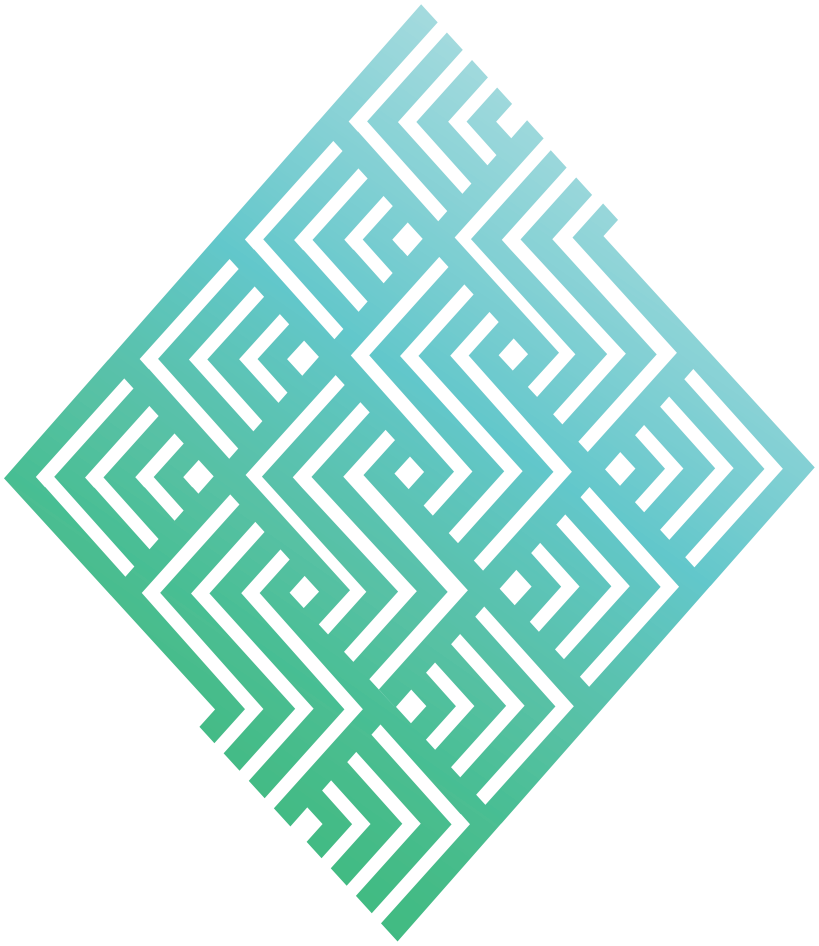
THE ROUNDUP

Volume 2
Issue 1



THE MIND LAB®

TECH FUTURES LAB®

Foreword

Huw Jones

Tuhia ki te rangi,	*Write it in the sky,*
Tuhia ki te whenua,	*Write it in the land,*
Tuhia ki te ngakau o ngā tangata,	Write it in the heart of the people,
Ko te mea nui, ko te aroha.	*The greatest thing is love.*
Tihei mauri ora.	Behold there is life.

E ngā mana, e ngā reo, e rau rangatira mā, tēnā koutou.
Ngā mihi nunui kia koutou katoa.
He uri whakaheke tenei o ngā waka Te Arawa, Tainui, me Ngatokimatawhaorua
Nō Ngāti Whakaue, Ngāti Pikiao, Waikato-Tainui, Ngāpuhi, Ngāti Hamoa, Ngāti Tonga, me Ngāti Wērā ahau
Ko Ngongotaha te maunga
Ko Te Rotorua-nui-a-Kahumatamomoe te roto
Ko Tunohopu raua ko Waikuta ōku marae
Ko Huw Jones tōku ingoa

Welcome to He Rourou. It is an honour to open the Second Edition with a foreword that celebrates our contributors' curiosity, commitment and tenacity while sharing a brief observation of this collection's critical themes and topics.

Previous guest editor Lisa Davis said it best when sharing, “He Rourou is about empowering, growing, and engaging collective voices and knowledge, and sharing them to generate kōrero, collaboration and maybe some magic.”

I hope that in reading this body of work, you will discover something impactful, practical and perhaps even magical that sparks further motivation and inquiry to take on the challenges facing you in your sphere of interest and influence.

Collectively, there are numerous nuggets of inspiration nested within these presentations. As you read through the following articles, you will immerse yourself within the domains of experienced teachers, students, industry professionals, and Mind Lab partners while gaining insight into myriad opportunities within and around our current education system.

Before offering a brief overview of what each submission entails, the following whakatauki (proverb) serves as a guiding needle and thread that weaves together these independent yet connected pieces of knowledge:

"Whāia te mātauranga hei oranga mō koutou"
Seek after learning for the sake of your well-being.

In pursuit of knowledge and understanding, each of our contributors offers insightful discoveries, meaningful reflections, and practical recommendations that benefit the groups and communities they are engaged in and provide us with insight into our individual and collective Hauora (wellbeing).

Our first article, *Supporting Executive Functioning in a Play-Based Environment,* authored by Hannah Newton, looks at children's executive functioning skills in play and the resources teachers employ in their development. Current conceptions of executive functioning and the features of high-quality play-based environments are considered, resulting in several classroom-ready resources being developed.

Improving wellbeing through a modern, integrated experience by Alaine Perrott investigates critical factors contributing to wellbeing, focusing on personal finance and existing solutions available in Aotearoa, New Zealand. Alaine identifies a significant gap in readily available holistically inclusive solutions while calling for a new well-being ecosystem that incorporates financial, personal, community and environmental wellbeing.

Jacob Doak shares his passion for finding innovative ways to best prepare young people for life after school with an insightful article titled *Bridging the Gap: The Impact Project-based Contextualization has on the Motivation of Junior Technology Students: A Mixed Method Study*. Importantly, Jacob highlights that contextualising classwork with industry exposure can increase student motivation, ultimately impacting career aspirations and pathways beyond secondary school experiences.

Next, Melissa Fergusson shines a light on the concerning issue of *Loneliness in Aotearoa*, particularly as it pertains to young people aged between 15 - 24 years old, also referred to as Generation Z. Melissa's submission emphasises the challenges and problems faced by this group, and points to the need for further investigation, resources and support.

Information Knowledge Specialist Senga White shares her passion for lifelong learning and education with a perceptive article titled *History Detectives in Action: Bringing history to life using primary sources*. Senga's contribution provides an approach for the inclusion of local history into the Aotearoa New Zealand History

Curriculum (ANZHC), delivered through a Universal Design for Learning framework that seeks to critically engage students, promote an inquisitive mindset, and grow teacher confidence in working collaboratively with other educators.

Sarah Cooke, an experienced primary school teacher and Masters of Contemporary Education graduate, provides an active account of *The impact of Design Thinking and Steam Learning on student engagement*, which considers evaluating various cognitive, emotional and behavioural factors. Additionally, Sarah highlights some challenges when observing and measuring student engagement, especially during active, hands-on steam learning experiences.

Ka muri, ka mua - Walking backwards into the future, by Violet Pou (Ngapuhi, Ngati Porou), is the first of our practitioner reflections. As the title suggests, Violet's contribution offers an introspective exposition of how the past, and of note, one's experiences, relationships and whakapapa (genealogy), coupled with knowledge of reading patterns and tohu (signs/trends) of the present, can be harnessed to navigate the uncertainties and challenges of the future. Violet's reflection draws upon her knowledge and many years of experience in education, sharing with us her journey of learning and re-searching while building upon her practice and weaving together a passion for storytelling and cultural reclamation.

Our second practitioner reflection, Whanaungatanga in the time of Covid: Strategic and value-based responses to the challenges of Covid-19 in a South Auckland primary school, provides a snapshot of the enormous difficulties our schools faced over the past two years, specifically about online/distance learning and addressing the Digital Divide. Author, Brendon Shaw (Ngapuhi), shares his thoughtful account of his school's "move from emergency online teaching to a more structured version of online delivery through trial and error, conversations, and collaboratively creating systems and structures."

On the theme of wellbeing and education, and following on from Brendan's reflection, Karen Lambrechts and Darcy Vo share an insightful presentation on *The Post Covid Impact on distance learning for New Zealand teachers*. Tuning into their kōrero, Karen and Darcy provide an overview of the critical insights gained from their research, including an in-depth study using a hybrid qualitative/quantitative survey of 31 school teachers in Aotearoa.

Notwithstanding the significant challenges faced by many teachers, students and parents alike, it is encouraging to note how resilient, resourceful and creative our educators are as they deal with the unprecedented impact of Covid-19, the disruptive nature of lockdowns, and the varied concerns of school leaders, parents and the general public at large.

Reflecting on these articles and contributions, many lessons are shared as sources of inspiration and insight, particularly as they emphasise the importance of seeking knowledge to benefit our individual and collective Hauora. As you read through these submissions, you may ponder, *What next? What can and will I do to build upon my personal and collective well-being?*

Huw Jones

Passionate about seeing entrepreneurs succeed in business and all aspects of their lives, Huw is a proud husband, twin dad and serial founder with a background in Entrepreneurship, Education and Marketing.

Through coaching, content, and community building, Huw leverages emerging technologies, holistic wellbeing modalities, and GeniusU – the world's leading Entrepreneur Success Platform, to provide founders with the latest tips, tools and tactics to help them grow, access flow and improve their overall performance, productivity and impact.

As Pou Āwhina here at The Mind Lab, Huw supports our Master's students to consider how a kaupapa Māori lens can enhance their research while also participating in our Moderation and Assessments team ensuring that our MTF students have an opportunity to integrate indigenous principles and values relevant to their projects.

Huw is also the Chair of Ranui 135, a community-based trust dedicated to serving Youth in Ranui and West Auckland.

Regarding academic achievement, Huw has a Bachelor's Degree in E-Commerce from the University of Waikato, a Masters of Business Administration from Auckland University of Technology, and a Masters of Commercialisation & Entrepreneurship from the University of Auckland.

Outside of serving entrepreneurs and students here at The Mind Lab, Huw enjoys quality time with his family, learning about futurology, edtech, the quantified self-movement, and supporting his favourite sports teams, The All Blacks, Chiefs, NSW Blues and LA Lakers.

Research Article

Supporting Executive Functioning in a Play-Based Environment

He Rourou, Volume 2, Issue 1, 1-23, 2022

Hannah Newton

Matua Primary School

Abstract

This project examines how executive function is exercised in a New Zealand primary school. This project aimed to bring together two fields of research: current conceptions of executive functioning and the features of high-quality play-based environments, to uncover the executive functioning skills of children in play and the supports teachers employ in their development.

To implement the project, consideration was given to creating an environment that demonstrated quality play practices to support the development of executive functioning. The action research design was undertaken in three iterations that included 16 Year 1 and 2 student participants. The first two iterations focused on capturing student behaviours using researcher observations and audio recordings, and the third used third-party observations to capture teacher behaviour. An observational tool developed by Moreno et al., (2017) was adopted to analyse student and teacher behaviours for markers of executive function.

The findings of the project suggested that executive function primarily occurs as conversations outside the play itself as it sets the rules that allow a suspension of reality and push the narrative forward. To maximise executive function in guided play, teachers can use a range of verbal supports to support students' executive functioning and provide many opportunities for children to organise their cognition in self-directed and guided play with an intentional adult. These findings are significant because they support current research trends to place executive functions back into the contexts in which they are embedded (Doebel, 2020). To ground these findings in practice, several classroom-ready resources were created. A reflective questionnaire to support teachers to stocktake their current play practices and shift them towards promoting student executive function. A questioning prompt linked to the items in the observational tool. An executive function checklist to determine strengths and areas of support for

executive functioning adapted from Stowell (2018). Future research would focus on how classroom practitioners could use these resources in everyday Year 0–2 classrooms to support teachers wanting to develop executive functioning skills in a play-based environment.

Introduction

Recent findings from the Dunedin Study, a multidisciplinary longitudinal study following the lives of 1,037 babies born between 1 April 1972 and 31 March 1973 in Dunedin's Queen Mary Maternity Hospital, indicated that children with strong self-regulatory skills between the ages of three and 11 enjoy better life outcomes in health, wealth and social domains (Moffitt et al., 2013). The power of self-regulation is underpinned by executive functioning – a set of cognitive processes that are malleable and can be learned – suggesting that developing these skills in the early years could have a lasting impact on outcomes across an individual's lifespan.

In New Zealand, teachers of Year 1 and Year 2 students are noticing a worrying increase in students starting school who lack the necessary executive functioning/self-regulatory skills to successfully meet the demands of traditional education. These students present short attention spans, the inability to focus for long periods, poor impulse control, and social/emotional difficulties (Moffitt et al., 2013). To address these needs, one emerging trend in New Zealand is the adoption of a pedagogy of play in the early years of primary schooling (Davis, 2018). The play-based environment in a primary-school setting is believed to meet the social, emotional and behavioural needs of incoming students (Aiono et al., 2019; Davis, 2018).

This project implemented a play-based environment to examine how executive function is exercised amongst a group of selected Year 1 and Year 2 participants at a New Zealand primary school. As an emerging field of research, the overlap between executive function and play holds a promising space for teachers to facilitate the development of effective executive functioning skills, setting them up to thrive in the education setting and in life.

Literature Review

The scope of this literature review explores the overlap in research between play and the development of executive functions with the intention of applying it to New Zealand primary schools. Although this literature review is focused on the development of executive functioning in five- to seven-year-olds, a lot of literature examined is taken from the early years of development in three- to five-year-olds. This is an intentional decision because early-year research is generally framed using a play-based approach similar to the context this research project is grounded in.

Much of the research linking executive functioning and play is conducted internationally, which could be attributed to the fact that play has only recently been adopted as a pedagogical approach in the early years of primary school in New Zealand. This lack of research creates an exciting new direction for research in New Zealand. This project aims to explore the freely chosen nature of play and how this supports the developing executive function in five- and six-year-olds in a New Zealand primary-school setting.

Executive Function

Executive functioning comprises a set of cognitive skills and processes that underpin goal-directed and self-regulated behaviour (Moreno et al., 2017; Meyers & Berk, 2013; Bryce et al., 2015; Follmer, 2018). Widely regarded as three separate but interrelated domains – Working Memory, Inhibitory Control and Task Switching (sometimes referred to as Flexible Thinking or Cognitive Flexibility) – executive function is often referred to as the brain's air traffic control system (Moreno et al., 2017; Harvard University, n.d; Anderson & Reidy; Clerc et al., 2014; Follmer, 2018; Bryce et al., 2015). Although not all are present from birth or developed at the same time, it is thought the development of executive functioning skills continues into adulthood and that flexible thinking only begins to emerge after seven years of age (Whitebread & Szűcs, 2015).

Executive function is linked to motivation as students engage in goal-directed activities which can be conceptualised as either hot or cool executive function processes. Cool processes are categorised by the adoption of executive functions in abstract/decontextualised situations and hot processes are meaningful responses situated in context (Anderson & Reidy, 2012; Clerc et al., 2014). Separating executive function into hot and cool processes has a direct influence on how executive functions are measured and observed in research.

Measuring Executive Function

Traditionally, executive functioning has been measured as cool processes through the administration of synthetic tasks that measure each individual process separately and underpin early research into executive functioning (Whitebread & Szűcs, 2015; Anderson & Reidy, 2012).

Working memory commonly uses the backward digit span to measure executive function and a Stroop Test is administered to measure inhibitory control. Each of these measures considers a separate facet of executive function, failing to take into consideration hot processing (Doebel, 2020). Furthermore, attempts to directly measure executive functions through administering tasks have been scrutinised and found subject to task impurity, with researchers believing that no one assessment task

employs just one executive function, and instead a host of other factors work together to determine a participant's success in completing the task (Wood et al., 2018). What is needed is an indirect measure of executive function to capture the nuanced interplay between each facet of executive functioning and the environments in which they are exercised. Recently, researchers have proposed a new model conceptualising executive functions as a set of holistic functions that are tied to social practices (Doebel, 2020; Fleer, et al., 2017). Doebel (2020) puts forth a convincing argument imploring us to return executive functioning back into the contexts that they are employed in rather than examining it through clinical contexts divorced from social practices. This signals an emerging school of thought and a radical departure from how executive functioning has been traditionally measured, requiring researchers to rethink practices and approaches to measure hot executive function processing and its development.

Developing Executive Function

There is some debate among researchers over the best way to develop executive functioning skills in children (Anderson & Reidy, 2012; Doebel, 2020; Moreno et al., 2017). Programmes and short-term interventions that have been developed to train children's cool executive functioning such as computer-based programmes, have been criticised as being too specific in their approach and developing a skillset too narrow to result in significant transferable generalised gains in specific executive functions (Bailey et al., 2017; Anderson & Reidy, 2012). Furthermore, the gains made initially through these measures appear to be subject to fadeout over time (Bailey et al., 2017; Gathercole & Alloway, 2008).

To combat this phenomenon, interventions need to be developed that are not subject to fadeout (Anderson & Reidy, 2012; Bailey, et al., 2017). Bailey et al. (2017, p. 2) discussed the importance of interventions targeting the development of trifecta skills – "ones that are malleable, fundamental and would not have developed in the absence of the intervention." The development of trifecta skills can be influenced directly through instruction or indirectly through environmental cues (Bailey et al., 2017). Any intervention to enhance executive functioning skills would need to meet the trifecta criteria, developing skills where the gains are less likely to be subject to fadeout over time.

The environment is stressed as an important component in maintaining the gains made in executive functioning interventions for the skills to persist over time (Bailey et al., 2017). The environments that students move through must support and extend the gains made earlier to combat fadeout and sustain growth. The implications of this, when looking at the transition from early childhood to school, is that adopting a play-based environment offers an opportunity for the skills acquired in early-years settings to be transferred into a school setting and built upon through the environment

and teacher/student interactions. This then provides an opening where a play-based environment could offer the best possible avenue for developing lasting executive functioning skills in children under the age of seven.

Play

As defined by Peter Gray (2013), play is a self-chosen activity guided by mental rules that is imaginative in nature, intrinsically motivated and conducted in an unstressed frame of mind. Play can be observed and organised by play types. These are the functional ways in which children play. There are six play types: physical, language, exploratory, constructive, fantasy, and social (Gray, 2013). These types of play indicate the evolutionary importance of play as brain-building and support the development of skills that prepare children to function in society. There seems to be agreement amongst leading experts and practitioners on the self-determining nature of play and that it requires an absence of adult intervention to ensure that play in its purest sense is preserved (Crisp & Brownlee, 2016; Gray, 2013; Aiono et al., 2019; Vygotsky, 2016). Play is considered to enhance brain structure and function as children engage in goal-directed behaviours, ascribe symbolic thought and engage their imagination (Yogman et al., 2018; Vygotsky, 2016; Fleer et al., 2017; Berk & Meyers, 2013).

Role in Play – The Intentional Teacher

Problems arise when considering the self-determining nature of play and mediating the role of an adult-led invention in a play-based environment (Gray, 2013; Crisp and Brownlee, 2016). The term "intentional teacher" has been coined in an attempt to define an adult's role in play. The intentional teacher casts an active role for an adult to mentor, connect and guide children, taking purposeful action to extend play – mediating the line between child- and adult-led play (Legget & Ford, 2013; Milne & McLaughlin, 2018; Crisp & Brownlee, 2016; Aiono et al., 2019). Intentional teachers extend play through questioning, extension and by providing relational support for children to develop social and emotional skills through meaningful interactions mediating both adult- and child-led play experiences (Milne & McLaughlin, 2018; Aiono et al., 2019; Legget & Ford, 2013). Framing an adult's role through the lens of the intentional teacher lends provision for teachers to host interventions while harnessing the power of play as a natural and holistic way that children learn (Gray, 2013; Aiono et al., 2019).

The Intentional Teacher and Executive Functioning

The role of the teacher has been found to be crucial in promoting and supporting developing executive functions (Neitzel, 2018). They provide support and

scaffolds through metacognitive support to help regulate thinking through questioning, prompting, expanding ideas and making connections (Fleer, et al., 2017; Neitzel, 2018; Yogman, et al., 2018). All of these are hallmarks of the intentional teacher who supports and guides to expand children's play while taking care not to control play to enhance executive functioning as children organise their own cognition (Berk & Meyers, 2013).

Imaginative Play

Researchers have explored the link between the benefits of imaginative play and the development of executive functioning skills in young children (Fleer et al., 2020; Berk, & Meyers, 2013; Yogman et al., 2018; Robertson, 2018). There are two trends that emerge between studies – those which honour the self-chosen condition of play and those that are adult-led/centred. Fleer et al. (2020) examined the role of play worlds and their link to the development of executive function. Although their findings indicated that adopting this pedagogy showed benefits in the development of executive function, it doesn't meet the requirements to be considered play as their pedagogy is very adult-centric despite it being led by child interests. Other researchers have honoured the self-directed nature of play, exploring the role of the power of imaginative play to develop executive functioning as children use the power of imagination to create symbolic thought (Berk & Meyers, 2013; Yogman et al., 2018; Fleer et al., 2017). Their findings indicated that play – particularly imaginative play – naturally supports and enhances a child's developing executive functions.

Loose Parts and the Play-Based Environment

Structuring a high-quality environment is seen as a possible avenue of research into supporting the development of executive functioning skills and combatting fadeout (Bailey et al., 2017). A quality play environment is rich in loose parts. These are open-ended materials that children are free to manipulate and repurpose to support their needs, promoting problem-solving, reasoning and language skills that are the physical expression of executive functioning in action (Neitzel, 2018; Gull et al., 2019; Sear, 2016). They support the development of executive functions by provoking symbolic thought through the use of imagination in dramatic (fantasy) play (Legget & Ford, 2013; Neitzel, 2018; Sear, 2016; Bogunovich et al., 2019; Vygotsky, 2016). Loose parts further support executive functions as students interact with them in social settings as they "negotiate roles and responsibilities within the context of play schemes" (Neitzel, 2018, p. 6). It is interesting to note that research concerning loose parts often emphasises their critical role in supporting the development of executive functioning (Sear, 2016; Gull et al., 2019). However, research with an executive function lens often

neglects the importance of loose parts in favour of discussing the power of imaginative and dramatic play (Fleer et al., 2020; Berk, & Meyers, 2013; Yogman et al., 2018; Robertson, 2018).

Vygotsky reconciles the gap between loose parts and imaginative/dramatic play in his seminal lecture, initially presented in 1966 and later translated for English audiences. He proposes that objects and their unique qualities support cognitive development as they act as pivots for imaginative thought as children ascribe meaning to those objects (loose parts) when they become part of their play (Vygotsy, 2016). This supports a reciprocal relationship between loose parts and imagination. Although Vygotsky does not speak directly to executive function, he does credit play as the critical line of development for pre-school-aged children.

Trifecta Skills in Play to Enhance Executive Function

Adopting a play pedagogy to support developing executive function meets the requirements for trifecta skills not subject to fadeout (Bailey et al., 2017). In play, malleable executive functions develop as children shift their thinking to adjust to the ever-shifting scheme (Berk & Meyers, 2013). Play targets fundamental skills that support the learning process through challenging and exercising cognitive flexibility, inhibitory control, and working memory in a rich variety of contexts (Yogman et al., 2018). These skills are unlikely to develop on their own and emerge from play interactions between children and their environment (Bailey et al., 2017). It is then not unreasonable to assume that gains in executive function developed through play will not be subject to fadeout over time, making it a robust and appropriate intervention for children between the ages of three and seven.

Summary

There is a trend towards reimagining the way we conceptualise executive functioning as a holistic set of hot processes that guide goal-directed behaviours in response to the contexts in which they occur (Doebel, 2020). This reimagining has implications for researchers and teachers as they investigate how to best assess and support executive functioning in the critical years of development, before the age of seven – reconnecting executive functioning with the real-time motivated behaviour where they are employed. Play offers a natural environment to support children in developing their executive functions as they engage in play that is self-directed (Gray, 2013; Crisp and Brownlee, 2016), imaginative (Fleer et al., 2020; Berk, & Meyers, 2013; Yogman et al., 2018; Robertson, 2018), and supported by loose parts (Sear, 2016; Gull et al., 2019; Vygotsky, 2016).

Methodology

The project was undertaken using three cycles of inquiry employing Action Research Methodology. Action research offers a robust framework to analyse phenomena that occur in complex environments by providing an "opportunity to look at a phenomenon while it is evolving" (Phelps & Hase, 2002, p. 4). It is a dynamic process that offers a lens through which to view classroom practice, and allows theories to evolve based on a rigorous cycle of observation and reflection grounded in social context (Johnson, 2012; McNiff & Whitehead, 2005). The first cycle observed how students employ executive function in response to the environment, the second used audio recordings gathered through Otter, and the third explored how teacher interactions can support executive functioning in the play-based environment.

Participants were selected from my class of Year 1 and Year 2 students, and 16 consent forms out of 20 were returned. The high number of returned consent forms meant that analysis could take place where large numbers of participants were interacting with each other and the environment. Specific students were not tracked throughout the experiment to focus on examining the hot processing of executive function in play. To capture hot processing, this project used an observational tool developed by Moreno et al. (2017) to understand executive functioning in a play-based environment. It examines child and teacher behaviours that enhance executive function as they are employed in context. As an indirect measure, it relies on coded observations to uncover executive function in response to the environment and aligns with Doebel's (2020) argument to return executive function to social practices.

Table 1 shows the behaviours that serve as markers for executive function in the observation tool developed by Moreno et al. (2017).

Children's Behaviours	*Teacher Behaviours*
Mature Dramatic Play	Metacognitive Support
Uses self or other as agent (non-fantasy)	Specific praise
Uses self or other as agent (fantasy)	Activity-related narration
Constrains self or other in roles	Activity-related questioning
Expanded scripts	Modelling meta-cognitive or private speech
Abstract symbol use	Appearing naive

Resolving cognitive dissonance	Specific requests for children to think/reflect, report, predict or remember
Other types of meta-play	Concept Development
Meta-Cognitive Language and Narrative Talk	Language expansions
Task-relevant private speech	Open-ended questions/"thought experiment"
Talk about own thoughts	Narrative expansions
Talk about own knowledge	Following up
Talk about planning	Requesting idea/category generation
Provision of rationale	Asking for evidence
Provision of evidence	Environment – or activity – structuring
Monitoring, controlling or evaluating present activity	Gestural, visual or symbolic cues
Verbal self-inhibition	Assigning responsibility
Links to home or self	Games or routines with rules
Links to the outside world	
Elaborated reporting	
Prediction	
Varied Object Play	
Uses object as symbol (not in a dramatic play context)	
Curiosity/function diversity	
Generativity of uses	

Table 1. Student and teacher behaviour markers for executive function taken from the observational tool by Moreno et al. (2017).

Observational data was collected as audio recordings, photos and observations. The audio recordings were kept short (three minutes), and analysed for markers of executive function using the observational tool. Observations were often turned into

vignettes (Learning Stories) to be shared on Seesaw with tagged markers for executive functioning. A research diary was kept to record observations, trends and reflections that sat outside the vignettes to help inform the design of subsequent iterations. This provided insight into what was observed, but more importantly what I wasn't seeing manifesting in the play-based environment.

Data Collection

Learning Stories

During the project, a total of 22 Learning Stories were created and tagged for observed markers of executive functioning across all three iterations of the project. The markers of executive functioning were tallied on a table against the observation framework from Moreno et al. (2017).

Audio Recordings

There were six audio recordings transcribed through Otter.ai. From these recordings, three minutes of audio were selected and three transcribed by hand. The transcriptions generated by Otter.ai were unable to be used as they didn't accurately capture the conversations due to noise levels and the transience of the play. These recordings were tagged against the observed markers for executive functioning. Both the markers taken from the Learning Stories and Otter.ai recordings were then graphed for a comparative analysis to evidence executive functioning during play. Each graph is separated into the "Executive Functioning Behaviours" categories – Mature Dramatic Play, Meta-Cognitive and Narrative Talk, and Varied Object Play.

