

Designing Mobile Applications for Improving Positive Behaviour for Learning (PB4L) Pedagogy

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Abstract: Applications and online digital games are currently being used in New Zealand schools for the teaching of reading, writing and maths regularly. However, the teaching of behaviour has been heavily reliant on paper based and traditional forms of reinforcement as shown by the Positive Behaviour for Learning–School Wide (PB4L-SW) pedagogy. In this paper, we will introduce our current school based research for developing a tool for implementing PB4L-SW. We also describe our efforts in gamifying the teaching and reinforcing of behaviour through the design and development of the proposed “mPB4L” mobile application. We then outline our future plan for evaluating the effectiveness of the app in teaching Positive Behaviour and seeking teachers’ feedback at an Auckland-based Intermediate school. The findings will be used to support further development of integrating the PB4L into the digital world.

Keywords: gamification, behaviour management, game design, PB4L, teaching behaviour.

1. Introduction

Since 1989, the New Zealand education system has been largely punitive in its approach to behaviour management based on the reforms of the “Tomorrows Schools”. The New Zealand government at the time made the Ministry of Education have less administrative management of schools (Wylie, 2009). The Tomorrows Schools initiative was meant to decrease Maori (the indigenous people of New Zealand) under achievement and stand downs. A stand down is when a teacher decides that a student is to be removed from school for up to 10 days within a school year. Suspensions are considered a punitive approach and support little change in students positive behaviour (Lewis, Sugai, & Colvin, 1998). In 2015 - Hillier’s study of stand downs in New Zealand indicated that there were 14,198 stand-down cases (Hillier, 2015). This is a problem for educators as each of those cases of stand downs is when a student is not engaging with their learning and summarily not achieving. Maori and Pasifika learners therefore are disproportionately represented in the Hillier’s data due the behaviour management system set up to help them. The context of the research project is predominantly focused on Maori and Pasifika populations and therefore the forementioned data is pertinent to the study. Changes to practice could yield in positive outcomes for Maori and Pasifika learners however teacher responses to students behaviour needs to move away from the punitive responses in order to keep students highly engaged and in school (Guo et al., 2011).

The problems associated with stand downs within New Zealand and its relationships with current behaviour management and instructional approaches have been a major concern of politicians and educators alike. In Tomorrows Schools, the original aim was to create more individualised and culturally responsive approaches to behaviour management, which never

eventuated. However in 2009, the New Zealand government's Ministry of Education cited the Taumata Whanonga Behaviour Summit, which highlighted the need of addressing the disproportionate numbers of Maori learners being represented in stand down and under achievement data. The summit provided a catalyst for the changes in how behaviour management support via professional learning and development was offered to Schools (Ministry of Education, 2015). This paper gives a proposed intervention to address one of the gaps in the behaviour systems that support Maori and Pasifika learners.

A perennial issue within the New Zealand education sector is to improve the behaviour management approaches and to mitigate the shocking stand-down statistics highlighted by Hillier and the Ministry of Education (Boyd & Felgate, 2015). Studies on effective behaviour management approaches have shown their effectiveness in reducing stand downs and increasing learning outcomes for students (Lewis et al., 1998; Simonsen, Fairbanks, Briesch, Myers, & Sugai, 2008; Yeung, Mooney, Barker, & Dobia, 2009). This paper also acknowledges the ecological reasons for students' misbehaviour that lead to stand-downs and proposes an instructional approach to behaviour management (Paquette & Ryan, 2001). There are a number of different approaches to support teachers in implementing non-punitive pedagogy and we will propose an adaptation to one such instructional approach.

Positive Behaviour for Learning School Wide (PB4L or PB4LSW) is an instructional approach to effective management of students' behaviour within the whole school environment (Elder & Prochnow, 2016). The instructional approaches can be managed by teachers within the school setting. The strategies or tools used by educators to improve their pedagogical approach regarding classroom management should improve learner's outcomes (Guo et al., 2011). The interventions also reduce student stand-downs and helps to create systems and procedures for effectively managing maladaptive or antisocial student behaviour (Lewis & Sugai, 1999). We use literature to make links to the practices of PB4L and aim to apply them into a digital online gamified learning platform by rewarding the prosocial behaviour (Bradshaw, 2013).

Wesley Intermediate School has implemented the PB4L-SW framework within the school since 2014. The main research question we are investigating in this project is whether a mobile-based PB4L tool is more effective than traditional methods of acknowledging students' behaviour based on improving self-reported and user engagement data.

