy

Mobile: 021767661

email: lreddy@wesleyintermediate.school.nz

UREC REGISTRATION NUMBER: *2017 -1081*

This study has been approved by the UNITEC Research Ethics Committee from *4 to 14 December 2017*. If you have any complaints or reservations about the ethical conduct of this research, you may contact the Committee through the UREC Secretary (ph.: 09 815-4321 ext. 8551). Any issues you raise will be treated in confidence and investigated fully, and you will be informed of the outcome.

Appendix 5 – PB4LSW supporting letter



28 November 2017

To: Unitec Research Ethics Committee

Re: Research ethics application Ref 2017-1081

I am a Positive Behaviour for Learning School-Wide (PB4L-SW) Practitioner with the Ministry of Education. In this role I liaise with Lou Reddy to support the implementation of the PB4L-SW framework at Wesley Intermediate School. The School has an agreement with the Ministry of Education to implement the PB4L-SW framework.

One of the seven essential features of the framework is a school-wide student acknowledgement system to be used by all teachers. Lou has developed an App that meets the requirements of the PB4L-SW framework as a “Free and Frequent” acknowledgement that is easy for staff to use to acknowledge positive behaviours by students. This letter is to clarify that the App supports the implementation of this part of the PB4L-SW framework.

I understand that Wesley Intermediate has approved the development and testing of this App within their school.

Yours sincerely



Jenny Barker

Ministry of Education
Positive Behaviour for Learning School-Wide Practitioner
DDI: 6329460 Mobile: 027 839 0467
jenny.barker@education.govt.nz
Private Bag 92644, Symonds Street, Auckland 1150

Appendix 6 - Publications

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- Reddy, L., Baghaei, N. (2018). Improving Teacher Behaviour in Implementation of Positive Behaviour for Learning (PB4L) Pedagogy: Persuasion via Gamification, Adjunct Proceedings of 13th International Conference on Persuasive Technology, Waterloo, Canada, 16-19 April.

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Declaration

Name of candidate: Lou Reddy

This Thesis/Dissertation/Research Project **entitled** : Persuasion via Gamification:
Mobile Applications for Supporting Positive Behaviour for Learning (PB4L)
Pedagogy

is submitted in partial fulfillment for the requirements for the Unitec degree of
Masters of Applied Practice

Principal Supervisor: Nilufar Baghaei

Associate Supervisor/s: Hayo Reinders

CANDIDATE'S DECLARATION

I confirm that:

- This Thesis/Dissertation/Research Project represents my own work;
- The contribution of supervisors and others to this work was consistent with the Unitec Regulations and Policies.
- Research for this work has been conducted in accordance with the Unitec Research Ethics Committee Policy and Procedures, and has fulfilled any requirements set for this project by the Unitec Research Ethics Committee.

Research Ethics Committee Approval Number: 2017 -1081

Candidate Signature:

A handwritten signature in black ink, appearing to be 'Lou Reddy', written over a dotted line.

Date:

12-09-2018

Student number: 1448635



Full name of author: Lou Reddy

ORCID number (Optional):

Full title of thesis/dissertation/research project ('the work'):

Persuasion via Gamification: Mobile Applications for Supporting Positive Behaviour for Learning (PB4L) Pedagogy

Practice Pathway: Te Miro Postgraduate Applied Practice – Digital and Collaborative Learning

Degree: Master of Applied Practice

Year of presentation: 2018

Principal Supervisor: Nilufar Baghaei

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