Teacher Observations

In iteration three, two observations of teacher behaviours were collected on an observation template. Observations were taken 30 minutes into the play block and lasted for 30 minutes each. These were later coded for markers of teacher behaviours to support executive functioning and each observation was graphed for comparative analysis.

Research Diary

I reviewed my research diary and highlighted passages according to emerging themes – Teacher Actions, Oral Language, Capturing Data (sub-themes include Otter, capturing dramatic play and checklist). Highlighted sections were arranged into themes to create a narrative around my thinking as the project was emerging.

Data Analysis

Capturing observational data in a play environment was difficult. The observational nature of data collection meant that observations were often subject to the Hawthorne Effect, where the act of observation changes the nature of the phenomena being observed (Oswald et al., 2014). The transient nature of play and the disruptive presence of the phone also posed significant challenges to data collection.

Student Behaviours that Demonstrate Executive Functioning

The following graphs (Figures 1–3) compare the total markers for executive functioning from all audio recordings (iteration two) with Learning Stories (iteration one and two). The blue bars show markers taken from the analysis of audio recordings and the red bars show the markers taken from the Learning Stories. Due to the discrepancy between sample sizes, 22 Learning Stories versus six audio recordings and the challenges to getting rich data from observed learning stories, these graphs are likely to be misleading.

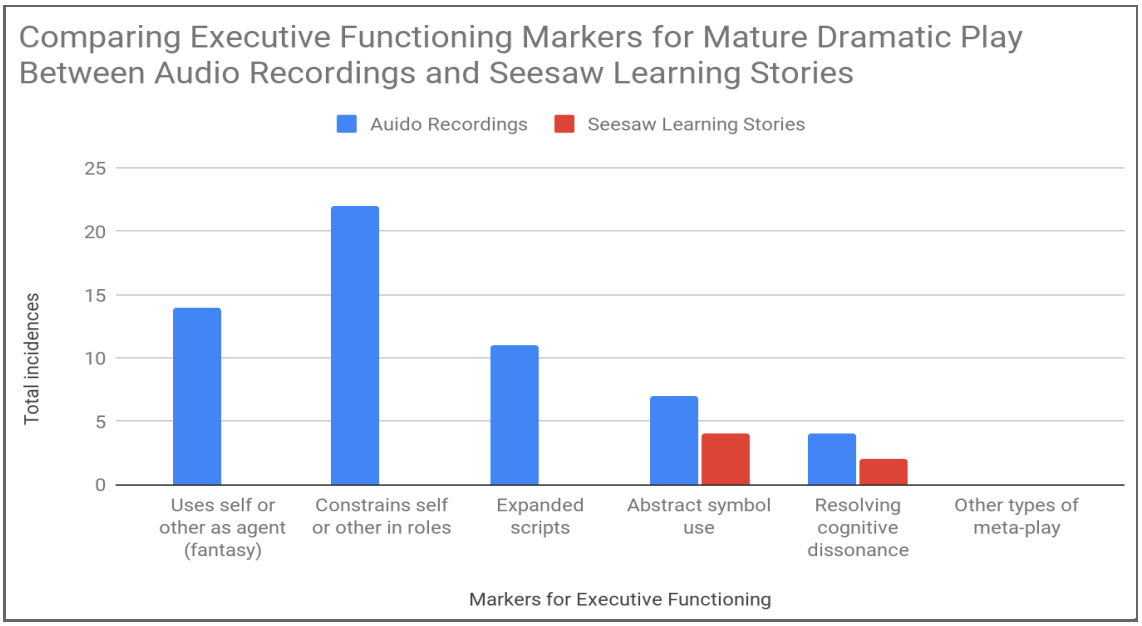


Figure 1. Comparing executive functioning markers for mature dramatic play.

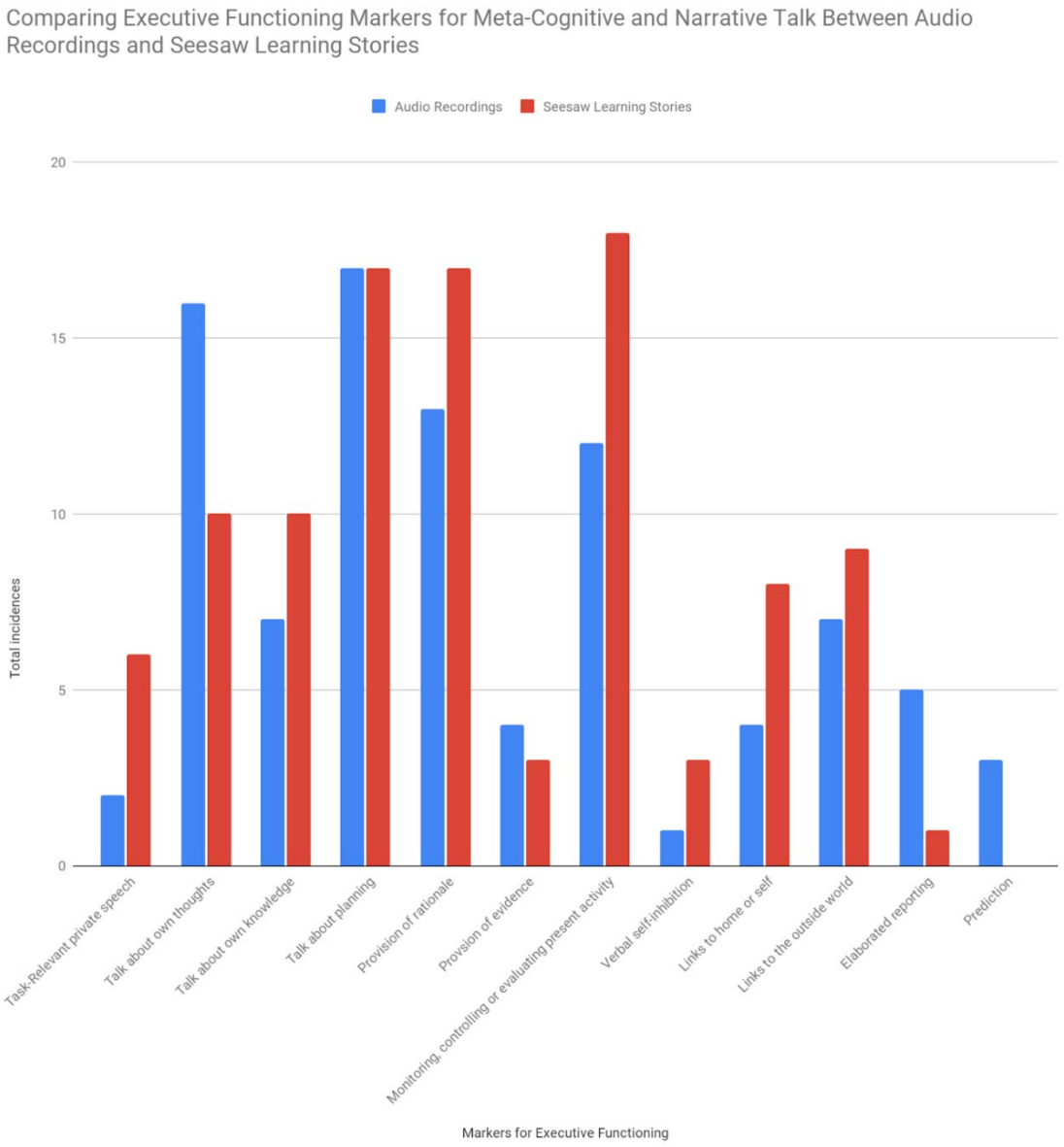


Figure 2. Comparing executive functioning markers for meta-cognitive and narrative talk.

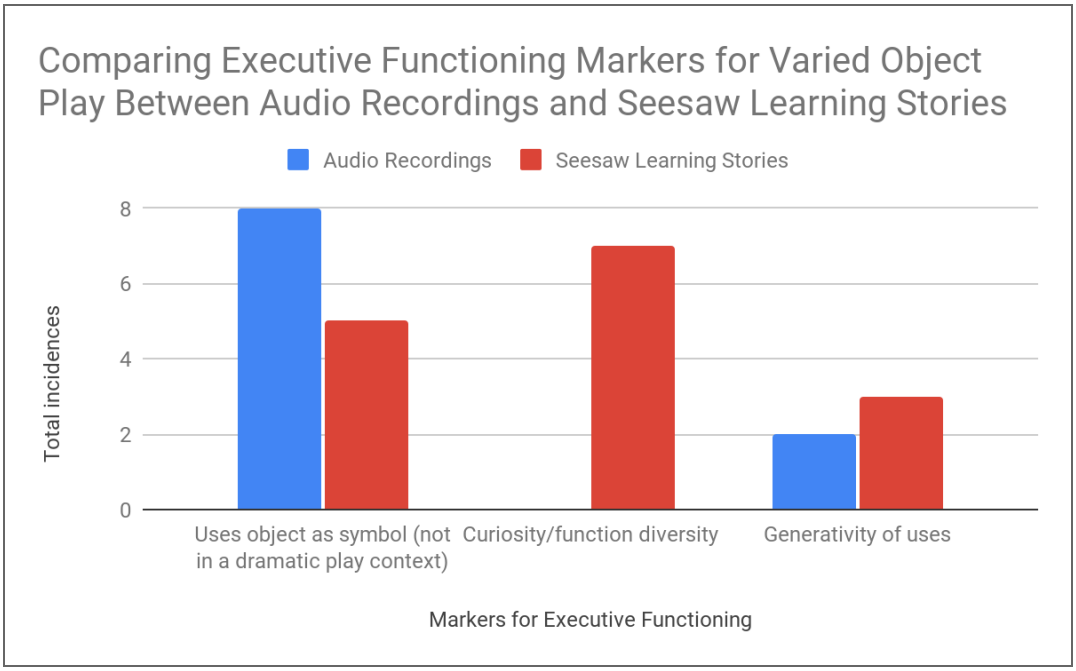


Figure 3. Comparing executive functioning markers for Varied Object Play.

Despite the challenges to data collection and disparity between sample sizes, what we can assess from these graphs is that children at play use a variety of markers that indicate executive function is taking place with only other types of "meta play" not evidenced either by audio recordings or observations. This could be attributed to the lack of visual information in both the observations and audio recordings.

Teacher Behaviours to Support Executive Functioning

A more confident analysis can be taken from the observations of teacher behaviours that support executive functioning. Figure 4 presents two 30-minute observations making two comparable data sets.

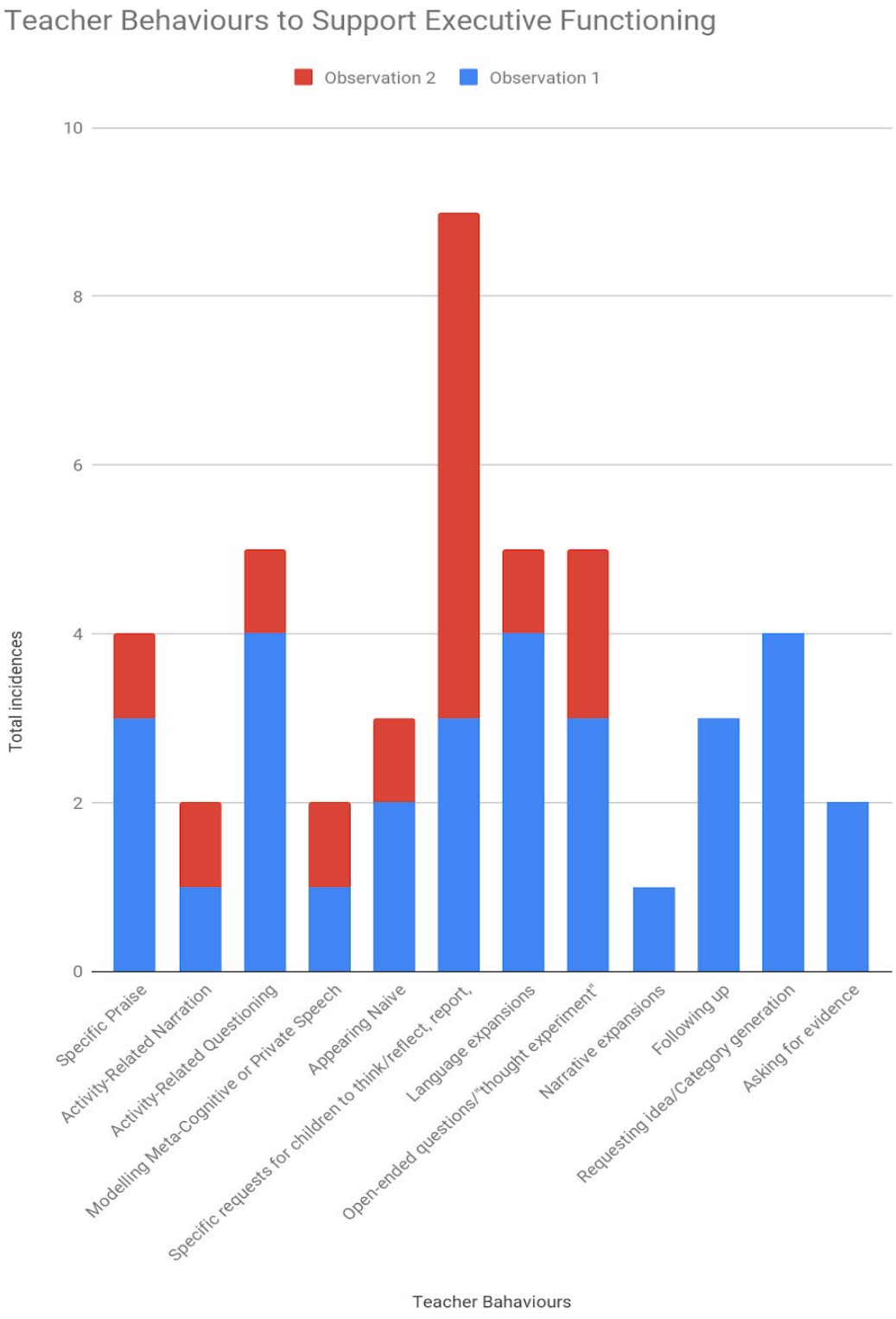


Figure 4. Comparing teacher behaviours that support executive functioning.

Observation 1 shows the presence of all identified teacher supports for executive functioning and Observation 2 shows all but the last four present on the observation checklist. The differences between the data in these two sets could be attributed to the types of play taking place during these observations.

Observation 1: participants were making sock puppets and needed a high level of support before they became self-sustaining, lending lots of opportunities to support students' executive function.

Observation 2: participants were all engaged in different types of play away from the teacher, limiting opportunities for interactions without disturbing the play. This partially explains why there aren't as varied markers for the support of executive functioning during this observation. During this observation, the observer recorded me commenting that "they [participants] don't need me," thus supporting the notion that they were engaged in independent play.

When analysed together many markers of behaviours that support executive function are present and suggest these behaviours work together in symphony. Markers that were not observed but were on the checklist were gestural, visual or symbolic cues, assigning responsibility, or games with routines and rules. This could be attributed to the fact it is hard to record these from observations or the types of play that were engaged in at the time. What is clear is that there is a high level of verbal support linked to eliciting responses that require students to think – activity-related questioning (5), specific requests for children to think/reflect, report, predict, remember (9), open-ended questions/thought experiments (5) and language expansions (5), suggesting that to support executive function a teacher's role is to support students in decision-making and organising their own cognition.

Findings

From the data analysis, we can see that observing and collecting accurate data on how executive functioning is exercised in a play-based environment is challenging as collection methods often disrupt or do not fully capture play's complexities, particularly in dramatic play. This makes it hard to deduce grand statements or findings related to my purpose statement, but some suggestive trends emerge from the data collected.

1. A play-based environment provides many rich opportunities for students to employ a range of executive functions as they adapt to shifting play schemes.

2. Teachers use a range of verbal supports in symphony to support students' executive functioning.

Discussion and Opportunities for Further Research

The difficulties when measuring young children, combined with the observational nature of data collection and the transient nature of the play-based environment, often posed challenges when determining how executive function is exercised. The observation protocol revealed student and teacher behaviours, making executive functioning visible in everyday play (Moreno et al., 2017). However, similar to the findings of Moreno et al. (2017), there was not enough evidence to determine whether teacher behaviours led to the extension or suppression of students' executive function in play. This is reflected in my findings where my behaviours were only evident and captured during structured activities, and recordings of students engaged in play are largely teacher absent. This is suggestive that support for executive functioning is best conducted during guided play where a teacher takes an active and purposeful role in the play. This mirrors the work of the intentional teacher as someone who provides support with questioning, prompting and expanding ideas (Fleer et al., 2017; Neitzel, 2018; Yogman et al., 2018; Moreno et al.,). Here we see the teacher's role is still vital as one who guides students in exercising executive function behaviours. However, careful consideration must be given to when this occurs in order to not encroach on students being able to organise their own cognition.

What is unclear from this project is whether the executive functioning skills developed in a play-based environment are enduring – not subject to fadeout. The purpose of the project was to examine how executive function was exercised in a play-based environment, so it was not the scope of the design to determine an increase in these skills. However, it was designed in light of developing trifecta skills that would not fade out over time (Bailey et al., 2017).

While effective in determining the presence of executive function behaviours in both teachers and students, the observational tool is useful for those researching the field, however, it falls short of being able to be used by teachers to support their everyday practices in the classroom. This is because it does not explicitly link to the dimensions of executive function in the classroom and lacks finer details in determining age-appropriate norms for executive function behaviours, not taking into account their development (Anderson & Reidy, 2012). For this to be implemented by teachers in classrooms, an adapted tool is needed to support teachers in developing their skills in supporting executive function and recognising when students are organising their cognition.

An environment that supports the development of executive function skills is based on language and provides many rich opportunities for students to engage in dialogue with the teacher and with each other in free and guided play to take advantage of behaviours that support executive function. However, careful

consideration needs to be taken to ensure that the environment is rich in loose parts as these open-ended materials provide the opportunity for symbolic thought as students engage in the imaginative power of play to elicit executive function (Legget & Ford, 2013; Neitzel, 2018; Sear, 2016; Bogunovich et al., 2019; Vygotsky, 2016). This has a direct impact on classroom organisation and the materials made available.

A further consideration to maximising the power of play to support the development of executive function is placing importance on the timetabling of play in the school day. Plenty of time needs to be given to play for students to be able to settle into it. Short bursts of interrupted play deny students the opportunity to become immersed and take advantage of the social interactions where executive functioning behaviours are best observed in action (Moreno et al., 2017).

There are several points of consideration for teachers wanting to maximise the features of a play-based environment to support the development of executive functioning skills. The first is to reflect on the types of play and the classroom environment they have created to encourage executive function to be maximised. They also need to be aware of their presence in the play and the interactions that support and extend executive function. Lastly, they need to know what behaviours to observe to measure executive function in play.

Evaluating Play and the Environment

To support teachers to reflect on the types of play and the classroom environment, they must ask themselves several questions to stocktake the state of play in their classrooms and determine if they have maximised its ability to support executive function (Figure 5).

1. Is play timetabled so that students have long periods of uninterrupted time to immerse themselves in play?
2. Are there plenty of opportunities for students to engage in free play and structured play guided by an adult?
3. What materials are available to support play?
4. Are they predominantly open, such as loose parts, or are they closed materials that prescribe how they must be used?
5. Are materials organised so that students can freely access them?
6. Am I dedicating enough time to observing students at play?

Figure 5. Reflective questions for teachers wanting to maximise their play environment to support executive function.

Teacher Actions to Support Executive Function

The Question Prompts (Figure 6) were drawn from the work by Moreno et al. (2017) and parallel actions of an intentional teacher taking deliberate action to extend play through extending, questioning and providing relational support in a play-based environment (Milne & McLaughlin, 2018; Aiono et al., 2019; Legget & Ford, 2013).

Question Prompts	
Open-ended questions starters	How, when and why questions
Thought experiments	• What would happen if …?
Appearing naive	• I am not sure, what would you do? • I don't know, how could we find out?
Requesting ideas	• What do you think? • How could this be improved? • Tell me about …
Asking for evidence	• Why did that happen? • How do you know that?
Specific requests for children to think/reflect, report, predict or remember	• What do you know about …? • What could you use? • Where could you find …? • What would happen if …? • Tell me about … • Did that do what you expected? • Could you have done that differently? • What do you think?
Activity-related questioning	• What do we need to finish this? • What could you use?
Following up	• How did that go? • How are you getting on with …? • What's happened so far?

Supportive Statements	
Specific praise	• I see that you … • You have …
Activity-related narration	• You helped/attached/placed/got …
Modelling meta-cognitive or private speech	• I am going to … • I need to draw a plan. • … will help me ...
Language expansions	Details the recasting of language into complete sentences or extends language used with new vocab. • Yes … • That's right, …

Figure 6. Question and supportive statement prompts to support teachers to extend and support executive function.

The Executive Function Checklist

The Executive Function Checklist supports teachers wanting to assess student competence when utilising executive functioning in their classrooms. I adapted the "Executive Function" checklist from Janet Stowell (2018). Originally written from a deficit perspective with the goals of a traditional school environment in mind, Stowell's checklist needed adaptation to ensure it was suitable for a play-based environment. I rewrote the teacher checklist from a "strength" perspective, removing markers that were not applicable to a play-based environment. I combined some markers and added the marker "Notices and seeks help when needed" to the goal-setting section. This revised checklist (Figure 7) has the potential to help teachers make judgements on students' current executive functioning skills. It is consistent with Doebel's (2020) plea to situate the measuring of executive function into the context that the skills are used, while also explicitly relating each behaviour to features of executive function. This provides a potential avenue to measuring progress that is not derived by synthetic measures that have been traditionally used to determine and measure executive functioning skills.

Name	Date		Year	
Executive Function and Play Check list				
Executive Function		Almost Never	Sometimes	Often
Response Inhibition	Thinks before they act, either verbally or physically			
	Waits for their turn to speak			
	Puts hand up when speaking in group situations			
	Waits for their turn			
	Uses restraint in physical games			
	Stays calm when there is a problem			
Subtotal				
Cognitive Flexibility	Transitions in and out of play easily, without support and cueing			
	Stops what they are doing when asked			
	Adapts their approach when they make a mistake			
	Generate many different ways to solve a problem			
	Show resilience when things do not go to plan			
	Able to take on board others ideas and act on them			
Subtotal				
Working Memory	Follows multi-step instructions (3+ steps)			
	Follows directions the first time without the need for them being repeated			
	Holds an idea in their head and remembers it			
	Keeps track of their belongings			
	Follows classroom routines and/or procedures			
Subtotal				
Organisation	Keeps their school bag tidy and belonging organised			
	Tidies up after themselves when they have finished playing			
	Looks after class belongings			
Subtotal				
Goal Settings	Stays on task for a sustained length of time			
	Sustains attention			
	Filters out the distractions happening around them			
	Notices and seeks help when needed			
Subtotal				
Task Initiation	Initiates play independently			
	Begins pack up immediately when asked			
Subtotal				

Figure 7. Executive Function and Play Checklist for teachers adapted from Stowell (2018).

When taken together, these resources help bring us closer to maximising and supporting executive function in a play-based environment that is rich in loose parts, with plenty of opportunities to engage in self-directed and imaginative play in addition to participating in guided play and structured activities supported by an intentional teacher. Future research would see these resources tested in classrooms by teachers to assess their usefulness in supporting executive functioning in a play-based environment.

References

Aiono, S., McLaughlin, T., & Riley, T. (2019). While they play, what should I do? Strengthening learning through play and intentional teaching. *He Kupu*, *6*(2), 59-68.

Anderson, P. J., & Reidy, N. (2012). Assessing executive function in preschoolers. *Neuropsychology review,* 22(4), 345-360.

Bailey, D., Duncan, G. J., Odgers, C. L., & Yu, W. (2017). Persistence and fadeout in the impacts of child and adolescent interventions. *Journal of research on educational effectiveness,* 10(1), 7-39.

Berk, L. E., & Meyers, A. B. (2013). The Role of Make-Believe Play in the Development of Executive Function: Status of Research and Future Directions. *American Journal of Play,* 6(1), 98-110.

Bryce, D., Whitebread, D., & Szűcs, D. (2015). The relationships among executive functions, metacognitive skills and educational achievement in 5 and 7 year-old children. *Metacognition & Learning*, 10(2), 181–198. https://doi.org/10.1007/s11409-014-9120-4

Clerc, J., Miller, P. H., & Cosnefroy, L. (2014). Young children's transfer of strategies: Utilization deficiencies, executive function, and metacognition. *Developmental Review,* 34(4), 378-393.

Crisp, K. & Brownlee, P. (2016). *The Sacred Urge to Play. New Zealand,* Good Egg Books.

Doebel, S. (2020). Rethinking Executive Function and its Development. Perspectives on Psychological Science, 1745691620904771.

Fleer, M., Walker, S., White, W., Veresov, N., & Duhn, I. (2020). *Playworlds as an evidenced-based model of practice for the intentional teaching of executive functions,* Early Years, DOI: 10.1080/09575146.2020.1835830

Follmer, D. J. (2018). Executive Function and Reading Comprehension: A Meta-Analytic Review. *Educational Psychologist,* 53(1), 42–60. https://doi.org/10.1080/00461520.2017.1309295

Gray, P. (2013). *Free to Learn.* New York, USA: Basic Books.

Gull, C., Bogunovich, J., Goldstein, S. L., & Rosengarten, T. (2019). Definitions of Loose Parts in Early Childhood Outdoor Classrooms: A Scoping Review. *International Journal of Early Childhood Environmental Education*, *6*(3), 37-52.

Harvard University. (n.d.). *Executive Function & Self-Regulation.* https://developingchild.harvard.edu/science/key-concepts/executive-function/

Johnson, A. (2012). *A Short Guide to Action Research (4th Ed.).* Minnesota, USA: Pearson Education.

Leggett, N., & Ford, M. (2013). A fine balance: Understanding the roles educators and children play as intentional teachers and intentional learners within the Early Years Learning Framework. *Australasian Journal of Early Childhood,* 38(4), 42–50. https://doi.org/10.1177/183693911303800406

McNiff, J. & Whitehead J. (2005). *Action research for teachers: a practical guide.* London: Sage. Retrieved from https://ebookcentral.proquest.com/lib/themindlab/reader.action?docID=1075096

Milne, J., & McLaughlin, T. (2018). Examining the Teacher's Role in Play-Based Learning: One Teacher's Perspective. *set: Research Information for Teachers*, *3*, 44-50.

Moffitt, T. E., Poulton, R., & Caspi, A. (2013). Lifelong impact of early self-control. *American Scientist*, 101(5), 352-359.

Moreno, A., Shwayder, I., & Friedman, I. (2017). The Function of Executive Function: Everyday Manifestations of Regulated Thinking in Preschool Settings. *Early Childhood Education Journal*, 45(2), 143–153. https://doi.org/10.1007/s10643-016-0777-y

Neitzel, J. (2018). What measures of program quality tell us about the importance of executive function: implications for teacher education and preparation. *Journal of Early Childhood Teacher Education*, 39(3), 181–192. https://doi.org/10.1080/10901027.2018.1457580

Oswald, D., Sherratt, F., & Smith, S. (2014). Handling the Hawthorne effect: The challenges surrounding a participant observer. *Review of social studies*, *1*(1), 53-73.
https://www.rossjournal.co.uk/wp-content/uploads/2016/12/RoSS-Vol1-No1-Oswald-et-al-53-73.pdf

Phelps, R. & Hase, S. (2002). Complexity and action research: Exploring the theoretical and methodological connection. *Renata Phelps*. 10. 10.1080/09650790200200198.