2. Related Work

The Ministry of Education established PB4LSW support for schools as one of the interventions adopted from the American system called Positive Behavioural Interventions and Supports (PBIS) (Elder & Prochnow, 2016; Lewis & Sugai, 1999). The set up of PB4LSW in New Zealand is based on the work by two key theorists – *George Sugai* from the Centre for Behavioural Education & Research, University of Connecticut and *Tim Lewis* who is the Dean for Research & Graduate Studies at the University of Missouri-Columbia (Ministry of Education, 2015).

Studies into the implementation of PB4LSW by the New Zealand Centre for Educational Research states that PB4LSW:

“offers primary, intermediate, and secondary schools a way of building a consistent and positive school-wide climate to support learning. It is a framework of key elements which schools implement in ways that suit their context.” (Boyd & Felgate, 2015).

PB4LSW systems is targeted at the continuum of procedures for encouraging expected behaviours or reward systems. The rationale for investigating the research around this area is contextualised to the implementation factors of PB4LSW at Wesley Intermediate School since 2015. Theorists suggests that teachers should use reward tools and strategies to help students improve their behaviour, with a goal to reinforce the expected behaviour within a consistent

reward system and school wide (Johansen, Little, & Akin-Little, 2011; Parsonson, 2012; Simonsen et al., 2008).

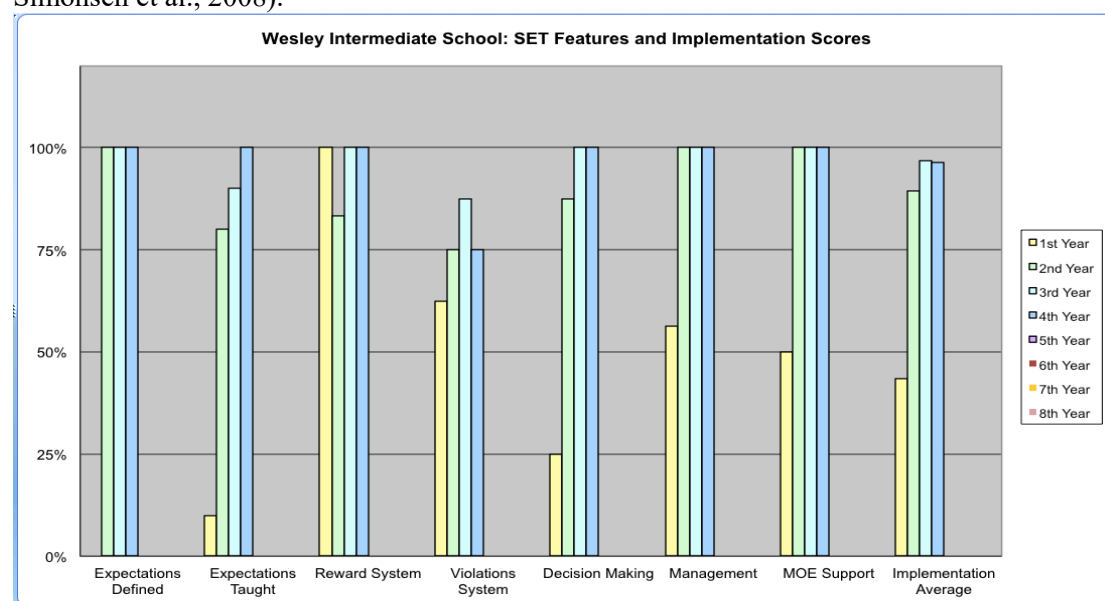


Figure 1. SET survey 2016 Wesley Intermediate School

As part of ongoing evaluation Wesley Intermediate School uses the School wide Evaluation Tool or SET (Horner et al., 2004) to collect data on the effective implementation of PB4L-SW systems. The school initially had lower levels of teaching expected behaviours at the start of training. We have slowly improved our systems and also in a decrease in our stand downs since implementation. See Figure 1 of SET from 2013 to 2016 (Wesley Intermediate School, 2016). As reflected in our SET survey, there is a lack of PB4L expectations being taught and acknowledgement systems being embedded. The evaluation of PB4L –SW similarly shares evidence that implementation PB4L systems in intermediate and high schools need more development compared to Primary schools within the study (Boyd & Felgate, 2015). The review of the current data teacher feedback showed that teachers gave a higher priority to reward systems for non-classroom settings whilst using an Effective Behaviour Survey which is similar to user feedback surveys (Lewis & Sugai, 1999; Ministry of Education, 2017a). Teachers at the school wanted to improve the traditional paper based tokens as rewards for their students. Some educators still use traditional paper based systems as simply they do not have the knowledge or technological skills to create digital tools (Naismith, Lonsdale, Vavoula, & Sharples, 2004). Research shows that teacher’s perspectives towards implementing behavioural interventions is heavily influenced by their understanding or prior education (Johansen et al., 2011).