Sear, M. (2016). Why loose parts? Their relationship with sustainable practice, children's agency, creative thinking and learning outcomes. *Educating Young Children: Learning & Teaching in the Early Childhood Years*, 22(2), 16–19.

Stowell, J. (2018). *The Executive Functions Toolkit for Classroom Teachers*. Hamilton, New Zealand: Janet Stowell Publishing.

Vygotsky, L. S. (2016). Play and Its Role in the Mental Development of the Child. *International Research in Early Childhood Education*, 7(2), 3-25.

Wood, L., Roach, A. T., Kearney, M. A., & Zabek, F. (2018). Enhancing executive function skills in preschoolers through a mindfulness-based intervention: A randomized, controlled pilot study. *Psychology in the Schools*, 55(6), 644–660. https://doi.org/10.1002/pits.22136

Yogman, M., Garner, A., Hutchinson, J., Hirsh-Pasek, K., & Michnick Golinkoff, R. (2018). The Power of Play: A Pediatric Role in Enhancing Development in Young Children. *Pediatrics*, *142*(3), 1–16. https://doi.org/10.1542/peds.2018-2058

Hannah Newton

Hannah Newton is an experienced teacher from the Ōtūmoetai Kāhui Ako. She teaches Year 2 at Matua Primary School and holds an across-school role focusing on Learning Through Play, Oral Language, Transition to School and Foundation Skills.

As a curriculum hacker with heart, she is passionate about child-centred learning and using curriculum design to create programmes focused on creating conditions where students thrive. She is a committed educator who pursues puzzles of practice with curiosity and an evidence-base, completing her Master of Contemporary Education from The Mind Lab in 2021.

When not at school, you can find her dreaming of her next travel adventure, honing dishes from her favourite destinations or attending live music events.

You can contact Hannah at newtonhann@gmail.com

Research Article

Improving Wellbeing Through a Modern, Integrated Experience

He Rourou, Volume 2, Issue 1, 24-45, 2022

Alaine Perrott

Abstract

This article is a summary of the research undertaken on the concept of improving individuals' wellbeing which was carried out between February 2021 and February 2022. This involved desktop research, a consumer survey and stakeholder interviews. Key factors that contribute to wellbeing are investigated (with a focus on personal finance) as well as existing solutions that are available to improve wellbeing in New Zealand (NZ).

From this research a wellbeing eco-system consisting of four elements is defined: personal, financial, community and environmental wellbeing. These elements are interlinked and together present a holistic approach to improving wellbeing. The benefits of improving wellbeing are also discussed. Just as the elements are interlinked, there are demonstrated flow-on benefits to improving wellbeing in each area. Using this framework as a basis, a modern, end-to-end solution is designed, incorporating value-driven products and services and other features that contribute to improving wellbeing which could be developed, empowering people to thrive.

Introduction

Wellbeing is a hot topic in New Zealand and globally. It is talked about in various industries and multiple contexts. Existing solutions to address people's wellbeing concerns tend to be specialist, concentrating on one aspect in isolation, yet there are many interlinked components which must all be addressed to enable a thriving lifestyle.

The aim of this project is to improve the wellbeing of New Zealanders, to enable them to thrive now and for the rest of their lives. Nearly every part of life is underpinned by money and by taking a holistic approach to wellbeing through this lens, it is possible to create a unique solution that offers a modern, impactful, end-to-end, integrated experience.

Context

Banks offer a multitude of products including transactional accounts, savings accounts, credit cards, personal loans, mortgages, insurance and foreign exchange. These products, on the whole, have not adapted in line with societal changes and therefore do not always meet customer needs and expectations. Examples include women losing access to their money after their husband's death and payment reference fields being misused by abusers to exert control over their victims (Burrell, 2021; Newton, 2021; Nichols, 2021).

In addition, most financial services products are created with the aim of making money for the organisations that provide them, which means outcomes can be at odds with customer wellbeing. This is evidenced by customers being charged more for "breaking the rules", for instance by withdrawing savings from a fixed-term account early or lack of flexibility with loan repayments. This penalises people and can make life much harder at a time when they can least afford it (Commerce Commission, 2021; MoneyHub NZ, 2022).

According to a study by EY, "Sustainability will soon be as important as affordability" (Macfarlane, 2020). Climate change is becoming more and more urgent, and we are seeing nations, industry and individuals coming together to try and find solutions. New Zealand has committed to the United Nations' sustainable development goals and there is an opportunity to utilise these measures, the Living Standards Framework and other existing accreditation frameworks within NZ, for example toitū carbon zero, living wage, accessibility tick, rainbow tick and DV free, to align products with customers' values and offer a conscious choice (Accessibility Tick Limited, n.d.; Kāhui Tū Kaha, n.d.; Living Wage NZ, n.d.; Shine, n.d.; Toitū Envirocare, n.d.).

Technology also presents an opportunity to do things differently, for instance, "offer[ing] propositions and experiences that are intelligent (that is, recommending actions, anticipating and automating key decisions or tasks), personalized (that is, relevant and timely, and based on a detailed understanding of customers' past behavior and context), and truly omnichannel (seamlessly spanning the physical and online contexts across multiple devices, and delivering a consistent experience)" (Biswas et al., 2020, p.5).

Other opportunities lie in different operating models, for instance, marketplace models such as the way that Amazon and AliExpress operate where traditional industry barriers are blurred and different systems combined to offer a new approach based on a set of customer needs. Or alternatively shifting from a purely profit-driven model to balancing profit with purpose to produce positive social, environmental, and economic change.

Research Question

The overarching research question was: How can the wellbeing of New Zealanders be improved through a modern, integrated experience?

Sub Questions

- What is wellbeing? What are the key factors that contribute to wellbeing? What existing solutions are available to improve wellbeing in NZ?
- What would a modern, value-driven solution look like? What are the key components?
- Test the effectiveness of one key component (Financial Wellbeing) by designing a Minimum Viable Product (MVP). What would the MVP look like? How effective would it be?
- What benefits are there to improving wellbeing?

Literature Review

What is Wellbeing?

Wellbeing is aimed at getting the best out of life. Having good wellbeing can be described as "being satisfied with one's life overall, having a sense of meaning and purpose, feeling positive emotions, such as happiness and contentment, and not feeling negative emotions" (New Zealand Treasury, 2021, p. 12). Wellbeing is a subjective concept that's dependent on what is deemed important by each individual. Certain things, for instance good living conditions, are deemed fundamental, and tracking these conditions is important for public policy, but wellbeing also takes into account people's overall satisfaction with life, i.e. how they feel. This incorporates the quality of their relationships, positive emotions and resilience (Centers for Disease Control and Prevention, 2018).

"The resilience of the human mind has proven, at least through the research, that the negative experiences don't tank us down as much as the positive experiences boost up our life evaluation" (Gallup, 2021, para. 33).

Frameworks & Measurements

There are various frameworks and measures that have been created in relation to wellbeing all around the world. The following are a selection of global and national examples that illustrate the key factors that contribute to wellbeing.

- The OECD Better Life Index
- World Happiness Report

- UN Sustainable Development Goals
- Gallup
- Living Standards Framework
- Te Whare Tapa Whā
- Te Tauihu wellbeing framework
- Mental Health and Wellbeing Commission
- PERMA

Wellbeing Solutions

A wealth of resources are available in NZ, many of which are very specialist and aim to improve distinct elements of wellbeing. Examples include networks and tools that provide assistance to quit smoking, increase physical exercise, support mental wellbeing and build financial capability (Figure 1).

Figure 1: Examples of wellbeing resources in New Zealand.

Relationship of Wellbeing Factors

Influential factors that contribute to wellbeing are undeniably linked. For example:

- physical activity can improve resilience;
- eating healthily, particularly more fresh fruit and vegetables, can improve mental health;
- learning new skills can increase confidence as well as employment prospects; and
- participating in tree-planting activities can reduce stress as well as building new relationships.

(Mohan, n.d.; Ridner et al., 2016; Stranges et al., 2014)

By contrast, a systematic review conducted by O'Neil et al., 2014 showed that an unhealthy diet (including high levels of saturated fat, refined carbohydrates and processed food) is linked to poorer mental health (The Wellbeing Thesis, n.d.).

What is Financial Wellbeing?

"The extent to which someone is able to meet all their current commitments and needs comfortably and has the financial resilience to maintain this in the future" (Kempson et al., 2017, p. 19). Financial wellbeing encompasses an understanding of how money works and how to manage it. It is intrinsically linked to what we believe and therefore how we think, feel and act. Financial wellbeing is made up of four elements spanning both current and future security and freedom of choice (Figure 2).

	Present	Future
Security	Control over your day-to-day, month-to-month finances	Capacity to absorb a financial shock
Freedom of choice	Financial freedom to make choices to enjoy life	On track to meet your financial goals

Figure 2: The four elements of financial wellbeing (Consumer Financial Protection Bureau, 2015a).

To achieve good wellbeing and live a thriving lifestyle, financial wellbeing is critical. "Financial wellbeing is an important contributor to overall health and wellbeing and has a major influence over the lives of every New Zealander" (Roy Morgan, 2020, p. 1). Those most confident in their abilities to save and spend intelligently score nearly twice as high in overall wellbeing (Discover & Thrive Global, n.d.). "When we feel in control over our financial behaviour and our goals, we feel a sense of self-determination and, ultimately, we are better able to grow and thrive in life and work" (Footprint Connect, 2022, p. 7). Financial wellbeing is underpinned by financial skills, behaviours and circumstances, however, just like wellbeing, financial wellbeing

is a subjective measure. Therefore people with the same income, financial experiences, or education can have very different levels of financial wellbeing.

Methods/Methodology

Survey

An anonymised survey was undertaken which was distributed online resulting in 176 responses. This covered financial knowledge, attitudes and behaviours, an assessment of financial wellbeing, and suggested various conceptual aspects of what a solution could incorporate to improve wellbeing. Approximately one-third of survey respondents were male and two-thirds were female. The bulk of respondents were aged between 31 and 61 whilst age categories at either end of the scale (under 30s and over 65s) were under-represented compared to the age distribution of the New Zealand population. Approximately two-thirds of respondents were European which is proportionate to the current makeup of New Zealand society.

In terms of individual income, there was a low number of responses for individuals earning under $70,000p.a. Individuals with income over $70,000p.a. were consistently over-represented. More research would be required to ascertain why those with low incomes didn't engage, for example whether they didn't have access to the necessary technology or weren't interested in the survey topic.

64% of the overall respondents' financial wellbeing scores were high or very high scores according to the Consumer Financial Protection Bureau's score ranges (Consumer Financial Protection Bureau, 2015b).

Although the majority scored highly, it does however mean that 36% are not thriving under the current system. This is 10% higher than ANZ's 2020 figures (Roy Morgan, 2021). Further research would be needed to ascertain whether this is due to timing (particularly as the survey was undertaken during NZ's outbreak of the Delta variant of COVID-19) or differences in methodology and collection methods. Indications from respondents were that they focus on the immediate to short-term period and less on the future.

The percentages of those not thriving indicate plenty of opportunities for increasing financial capability and therefore wellbeing. This was further evidenced by respondents' self-assessments of their financial knowledge and demonstrated by their behaviours. For example, most respondents had plans, goals and emergency funds in place but not everyone followed through on their intentions.

The proposed conceptual aspects are shown in order from most to least popular (Figure 3):

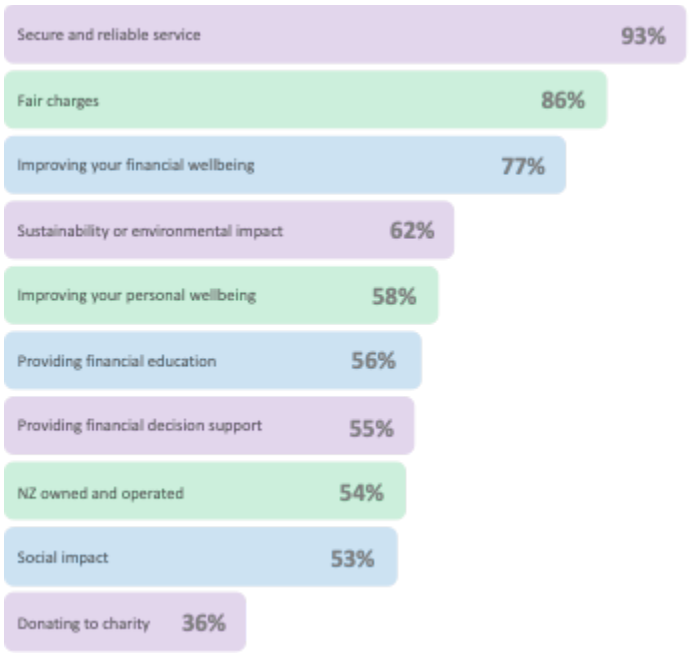


Figure 3: Popularity of conceptual aspects.

The majority of respondents stated they would not be comfortable sharing any additional personal data in order to increase the functionality of a product, more accurately assess lending risk, and/or provide an enhanced user experience. This doesn't necessarily prohibit it from being added as an option, it just means the value has to be proven to the customer as to the benefit it would provide.

Interviews

Interviews were completed with a range of high-calibre industry experts across the banking and financial services industry:

1. Regulator
2. CEO major bank (retired)
3. CEO major bank
4. CTO investment firm
5. Disruptor (CEO)
6. Start-up founder (CEO)
7. Financial educator (programme manager)
8. Financial educator (researcher)
9. Sustainability expert
10. Financial inclusion expert

All interviews took place over video conference utilising a semi-structured approach. This ensured the conversation covered specific areas without being too rigid. Questions were adapted dependent on each stakeholder's area of expertise.

Accordingly, it was possible to gain rich insights and valuable ideas from each interview.

By using thematic analysis, common broad categories were identified. Narrative analysis was then used to synthesise the information and identify areas of converging and diverging opinions.

The interviewees agreed that there were a number of challenges facing financial institutions in NZ. They indicated that these problems were diverse and complex in nature and that there was no panacea or silver bullet to resolve them.

COVID-19 was considered to be one of the most significant events impacting New Zealanders, with both negative and positive impacts on wellbeing. Challenges discussed ranged from the negative impacts such as increasing the digital divide, setting back work to reduce the gender pay gap and employment of women, Pacific Islanders and Māori. On the other hand, it was credited with solving collaboration problems and speeding up the move to online learning, as well as challenging the way that we work (move to remote working) and bank (reduced ATMs and branches).

Similarly, climate change is both a challenge and an opportunity for financial institutions. Opportunities recognised include development of new products, e.g. green investments, and services, e.g. carbon footprint tracking, but there is still a lot more that needs to be done. "Banks have a significant opportunity to be a leader on climate action" (Sustainability expert, 2021).

Amongst the challenges faced was the potential for financial institutions to lose relevancy with conscious consumers who were likely to move their money to organisations sharing their values. Banks are investing in wellbeing and related services, e.g. Groov by Mentemia, however, the focus has been on employees rather than customers. The customer-bank relationship has the potential to change from a transactional one to one much more customer-led and empowering. "[It] is quite archaic and is extremely institution led, as opposed to consumer led" (CTO investment firm, 2021). By creating better connection with customers, you can really help them to live their lives better and improve wellbeing. Providers often take a short-term view and this should be balanced with a mid- to long-term view of what's in the customer's best interest and what will enable them to achieve their goals and dreams. If products and services are redesigned to create good customer outcomes rather than good outcomes for the bank, we'll see the relationship change.

Findings

No Holistic Wellbeing Solution

Although there is a wealth of resources available in NZ, many are very specialist and aim to improve distinct elements of wellbeing. However, influential factors contributing to wellbeing are undeniably linked. It follows that addressing these factors on a holistic basis will have a flow-on effect of improving wellbeing to a greater extent than by attempting to address each factor in isolation.

The New Zealand government produces a wellbeing budget designed to put people's wellbeing and the environment at the heart of its policies. They have also developed the Living Standards Framework in order to understand the drivers of wellbeing and consider the broader impacts of policy. Despite this, there is no end-to-end solution designed to improve wellbeing holistically.

By taking a human-centric approach to wellbeing, a series of needs can be identified, such as the ability to enjoy life, be connected, resilient and meet goals, that together positively impact wellbeing. As these needs cross multiple sectors, a new ecosystem will need to be created to offer a complete experience empowering individuals to take proactive steps towards improving their wellbeing. Four categories are proposed; financial, personal, community and environmental wellbeing.

Financial Wellbeing

Money underpins nearly every part of life; what we eat, where we live and the things we do. It is a source of stress for those who have too little or too much. It can affect our enjoyment of life, lead to irritability, anger, and fatigue, affect our immune systems and overall physical health, and impact our relationships (Discover & Thrive Global, n.d.; Footprint Connect, 2022; FoxPlan, 2012). In the NZ context (Figure 4):

Figure 4: Financial wellbeing statistics (Galicki, 2021; Roy Morgan, 2021; Stats NZ, 2021a; Trading Economics, 2021).

This indicates that one-third of the population are not even able to meet their everyday needs, let alone feel confident about their futures. The impacts of COVID-19 are still to be determined but the current economic situation suggests it is only going to get worse. Annual inflation is the highest it has been in 30 years at 5.9% (2020-2021) (Stats NZ, 2022), creating an increasing reliance on food banks and hardship grants. Auckland City Mission figures show a 30% increase in food parcel demand between 2018–19 and 2019–20 (Child Poverty Action Group, 2020) (figures are not yet available for the past year). In addition we are facing soaring house prices and increasing interest rates, coupled with stricter lending regulations, meaning the Kiwi dream of being a homeowner may no longer be achievable for many.

There are currently a lack of integrated, personalised financial wellbeing solutions in New Zealand so managing money well is time-consuming and requires considerable knowledge.

Personal Wellbeing

Personal wellbeing is multi-faceted and incorporates the following areas (Figure 5). Improving each of these elements can have a positive effect on our wellbeing.

Figure 5: Personal wellbeing components (Balansag, 2018; Black, n.d.; Chowdhury, 2018; Leech, 2022; Ministry of Health NZ, 2021; National Heart Lung and Blood Institute, n.d.; New Zealand Treasury, 2021; Siampani, 2021; Teaching Jobs, 2020; World Health Organization, 2022; Yeung & Johnston, 2020)

Community Wellbeing

Community can refer to many different types of relationships formed through familial connection, shared experiences or working together (Figure 6). Like the Māori concept of whanaungatanga describes, these relationships provide a sense of belonging and kinship.

Figure 6: Community wellbeing relationships.

With the arrival of COVID-19, many of our social interactions changed. We experienced prolonged periods of being restricted to our household bubbles, placing considerable strain on those relationships. For the majority of those fortunate to continue working, this moved online. Other contact took place digitally, by phone or was simply placed on hold, causing social and emotional distancing and a sense of isolation. Two years on, we continue to live with ongoing restrictions and working from home looks set to become permanent.

Around the world loneliness is rising. As at March 2021, 18.4% of New Zealanders said they felt lonely some or most/all of the time (Stats NZ, 2021b). Despite indications that loneliness increased during lockdowns, there has not been a significant overall increase to the number of people feeling lonely, however, other studies claim that "this masks severe and ongoing loneliness among some marginalised groups" (Walker, 2021, p. 7). Ensuring we create and nurture meaningful connections and a sense of belonging is important to dispelling loneliness, enjoying our lives – including work – and improving our wellbeing.

Environmental Wellbeing

Whatungarongaro te tangata, toitū te whenua
As people disappear from sight, the land remains – Māori proverb

Earth is a complex ecosystem that is 4.5 billion years old and currently sustains 7.9 billion people world-wide (Worldometer, 2022). Our relationship with this environment is reciprocal; we need to take care of it in order to benefit from air, water,

food, shelter, beautiful landscapes, and other factors important to maintaining life and flourishing. Over time, this relationship has fallen out of balance, with people impacting the environment through overpopulation, pollution, burning fossil fuels and deforestation. We are now experiencing the effects of that imbalance: climate change, erosion, poor air quality, and polluted waterways (National Geographic Society, n.d.). None of these impacts should be taken lightly, however, climate change is becoming more and more urgent; "unchecked [it] will affect all aspects of human life and the natural world" (Lamhauge et al., 2021, p. 6).

Whilst for many years New Zealand enjoyed a reputation of being clean and green, this is now at odds with various environmental statistics. For instance:

- New Zealand has the world's highest proportion of species at risk (Bradshaw et al., 2010)
- 60% of NZ's total energy supply is from non-renewable sources (Ministry of Business Innovation and Employment, 2021)
- The Climate Action Tracker Organisation rated New Zealand highly insufficient overall (indicating that climate targets, policies and commitments are not stringent enough) (Climate Action Tracker, 2021).

Sustainability has become one of the biggest themes of our generation. There is a growing realisation that we need to look after the environment so that future generations can benefit from it too. We must take care to safeguard natural resources like rivers, native forests and mountains and clean air and water. The Māori worldview reflects a deep connection to the land and the natural world where people act as kaitiakitanga and are responsible for guardianship, preservation and protection of the environment (Royal, 2007). Adopting this mindset and contributing to the preservation effort can increase our sense of purpose.

Benefits

Benefits to improving wellbeing are many and wide-ranging. For the individual, they can range from feeling happier and more at peace, to having hope and purpose, more energy, feeling connected and valued, and thinking more clearly.

Just as factors contributing to wellbeing are inter-connected, so too are the benefits of improving wellbeing (Figure 7).

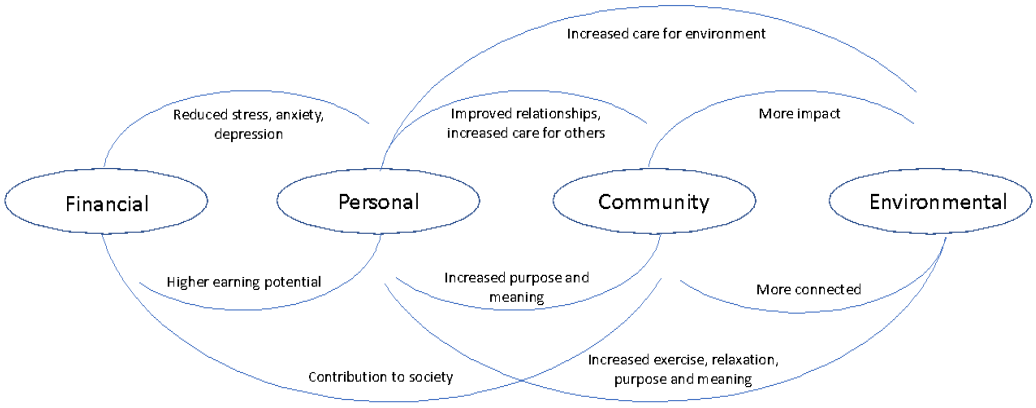


Figure 7: Individual benefits of improving wellbeing.

Benefits of improving wellbeing extend from the individual themselves out to the wider community and region, as well as to national and global levels.

From a community perspective, there is an increased propensity to help others and contribute to society, for example, sharing of knowledge and wealth. "Participation is necessary to maintain the collective institutions that research shows are so essential to building and maintaining wellbeing across a country" (New Zealand Treasury, 2021, p. 33).

Workplaces are recognising the importance of wellbeing programmes as they aim to create better work/life balance for their employees, build a new culture around remote working, prevent burnout and high turnover. They experience better engagement, reduced absenteeism and higher productivity from their people (Manners, 2020; Mental Health Foundation, n.d.).

From a regional perspective, improving wellbeing can lead to reduced reliance on regional services like healthcare, meaning facilities are available to provide better quality services with fewer resources. Conversely, regional resources like parks, libraries etc. may see increased usage as individuals seek to improve their personal and/or environmental wellbeing.

Improving wellbeing on a national scale can lead to less preventable illness, less poverty, less crime, more innovation and higher GDP. As Thomas Jefferson so notably said "The care of human life and happiness... is the sole legitimate object of good government." In the New Zealand government's words, "reducing the number of beneficiaries that are reliant on welfare provision will, in many cases, lead to improved outcomes – both in terms of individual wellbeing and poverty relief, but also improved fiscal, social and economic performance" (New Zealand Treasury, 2010, p. 160).

Global benefits are similar to national benefits but on a greater scale and rely on multiple countries improving wellbeing across their populations to create substantial impact. They are focused around shared interests and have sometimes been set as aspirational goals such as eradicating poverty, slowing climate change and bringing about world peace.

Discussion

Holistic Solution

A new wellbeing solution is proposed that is aimed at improving wellbeing on a holistic basis. Operating as its own ecosystem, it will allow users to create their own personalised experience by actively seeking to improve the aspects of their wellbeing that they care about the most.

Financial wellbeing could include budgeting, tracking of expenses, building and maintaining your credit score and creating an emergency fund. Personal wellbeing could include setting goals, just-in-time education, daily tips and integration of other apps, including fitness trackers and meditation apps. Community wellbeing could include helping family and friends, volunteering and participation in cultural groups, as well as creating an online community. Environmental wellbeing could include a carbon footprint tracker, sustainability features, renewable energy, transport and positive environmental contributions like tree-planting.

For an example of how this might work, watch Tony & Sarah's wellbeing experience

It is anticipated that an MVP concentrating on controlling expenses (one aspect of financial wellbeing) will be developed first. The remainder of the app will be built out over time, incorporating the other areas of wellbeing defined in this article to form a first of its kind, wellbeing ecosystem. As part of the development process, collaboration with existing wellbeing providers whose services could be integrated into the ecosystem will be sought to provide a comprehensive end-to-end experience for users.

Conclusion

There is a gap in the market with regards to wellbeing solutions in NZ. Existing resources tend to be specialist, and don't provide a holistic service. There is no end-to-end integrated solution that is focused on empowering New Zealanders to thrive. The need to improve our wellbeing on an individual basis is underpinned by the societal shifts we are currently undergoing causing changes to our lifestyles, emphasising our values and impacting our financial circumstances.

Through this research, a shift towards a true human-centric mindset where a series of needs drive the solution has been demonstrated. This approach removes the barriers imposed by defined industries and enables the creation of a new wellbeing eco-system incorporating financial, personal, community and environmental wellbeing. This solution has the potential to change the lives of so many for the better by aiming to empower people to thrive and live a long, happy and fulfilled life.

References

Accessibility Tick Limited. (n.d.). *Accessibility Tick Programme*. Accessibilitytick.nz. Retrieved May 20, 2022, from https://accessibilitytick.nz/programme/

Balansag, S. (2018). *Benefits of Education to Society and Individuality*. Grin.com. https://www.grin.com/document/494160

Biswas, S., Carson, B., Chung, V., Singh, S., & Thomas, R. (2020). AI-bank of the future: Can banks meet the AI challenge? In *Global Banking & Securities*.

Black, M. (n.d.). *Mark Black | Breakthrough adversity to thrive through change*. Markblack.ca. Retrieved February 10, 2022, from https://markblack.ca/

Bradshaw, C. J. A., Giam, X., & Sodhi, N. S. (2010). Evaluating the relative environmental impact of countries. *PLoS ONE*, *5*(5). https://doi.org/10.1371/JOURNAL.PONE.0010440

Burrell, M. (2021). ASB, ANZ and Westpac accused of credit card debacle with widows. *NZ Herald Online*. https://www.nzherald.co.nz/nz/asb-anz-and-westpac-accused-of-credit-card-debacle-with-widows/DG35PPCGMPUSO72FSD6KXSKYYI/

Centers for Disease Control and Prevention. (2018). *Well-Being Concepts*. Health-Related Quality of Life (HRQOL). https://www.cdc.gov/hrqol/wellbeing.htm

Child Poverty Action Group. (2020). Auckland City Mission Food Parcel Demand (2008-2020).

Chowdhury, M. (2018). *Top 10 Benefits of Education - The Borgen Project*. Borgen Magazine. https://www.borgenmagazine.com/top-10-benefits-of-education/

Climate Action Tracker. (2021). *New Zealand | Climate Action Tracker*. Climateactiontracker.org. https://climateactiontracker.org/countries/new-zealand/

Commerce Commission. (2021). *The Credit Contracts and Consumer Finance Act*. www.comcom.govt.nz/disclosure

Consumer Financial Protection Bureau. (2015). Financial well-being: What it means and how to help. files.consumerfinance.gov/f/201501_cfpb_digest_financial-well-being.pdf

CTO investment firm. (2021). *Interview quotes*.

Discover, & Thrive Global. (n.d.). Thriving Wallet Research insights report / white paper.

Footprint Connect. (2022). Getting Under the Hood of Employee Financial Wellbeing.

FoxPlan. (2012). Financial education in the workplace.

Galicki, D. C. (2021). New Zealand Financial Capability Survey 2021.

Gallup. (2021). *Why Is Wellbeing Important?* Clifton Strengths. https://www.gallup.com/cliftonstrengths/en/355019/why-is-wellbeing-important.aspx

Kāhui Tū Kaha. (n.d.). *Rainbow Tick*. Rainbowtick.Nz. Retrieved May 20, 2022, from https://www.rainbowtick.nz/#offer

Kempson, E., Finney, A., & Poppe, C. (2017). Financial Well-Being A Conceptual Model and Preliminary Analysis. In *SIFO Project Note no. 3-2017: Oslo, Oslo and Akershus University College of Applied Sciences* (Issue 3).

Lamhauge, N., Rocha, M., Stadler, B., & Chhun, B. (2021). *Managing Climate Risks, Facing up to Losses and Damages*. OECD. https://doi.org/10.1787/55ea1cc9-en

Leech, J. (2022). *10 Top Benefits of Getting More Sleep*. Healthline. https://www.healthline.com/nutrition/10-reasons-why-good-sleep-is-important

Living Wage NZ. (n.d.). *Living Wage Accreditation*. Livingwage.org.nz. Retrieved May 20, 2022, from https://www.livingwage.org.nz/employers

Macfarlane, R. (2020). *Why 2021 will be the year of the consumer*. EY. https://www.ey.com/en_nz/future-consumer-index/why-2021-will-be-the-year-of-the-consumer

Manners, J. (2020). *Benefits Of Wellbeing At Work: What The Research Says*. Haptivate.co.uk. https://haptivate.co.uk/blog/the-benefits-of-wellbeing-at-work-where-to-start-what-works/

Mental Health Foundation. (n.d.). Five Ways to Wellbeing at Work Toolkit.

Ministry of Business Innovation and Employment. (2021). Energy in New Zealand. In *Markets - Evidence and Insights*. https://www.mbie.govt.nz/dmsdocument/11679-energy-in-new-zealand-2020

Ministry of Health NZ. (2021). *Annual Update of Key Results 2020/21: New Zealand Health Survey*. Health.govt.nz. https://www.health.govt.nz/publication/annual-update-key-results-2020-21-new-zealand-health-survey

Mohan, R. (n.d.). *Why Learning New Skills is Good for Your Confidence*. Https://Thriveglobal.Com. Retrieved March 27, 2022, from https://thriveglobal.com/stories/why-learning-new-skills-is-good-for-your-confidence/

MoneyHub NZ. (2022). *Compare term deposit rates in New Zealand*. Moneyhub.co.nz. https://www.moneyhub.co.nz/term-deposit-rates.html

National Geographic Society. (n.d.). *Human Impacts on the Environment*. Nationalgeographic.org. Retrieved February 9, 2022, from https://www.nationalgeographic.org/topics/resource-library-human-impacts-environment/?q=&page=1&per_page=25

National Heart Lung and Blood Institute. (n.d.). *Sleep Deprivation and Deficiency*. Nhlbi.nih.gov. Retrieved February 10, 2022, from https://www.nhlbi.nih.gov/health-topics/sleep-deprivation-and-deficiency

New Zealand Treasury. (2010). The New Zealand Benefit System: Key Problems and Options for Reform.

New Zealand Treasury. (2021). *The Living Standards Framework 2021* (Issue October).

Newton, K. (2021). "I can still get to you": Bank payment references used to send thousands of abusive messages. *Stuff.co.nz*, *Online*. https://www.stuff.co.nz/national/125194882/i-can-still-get-to-you-bank-payment-references-used-to-send-thousands-of-abusive-messages

Nichols, L. (2021, May 20). It's just so wrong. *NZ Herald*.

O'Neil, A., Quirk, S. E., Housden, S., Brennan, S. L., Williams, L. J., Pasco, J. A., Berk, M., & Jacka, F. N. (2014). Relationship Between Diet and Mental Health in Children

and Adolescents: A Systematic Review. *American Journal of Public Health*, *104*(10), e31. https://doi.org/10.2105/AJPH.2014.302110

Ridner, S. L., Newton, K. S., Staten, R. R., Crawford, T. N., & Hall, L. A. (2016). Predictors of well-being among college students. *Journal of American College Health*, *64*(2), 116–124. https://doi.org/10.1080/07448481.2015.1085057

Roy Morgan. (2020). *an Ongoing Snapshot of Financial Wellbeing in New Zealand*. *March*, 24. https://news.anz.com/content/dam/news/New-Zealand/2020/March/anz financial wellbeing report 2020.pdf

Roy Morgan. (2021). *ANZ Financial Wellbeing Indicator* (Issue April).

Royal, T. A. C. (2007). *Kaitiakitanga – guardianship and conservation*. Te Ara Encyclopedia of New Zealand. https://teara.govt.nz/en/kaitiakitanga-guardianship-and-conservation

Shine. (n.d.). *The DVFREE Tick | Making the Workplace Domestic Violence Free*. Dvfree.org.nz. Retrieved May 20, 2022, from https://www.dvfree.org.nz/dvfree-tick/

Siampani, A. (2021). *The Benefits Of Education For Every Individual – How It Helps People Prosper*. CEO World Magazine. https://ceoworld.biz/2021/03/27/the-benefits-of-education-for-every-individual-how-it-helps-people-prosper/

Stats NZ. (2021a). Kei te pehea tatou? A snapshot of New Zealand's wellbeing.

Stats NZ. (2021b). *Wellbeing statistics: March 2021 quarter*. Information Releases. https://www.stats.govt.nz/information-releases/wellbeing-statistics-march-2021-quarter#recent

Stats NZ. (2022). *Annual inflation hits a three-decade high at 5.9 percent*. Stats.govt.nz. https://www.stats.govt.nz/news/annual-inflation-hits-a-three-decade-high-at-5-9-percent

Stranges, S., Samaraweera, P. C., Taggart, F., Kandala, N. B., & Stewart-Brown, S. (2014). Major health-related behaviours and mental well-being in the general population: The health survey for England. *BMJ Open*, *4*(9). https://doi.org/10.1136/bmjopen-2014-005878

Sustainability expert. (2021). *Interview quotes*.

Teaching Jobs. (2020). *Reasons to Educate People – What are the Advantages of Education?* Teaching-jobs.org. http://www.teaching-jobs.org/reasons-educate-people-advantages-education/

The Wellbeing Thesis. (n.d.). *Physical Wellbeing and Mental Wellbeing*. Retrieved November 12, 2021, from https://thewellbeingthesis.org.uk/foundations-for-success/physical-wellbeing-and-mental-wellbeing/

Toitū Envirocare. (n.d.). *Toitū Envirocare Carbon Programmes & Certification*. Toitu.co.nz. Retrieved May 20, 2022, from https://www.toitu.co.nz/what-we-offer/carbon-management

Trading Economics. (2021). *New Zealand Households Debt To Income*. Tradingeconomics.com. https://tradingeconomics.com/new-zealand/households-debt-to-income

Walker, H. (2021). Still Alone Together. April.

World Health Organization. (2022). *Physical inactivity*. The Global Health Observatory. https://www.who.int/data/gho/indicator-metadata-registry/imr-details/3416

Worldometer. (2022). *World Population*. Worldometers.info. https://www.worldometers.info/world-population/

Yeung, O., & Johnston, K. (2020). Resetting the World with Wellness. *Global Wellness Institute (GWI)*, 83. https://globalwellnessinstitute.org/wp-content/uploads/2020/08/2020_White_Paper_Series_Resetting_the_world_with_Wellness_Revised.pdf

---

Useful links and resources

- The OECD Better Life Index https://www.oecdbetterlifeindex.org/
- World Happiness Report https://worldhappiness.report/
- UN Sustainable Development Goals https://sdgs.un.org/
- Gallup https://www.gallup.com/
- Living Standards Framework https://www.treasury.govt.nz/information-and-services/nz-economy/higher-living-standards/our-living-standards-framework
- Te Whare Tapa Whā https://www.health.govt.nz/our-work/populations/maori-health/maori-health-models/maori-health-models-te-whare-tapa-wha
- Te Tauihu wellbeing framework https://www.tetauihu.nz/
- Mental Health and Wellbeing Commission https://www.mhwc.govt.nz/
- PERMA https://www.pursuit-of-happiness.org/history-of-happiness/martin-seligman-psychology/?gclid=EAIaIQobChMIgN7oo5yw9gIVboNLBR0wNwoNEAMYASAAEgKqYfD_BwE
- Tony & Sarah's wellbeing experience https://youtu.be/pdNYmCLIq9s

Alaine Perrott

Alaine's interest in wellbeing has developed from both her personal and professional experiences. These include over 10 years working in the banking and financial services industry in New Zealand and the United Kingdom. Like a lot of others, Alaine has experienced burnout, along with the more recent COVID fatigue. She has had to work to overcome the resulting stress and anxiety and build back resilience, coming to realise the impact of lifestyle choices on mood, energy levels and overall happiness and satisfaction with life.

Alaine has a Bachelor of Arts and a Bachelor of Commerce from the University of Auckland, and in 2022 completed her Masters of Technological Futures with Tech Futures Lab.

Research Article

Bridging the Gap: The Impact Project-Based Contextualization has on the Motivation of Junior Technology Students

He Rourou, Volume 2, Issue 1, 46-71, 2022

Jacob Doak

Abstract

This study seeks to improve learning motivation of Year 10 Technology students at a secondary school in South Auckland. Despite the emphasis in New Zealand schools on university education, the majority of students in low-decile schools do not follow this pathway. The emphasis on higher education decreases student motivation in the classroom and highlights economic, qualification, and occupational inequities in low socio-economic communities. This study aims to help students make informed choices for career pathways after school, with an emphasis on trade apprenticeships as an alternative to the traditional university pathway. This research seeks to understand how contextualising the Technology curriculum through a project-based assignment affects motivation in the classroom. It also seeks to understand how exposing students to opportunities in the construction industry affects career aspirations. Students participated in visits to industry worksites while working in groups to design and construct seating projects for a stakeholder in their school community. This project mirrored a real-world inquiry project, with students acting as professionals in the college environment while also being exposed to industry workplaces. This helped them to make connections between classroom learning and the workplaces. In doing so, they learned both subject knowledge and *how to apply* that knowledge to different concepts and contexts outside the classroom. Qualitative and quantitative data was collected in the form of journal reflections, surveys, and observations before and after the intervention to measure the change in student motivations and aspirations. The data was evaluated using Ajzen's (1991) motivation theory framework to analyse the factors of self-efficacy, social pressures, task-value, and the added factor of cost. The findings from the data showed that contextualising classwork with industry exposure increased student motivation and impacted career aspirations.

Introduction

Making career decisions is a significant yet necessary pressure for young people in Aotearoa. Thoughtful consideration is required to weigh up such decisions considering what they will cost. Many students have great difficulty making career decisions for a lack of readiness, lack of information, or inconsistent information (Kırdök & Harman, 2018). Previous research suggests that while the age of 15 seems too young for students to be making career decisions, their future pathways are already being impacted by choices made for NCEA (Medina & Sutcliffe, 2021). Therefore, schools have an obligation to be adequately preparing students and their whānau to be making these choices. This research project is an inquiry into how industry exposure and contextualised project work in school can bridge the gap between the classroom and the workforce. The rationale behind it is to more adequately prepare students to make informed decisions regarding career pathways, and therefore increase student motivation for learning in the classroom. Project-based contextualisation is teaching content in the form of a project that has real-world application, rather than abstract or theoretical concepts disconnected from reality. In this case, real-world applications are discussed in relation to industry and the workforce.

Context

The New Zealand school curriculum is a system that favours higher education pathways for school leavers. In tension with this emphasis are the opportunity and economic disparities across socio-economic areas (Pannekoek et al., 2019). Only 14.8% of school leavers in the decile 2 school being researched enrolled in Bachelors and above qualifications in 2019, compared to 52.7% of decile 9–10 school leavers (Education Counts, 2021). For economic and social reasons, many students are unable to attend higher education; all students are capable, however not all have the same opportunities. This highlights the economic, qualification, and occupational inequities in Aotearoa, which are the wider contextual issues that will be addressed in this study. The data shows that there is a very clear correlation between the socio-economic climate of schools, and the percentage of school leavers who gain a Level 2 NCEA qualification or higher. Data from the Ministry of Education (2021) found that in 2019, 91.3% of students in high decile schools were leaving college with Level 2 or above, while only 64.9% of students from decile 1 and 2 schools graduated with the same.

This research was conducted at a decile 2 secondary school in South Auckland. Achievement at the school for Design and Visual Communication (DVC) Standards was 67.1% from 2019 to 2020, which is significantly lower than the 81.7% achievement of DVC classes in the same decile group (NZQA, 2020). The department sustains

achievement rates across the three subject areas, however, it is a common trend that a minimal percentage of students attain grades higher than the minimum assessment requirements.

Literature Review

A great amount of research has gone into the possible influencing factors of motivation to promote academic performance (Buzdar et al., 2017; Dweck, 2000; Eccles & Wigfield, 2002; Vansteenkiste et al., 2006), all of which find that the theory of motivation in the classroom is an increasingly complex issue. Motivation is student-specific, subject to environment, culture, and background. As its root *motive* suggests, it is what drives people towards something; it is a reason, rationale, or incentive to behave in a certain way. Afzal et al. (2010) defined motivation as that which pushes students' attitudes to progress in learning opportunities.

In his seminal work into behavioural psychology, Ajzen (1991) suggested that the attitudes of people's beliefs can predict their subsequent behaviours by three main factors – their attitudes towards the behaviour and subjective social pressures, and their perception of behavioural control. Translating this theory to a New Zealand secondary school context, Walkey et al. (2013) found that student aspirations and their subsequent achievement are influenced by (1) the value the student places on the achievement opportunity, (2) the amount of control the student perceives they have over their own achievement, and (3) the social pressure on the student to achieve. In support of this, Hynds et al. (2017) identified that sustained school success for Māori students is dependent on three factors – how positively students identified with academic achievement, the extent to which students felt they belonged at school, and whether or not the students believed they could achieve. It is notable that all three factors correspond with other leading motivation theories. Another term used is expectancy-value models (Harun et al., 2012), which run in the same vein as Ajzen's theory of planned behaviour. Biggs and Tang (2011) also stated that students are motivated to aspire for educational achievement when the outcome is of value to them, and when they perceive they have an attainable opportunity for success.

Some researchers, however, argue that there is one more crucial factor that affects student motivation – *cost*. Eccles and Wigfield (2002) and Jiang et al. (2018) tested an expectancy-value model with the added factor of cost. Cost is commonly described in relation to the negative results of engaging in a particular learning activity including the cost of time, fear of failure, effort expended on tasks, and the general hard work needed to grow in a certain area. However, it is important to note that cost also has external considerations such as the loss of engaging in alternative

opportunities (Eccles et al., 1983). Any choice to pursue a subject in school requires multiple lost possibilities for the sake of one learning opportunity. A broader view of the factor of cost involves the cost for students engaging in other simultaneous learning opportunities and the effect that they will have on the "new" opportunity (Flake et al., 2015). For example, the added stress of studying for an exam may occupy a student's mind and time when they are engaging with another subject. Alternatively, if students were required to spend more time on one area of learning, this would cost them time out of school to catch up on other subjects.

Research has shown that if the cost outweighs the perceived benefits, students will not engage in learning opportunities (Flake et al., 2015). These studies suggest that academic outcomes can be lifted by greater quantities of motivation. However, in contention with this view is Deci and Ryan's self-determination theory (SDT) (1985), which claims that higher achievement outcomes are caused by qualitative factors of motivation, rather than quantitative amounts (Vansteenkiste et al., 2009). Qualitative studies emphasise students' autonomy, relatedness, and competence. Expectancy-value models operate more like an equation that works out the degree to which students are willing to engage. For example, a student with quantitative factors of motivation is someone who displays a high level of self-efficacy and who perceives a low level of cost to engage in the learning opportunity.

Two important forms of motivation affect students in the classroom – intrinsic and extrinsic. While intrinsically oriented students find value in the learning itself, extrinsically oriented students seek learning to an end because of an external pressure or regulation. Considerable research has been undertaken into the effectiveness of intrinsic and extrinsic motivations for learning (Buzdar et al., 2017; Zaccone et al., 2019), and it is commonly agreed that intrinsic motivations are more effective for learning because they employ personal commitment and long-term, deeper-level interest in a subject (Afzal et al., 2010; Vansteenkiste et al., 2009; Zaccone et al., 2019). Intrinsically motivated students are also more likely to persevere when faced with adversity than those who are extrinsically motivated (Afzal et al., 2010).

External reasons for achievement can also be powerful motivators, an example being when the learning facilitates or leads to valuable future goals like career aspirations or simply higher grades, even if the task in itself is not particularly enjoyable (Eccles & Wigfield, 2002). While many researchers found that negative academic performance is associated with external motivators, Jovanovic and Matejevic (2014) and Rehman and Haider (2013) agree that there are particular forms of external incentives that complement intrinsic motivations and produce greater effectiveness of learning in the classroom. The question that arises from the literature around forms of

motivation is this: How do educators, as external facilitators, foster and grow internal motivations in students, while applying external incentives positively?

Rationale

Students who do not gain minimal qualifications are more socially and economically disadvantaged (Honigmann, 2017; Strathdee, 2016). Education Counts (2021) shows that 33.5% of students from decile 1–2 schools like the college in this study enrol in Level 1–7 (non-degree – certificates and diplomas) pathways. This data suggests that, compared to the 14.8% heading to higher education, the non-degree pathways are much more deserving of our focus. There is an argument for increasing higher education opportunities for students in lower decile school contexts. However, the argument of this paper is that higher education is not the only option available, contrary to the emphasis in our schools.

Project Aim and Questions

The research investigated how project-based contextualisation in the form of integrated client-based design projects and industry exposure would affect student motivation for learning in the classroom, and subsequently, their future aspirations beyond college. It studied student comprehension of the classwork in relation to real-world contexts and analysed the factors of Ajzen's expectancy-value model for planned behaviour. My research question was: What impact can project-based contextualisation have on the motivation for learning of Year 10 Technology students? Additionally, my sub research question was: What impact can project-based contextualisation have on the future aspirations of Year 10 Technology students?

Methodology

To investigate the impact that project-based contextualisation has on student motivation over time, a mixed-method approach was taken. The methodology of concurrent triangulation (Creswell et al., 2003) was chosen because it allows both qualitative and quantitative data collection simultaneously, and uses each data set to help validate the other, thus leading to holistic results. This approach is suitable as the participant group are a small number of students. Therefore, while the data is not quantitatively rich, the quantitative findings validate the rich qualitative results, and together are helpful to provide a more meaningful data set. This research design also helps to increase reliability of data by collecting it in multiple forms. Figure 1 displays this form of methodology (Atif et al., 2013).

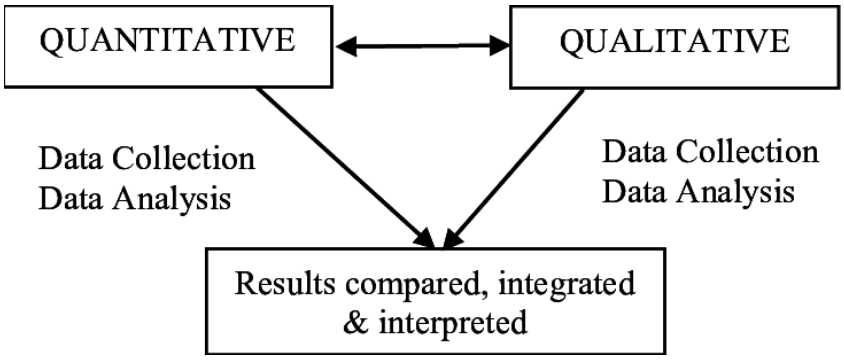


Figure 1. Diagram of concurrent triangulation

The study consisted of 12 Technology students who participated in the project and data collection, with an average age of 15. The class of 25 students was presented with the opportunity to take part in the research, and from that class 12 students volunteered. Students filled out online journal reflections, surveys, and were observed over a period of 22 weeks (two school terms). The 22 weeks were divided into two phases of 11 weeks each (see Table 1). The surveys were distributed before, during, and after the intervention to measure change in students' motivation over time. The students wrote online journal reflections after each of the intervention's three organised activities. Insider-researcher observation notes were written over the duration of the project, with the specific focus on how students reacted to the intervention.

Project Structure

The project was divided into two key Phases (see Table 1), which consisted of the Industry Exposure Phase and the Stakeholder Project phase. These were the two key components designed to work together – contextualisation and project-based learning.

Phase One: Industry Exposure			
#	What We Did	Activities & Learning Involved	Data Collection Methods
1	Past student & Air NZ engineer visit to speak to the students	-Showed students some of the projects he worked on in order to get into the training course -Talked to the class about potential pathways in the engineering and aircraft industry -Talked to the class about potential career pathways from Technology subjects	-Observations
2	EOTC Trip #1: Lloyd Stevenson Boat builders in East Tamaki	-Initial case study into the boat building and marine composites industry -Tour around the workshop to see the current builds in progress	-Student online reflection journals -Surveys

3	**EOTC Trip #2:** Linear Homes building site in Botany	-Initial case study into the construction industry complete induction for HazardCo app for safety on entering worksites -All students sign -Tour around the building site -On-site apprentices shared their experiences on the job and the pathways they each took to get there -On-site group activity: Build a chair for the team's lunch area	-Student online reflection journals -Surveys
Phase Two: Stakeholder Projects			
#	What We Did	Activities & Learning Involved	Data Collection Methods
1	**Initial group seating construction project:** Breakfast Bar stools	-Health & Safety induction -Individually learning how to use tools and equipment in the workshop -Individually learning how to create a range of woodwork joints -Working in groups to create breakfast bar stool from the plans in preparation for the Stakeholder Projects	-Surveys -Observations
2	**Stakeholder Projects:** Design and construct a form of seating furniture for a client in the school community	-Working in groups to interview clients, research seating, ergonomics, durability etc., design the project for a client, create a CAD model & plans (computer-aided design) -Work in groups to construct Stakeholder Projects	-Student online reflection journals -Surveys
3	**Stakeholder Project Exhibition**	-Exhibition after-school to display Stakeholder Projects along with graphic CAD drawings -All whānau, teachers, and peers invited	-Student online reflection journals

Table 1. Research Structure and Project Phases

Surveys

The research surveys were based on Icek Ajzen's (1991) theory of planned behaviour and adapted to include the factor of cost (Eccles & Wigfield, 2002). The Baseline, Midpoint, and Endpoint surveys consisted of 12 questions with five-point Likert scale questions; three questions for each of the four sections – expectancy, value, social, and cost.

Each section ended with an open-ended question, and at the end of each survey were two general open-ended questions asking students to describe what increased and decreased their motivation in class. Additionally, the questions and sections were asked in a random order for greater reliability of data. Students were given 20 minutes at the end of class for checkpoints in May, July, and October, and filled the surveys out anonymously. See Table 2 for the survey structure and the measures for why each question was relevant.

Self-efficacy (Expectation)		**Measure**	**Survey Question Number**
1.	How good are your woodwork skills in Technology class for making the Stakeholder project?	Perception of own understanding	2
2.	How good do you think your Stakeholder project will be?	Perception of own ability	6
3.	I know that I'll be able to learn the skills needed for our stakeholder projects	Confidence of ability to learn	10
Task Value (Value)		**Measure**	**Survey Question Number**
1.	How much do you enjoy Hard Materials Technology?	Intrinsic value of the task	5
2.	Do you think you will be able to use the practical skills in Technology in other places?	Perception of the task's 'utility value'	9
3.	How important is Technology class to you?	Extrinsic value of the task	1
Social Pressures (Social)		**Measure**	**Survey Question Number**
1.	Others would be disappointed if I didn't do well in Technology	Negative social pressures as motivators	7
2.	I enjoy working with my peers in Technology	Peer affiliation	3
3.	My teacher cares about my learning and helps me to do my best in Technology Hard Materials	Teacher affiliation	11
Negative Consequences of Engagement (Cost)		**Measure**	**Survey Question Number**
1.	How hard are you willing to work in this subject?	Effort expended	4
2.	How stressful do you find Technology?	Stress caused	8
3.	How likely would you be to attend lunch or after school opportunities to work on your Stakeholder project?	Sacrifice of time	12
Open-ended Questions (General)		**Measure**	**Survey Question Number**
1.	In the space below, please list specific things that INCREASE your motivation to learn in your Technology class	Subjectivity	13
2.	In the space below, please list specific things that DECREASE your motivation to learn in your Technology class	Subjectivity	14

Table 2. Expectancy-Value-Social-Cost Model (EVSC) Survey Questions

Figure 2 below demonstrates the way in which this data was analysed against Ajzen (1991) and Walkey's (2013) research considering value, self-efficacy, social pressures, and cost. Because motivation is complex, it was helpful to analyse the data holistically to avoid misinterpretation. The graphs below convey the extent to which each of the measured aspects affected students' motivation in the classroom at the baseline checkpoint.

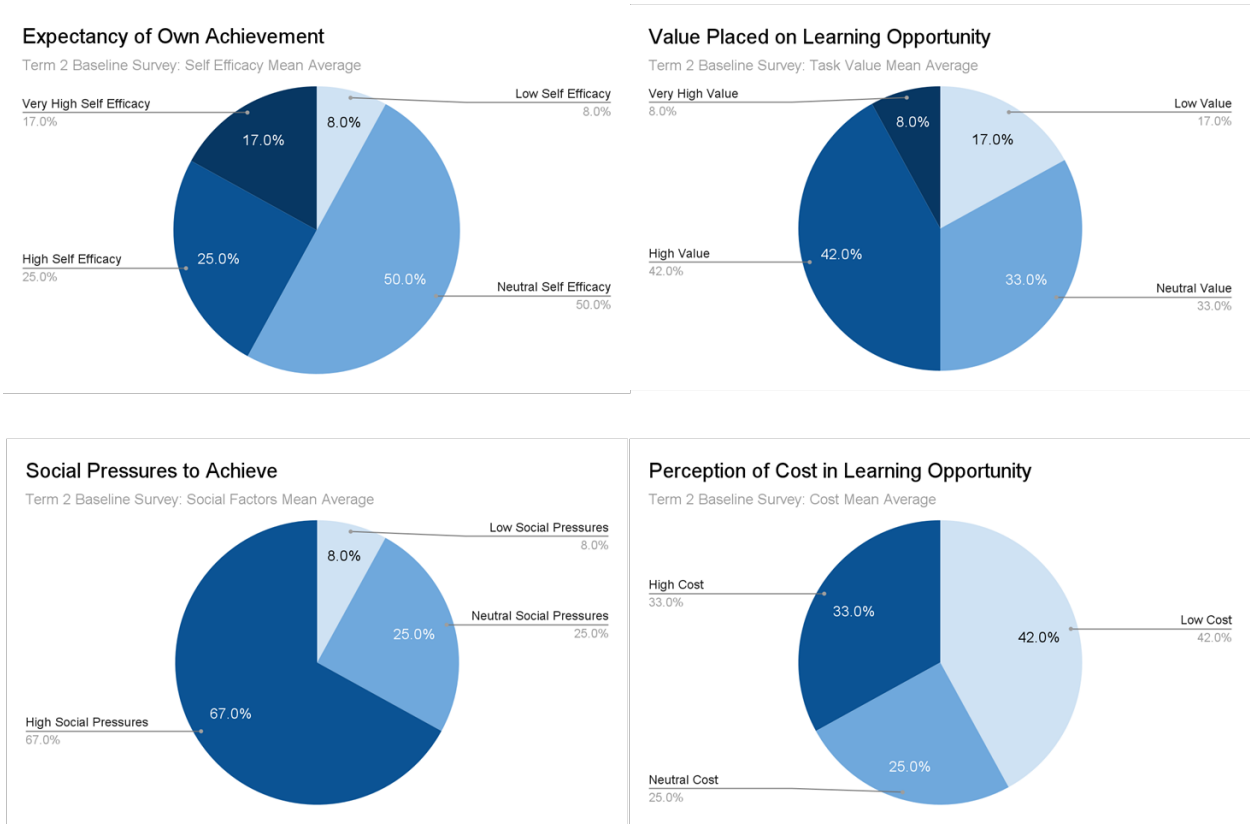


Figure 2. Expectancy Value Social Cost Model of Motivation

Online Journal Reflections and Observation Notes

Students filled out online journal reflections after each of the three organised activities in Phase 1 (see Table 1), which were given to them in the form of a Google Slides template (see Appendix 1). The templates consisted of three open-ended questions and three 10-point Likert scale questions. Observation notes were collected in an online folder.