Research into the implementation of PB4L systems in New Zealand show the need for more development in the engagement of teachers and students in the intermediate and high school sectors (Boyd and Felgate, 2015). In Boyd’s research most primary school coaches (managers) expressed that their staff effectively used acknowledgement and behaviour consequence systems to encourage positive behaviour, however, a quarter (24%) of secondary/intermediate coaches disagreed with the primary school coaches’ statement (Boyd and Felgate, 2015). Educators needs more tools, yet there are not many evidenced based tools for educators to use, so the proposed interventions aim to design a digital tool to support teachers trying to implement PB4L pedagogy in their school (Naismith et al., 2004).

3. Our Proposed mPB4L App

Our proposed app, mPB4L, is based within the context of a NZ Intermediate School’s behaviour management system and inherent in this system are teacher’s perceptions and

efficacy of PB4L. The design and implementation of mPB4L app is making the learning of pro-social behaviour gamified and more engaging for teachers and learners (Schoech, Boyas, Black, & Elias-Lambert, 2013).

We will trial the mPB4L app later this year and evaluate its effectiveness in supporting teachers to implement PB4L pedagogy. As a group of leaders and researchers of PB4L, we have found that there is relevant research promoting gamified forms of digital education to help teachers and students achieve positive behaviour outcomes (Gouseti, 2014 and Kapp, 2012). This app will encourage learners and teachers to use the application competitively and also promote high expectations for Pasifika and Maori learners which will foster better relationships (Hawk, K., Tumama-Cowley, E., Hill, J., & Sutherland, 2002). The app will aim to gamify the teaching and learning of behaviour and the participants' engagement with the app and enjoyment will be measured.

Figures 2-3 shows an initial prototype of the app interface for students with links to the acknowledgements that students may have received from their teachers. The concept heavily focused on students reinforcing each other's PB4L values (respect others, yourself and the environment) within their profile page. Figure 4 shows the user dashboard for the teacher view of assigning points.



Figure 2. User profile



Figure 3. User profile

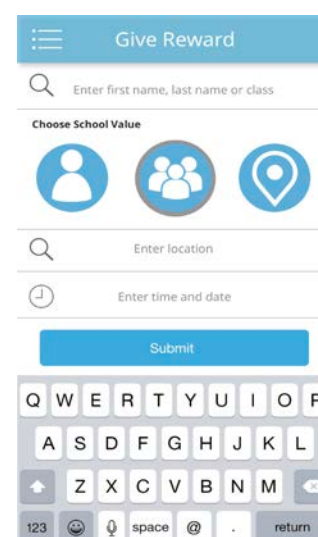


Figure 4. Teacher view

Some potential features could include the app being able to record incident report data, functional behavioural assessment (O'Neill & Stephenson, 2010) and response strategies for antisocial behaviour for teachers which is divergent to similar apps like Class Dojo . We believe our trial and findings will create some meaningful shifts in student wellbeing, decreasing stand-down rates and also increasing teacher engagement of PB4L in the future. The research before and after the trial will inform further design of the mPB4L app.

4. Conclusions & Future Work

In this paper, we outlined a proposed rationale for testing a prototype of the forementioned design and development of mPB4L app, based on evidenced based practice of PB4L (Ministry of Education, 2017b). We have also demonstrated a link to effective use of digital tools such as gamification within apps (Muntean, 2011; Simões, Redondo, & Vilas, 2013) and use of apps in education to provide accessibility and changing students behaviour (Naismith et al., 2004). The long term goal is to make an app that encompasses PB4L pedagogy and research teachers perceptions on whether it helps improve learning relationships and reduce stand down rates (Hillier, 2015).

The methodology will drive what the teachers want in their mPB4L app and we will use an indigenous approach to research the effectiveness of the app. The approach called Talanoa uses the method of informal story telling and will be used during two focus group sessions (Vaiolleti, 2006). The Talanoa sessions will be spread over a term (first before intervention and after intervention). The approach is post-positivistic and encompasses teachers as practitioners conducting research to create solutions (Koshy, Valsa, & Waterman, 2010). The research will focus on whether teachers found the app beneficial in implementing PB4L Pedagogy. Participation is voluntary, not performance based and will have qualitative data collection through Talanoa and quantitative data collection through surveys like the Effective Behaviour Survey (Ministry of Education, 2017a), which is already in place. The Talanoa methodology will allow for culturally inclusive practice. A careful understanding of protocols, values and principles will be needed, for example the considerations made of the differences in male and female relationships, customs of individuals titles and roles (Pihamā, Tiakiwai, & Southey, 2015; Vaiolleti, 2006). We believe our findings will create some meaningful shifts in student wellbeing, decreasing stand down rates and increasing teacher engagement of PB4L in the future.

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