Data Analysis

The present research aimed to understand what underlying ideas were beneath the data and let the data determine the themes for itself. A latent inductive approach

was therefore used for the data analysis, a method developed from Braun and Clarke's (2006) thematic analysis which was originally developed for psychology. A coding system (Glaser & Holton, 1967) was used to identify different themes, similar phrases, and patterns that emerged. From these, themes were generated and reviewed. At the end of data collection, quantitative findings were used to validate reviewed qualitative findings. Upon final data collection, students were grouped into three distinct categories (see Table 3) based on the themes in the data and their attitudes toward the learning. This grouping system is based on previous research (Walkey et al., 2013), which identified student goal orientations based on the theory of planned behaviour in a similar way (Ajzen, 1991). The premise of these orientations is that they are predictive of student achievement outcomes.

Group A – *Doing My Best*	
Strong engagement	Negative social pressure from peers is demotivating
Intrinsically and extrinsically motivated	Willing to sacrifice own time for achievement
High self-efficacy	Low perception of cost
High perseverance	Learning new things is motivating
Motivated by practical work	Social pressures are very influential on other factors of expectancy, value, and cost
Motivated after seeing career opportunities for the first time	
Working with peers is motivating	
Group B – *Doing Just Enough*	
Moderate engagement	Unwillingness to sacrifice own time for achievement
Strong positive social pressure from teacher to achieve	Challenge is perceived as demotivating
Low perceived value of achievement in the subject	Motivated when the learning is fun and enjoyable
Moderate self-efficacy	Social pressures are very influential on other factors of expectancy, value, and co
High perception of cost required for achievement	
Group C – *Don't Care*	
Low self-efficacy	Unwillingness to sacrifice own time for achievement
Little engagement	Challenge is perceived as demotivating
Low perceived social pressure from teacher to achieve	High perception of cost required for achievement
High perception of cost required for achievement	Little to no motivation to achieve in class

Table 3. Themes in Different Groups of Students in their Attitudes toward the Learning

Results and Analysis

The research found that giving students new opportunities lifts motivation in the classroom. This was done in the present research by exposing students to career

pathways they had not previously known much about. Students who were able to see the tangible reality of what schoolwork was preparing them for indicated that they were more motivated in class. Take for example the statement below from one of the student's survey answers.

"…It [contextualised learning] motivates me as I know what I'm doing in class can become a job, and if it's a subject I enjoy and I know I can get a job in the area, I would want to work harder…"

The findings convey that for students to be able to make responsible, informed decisions about subjects and careers, educators need to be providing a more in-depth look at the different avenues to which their subjects lead. It also highlights the need for a more experiential view of career opportunities.

Preparing for the Future Early

When asked whether they knew boat building was an available career pathway, 71% of the class did not. In the case studies into the construction industry, the collective group knew of only eight careers out of the possible 15 construction pathways (BCITO, n.d). Furthermore, students were unanimous that the unique opportunities in Technology this year helped them to make subject decisions, and all but one indicated that the opportunities had helped them in their future career decisions. One of the key arguments of this research is the need for educators to be preparing students and their whānau for future pathways as early as the age of 15 (Medina & Sutcliffe, 2021). Every industry contact over the course of the project supported the premise that 15 is not too early to be considering future careers. An example of this position is shared below in a statement addressed to the class. During Phase One of the project, an Air New Zealand engineering apprentice and ex-pupil of the school visited the college to share his experiences.

"…I know you're just in Year 10, but your time at school goes so fast, and very soon you're going to be walking out of here and thinking, 'what am I going to do next?' So, it is really important that you are thinking about the future – where am I going to be in the next five years? Your plans might change too. Mine did. I wanted to be an accountant, remember? Now I am doing something completely different. It's alright if your plans change. But what's important is that you *do* have a plan…"

This reinforces the proposal that conducting EOTC visits to subject-related workplaces as early as junior high school is not merely a fun excursion, but helps

students to focus on the future and begin to formulate a post-school plan for themselves. Encouraging a future-focused mindset will help students make the most of the time they have at school. Such opportunities also give students career aspirations to work toward, which in turn fosters motivation in the classroom.

Future Career Aspirations

As students were exposed to various industry pathways and contextualised learning in the classroom, their interest in apprenticeships increased. Figure 3 displays how interest in apprenticeship pathways changed over the course of the project. Students were presented with an unbiased selection of pathways available in the construction industry, including trade certificates, diplomas, and university level qualifications such as Engineering and Architecture. The data revealed that by the end of the project, many students' interest in apprenticeships as a potential pathway had grown. This is significant because it reinforces the value of project-based contextualisation as something that has begun to have an impact on the futures of young people. In addition to this, students' interest in university pathways also grew throughout the year, some aiming for a Technology-related degree, and others elsewhere.

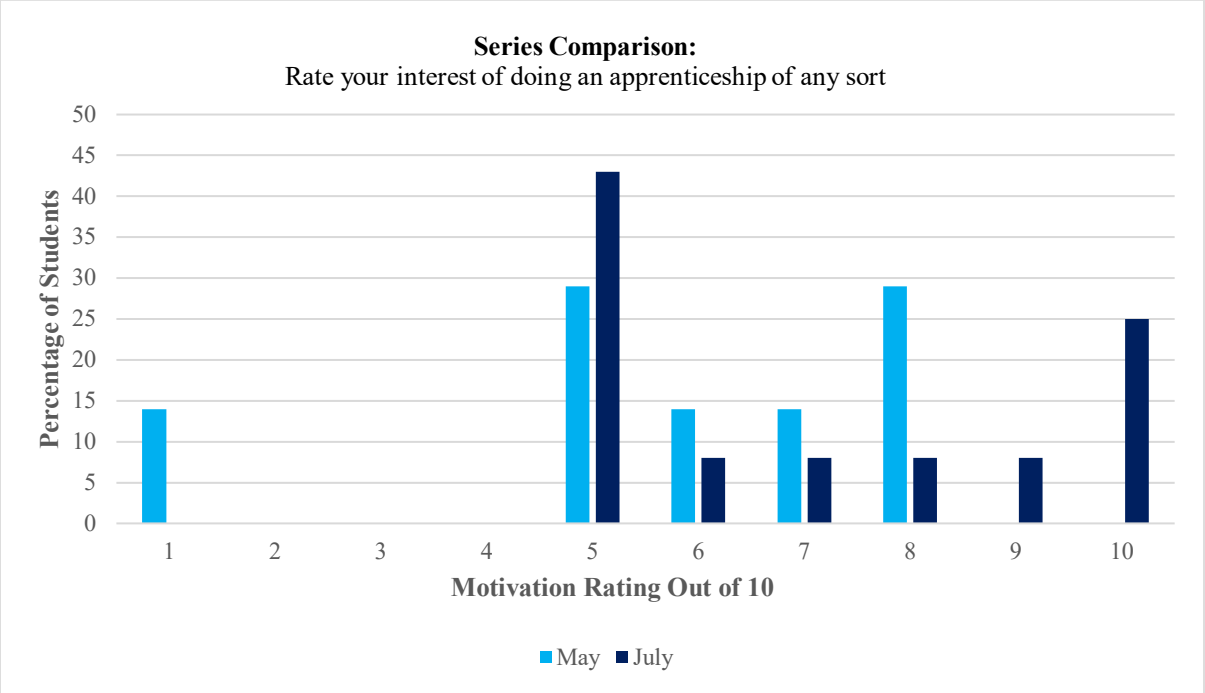


Figure 3. Series comparison: Students interest in doing an apprenticeship

EOTC Trips, Aspirations and Motivation

There is a direct correlation between education outside the classroom and motivation inside the classroom. All but one of the students said that the EOTC field trips to Lloyd Stevenson Boat Builders and the Linear Homes building site had motivated them more in their classwork. This was broadly due to a deeper level of and a developing long-term interest in the subject. Qualitative data revealed that the trips motivated students due to new or growing career aspirations in the construction industry. An example of this is shared below from one of the student's answers in the Endpoint survey.

"…Going on these trips motivated me as I can see taking this subject can be beneficial in the future as I can work toward making it my occupation and even running a business…"

Not all students were motivated for the same reasons, however. Those who did not indicate aspirations in the construction industry still reported that the field trips to LSB and the LH site motivated them for the sake of the classwork itself, even if there were no future goals for which it was preparing them. The paperwork to organise these trips is disproportionate to the amount of time spent during the visit, however this research suggests that the value of giving students opportunities they have never had is well worth it. Gaining access to industry workplaces in the community and engaging teaching staff in this model of education are two of the toughest challenges opposing contextualised learning (Beier et al., 2019). In their case study into forming tech-industry links with a low socio-economic school in New Zealand, Brunton and Coll (2005) back this up, stating that because of the time and physical resources required to invest in such a partnership, a serious and ongoing commitment from both parties is required. They did however conclude that the positive affects this had on student motivation and work ethic outweighed the costs.

Post-Trip Motivation

The increase in motivation suggests that contextualised EOTC trips are not merely a fun excursion, but a worthwhile investment. After each of the field trips, the students were asked to rate how motivated they felt towards their work in class having just been on the trip and seeing how the work in class fits into the larger picture of industry. This question sought to measure what immediate impact the intervention had on students' level of interest in a career path, and whether this would inspire a willingness to embrace a harder work ethic in order to aspire toward that career

interest. See Figure 4 for a comparison of the students' self-rated motivation over a period.

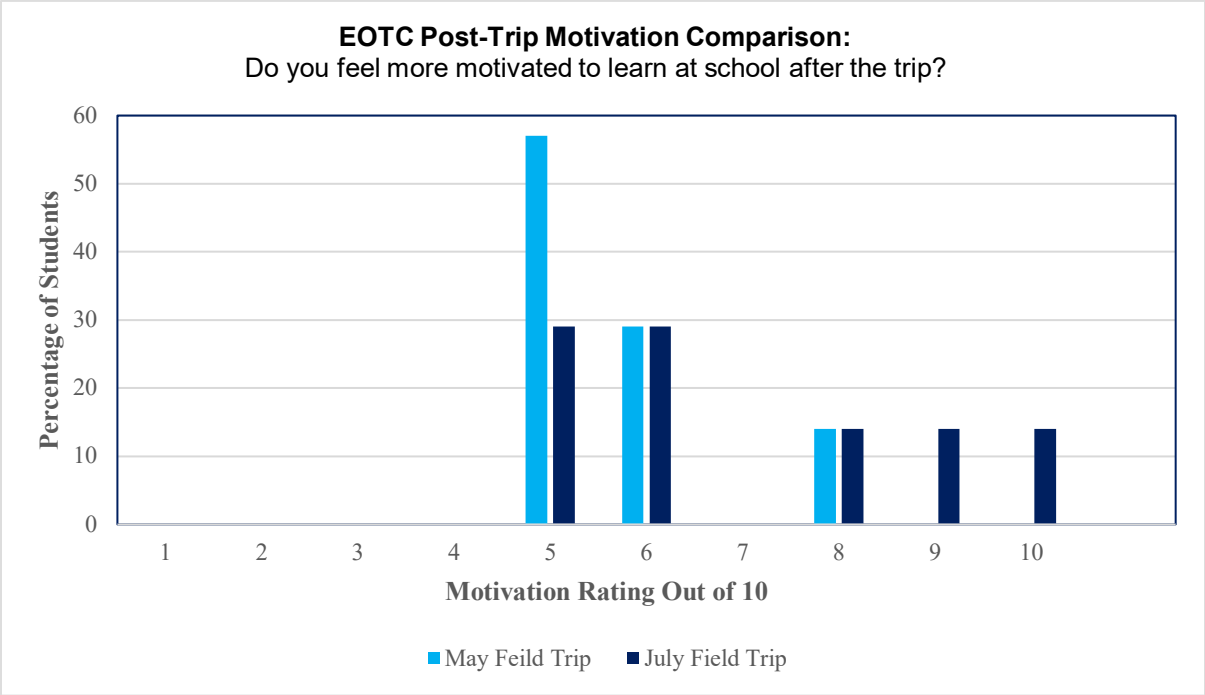


Figure 4. Series comparison: post-trip motivation rating

The results showed that there was minimal post-trip motivation in May, however after the July trip there was an increase in student motivation towards their classwork. Some of the students' reflections from the July trip (no. 2) are shared below.

Student A: "I went on the trip mainly to learn about what the trades offer, what type of work you would do on a site, and to hear about the types of experience the workers have gained."

Student B: "I went [on the trip] to have a fair idea of the trades."

Student C: "I went [on the trip] to find out more about building companies and work experience."

There are different factors that could have influenced the increase in motivation, however one of the reasons, as articulated by the students above, was that by this point the class was gaining a deeper understanding of how the theory in class related to the real world, specifically to the real possibilities in their future.

Knowledge Comprehension and Retention

One of the reasons EOTC trips lifted motivation in the classroom was that they produced a deeper level of learning and engagement. Qualitative student reflections showed that the level of knowledge comprehension and retention was far deeper after each field trip than it usually is in the classroom. Below is an example of the level of detail from a student's online journal reflection.

"…The most interesting thing was how they retained the landscape and still protected nature. It was interesting to know that there are so many regulations you have to follow when constructing houses, such as knowing what type of soil there is and using the right type of concrete for the ground… The combination of concrete and steel beams to use on walls, floors and ceilings. How the water proofing process works and how a flame is used to weld it…"

Seli et al. (2016) note that knowledge comprehension and retention of information is a strong indicator of motivation and in these cases, most students were able to give detailed accounts of their key learnings from the visits.

Stakeholder Projects

All but two students indicated that the Stakeholder Projects had also motivated them more in their learning, citing freedom of creativity, initiative, and group work. The most common reason for this increase in motivation, however, was that the projects were specifically for someone as a gift. The work, therefore, held a greater purpose outside of the students themselves. Emerging research has shown that psychological learning interventions increase classroom efficiency, productivity, persistence, and drive (Reeves et al., 2021). They suggest that this happens when students gain prosocial motivations for learning, which is the motivation to learn to have a positive impact on whānau, communities, and wider society. Although prosocial motivations were strong, social pressures from peers proved to be the most influential and defining factor.

Social Pressures from Peers

Teacher affiliation and pressures from whānau remained consistent and were not influential factors in any change in motivation. Furthermore, it was found that peer affiliation had a large impact on the students' perception of cost in the subject. Quantitative and qualitative data presented peer affiliation as the strongest predictor of behaviour in this context, which lines up with Ajzen's (1991) theory of planned behaviour. In an observation, students were asked to comment on how they found

pressures from their peers in the class affected their work. The following is a transcript from the observation notes.

Student A: "…Peers can make it fun but when people don't do the work, it makes you not want to work either. You're kinda like following the sheep…"

Student B: "…Yeah I feel like peers, like if they're pressuring you [negatively] it's not that fun. And it's more like, 'I don't really want to do the work.' But if you can get on well with them and start doing teamwork and engage in your work, it's a lot easier and it's more enjoyable…"

The group's overall self-efficacy and their perception of the teacher's support were consistent throughout the duration of the project. The trends in the data record that the greatest areas of change are the social pressures from peers, whether positive or negative, and the perceived cost of engaging in the learning, whether higher or lower. Students whose motivation dropped over the sequential periods reported that (1) their peers were a negative influence on their engagement in the learning, and (2) they perceived the cost of the learning opportunity to be greater than when they began the course. Alternatively, students whose motivation either stayed the same or increased over the series reported the opposite. These students were either listed in Group A: Doing My Best or in Group B: Doing Just Enough in Table 4. The research also showed that the social pressures on students to achieve was often deeply influential on the perceived value of the subject and of the expectations of one's own ability to achieve. Below is an example of this theme from a student's answer in the Midpoint Survey.

"…It's not the subject but the people in my surroundings that make me not enjoy it… What motivates me are people I know and am confident around…"

If students perceived their peers to be a positive influence in class and they felt they had sufficient support from their teacher, they were more likely to place a higher value on the subject. Furthermore, they also believed in their own ability to achieve.

Self-Efficacy in Mastery-Oriented Learning

Students who conveyed the highest levels of self-efficacy in the class stated that challenges and hurdles were a positive motivator in the subject. Conversely, students who displayed low levels of self-efficacy stated that challenges and difficulties in the subject were demotivating. Students who communicated this view of their own ability all expressed a general dislike of the subject and a notable aversion to any form of

challenge or problem solving. Students with a high self-efficacy needed to be challenged; it was fulfilling to grow in the subject even if it meant facing difficulty to get there. Previous research has shown that project-based learning creates motivation in the classroom through mastery-oriented curriculum (Beier et al., 2019; Harun et al., 2012; Perin, 2011). When students have positive educational experiences mastering a skill or topic, their self-efficacy increases, along with their subjective value of the learning opportunity (Beier et al., 2019). Accordingly, students reported an increase in their self-efficacy as they mastered new skills while working on the Stakeholder Projects. A reflection from a student at the end of the intervention is shared below.

"…I've been helping my mum with some of her projects, and learning in wood tech has made things a lot easier… I feel my self-confidence has improved as I can now work with my hands and hard materials…"

However, the opposite is also true when students have negative learning experiences in project-based learning. Educators, therefore, have a central responsibility to guide the learning and facilitate topic mastery, albeit at different paces depending on individual rate of progress.

Aspirations for Schoolwork

Project-based contextualisation has positively affected student aspirations and expectations toward their classwork in this study. One of the outcomes of motivation is students' expectations toward the learning. The quality and degree of work students are aiming to produce at school is a strong indicator of their achievement outcomes (Ajzen, 1991; Walkey et al., 2013). In each of the surveys, students were asked to indicate what quality of work they were expecting their Stakeholder Projects to be. Figure 5 conveys the change of student expectations toward their schoolwork over time.

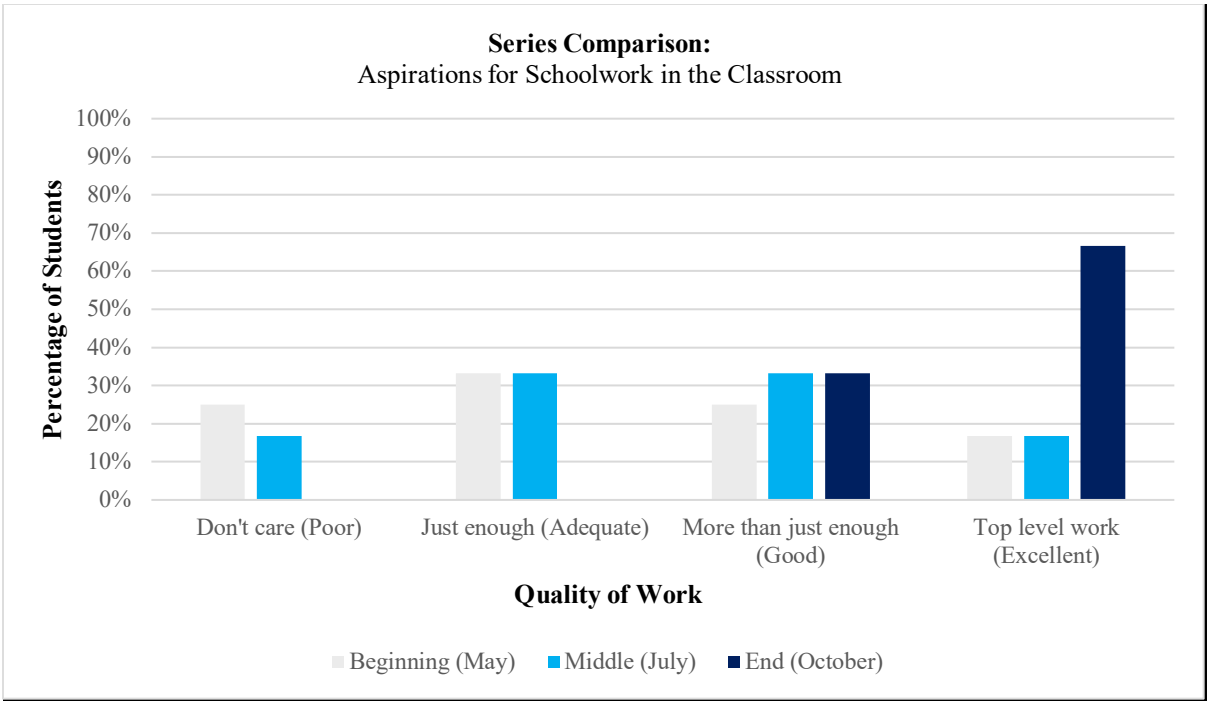


Figure 5. Series comparison: Student aspirations for quality of work

Before the intervention in May, most students were aiming to produce adequate work, an attitude toward the learning of *Doing Just Enough*. During the intervention in July, one-third of students approached the work with the same expectation and one-third were aiming for *More Than Just Enough (good quality)*. The final set of results taken from the Endpoint Survey after the intervention in October display the most noticeable change. While a third of the class indicated a *More Than Just Enough (good quality)* attitude, the majority (two-thirds) of the participants indicated they were aiming for *Top Level Work (excellent quality)*. The data suggests that the intervention lifted student aspirations in the classroom. This is significant because high expectations are strongly predictive of achievement outcomes. The need to lift student aspirations in the classroom is pertinent because of the disparities in achievement outcomes for underprivileged students. Medina and Sutcliffe (2021) found that while half of all students in their study expected to complete a degree, only a third of socio-economically disadvantaged students expected the same.

Purpose-Driven Education

One of the key qualitative findings of this research has been that motivation for learning increases when students have a larger view of its purpose. This was not reflected in Table 5, which conveys how students define success in the subject in the Baseline and Endpoint surveys.

Baseline (May)
1. Growing in knowledge and learning 2. Passing all the assessments 3. Enjoying the subject work this year 4. Engaging in meaningful work
Endpoint (October)
1. Growing in knowledge and learning *equal with* Enjoying the subject work this year 2. Passing all the assessments 3. Engaging in meaningful work *equal with* Having fun with my peers *and* Enjoying the subject as a hobby

Table 4. Students' own definition of success in Technology listed in order of importance (May-October 2021)

In the table, the definition "Engaging in meaningful work" dipped from 36.1% to 16.7%, while at the same time themes in the thematic analysis suggested that a larger view of purpose increased student motivation. One possibility for this could be that the student's intrinsic enjoyment of a subject is tied up with their understanding of "meaningful work," based on the work of Yeager et al. (2014) and Grant (2007, 2008), who found that students find enjoyment in their work *because* of the greater purpose of helping others. They found that students who had a purpose that transcended self-interest, such as a desire to help others through their future careers, displayed a far deeper level of learning and a far greater perseverance through tedious and difficult schoolwork. More extensive research on a larger scale is recommended to understand the reasons for the discrepancy in the data.

Implications

The theory of planned behaviour (Ajzen, 1991) was effective in this study, particularly for understanding how the different elements of the theory (EVSC) were affected by the intervention. The added factor of *Cost* was necessary for interpreting the data and is recommended to be included in the project's next steps. Further study is required for a deeper analysis of the data with a substantially larger cohort of participants, for quantitatively rich data to be collected and analysed. Furthermore, relationships between the school and industry contacts should be maintained over a longer period for best results. The limitations caused by COVID-19 meant that Phase 2 could not be fully carried out. There are therefore opportunities to inform future research because of the inability to complete what was intended for the present study.

Limitations

There were some key limitations to the research, namely a 10-week lockdown due to the COVID-19 pandemic, which caused a disruption to the construction component of the plan during Phase 2. This meant that data collection at the end of the project could not be based on the completion of the Stakeholder Projects or Exhibition. Data analysis, therefore, focused more on the process of the intervention, and how it impacted student motivation for learning in the classroom up until halfway through Phase Two.

Conclusion

This research aimed to measure the impact project-based contextualisation would have on student motivation in the classroom. Based on the findings, it can be concluded that real-world learning brings meaning and motivation to classwork. This study has shown the value of taking students to workplaces, both for understanding how classwork in school is meaningful, and for growing career aspirations. It can also be concluded that when learning is given a self-transcendent purpose, such as helping others through the work they do, students are most motivated and engaged. The results of this research suggest that educators should embed curriculum within real-world contexts and frame it with a purpose greater than the work itself.

This research suggests that students need to be aware of all the pathways which exist if they are to make informed career decisions. Making informed decisions starts with subject selection. Therefore, in the early years of secondary school it is of utmost importance that students are given exposure to the potential career pathways their subjects may lead to. Project-based contextualisation not only values students' academic achievement, but also their personal formation. It is when these two domains are combined that students will be fully equipped for life beyond the classroom.

References

Afzal, H., Ali, I., Khan, M. A., & Hamid, K. (2010). A Study of University Students' Motivation and Its Relationship with Their Academic Performance. International Journal of Business and Management, 5(4), 80. https://doi.org/10.5539/ijbm.v5n4p80

Ajzen, I. (1991). The theory of planned behavior. Organizational Behavior and Human Decision Processes, 50(2), 179–211. https://doi.org/10.1016/0749-5978(91)90020-T

Atif, A., Richards, D., & Bilgin, A. (2013, December 4). A Student Retention Model: Empirical, Theoretical and Pragmatic Considerations. Proceedings of the 24th Australasian Conference on Information Systems.

BCITO. (n.d.). Careers. https://bcito.org.nz/apprentices/careers/

Beier, M. E., Kim, M. H., Saterbak, A., Leautaud, V., Bishnoi, S., & Gilberto, J. M. (2019). The effect of authentic project-based learning on attitudes and career aspirations in STEM. Journal of Research in Science Teaching, 56(1), 3–23. https://doi.org/10.1002/tea.21465

Biggs, J. B., & Tang, C. S. (2011). Teaching for quality learning at university: What the student does (4. ed). McGraw-Hill, Society for Research into Higher Education & Open University Press.

Bishop, R., Berryman,M., Cavanagh, T. (2007). Te kōtahitanga. Establishing a culturally responsive pedagogy of relations in mainstream secondary school classrooms. https://www.educationcounts.govt.nz/publications/schooling/9977/9454

Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. Qualitative research in psychology, 3(2), 77-101.

Brunton, M., & Coll, R. K. (2005). Enhancing technology education by forming links with industry: A New Zealand case study. International Journal of Science and Mathematics Education, 3(1), 141–166.

Buzdar, M. A., Mohsin, M. N., Akbar, R., & Mohammad, N. (2017). Students' Academic Performance and its Relationship with their Intrinsic and Extrinsic Motivation. Journal of Educational Research, 20(1), 74–82.

Ministry of Education. (2021). Education Counts. Ministry of Education. https://www.educationcounts.govt.nz/statistics/school-leavers

Creswell, J. W., Plano Clark, V. L., Gutmann, M. L., & Hanson, W. E. (2003). An expanded typology for classifying mixed methods research into designs. In A. Tashakkori, C. Teddlie (Eds.), Handbook of Mixed Methods in Social and Behavioral Research (pp 159-196). Sage.

Eccles (Parsons), J., Adler, T. F., Futterman, R., Goff, S. B., Kaczala, C. M., Meece, J. L., & Midgley, C. (1983). Expectancies, Values, and Academic Behaviors. In J. T. Spence (Ed.), Achievement and achievement motivation San Francisco, CA: W. H. Freeman.

Eccles, J., & Wigfield, A. (2002). Motivational Beliefs, Values and Goals. Annual Review of Psychology, 53, 109–132. https://doi.org/10.1146/annurev.psych.53.100901.135153

Flake, J. K., Barron, K. E., Hulleman, C., McCoach, B. D., & Welsh, M. E. (2015). Measuring cost: The forgotten component of expectancy-value theory. Contemporary Educational Psychology, 41, 232–244. https://doi.org/10.1016/j.cedpsych.2015.03.002

Glaser, B. G., & Holton, J. (1967). Discovery of grounded theory. Aldine Press.

Grant, A. M. (2007). Relational Job Design and the Motivation to Make a Prosocial Difference. Academy of Management Review, 32(2), 393–417. https://doi.org/10.5465/amr.2007.24351328

Grant, A. M. (2008). Does intrinsic motivation fuel the prosocial fire? Motivational synergy in predicting persistence, performance, and productivity. Journal of Applied Psychology, 48–58.

Harun, N. F., Yusof, K. M., Jamaludin, M. Z., & Hassan, S. A. H. S. (2012). Motivation in Problem-based Learning Implementation. Procedia - Social and Behavioral Sciences, 56, 233–242. https://doi.org/10.1016/j.sbspro.2012.09.650

Honigmann, M. (2017). Moving towards more socially-connected educational systems: From theory to practice. https://www.mcgill.ca/isid/files/isid/maxime_honigmann_-_isid_education_policy_paper.pdf

Hynds, A., Averill, R., Hindle, R., & Meyer, L. (2017). School expectations and student aspirations: The influence of schools and teachers on Indigenous secondary students. Ethnicities, 17(4), 546–573.

Jiang, Y., Rosenzweig, E. Q., & Gaspard, H. (2018). An expectancy-value-cost approach in predicting adolescent students' academic motivation and achievement. Contemporary Educational Psychology, 54, 139–152. https://doi.org/10.1016/j.cedpsych.2018.06.005

Jovanovic, D., & Matejevic, M. (2014). Relationship between Rewards and Intrinsic Motivation for Learning – Researches Review. Procedia - Social and Behavioral Sciences, 149, 456–460. https://doi.org/10.1016/j.sbspro.2014.08.287

Kırdök, O., & Harman, E. (2018). High School Students' Career Decision-making Difficulties According to Locus of Control. Universal Journal of Educational Research, 6(2), 242–248. https://doi.org/10.13189/ujer.2018.060205

Medina, E., & Sutcliffe, R. (2021). He Whakaaro: What are 15-year-olds' qualification expectations and are we helping to fulfill them? https://www.educationcounts.govt.nz/publications/series/he-whakaaro/he-whakaaro-what-are-15-year-olds-qualification-expectations

Pannekoek, L., Ree, D., New Zealand, & Ministry of Health. (2019). Household food insecurity among children. https://www.health.govt.nz/system/files/documents/publications/household-food-insecurity-among-children-new-zealand-health-survey-jun19.pdf

Perin, D. (2011). Facilitating Student Learning Through Contextualization: A Review of Evidence. Community College Review, 39(3), 268–295.

Reeves, S. L., Henderson, M. D., Cohen, G. L., Steingut, R. R., Hirschi, Q., & Yeager, D. S. (2021). Psychological affordances help explain where a self-transcendent

purpose intervention improves performance. Journal of Personality and Social Psychology, 120(1), 1–15. https://doi.org/10.1037/pspa0000246

Rehman, A., & Haider, D. K. (2013). The impact of motivation on learning of secondary school students in karachi: An analytical study. Educational Research International 2(2), 139-147.

Seli, P., Wammes, J. D., Risko, E. F., & Smilek, D. (2016). On the relation between motivation and retention in educational contexts: The role of intentional and unintentional mind wandering. Psychonomic Bulletin & Review, 23(4), 1280–1287. https://doi.org/10.3758/s13423-015-0979-0

Strathdee, R. (2013) Neo-tribal capitalism, socio-economic disadvantage and educational policy in New Zealand. Journal of Education Policy, (28) 4, 501-516, doi: 10.1080/02680939.2013.775348.

Vansteenkiste, M., Sierens, E., Soenens, B., Luyckx, K., & Lens, W. (2009). Motivational Profiles From a Self-Determination Perspective: The Quality of Motivation Matters. Journal of Educational Psychology, 101, 671–688. https://doi.org/10.1037/a0015083

Walkey, F. H., McClure, J., Meyer, L. H., & Weir, K. F. (2013). Low expectations equal no expectations: Aspirations, motivation, and achievement in secondary school. Contemporary Educational Psychology, 38(4), 306–315. https://doi.org/10.1016/j.cedpsych.2013.06.004

Yeager, D. S., Henderson, M. D., Paunesku, D., Walton, G. M., D'Mello, S., Spitzer, B. J., & Duckworth, A. L. (2014). Boring but Important: A Self-Transcendent Purpose for Learning Fosters Academic Self-Regulation. Journal of Personality & Social Psychology, 107(4), 559–580. https://doi.org/10.1037/a0037637

Zaccone, M. C., Pedrini, M. (2019). The effects of intrinsic and extrinsic motivation on students learning effectiveness. Exploring the moderating role of gender. The International Journal of Educational Management, 33(6), 1381–1394. http://dx.doi.org/10.1108/IJEM-03-2019-0099

Appendix A: Google Slide Template (Online Journal Reflections)

Aim of the Journal

This is an ongoing document that will be added to throughout the year.

It is a record of targets and outcomes for your learning and to record what you have learnt or achieved.

This diary will be used to help you record your progress and how well you are able to link classwork to the workforce.

Add information in any format, written, pictures and video

EOTC Trip to Lloyd Stevenson Boatbuilders

If you attended the trip, answer the following on the next page:

1. Add any photos you took
2. Answer the following questions:

- What was the reason you went on the trip?
- Before the trip, how excited were you on a scale of 1-10?
- Why?
- Did you know boat building was an available career pathway after school?
- Rate your interest in doing an apprenticeship of any sort on a scale of 1-10
- Do you feel more motivated to learn at school after going on the trip? Give a number:
  (1 = I am less motivated, 5 = neutral, and 10 = I am more motivated)

EOTC Trip to Linear Homes Building Site

If you attended the trip, answer the following on the next page:

1. Add any photos you took
2. Answer the following questions:

- What was the reason you went on the trip?
- Before the trip, how excited were you on a scale of 1-10?
- Why?
- Before we did the study into the construction industry, which of the 15 available career pathways were you aware of?
- Rate your interest in doing an apprenticeship of any sort on a scale of 1-10
- Do you feel more motivated to learn at school after going on the trip? Give a number:
  (1 = I am less motivated, 5 = neutral, and 10 = I am more motivated)

Jacob H. Doak

Jacob Doak is a Hard Materials and Design Technology teacher in Hawkes Bay. His vision is to teach students foundational and traditional skill sets combined with contemporary technologies and all the creative possibilities these have to offer. While training in South Auckland, Jacob developed a passion for finding innovative ways to best prepare young people for life after school. This is reflected in his teaching style which adopts an experience-based, apprenticeship approach. To align with the school's motto, it's all about "growing good people for a changing world."

He believes that teaching in a way that honours Te Tiriti o Waitangi means to interweave a Te Ao Māori worldview into his practice. An essential part of this is anchoring the curriculum in the local context, which includes both geographical area and cultural understandings.

Along with a Bachelor of Product Design through AUT, Jacob holds a Master of Teaching and Education Leadership through Ako Mātātupu and The Mind Lab.

jacobdoak7@gmail.com

Research Article

Loneliness in Aotearoa

He Rourou, Volume 2, Issue 1, 72-89, 2022

Melissa Fergusson

Abstract

Loneliness is a severe problem in New Zealand and most prevalent among the young, namely Generation Z. In March 2020, New Zealand went into lockdown due to Covid-19, and there was a spike in young people indicating loneliness as an issue. This age group experienced feeling the loneliest.

The experience of loneliness is subjective for all individuals; however, feeling lonely relates to broader and shared social, economic, political, and environmental issues. As we have recently become regular social media users and have more screen time, disconnection and lack of deep human relationships and social connections are becoming serious issues for young people.

It is widely reported that loneliness, social isolation, and living alone have increased the risk of heart disease, stroke, and dementia, leading to depression and death. Promoting social connection is imperative for people and our community's well-being and health.

This research used documentary as a methodology to explore the thoughts and perceptions of people involved in understanding loneliness to help provide viewers with a deeper understanding, raise social awareness for people experiencing loneliness, and reduce the impact of being lonely.

The 'Loneliness in Aotearoa' documentary indicates that New Zealand's young people are currently suggesting that they are more lonely than other generations, and collectively there is a need to take action to minimise loneliness.

In the UK, Tracey Crouch, appointed the first Minister of Loneliness in 2018, stated, "Nobody should feel alone or be left with no one to turn to. Loneliness is a serious issue that affects people of all ages and backgrounds, and it is right that we tackle it head-on."

In New Zealand, we have not appointed a Minister of Loneliness yet. There is the; question do we need one?

A growing challenge

Alberti (2018) states that loneliness is a modern-day problem. In the sixteenth and seventeenth centuries, it was acceptable and relatively normal for people to be single and on their own. Loneliness has always existed and needs to be understood as an "emotion cluster" (Alberti, 2018, Hertz, 2020).

According to Hawkley and Cacioppo (2010), lonely people see the social world as a threatening place and expect more negative feedback, and this reinforces the cycle of social isolation that is accompanied by feelings of low self-esteem, stress, anxiety, and pessimism that can contribute to adverse health outcomes like depression (Hawkley & Cacioppo, 2010).

The general perception of loneliness is that it applies predominantly to the older generation who are widowed or single, not Gen Z. This is primarily due to the media regularly publishing material about older people being lonely. There is a lack of coverage and social awareness of loneliness among young people.

Personal observations of university students highlight that they have decided not to return to physical classes over the last 18 months; they prefer to study online, creating a more significant problem due to the lack of human connection. COVID-19 has caused more fear and social anxiety in people due to a lack of face-to-face contact since lockdowns began on 26 March 2020.

An individual perceives loneliness through a set of emotional aspects that accompany loneliness, including sadness, melancholy, frustration, shame, or desperation. It is the individual's subjective evaluation regarding the quality and quantity of their social relationships built and rebuilt by the people in their lives. Therefore, many variables are attributed to loneliness, and a person can experience these occurrences frequently or occasionally.

"Loneliness in New Zealand adults is highest among youth aged 15-24." Cathy Comber, Loneliness NZ

Social media platforms like Facebook, Instagram and TikTok were designed to connect people; however, if a user posts a photo or video and does not receive likes or comments on the post, it can cause the person to feel socially excluded. Many Gen Z now prefers communicating on devices instead of face-to-face human interaction. In late 2019 the world was alerted to the beginning of the SARS-CoV-2 outbreak. The pandemic has escalated loneliness to unanticipated levels in young adults in New Zealand. Loneliness increased significantly for 18- to 24-year-olds in 2020 when COVID-19 spread worldwide, and we went into lockdown. In the UK, people aged 16

to 24 were more than twice as likely (50.8%) to have experienced "lockdown loneliness" as those aged 55 to 69 (24.1%) (Pidd, 2020). In New Zealand, during the lockdown, 20.8 per cent of young people aged 18-24 reported feeling lonely most or all the time, compared to 5.8 per cent of young people aged 15-24 in the 2018 GSS (Walker, 2020). The challenge is growing as people become increasingly lonely from a young age.

Loneliness

"I used to think the worst thing in life was to end up all alone. It's not. The worst thing in life is ending up with people who make you feel all alone." – Robin Williams'

Loneliness is both an internal and an existential state – personal, societal, economic, and political (Hertz, The Lonely Century, 2020).

According to Yanguas et al. (2018), loneliness has multiple facets:

- There are feelings of emptiness or abandonment associated with a lack of relationships or intimacy.
- There is the temporal perspective (loneliness sets in over time) through which the individual perceives their loneliness.
- There is the set of emotional aspects that accompany loneliness, including sadness, melancholy, frustration, shame or desperation; and there is the individual's subjective evaluation regarding the quality and quantity of their social relationships, built and rebuilt by the people in their lives (p. 303).

The latter evaluation depends on the continuous interaction between factors which are rather diverse but include identity, personality, expectations, life events, interpersonal engagement, socio-economic variables, and household conditions. However, while effective interventions are necessary, they are still scarce (Yanguas et al., 2018).

Loneliness can make an individual feel unsupported and uncared for by neighbours, employers, the community, and the government. It is about feeling disconnected not only from those we are meant to feel intimate with but also from ourselves. It is not only about the lack of support in a social and familial context but also feeling politically and economically excluded.

Loneliness is subjective and is experienced from as young as five years old, originating from feelings of being socially excluded when others will not play with them (Berguno et al., 2004). In their extensive study, Berguno and colleagues (2004) invited Forty-two children aged between eight and ten years to be interviewed to learn about their loneliness experience at primary school. Eighty per cent of the children had periods of being lonely at school. These experiences were associated with boredom, inactivity, a tendency to withdraw into fantasy, and a passive attitude towards social

interactions. Moreover, children who invested in very few friendships were more vulnerable to becoming isolated. Similarly, most children (68%) claimed to have been bullied, with lonely children being more likely to be victimised by peers. Furthermore, children reported ineffective teacher interventions ending their victimisation experiences. Thus, the findings indicated that bullying and particular teacher interventions contributed to children's prolonged sense of loneliness at school (Berguno et al., 2004).

Adolescence and young adulthood are the most significant risk period for the emergence of depression. Loneliness might be most stigmatising, given intense social pressure to appear connected (Achterbergh et al., 2020). Given the high prevalence of loneliness amongst young people and the lack of research focused on this age group, it is crucial to gain a better understanding of the experience of loneliness among young people with depression, as well as its causes and consequences, to tailor the design of age-appropriate treatments (Achterbergh et al., 2020).

Project Aim

I aimed to understand more about loneliness by producing a documentary film and reducing the negative impact of loneliness. I hoped to drive further awareness and a deeper understanding of loneliness in Aotearoa. The loneliness documentary is for all stakeholders - people who identify as lonely and people with limited knowledge of loneliness. Interviews were conducted with stakeholders to deep-dive into why loneliness exists and unpack why people feel ashamed to be lonely.

Project questions

The overarching project question was: How might a documentary film approach provide a deeper understanding and raise social awareness for people who are currently experiencing loneliness?

The main questions used to structure the interviews in the documentary are as follows:

- What is loneliness?
- Why do you think loneliness exists?
- Are the younger or older generations more impacted by loneliness?
- With social media - isn't everyone more connected?
- What can be done to reduce loneliness?
- In New Zealand, do you think loneliness is a serious problem?

Methodology

Documentary filmmaking was used as a qualitative research strategy. This approach has recently gained traction as an extension of visual ethnography (Pink,

2013) or video ethnography (Heath et al., 2010). Through visual methods, it is possible to capture the views and beliefs of a wide range of stakeholders and share them in a more accessible medium. This can support a more authentic participant voice and connection with the topic (Fitzgerald & Lowe, 2020). There are questions regarding the rigour of the methodology, particularly around the researcher editing the footage in a way which manipulated the narrative. However, in this instance, it was used as a vehicle to support an awareness of an important social issue.

I interviewed stakeholders on camera about their professional experience working with people who identified as lonely, deep-dived into what loneliness is, and explored possible solutions to prevent or reduce loneliness in our communities. These stakeholders were health professionals, New Zealand NGOs (non-governmental organisations) and charities, mental health experts, and counsellors working with people who have experienced loneliness. It was crucial for this project to build strong stakeholder relationships throughout to ensure the success of filming this social impact documentary. I was privileged to collaborate with leading subject experts, including Michael Hempseed and Cathy Comber.

In addition to the documentary, I created surveys to measure loneliness in our society and asked a selection of questions based on participants' experiences with loneliness. This helped me understand the level of loneliness in Aotearoa from survey respondents. After people watched the virtual premiere of 'Loneliness in Aotearoa' on 4 December, I requested feedback (three questions) using the SurveyMonkey Likert scale to determine whether viewers had a deeper understanding of loneliness, if young people are more impacted than other generations, and possible solutions.

I would like you to now watch the 'Loneliness in Aotearoa' documentary before you continue reading the report. Please click the link here: Loneliness in Aotearoa.

Results and Analysis.

I collaborated with numerous people to bring together the 'Loneliness in Aotearoa' documentary. Unfortunately, due to the COVID-19 lockdown on 17 August 2021, I couldn't continue filming all the stakeholders for the documentary.

I planned to interview eight stakeholders on camera for the documentary. However, this did not occur due to lockdown and other mitigating factors. The five interviews I conducted for the documentary were with organisations including Youthline, Loneliness NZ, Student Volunteer Army (SVA), Cuddle Connection NZ and Michael Hempseed, a mental health expert with extensive knowledge on loneliness in young people.

There were several commonalities and recurrent themes among all these stakeholders who work with lonely people. One of the key insights is that loneliness

occurs due to the lack of deep connections with others, and you only need to have 3 to 5 friends in your life to achieve this. Another recurring theme was that deep connection needs face-to-face contact, not by connecting through video calls, chatbots, or interactive technology.

All stakeholders advised that loneliness impacts the Gen Z group (18 - 24yrs) in New Zealand. Evidence-based research across the world also confirms that young people are affected by loneliness more so than other generations.

The solutions to reducing loneliness across the stakeholders were to:

- Join community & support groups
- Build deeper connections with people (existing or new connections)
- Volunteer some time to purpose-led organisations
- Participate in a cuddle or touch therapy
- Explore co-living options to prevent loneliness
- Speak to helplines, health professionals, or service providers
- Social prescribing

"Loneliness and feeling unwanted is the most terrible poverty."
- Mother Teresa

Community & support groups

A key theme in the interviews was the effectiveness of joining community and support groups. There are many opportunities to connect with people through these groups. Some current examples include;

http://www.splice.org.nz/our-programmes
https://www.meetup.com/topics/for-lonely-people/nz/auckland/
https://mentalhealth.org.nz/groups

Public spaces

One way to build deeper connections with people is by spending more time in public spaces. In recent years, people have started to live more isolated from others, live to an older age, have fewer children, divorce more often, and live further away from friends and family for education and careers. These developments all make people feel socially excluded and, consequently, lonely. There is growing recognition that personal characteristics, such as being older or healthy, and neighbourhood characteristics, including urban design, can affect people's loneliness. The subjective feelings about a neighbourhood can also be a significant source of life satisfaction and loneliness.

In addition to the personal and social neighbourhood characteristics, mobility characteristics, such as transport-mode use, frequency of visits, and distance from public spaces, were found to affect loneliness and life satisfaction. Older adults can

walk and cycle in public areas, meet family and friends outdoors, and interact socially, reducing the risk of loneliness (Bergefurt, 2019).

During the 2020 national lockdowns, we saw stark differences in people's experiences, depending on where they lived. For some, it was balcony bingo, front lawn exercise classes, and a welcome break from the daily commute thanks to remote working from the spare room. For others, it was unsafe or overcrowded housing, limited access to safe green spaces, and working in settings often poorly equipped against the virus, or at home, without adequate room or furniture. The pandemic has starkly revealed the vulnerability and isolation caused by a built environment that keeps people away from their neighbours. Everyone should have the right to live, work and play in places that promote good health, well-being and connectedness (Lab, 2020).

Public space needs a sense of community to thrive and build connections. To improve wellbeing, it is imperative to prioritise common space, social interaction, and reasonable access to parks and public transport. This will enable people to feel connected, feel a sense of belonging in their neighbourhood, and be content.

"Urban design and public transport also play a huge part in how people feel can be physically connected and helps create a sense of community or neighbourhood. Again, about accessibility for all, Inclusive policies and spaces that do not discriminate…" - Loneliness survey participant.

Robotic pets

Another way to create connections with people is by using robotic pets. Robotic pets may effectively alleviate loneliness in older adults, especially those who live alone, have fewer social connections, and live less active lifestyles (Hudson, 2020). People with robotic pets reported showing their robotic pets to others, which helped facilitate communication and social connections.

Volunteering

The beneficial effects of volunteering on health outcomes have been well documented. Research has found that participation in voluntary services significantly predicts better mental and physical health, life satisfaction, self-esteem, happiness, lower depressive symptoms, psychological distress, and mortality and functional inability (Yeung, 2017).

Cuddle groups

When we cuddle, our bodies release hormones including oxytocin, serotonin and dopamine that provides happiness and can reduce feelings of loneliness. Thanks partly to the anxiety-reducing hormone oxytocin, released in response to positive,

social touch. Professional cuddle organisations like Cuddle Sanctuary aim to give clients a sense of calm and bliss. First popularised in the early 2000s, professional cuddling aimed to fulfil the touch needs of a range of clients, including survivors of post-traumatic stress disorder and sexual assault and adults on the autistic spectrum. Dozens of independent professional cuddling organisations, like Portland's Cuddle Up to Me, and more extensive networks of professionals, like Cuddlist, have trained hundreds of touch facilitators globally. Research has shown that without physical touch, we are likely to experience loneliness, depression, anxiety disorders and stress (Volpe, 2020).

There is one trained Cuddlist based in Whangarei, Northland, New Zealand. Charging $80 per hour, the Cuddlist begins the session with an agreement of open and honest communication. The goal is to help find more satisfying connections that flow into all areas of the person's life.

"Everyone knows how to cuddle. The training is around making sure we are always providing a safe space. Make sure the session is about them, at their pace, and we're always modelling how to maintain your boundaries. One of the important things for us, too, is that we never engage in anything we're not 100 per cent happy to do. We need to be a full yes, and it creates an energy that allows the client to relax and not worry" (Collins, 2020).

Co-living

The cohousing model was created in Denmark in the early 1970s as an innovative form of collective housing and later spread to other northern European countries, the USA, and other countries such as Uruguay. In recent years, cohousing has re-emerged in the USA, Europe, Australia, New Zealand, and Japan. This popularity has been associated with a growing desire for a sense of belonging, to experience more connection with the community and an increasing rejection of dominant consumption patterns. In addition, it has been boosted by the lack of affordable housing and poor rental conditions and has been presented as a potential alternative to conventional tenure arrangements (Juli Carrere, 2020).

Co-living embraces shared housing for like-minded people who want to live differently in a more sustainable way. In Auckland, numerous locations, including The Coh in Mt Eden, cater to young professionals and post-grads. Comunita has been designed to create a highly curated co-living space and encourages meaningful relationships, self-improvement, and well-being. Cohaus in Grey Lynn is focused on building affordable housing that incorporates smart design and innovative technology to create a community which minimises loneliness.

Mental Health chatbots

Chatbots (conversational agents) increasingly receive attention in the mental health arena because they elicit honest self-disclosure about personal experiences and emotions. Although self-disclosure can help determine mental health status, little research has addressed how to assess mental status from self-disclosure to a chatbot automatically. If a chatbot can automatically evaluate the mental status of users, it can help them improve their mental wellness or facilitate access to mental health professionals (Kawasaki, 2020).

Internet-based cognitive behavioural therapy (CBT) has been offered since the 1990s but has been characterised by low adherence. The development of CBT chatbots, which mimic everyday conversational styles to deliver CBT, may increase adherence and offer other advantages. A chatbot called 'Woebot' has decreased depression and anxiety in college students over a 2-week course (Press, 2020).

New Zealand has many text-based and AI chatbots, including Clearhead. New Zealand doctors designed this mental health platform to improve access to care for people who need it. After using the platform, I discovered that the bot could not recognise what loneliness is. Even though the conversation was friendly and colloquial, which built trust and confidence while using the platform, the chatbot kept diverting to tools and resources for depression and anxiety, which was not helpful. This is an example of the chatbot failing to recognise loneliness, potentially creating a negative experience for the user.

"I feel technology definitely has a role to play in helping with mental health issues. However, it needs to be applied sensitively. Any tech-based solution needs to focus on how a human will interact with it and how that will likely make them feel. As everyone is different, some tech solutions will work for some but not others - you need to take the journey knowing the capability and limitations of the tech you're using." – Loneliness survey participant.

Social prescribing

Social prescribing is when GPs and community-based practitioners prescribe patients to a link worker who gives people time to focus on what matters to them. Link workers take a holistic approach to helping people improve their health and well-being. Many national organisations and individuals from policy, practice, and academia are rightly advocating social prescriptions as an essential way to expand the options available for GPs and other community-based practitioners to provide individualised care for people's physical and mental health through social interventions. No robust figures exist, but it is thought that around 20% of patients consult their GP primarily for social issues. Given this and the driving forces of an ageing population, increasingly

complex health and social needs, and increasing demand for services, social prescribing is rapidly gaining popularity (Husk, 2019). Social prescribing is one way to help people manage and improve their health and well-being by connecting with their community to reduce loneliness and social isolation.

Rent-a-Friend

Rent-a-Friend is an online service that allows you to have a local friends all over the world. It caters to people new to a city, seeking companionship to see a film or go to a work party. The hourly rate is $10 per hour, depending on the location and activity requested. This is a platonic friendship, and time is limited.

Founded by an entrepreneur who had seen the concept take off in Japan and now operating in dozens of countries, including the UK, its website has more than 620,000 platonic friends for hire.

It is a sign of our times that a growing economy has emerged to service those who feel alone. Even before the coronavirus pandemic triggered a 'social recession' with its restrictions on gatherings, one in eight Brits did not have a single close friend they could rely on, up from one in ten just five years before (Hertz, Why working from home might not be as good for you as you think, 2020).

Conclusion and next steps

In 2021, my goal was to produce a pilot documentary film about loneliness in Aotearoa and validate that Gen Z is the group that experiences loneliness the most. After interviewing the stakeholders who participated in the documentary, they inspired me to continue this path to help reduce loneliness, not just for Gen Z but for other generations too.

Through my quantitative research and attending global loneliness webinars, conferences, and discussions in 2020-21, it has become clear that social isolation and loneliness are a health epidemic worldwide. This was confirmed by GILC (Global Initiative on Loneliness and Connection) and WHO (World Health Organization), working together on a global response to these public health issues.

The ‘Loneliness in Aotearoa’ pilot documentary shines a light on loneliness in New Zealand, highlighting that we also need to tackle the issue of social isolation and loneliness more seriously to prevent cardiovascular disease, stroke, dementia, suicidal ideation, anxiety, depression, and death.

From the start of my TFL journey in June 2020 until now, my interest in loneliness has never waned. The main challenge through this process was the lockdown that impacted the documentary’s filming. Trying to navigate through this uncertainty was tough. As I’d already filmed five stakeholders by 17 August 2021, I had enough footage

to work with. As a filmmaker, I understand that change and disruption can be a part of the creative process, so I adopted an agile approach to finish this vital piece of social impact work.

When I was interviewed on Flea FM in October 2021 for this project, I was asked about my plan for loneliness. I aim to secure creative funding in 2022/23 to produce a web series about loneliness across different segments. I'd like to further explore social isolation and loneliness in the LGBTI or rainbow community, people with disabilities, secondary school students, single parents, and other cultures.

Loneliness is subjective, and everybody experiences this feeling differently. I find it intriguing that some people only have glimpses of loneliness, and others experience chronic loneliness where they cannot connect with people on a deeper level.

I would also like to continue having conversations about loneliness and contribute to discussions locally and globally by collaborating with non-profit organisations such as 'Campaign to End Loneliness' UK, 'Ending Loneliness Together' Australia, 'No Isolation' Norway, 'Loneliness NZ' and others.

The documentary premiered on YouTube on the 4 December 2021 at 7:00 pm to a guest-list audience, and 300+ people viewed the documentary in a few days. Many stakeholders contacted me to advise that they were moved and inspired by the documentary to act and start a conversation in their own lives. After the launch of 'Loneliness in Aotearoa', I received much positive feedback from the stakeholders involved in the project - I found it very humbling that they liked or loved what I had produced. Loneliness NZ advised that they wanted to publish the documentary on their website; Dr Robin mentioned that she would recommend me as a loneliness expert to the Auckland University of Technology, and Tech Futures Lab asked if they could share my documentary with other cohorts.

I will continue pitching stories/angles to the media about loneliness to hopefully secure publications, radio interviews, broadcasting opportunities, social media and digital presence, and future collaborations to raise awareness about social isolation and loneliness in Aotearoa. I wish to destigmatise loneliness, so people can reach out and connect with someone who can help. This mahi will hopefully improve lives.

He aha te mea nui o te ao, he tangata, he tangata he tangata.
(What is the most essential thing in the world, it is the people, the people, the people).

Recommendations and resources

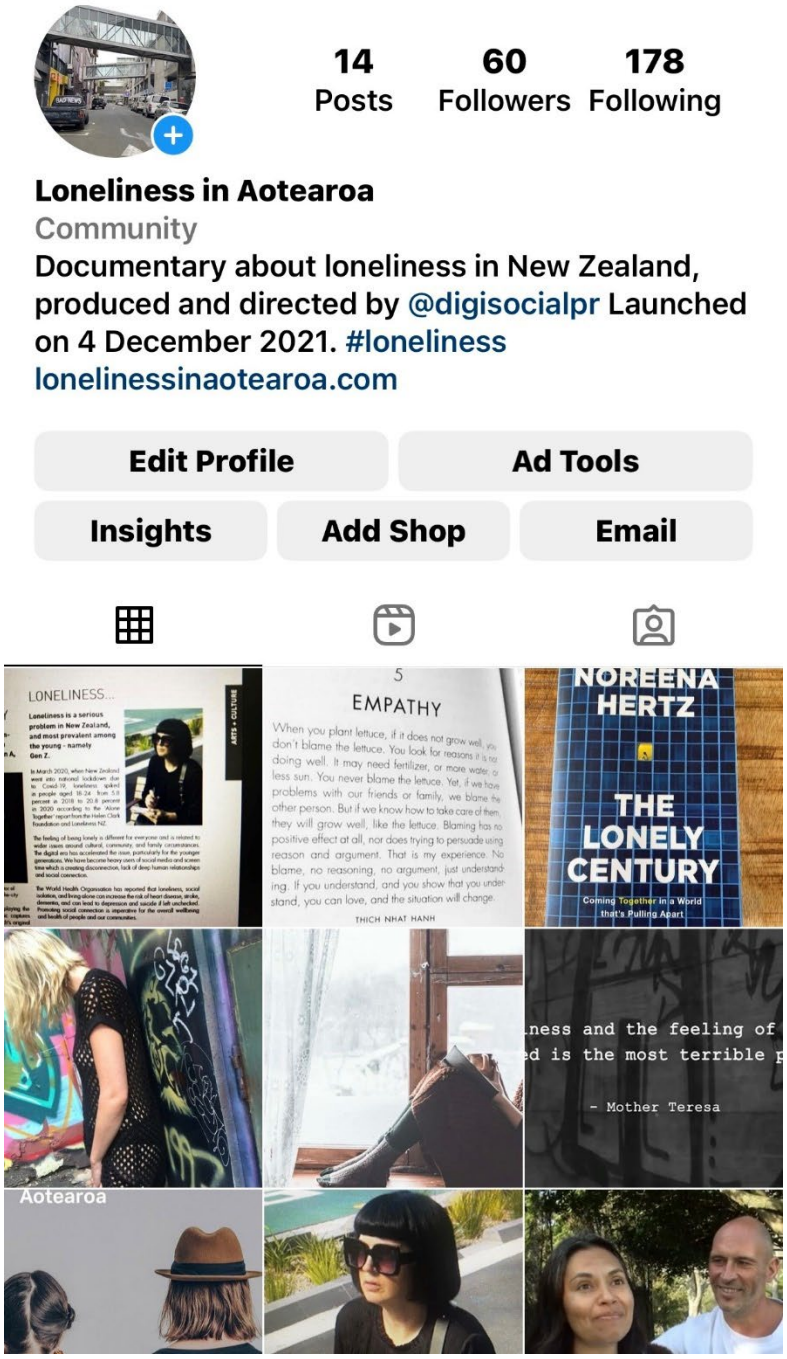
- The following organisations include:
    - The Loneliness Lab, London - Launched in 2018 to tackle loneliness through urban design, placemaking and the built environment https://www.lonelinesslab.org/
    - Marmalade Trust, Bristol - Charity dedicated to raising awareness of loneliness and helping people make new friendships https://www.marmaladetrust.org/
    - WHO (World Health Organization) - Social Isolation & Loneliness https://www.youtube.com/watch?v=-80ylRLHHNo
    - Ending Loneliness Together, Australia - National network of organisations who have come together to address the growing problem of loneliness in people living in Australia. https://endingloneliness.com.au/
    - Global Initiative on Loneliness & Connection (GILC) - Comprises representatives of national organisations committed to addressing the pressing global issues of loneliness and social isolation and supporting the dissemination of system-wide, national approaches to build social connection. https://www.gilc.global/

Loneliness in Aotearoa media channels

Contact lonelinessinaotearoa@gmail.com
Website https://www.lonelinessinaotearoa.com/

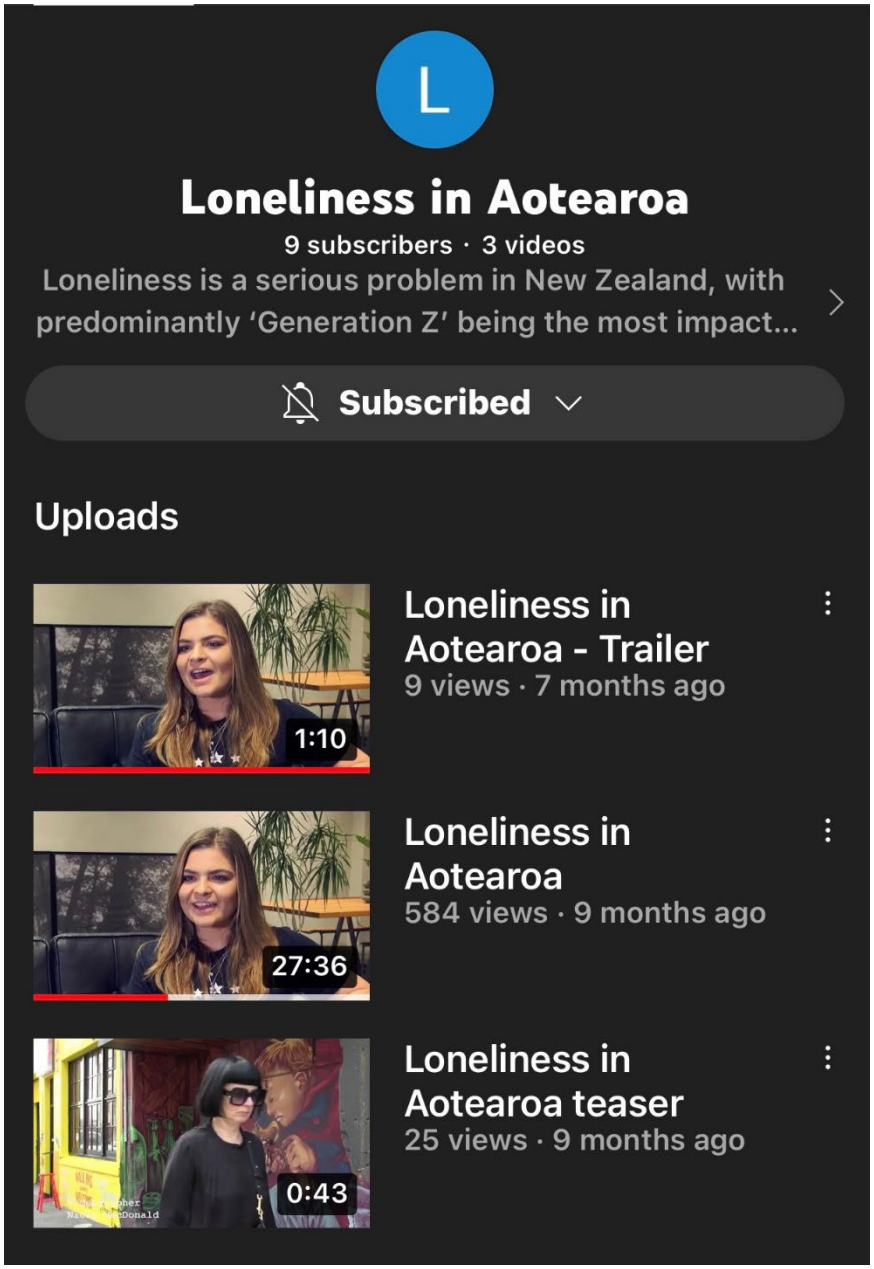
Instagram

https://www.instagram.com/lonelinessinaotearoa/



YouTube

https://www.youtube.com/channel/UCP7lHbzt-baZACIL4zticlA



References

Alberti, F. B. (2018). This "Modern Epidemic": Loneliness as an Emotion Cluster and a Neglected Subject in the History of Emotions. *Emotion Review*.

Bergefurt, L. K. (2019). Loneliness and Life Satisfaction Explained by Public-Space Use and Mobility Patterns. *International journal of environmental research and public health*, 16(21): 4282.

Berguno, G., Leroux, P., McAinsh, K., & Shaikh, S. (2004). Children's Experience of Loneliness at School and its Relation to Bullying and the Quality of Teacher Interventions. *The Qualitative Report*, *9*(3), 483-499. https://doi.org/10.46743/2160-3715/2004.1920

Hawkley, L. C., & Cacioppo, J. T. (2010). Loneliness matters a theoretical and empirical review of consequences and mechanisms. Annals of behavioural medicine: a publication of the Society of Behavioral Medicine, 40(2), 218–227. https://doi.org/10.1007/s12160-010-9210-8

Collins, M. (2020, July 23). *Whangārei woman opens professional cuddling service Cuddle Connection*. Retrieved from The Northern Advocate: https://www.nzherald.co.nz/northern-advocate/news/whangarei-woman-opens-professional-cuddling-service-cuddle-connection/BLUDTCF76JJOV6LMZMRABVUJU4/

Dame Sue Bagshaw, M. H. (2020, September 16). Loneliness among young people in New Zealand. (S. Up-Korerotia, Interviewer)

Demarinis, S. (2020). Loneliness at epidemic levels in America. *Explore NY*.

Documentary, R. (Director). (2018). Hikikomori Loveless: What causes young Japanese hermits to give up on real life [Motion Picture].

Dupont, L. (2019). Agile innovation: Creating value in uncertain environments. *Journal of Innovation Economics & Management*.

Fitzgerald, A., & Lowe, M. (2020). Acknowledging Documentary Filmmaking as not Only an Output but a Research Process: A Case for Quality Research Practice. International Journal of Qualitative Methods, 19, 1–7. https://doi.org/10.1177/1609406920957462

Government, N. (2021). *Unite against COVID-19*. Retrieved from NZ Government: https://covid19.govt.nz/

Hamasaki, Y. P.-D. (2020). Identifying Social Withdrawal (Hikikomori) Factors in Adolescents: Understanding the Hikikomori Spectrum. *Child Psychiatry & Human Development*.

Headspace. (2021). *About Headspace*. Retrieved from Headspace: https://www.headspace.com/about-us

Headspace. (2021). *Meditation made simple*. Retrieved from Headspace: https://www.headspace.com/subscriptions

Hertz, N. (2020). *The Lonely Century*. London: Sceptre.

Hertz, N. (2020, November 26). *The Lonely Century – Coming Together in a World That's Pulling Apart | Noreena Hertz*. Retrieved from YouTube: https://www.youtube.com/watch?v=qHpxPKIKn9Y&ab_channel=CityLit

Hertz, N. (2020, August 31). *Why working from home might not be as good for you as you think*. Retrieved from Daily Mail Australia: https://www.dailymail.co.uk/femail/article-8679279/Why-working-home-not-good-think-says-startling-new-book.html

Hudson, J. U. (2020). Robotic Pet Use Among Community-Dwelling Older Adults. The Journal of Gerontology. Series B, Psychological sciences and social sciences.

Husk, K. E. (2019). Social prescribing: where is the evidence? British Journal of General Practice: the journal of the Royal College of General Practitioners, 69(678): 6–7.

Yanguas, J., Pinazo-Henandis, S., & Tarazona-Santabalbina, F. J. (2018). The complexity of loneliness. Acta bio-medica : Atenei Parmensis, 89(2), 302–314. https://doi.org/10.23750/abm.v89i2.7404

Juli Carrere, A. R. (2020). The effects of cohousing model on people's health and wellbeing: a scoping review. *Public Health Review*.

Kawasaki, M. Y. (2020). Assessing Users' Mental Status from their Journaling Behavior through Chatbots. *IVA '20: Proceedings of the 20th ACM International Conference on Intelligent Virtual Agents*.

Lab, T. L. (2020). *Using design to connect us*. London: The Loneliness Lab.

Llyod, M. (2019, October 18). *Happy to Chat' benches: The woman getting strangers to talk*. Retrieved from BBC News: https://www.bbc.com/news/uk-wales-50000204

MedicalStartups. (2021, February 17). *Top 87 Startups developing health apps*. Retrieved from MedicalStartups: https://www.medicalstartups.org/top/apps/

Osaki, T. (2021, February 21). *As suicides rise amid the pandemic, Japan takes steps to tackle loneliness*. Retrieved from The Japan Times: https://www.japantimes.co.jp/news/2021/02/21/national/japan-tackles-loneliness/

Pardes, A. (2018, January 31). *The Emotional Chatbots Are Here to Probe Our Feelings*. Retrieved from Wired: https://www.wired.com/story/replika-open-source/

Press, C. U. (2020). Technology and mental health: The role of artificial intelligence. *European Psychiatry*.

Quartz. (2017, July 22). *The story of Replika, the AI app that becomes you*. Retrieved from YouTube: https://www.youtube.com/watch?v=yQGqMVuAk04&ab_channel=Quartz

Saint-Pierre, L. (Director). (2020). *Keep Calling* [Motion Picture].

Schwartz, E. H. (2019, December 18). *Synthetic Speech Startup Replica Studios Closes $2.5M Funding Round*. Retrieved from voicebot.ai: https://voicebot.ai/2019/12/18/synthetic-speech-startup-replica-studios-closes-2-5m-funding-round/

Shoard, C. (2020, June 12). *Spike Lee: 'Race relations today are a direct response to having a black president'*. Retrieved from The Guardian: https://www.theguardian.com/film/2020/jun/12/spike-lee-race-relations-today-are-a-direct-response-to-having-a-black-president

Song, J. (2018). Young people, precarious work, and the development of youth employment policies in Japan. *Japanese Journal of Political Science*.

Viviana E. Horigian MD, M. ,. (2020). Loneliness, Mental Health, and Substance Use among US Young Adults during COVID-19. *Journal of Psychoactive Drugs*.

Volpe, A. (2020, July 22). *Embracing change: pandemic forces professional cuddlers to get creative*. Retrieved from The Guardian: https://www.theguardian.com/lifeandstyle/2020/jul/22/cuddle-therapy-coronavirus-social-distancing-virtual

Walker, H. (2020). *Alone Together*. New Zealand: The Helen Clark Foundation.

Wilson, T. (2019, May 31). *Budget wish list - look after those who look after others*. Retrieved from New Zealand Herald: https://www.nzherald.co.nz/bay-of-plenty-times/news/tommy-wilson-budget-wish-list-look-after-those-who-look-after-others/ZC45UDZ5SJ6U3RVMCISZZQ6JMI/

Yeung, J. Z. (2017). Volunteering and health benefits in general adults: cumulative effects and forms. *BMC public health*, 18(1), 8.

Zealand, M. H. (2021). *Self-help tool and apps*. Retrieved from Mental Health Foundation of New Zealand: https://www.mentalhealth.org.nz/get-help/getting-through-together/self-help-tools-and-apps/

Melissa Fergusson

Melissa Fergusson heads brand and content for a high-growth tech company in Tāmaki Makarau. She has always had a passion for mental health and a deep curiosity about loneliness and how this impacts people's lives.

Melissa graduated with a Master of Technological Futures in 2021 and is considering further PhD study in 2023. Loneliness can touch us all, so finding solutions to reduce loneliness is front of mind for Melissa going forward with future projects and collaborations. She is currently studying He Papa Tikanga at Te Wananga o Aotearoa.

Research Article

History Detectives in Action: Bringing History to Life Using Primary Sources

He Rourou, Volume 2, Issue 1, 90-108, 2022

Senga White

Abstract

History Detectives in Action (HDIA), a programme designed to engage students, spark curiosity and prompt historical critical thinking in the social sciences, particularly suited to the new Aotearoa New Zealand Histories Curriculum (ANZHC), incorporates the principles of Universal Design for Learning and collaborative practice to expand teacher confidence and capacity to enact a place-based approach through embracing primary source materials. Additionally, HDIA provides the impetus for genuine and personal interactions with local history where engaged learning through active participation provides a more authentic learning experience.

Findings showed teachers' confidence and mindset to employ primary sources as an introduction to local history beyond the classroom increased, and collaborative partnerships with a professional librarian were acknowledged and valued. Moreover, student curiosity, engagement and active participation were noted by all teacher, archivist and teacher-aide participants.

As the ANZHC continues to be embraced by schools and other curriculum areas are refreshed through the Understand-Know-Do framework, there is a presupposition of meaningful local design to learning progressions and the HDIA approach provides a practical and applicable vehicle for teachers in both primary and secondary schools where an integrated, interdisciplinary approach is the expected outcome.

Introduction and Context

History Detectives in Action (HDIA) provides an approach for the inclusion of local history into the Aotearoa New Zealand Histories Curriculum (ANZHC) by focusing on primary source material, delivered through a Universal Design for Learning framework to critically engage students, promote a curiosity mindset and grow teacher confidence in working collaboratively with other educators to deliver the programme.

In September 2019, the government announced New Zealand history would become a compulsory subject within the New Zealand curriculum and that schools would be expected to be teaching it by 2022 (NZ Govt., 2019), later revised to 2023. While a wealth of rich information exists, there is a lack of crucial resourcing to support local history inclusion as it is neither easy to access nor available at appropriate literacy levels for learner engagement, which has significant implications for teaching history (Sheehan & Ball, 2020).

While a problem, it also presents educators and regional organisations with a mandate to identify, collate and curate relevant information suitable for local schools. The scope of the HDIA project focused on primary source materials as schools rarely consider using them, particularly when not available digitally, and they are perceived as difficult to locate and teach with. If introduced effectively, they are an engaging catalyst for historical curiosity and inquiry, and critical thinking, where engagement is not reliant on student literacy capabilities.

Durie (2015) posits that educators who aren't teachers but understand how to engage and align their practices to learning can impact the whole community. Librarians with the relevant educational knowledge, required expertise and access to archival materials, are ideally positioned to collaborate with teachers. The HDIA approach facilitates flexibly designed learning where teachers and librarians co-construct sessions. This promotes knowledge construction while enabling students to pursue interests and strengths in ways that support personal learning progress and achievement (Robinson, 2016). With measurable success, teachers acknowledge the benefits of collaboration and become confident in using this approach in subsequent lesson planning.

A secondary goal, in line with a heutagogical approach to learning (Kenyon & Hase, 2001), saw the development of a kete of multi-level resources, paving the way for engaged and participatory learning outside of the classroom.

Literature Review

A Universal Design for Learning (UDL) framework provides tangible ways for educators outside of the school environment to connect with classroom teachers. Hattie (2012) contends that the power exhibited in teachers' learning is through talking to each other and collaborative pre-planning. Meaningful planning is underpinned by flexible design and takes into account diverse strengths and needs while connecting all learners through contextual experiences, regardless of their ability (Barteaux, 2014; Kenyon & Hase, 2001; Marotta, 2018; UDL IRN, 2018). The three UDL networks of affective, recognition and strategic provide a blueprint for creating instructional goals linked to concepts rather than activities (Moore, 2019), and adopting methods,

materials and assessments that can be customised and adjusted to work for everyone (Robinson, 2017).

In this context, UDL allows for scaffolding and understanding complexity (Hattie, 2012; Moore, 2019), providing a necessary connection for teachers that circumvent any specific inquiry approach that individual schools might ascribe to. Libraries and UDL form a natural partnership that, when effectively activated, provides avenues for multiple ways to understand, engage and show learning (Robinson, 2017), while tailoring experiences that permit all learners to express their knowledge and abilities in ways that are meaningful to them (Moore, 2019; UDL IRN, 2018). This offers opportunities to develop sustainable relationships by building trust and respect through ongoing interactions, and flexibility in collaboration. This approach proved successful when using the Information Literacy Skills Framework (ILSF) to initiate targeted and focused learning conversations between classroom teachers and school librarians (White, 2018).

Hattie (2012) states, that when teachers move from a single idea to multiple ideas and then extend these ideas so that learners construct, and reconstruct, knowledge and ideas, it highlights the benefits of using frameworks. It facilitates the design of materials and activities assisting teachers to home in on the affective network while focusing on student learning and engagement rather than preconceiving topics or outcomes. The recognition network allows for students to explore activities and materials through what they see and hear, initiating active learning, rather than defaulting to passive observation or listening. This process leads the relationships built with teachers into the strategic network through creative and active options for expressing learning.

UDL leads students towards a deeper understanding through genuine inquiry when they are active agents in their own knowledge-building, constructing knowledge in their own minds and building an authentic understanding of the content (Bada, 2015; Barteaux, 2014; Talebi, 2015). Hattie (2012) contends that teachers construct meaning and meaningful experiences only when they're aware of what their students are thinking and what they know, so a team-teaching approach provides teachers with the freedom to learn alongside their students and observe what sparks their interest.

UDL meshes with knowledge construction, knowledge-building and guided inquiry. Bada (2015) claims constructivism's central idea is that human learning is constructed, that learners construct new understandings built on what they already know, and that learning is active rather than passive, while Hattie (2012) argues that "it is not the knowledge or ideas, but the learner's construction of this knowledge and ideas that are critical" (p. 19). In the context of this project, the focus is on building

knowledge to support professional learning for the teaching community, leading to capable people able to facilitate capability in others (Kenyon & Hase, 2001).

Learning needs to be more intentional and students require a clear pathway through the inquiry process. Kuhlthau's Information Search Process (ISP) establishes the importance of the UDL's affective network to student inquiry. This shouldn't be underestimated, given its impact on the learner's ability to persist with research when it feels too difficult for them to continue (Kuhlthau et al., 2012). Constructivist views of inquiry learning see students fitting new information into existing knowledge by having learning goals determined from authentic tasks (Bada, 2015; Kuhlthau et al., 2012), while a constructivist learning environment should provide opportunities for active learning (Bada, 2015), with knowledge-building taking place in physical contexts (Gilbert, 2018).

UDL has value when teaching complex skills such as critical thinking (Tam, 2000 cited in Bada, 2015), with critical thinking and reasoning also identified as core skills for future success (ITL, 2012). The New Zealand Curriculum (2007) vision describes lifelong learners as critical and creative thinkers, active seekers, users, and creators of knowledge, and this is reiterated in the key competency of participating and taking action as critical, informed and responsible citizens. Though, it should be noted that while UDL provides a structure to guide decision-making, this will only work in this context if there is mutual regard for distinct professional skill sets and a commitment to the collaborative component. White (2021) contends the Information Literacy Skills Framework bridges such complexity by connecting iterative information literacy skills to learning. This happens contextually and visibly while prompting informed, shared, learning conversations in this sphere.

Building on critical thinking, Sandretto and Klenner (2011) argue that engaging with students as co-investigators leads to dialogue that respects both teachers and students as part of a critical literacy approach. The critical theory emphasises reflection as a knowledge construction tool. Walker et al. (2020) suggest teachers should investigate students' questions the moment they emerge, showing appreciation for their curiosity and encouraging an inquisitive learning environment where students investigate answers for themselves.

The new ANZHC prompts us to consider local history resources and provides the potential for meaningful, mutually beneficial resource development amongst local culture and heritage organisations, as resourcing implications of this new curriculum are considerable (Sheehan & Ball, 2020). McLean (2007) emphasises that local history is not just national history scaled down, and that "Each place has its own special rhythms and themes that may not feature prominently in the national history" (p. 14), which cannot be underestimated. The Understand-Know-Do framework and progression

model (Figure 1) introduced through the ANZHC is now underpinning all areas of the Ministry of Education's curriculum refresh. The purpose is to provide teachers with the means to design a strong local curriculum focus which now explicitly states "The vision, purpose, and principles will provide a call to action to design responsive local curriculum – to support all ākonga to succeed in their learning" (Ministry of Education, 2022, para. 8).

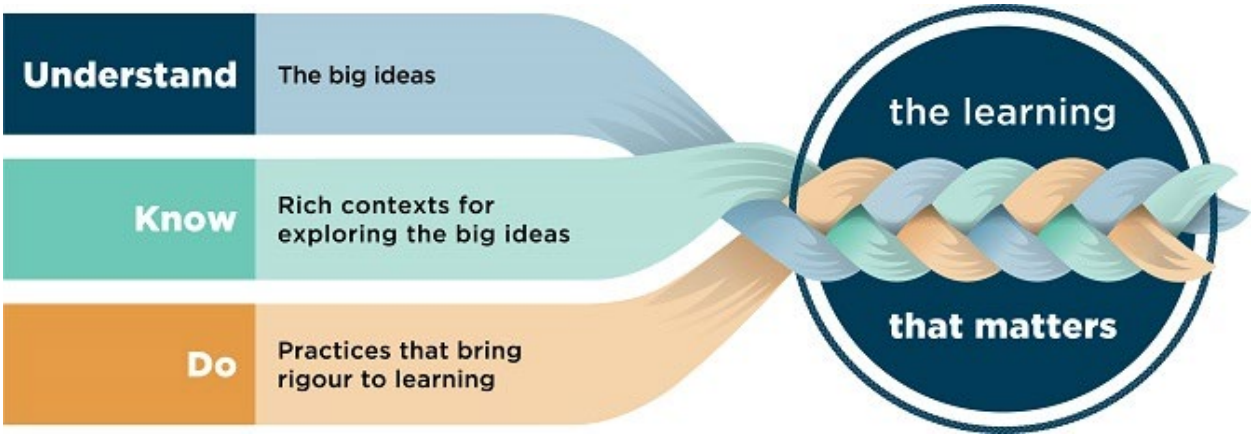


Figure 1. The Understand-Know-Do framework and progression model

It is important that teachers feel confident to engage young people through a local place-based historical context as this immerses students in powerful learning connected to their communities and benefits their academic milestones (Vander et al., 2020). Imbuing learners with the wonder of learning (Penetito, 2009), while designing opportunities to think critically about the past informed by historical evidence, aligns with critical historical thinking and culturally responsive pedagogy (Morgan & Rasinski, 2012; Sheehan & Ball, 2020). Vander et al. (2020) espouse the community as classroom principle, where learning can take place anywhere as long as students have agency and understand the relevance. This has potential to be expanded as students and teachers imagine increasingly complex and novel place-based learning experiences.

Barton (2005) indicates that using primary sources to stimulate curiosity and questions will help students to understand the stories of our local history. The judicial use of primary sources can potentially stimulate curiosity (Barton, 2005), creating a more positive mindset towards historical inquiry. The specific outcomes align with the inclusion and development of critical literacy skills and curiosity mindsets in supporting a journey towards historical thinking situated within a local, culturally responsive framework (Sheehan & Ball, 2020).

Emerson et al. (2018) discuss the consensus in the literature that teacher, librarian and educator collaboration has a verifiable track record in enhancing cognitive skills resulting in raising student achievement. Todd (2002) emphasises the

role of librarians as leaders of learning through guided inquiry which transforms students from simply reproducing knowledge to generating new ideas and understanding. Hattie (2012) describes collaborative practice within schools as the visible mark of professionalism and a way of driving the profession upwards, and this is equally vital to growing that work beyond the school environment. He posits that teachers shouldn't work in isolation when working together creates a culture that fosters effective educator collaboration, and that planning is most powerful when teachers develop common understandings to evaluate the impact of their planning on student outcomes. However, there is a further layer of complexity when the collaboration takes place between teachers and librarians as attitudes and beliefs are likely to impact their practice (Emerson et al., 2018), exacerbated by working outside a school environment.

Research Data and Methodology

The main goal of the HDIA project was to investigate teacher confidence and capacity to actively use primary source materials to teach local history with resources designed to engage students' curiosity and engagement. The research was conducted using a critical participatory action research methodology (Kemmis, 2011), which aligned with the predominantly qualitative data methods used. Data were collected to provide evidence of the impact of the HDIA project, evaluate to what extent identified goals were realised, and inform future development and alignment of subsequent programmes to support local history teaching. Qualitative data, collected through surveys, interviews, field notes and observations, also allowed for analysis of professional collaborations and mindsets in working with a professional who is not a teacher in order to transform learning.

There were three participant groups: six teachers from three schools, teaching classes from Year 5 to Year 7 (Figure 2), three archivists from the Invercargill City Libraries & Archives, and two teacher aides accompanying all Year 7 classes. Each class participated in two visits; the first was a full day of activities based at the public library and the second was a two-hour in-class experience involving a variety of targeted activities.

School	Year Level	Type	Decile	Roll
1	6	Integrated girls school	9	141
2	7	Y7-13 state school	2	492
3	5	Y1-6 contributing school	3	133

Figure 2. Participant groups

Pre-project surveys set benchmarks and established evidence of prior experience of teaching with primary sources, as well as capturing attitudes to inquiry learning and collaborative practice. Post-project surveys and teacher interviews with two of the teacher participants provided evidence of resulting changes or development. Comments, observations and personal field notes collected during the project informed iterative cycles and provided data for comparisons of approaches and responses from each school.

Five of the six teacher participants responded to both surveys. The non-respondent was part of a team-teaching arrangement and wasn't able to fully participate. All respondents indicated they had previously included elements of local history in their classrooms, but 60% acknowledged they were unsure or not confident to include primary source materials while 40% hadn't previously used or considered using primary sources nor had they collaborated with a librarian (Figure 3).

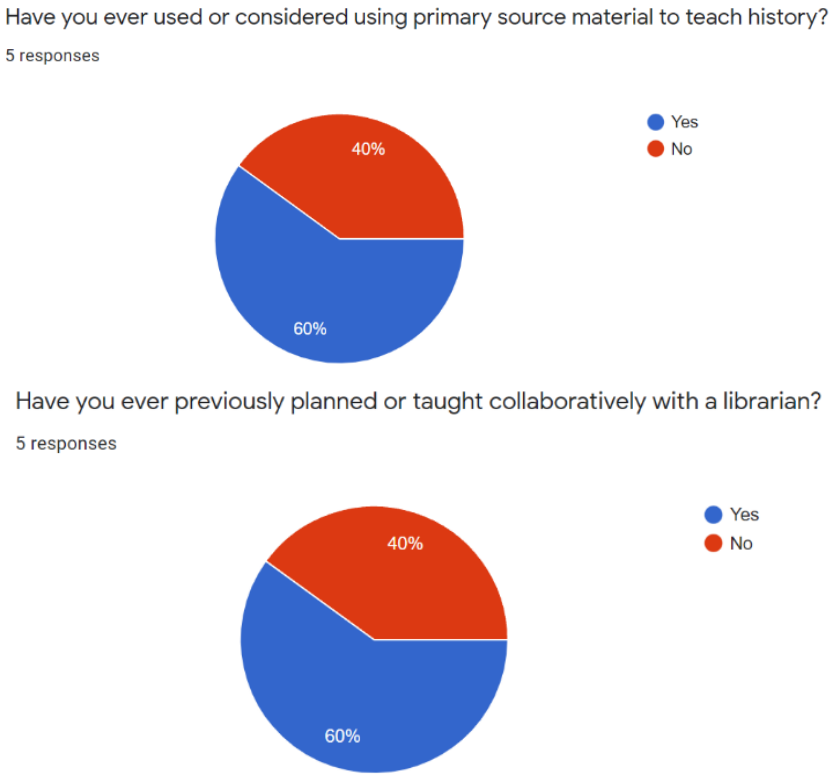
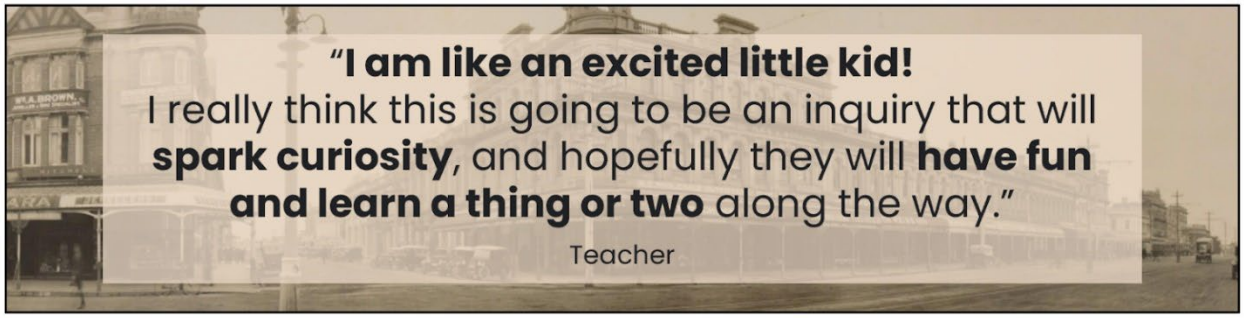
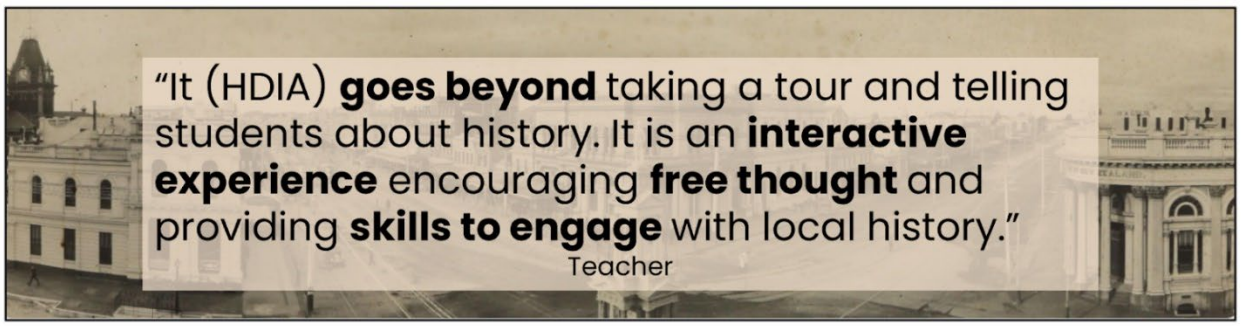


Figure 3. Survey responses



Participating archivists selected and curated suitable archival material while two also shared in leading archive tours and another actively participated in two school visits. All archivists observed benefits from active participation as a result of these tours. Two teacher-aides accompanying all four Year 7 classes readily agreed to participate, presenting an opportunity to seek a new and important perspective on the project.

Results and Analysis



Goal 1: Teacher Confidence and Capability

All teachers indicated they now understood the benefits of incorporating primary sources into their learning programmes, and that this experience had reinforced the need to engage with local community experts to provide enriched learning opportunities. They also acknowledged that schools can sometimes "live in their own bubbles." One teacher described the experience as a learning adventure, while another was impacted by witnessing the depth of student excitement.

Teachers viewed HDIA as an opportunity to ignite interest and teach topics more deeply in context rather than in a siloed manner and recognised that primary sources are an authentically powerful pathway for students to discover information. One respondent remarked that schools are always looking for practical teacher professional learning and believed such an opportunity for staff to incorporate HDIA into their teaching programme would be well received in her school as it aligns with the current focus of developing a place-based, local curriculum.

Time was identified as a barrier to this type of active learning outside of the classroom. One respondent described her expectation of learning outputs as overly ambitious and would simplify it next time, while another was concerned some of the classroom activities were beyond her students. Other respondents noted the need to upskill teachers attempting this approach, but also that engaged, enthusiastic teachers would convey their excitement and that ultimately HDIA would be a beneficial programme for schools. Another respondent indicated that using primary sources made learning accessible for all students and provided a gentle nudge to think more deeply, whereas another admitted to previously thinking they would be at too high a level for her learners, which was not substantiated by the experience.

While teacher-participant confidence to use primary source materials increased and all teachers spoke positively about the experience, only some discussed their next steps in using primary sources. They all described, discussed and demonstrated personal engagement with HDIA, however, evaluating differences in teacher attitudes to the same activities measured against years of teaching experience, age of their students, and the extent to which teachers actively participated could have provided more meaningful and useful long-term evidence related to the sustainability of the programme.

Goal 2: Resources to Engage Student Curiosity

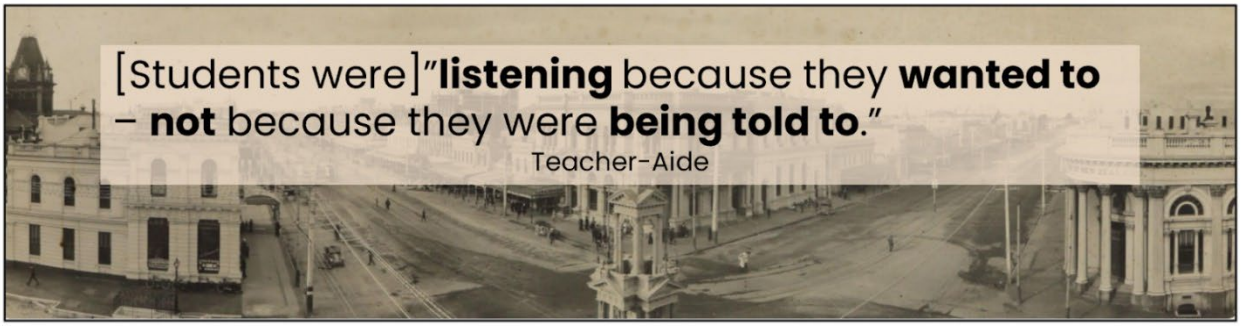
Overall, teachers observed a high level of student engagement or at least a shift towards engagement throughout the day spent at the library. They observed them having fun, that they were intrigued and fascinated with the novel experience, and the tangible elements prolonged engagement and sparked curiosity. In fact, all three participant groups noted that exposing students to primary source materials through active participatory inquiry provided an effective springboard to engagement and curiosity.

There were multiple examples of how students related to what they saw, heard or discovered throughout the experience. Examples include a Year 6 student engaging with a telephone book activity by linking her investigation directly to her grandparents, a Year 7 student displaying a previously undisclosed interest in historic buildings and architecture by observing during a city walking tour how old buildings were more ornate and attractive to look at than modern constructions, and another Year 7 student animatedly sharing a personal family story, prompted by the introduction of an archival object during an archives tour.

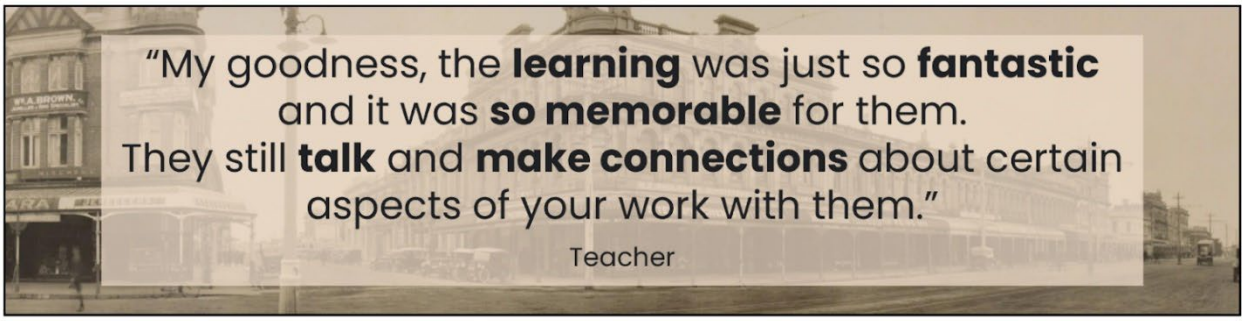
Students across all schools made strong connections during the archives tour to those artefacts that tell stories of their individual schools. This suggests that personal connection is an important context for engagement, and as a result, all three schools

used this interest to provoke further questioning and continued investigations of the history of their schools after the completion of HDIA.

Archivists noted increased engagement when students could relate artefacts to prior learning, something they had noticed during the central business district walking tour or linked to themselves or their families. They also noted curiosity increased with hands-on activities or props and that students were inquisitive about "everyday objects." Teacher aides also observed excitement but significantly, they were the group that remarked on levels of engagement being much higher across the board for their students, particularly amongst those who weren't often overly engaged in their learning.

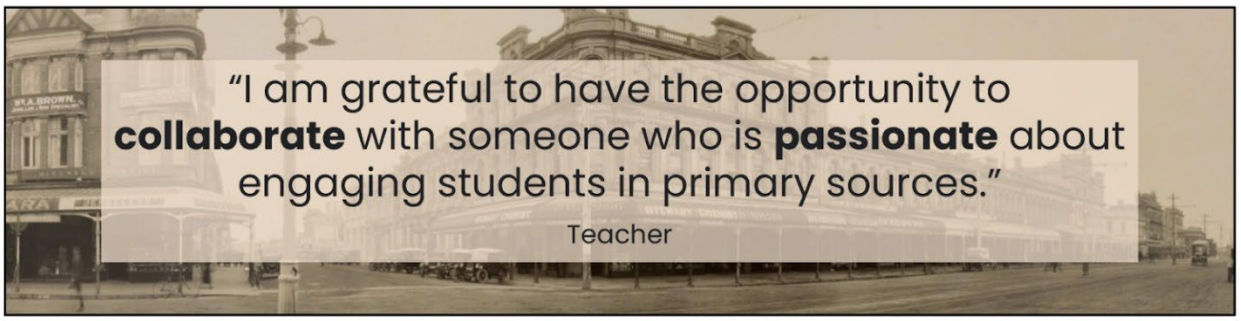


In post-project interviews with two of the teacher-participants, both noted that these activities were the perfect catalyst for engagement, and even more effective when personalised. The Year 7 learning leader commented that all teachers from her school described learning alongside their students as an "intriguing experience."



A final survey, had time allowed, could have provided rich data on how much of the learning experience was retained by students and acted as a catalyst for teachers. There is little in the literature on the kind of learning students retain from site visits or how long they retain it. "That learning takes time makes it difficult to measure, particularly as memories of a visit linger and can contribute to later learning" (Rivers, 2006, p. 13).

Collaborative Practice



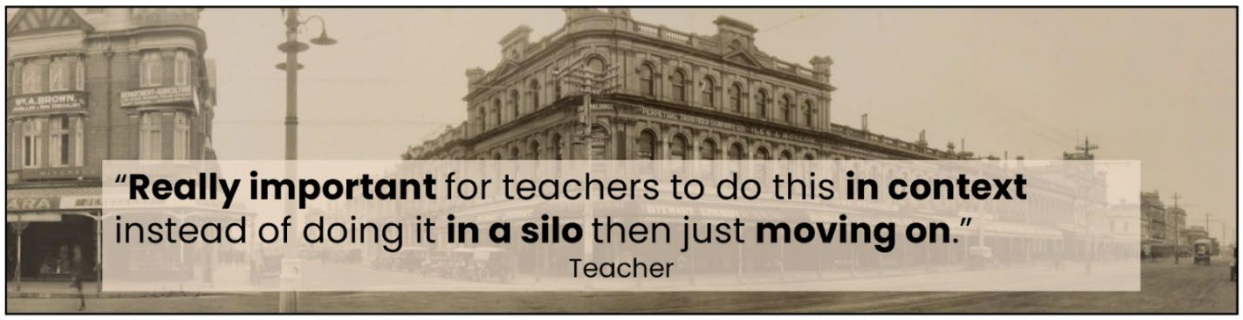
Collaborative practice is an integral element of the project's goals and aims. 60% of teachers indicated previous experience of teacher-librarian collaboration but only one described collaborating beyond the basic level of accessing information. Teachers who hadn't experienced teacher-librarian collaboration indicated reasons as either having had no opportunity to or not knowing how to initiate it. All teachers indicated they had enjoyed working with experts in the community and one stated that this confirmed previous experiences of working with librarians.

Two classes had job-sharing teachers, and one commented this experience had deepened her belief in collaborative practice and that sharing knowledge is a remarkable tool that should be utilised. This sentiment was echoed by the teacher aides, who talked of the value they placed in expertise being passed on to everyone. Collaborative learning also happened at the student level through working together in small groups with lots of discussions and successfully solving clues together.

Teachers articulated the value of collaboration for them as being able to work with a librarian and access specific skills and knowledge. One envisioned further

collaborative opportunities with the school librarian, and that future planning could allow space for teachers to become participants alongside their students, aligning to the professional relationships standard of "reciprocal, collaborative learning-focused relationships" (Education Council, 2017, p. 18).

Archivists noted that new approaches such as the HDIA programme could strengthen connections throughout the wider heritage sector locally and that librarians could act as catalysts for cross-sector experiences, benefitting the whole community while aligning these for schools.



UDL Framework

The UDL model proved to be a flexible framework for interdisciplinary learning. Key elements of HDIA were mapped against the UDL framework (Figure 4), which contributed to identifying similarities, differences and fresh themes, and provided visible links for collaboration. While this is determined by the teacher, it can also be influenced by the librarian partner when linked to the framework.

	Engagement WHY	**Representation WHAT**	**Action & Expression HOW**
Access	RECRUITING INTEREST Choice Relevance Value Authenticity	PERCEPTION Display of information Alternatives auditory Alternatives visually	PHYSICAL ACTION
Build	SUSTAINING EFFORT & PERSISTENCE Vary resources to optimize challenge Collaboration & Community	LANGUAGE & SYMBOLS Clarify vocab & symbols Decoding of text	EXPRESSION & COMMUNICATION
Internalise	SELF REGULATION Motivation Coping skills & strategies Self-assessment Reflection	COMPREHENSION Activate or supply background knowledge Patterns, critical features, big ideas & relationships Guide info processing & visualisation	EXECUTIVE FUNCTIONS Facilitate managing info & resources

Figure 4. Key elements of HDIA mapped against the UDL framework

Discussion and Challenges

Research findings clarified that active, participatory learning has a significant impact on student engagement and curiosity, collaborative partnerships are essential in moving beyond a siloed mentality, and decisive, educational leadership outside of traditional learning environments is almost non-existent but nevertheless important.

Active, participatory learning has a significant impact on student engagement and curiosity, in line with Dewey's belief that "students thrive in an environment where they are allowed to experience and interact with the curriculum" (Talebi, 2015, p. 4). What this research shows is that this can be extended beyond conventional schooling environments and encompass the realm of intergenerational and informal learning. The HDIA kete of primary sources not only supports local history in schools but serves as a connector to all generations through stories and questions, provoking a means to learn from one another. By remaining flexible and adapting to changing educational environments there are myriad opportunities to link learning for everyone and to enact a local curriculum while considering the community as a whole.

There is no doubt about the complexities of developing and sustaining collaborative learning communities, however visible learning that is scaffolded, participatory, creative and learner-driven is a powerful combination to spark curiosity, engage learners and provoke critical thinking at any age. There is potential for adoption of this philosophy through engagement with Ministry of Education programmes and groups such as the new Enriching Learning Curriculum, which replaces the previous Learning Experiences Outside of the Classroom, Networks of Expertise professional learning, and Community of Learning-Kāhui Ako.

The UNESCO (2015) Learning City Strategy (Figure 5) signals that "lifelong learning is becoming increasingly important in today's world and is an integral part of the 2030 Agenda for Sustainable Development" (p. 3). It provides a bridge for learning to continue beyond formal schooling and a platform for collaboration beyond libraries and schools.

Figure 5. The UNESCO (2015) Learning City Strategy

It also provides exciting opportunities to develop a learning approach within a local community context, recognising that connecting education to other initiatives such as preserving heritage buildings and supporting community well-being is a smart move. The HDIA kete is a tangible example of how schools, retirement villages, and community groups such as the University of the 3rd Age (U3A) can connect intergenerationally and build social capital when young people can interact with adults beyond their normal sphere, developing trust and a mutuality that holds communities together (Smith & Sobel, 2010). By extrapolating this approach through adaptive thinking, multiple partnerships can profit from using such ketes for different purposes.

There is scope for complementary learning experiences that are authentic and interactive, serving to ignite curiosity for local history. An investment should be made in new and exciting technological opportunities to connect people to their heritage,

stories and tāonga in new and exciting ways through virtual interactive history experiences or participation in the writing of local history stories.

Conclusions and Recommendations

Robinson (2016) suggests that there are three options for making changes in education. We can make changes *within* the system, press for changes *to* the system or take initiatives *outside* the system. As educators, we need to recognise our spheres of influence and acknowledge those which are important to us. For most, there will be opportunities at different stages in our careers to interrogate all of these options.

The first step is to personally reflect and then consider the impact this approach could have on our own practice and approaches. The next step is to begin conversations with others, not limited to only those possible within our school communities. Reach out to your school librarian and if there isn't one in your school, ask why not, but then make contact with public librarians with a learning focus or education experience. Discover what local heritage organisations such as museums offer as community experiences for schools and take advantage of those opportunities.

Finally, initiate or build on existing collaborations. Share your successes, challenges and insights with others, as what is obvious to you may just be amazing to someone else (White, 2011). The HDIA project has led to an unexpected and divergent perspective on how and why primary source materials can be used as a catalyst for introducing local history to students and goes some way to addressing Robinson's (2016) fundamental question: "What is education for?"

References

Bada, S.O. (2015). Constructivism learning theory: A paradigm for teaching and learning. IOSR Journal of Research & Method in Education. 5(6), 66-70.

Barteaux, S. (2014). Universal Design for Learning. BU Journal of Graduate Studies in Education, 6(2) 50-54. https://files.eric.ed.gov/fulltext/EJ1230738.pdf

Barton, K.C. (2005). Primary sources in history: Breaking through the myths. Phi Delta Kappan, 86(10) 745-753. http://ezproxy.christchurchcitylibraries.com/login?url=https://www.proquest.com/scholarly-journals/primary-sources-history-breaking-through-myths/docview/218518694/se-2?accountid=48718

Durie, M. (2015). Educational leadership for tomorrow. Educational Council of New Zealand. https://teachingcouncil.nz/assets/Files/Leadership-Strategy/Leadership-for-Communities-of-Learning-Five-Think-Pieces.pdf

Education Council. (2017). Our code our standards: Code of professional responsibility and standards for the teaching profession. https://teachingcouncil.nz/assets/Files/Code-and-Standards/Our-Code-Our-Standards-Nga-Tikanga-Matatika-Nga-Paerewa.pdf

Emerson, L., Kilpin, K., White, S., Greenhow, A., Macaskill, A., Feekery, A., Lamond, H., Doughty, C. & O'Connor, R. (2018). Under-recognised, underused, and undervalued: School libraries and librarians in New Zealand secondary school curriculum planning and delivery. Curriculum Matters, 14, 48–68. doi:10.18296/cm.0029.

Gilbert, J. (2018). Untangling constructivism, knowledge, and knowledge-building for "future oriented" teaching. Set: Research Information for Teachers, 1. doi:10.18296/set.0095.

Hattie, J. (2012). Visible learning for teachers: Maximising impact on learning. Routledge. https://hozir.org/pars_docs/refs/26/25322/25322.pdf

Innovative Teaching & Learning Research. (2012). 21 CLD Learning Activity Rubrics. Microsoft Partners in Learning. https://fcl.eun.org/documents/10180/14691/5.3x+-+21cld+learning+activity+rubrics+2012.pdf/e240da11-07c2-4633-a86e-06c12f00d8ad?version=1.0

Kemmis, S. (2011). A self-reflective practitioner and a new definition of critical participatory action research. (11-29). DOI:10.1007/978-94-007-0805-1_2

Kenyon, C. & Hase, S. (2001). Moving from andragogy to heutagogy in vocational education. 1-9. https://www.proquest.com/scholarly-journals/moving-andragogy-heutagogy-vocational-education/docview/62254315/se-2?accountid=196279

Kuhlthau, C., Maniotes, L., & Caspari, A. (2012). Guided Inquiry Design: A framework for inquiry in your school. ABC-CLIO.

Marotta, M. (2018, August 13). Tips, tricks and tools to build your inclusive classroom through UDL. EdSurge. https://www.edsurge.com/news/2018-08-13-tips-tricks-and-tools-to-build-your-inclusive-classroom-through-udl

McLean, G. (2007). How to do local history: a guide for historians and clients. Otago University Press.

Ministry of Education (2022, May 20). Refreshing the New Zealand curriculum. https://www.education.govt.nz/our-work/changes-in-education/curriculum-and-assessment-changes/curriculum-refresh/

Ministry of Education (2007). The New Zealand Curriculum. Wellington, New Zealand: Crown.

Ministry of Education: TKI. (n.d.). Universal Design for Learning. Inclusive Education. https://www.inclusive.tki.org.nz/guides/universal-design-for-learning/

Moore, S. [Five Moore Minutes]. (2019, October 8). Dr Baked Potato: How can we scaffold complexity? [Video]. YouTube. https://www.youtube.com/watch?v=7j0oL1CNXAs

Morgan, D. & Rasinski, T. (2012). The power and potential of primary sources. The Reading Teacher. 65(8), 584-594.

New Zealand Government. (2019, September 12). NZ history to be taught in all schools. Beehive. https://www.beehive.govt.nz/release/nz-history-be-taught-all-schools

Penetito, W. (2009). Place-based education: Catering for curriculum, culture and community. New Zealand Annual Review of Education, 18 5-29.

Rivers, J. (2006). Effectiveness of programmes for curriculum-based learning experiences outside the classroom: A summary. Ministry of Education. https://www.tki.org.nz/r/eotc/leotc/index_e.php

Robinson, D. (2017). Universal Design for Learning and school libraries: A logical partnership. Knowledge Quest, 46(1), 56-61.

Robinson, K. (2016). Creative schools: The grassroots revolution that's transforming education. Penguin Books.

Sandretto, S. & Klenner, S. (2011). Planting seeds: embedding critical literacy into your classroom programme. NZCER Press.

Sheehan, M. & Ball, G. (2020). Teaching and learning New Zealand's difficult histories. New Zealand Journal of History, 54(1), 51-68.

Smith, G. & Sobel, D. (2010). Bring it on home. Educational Leadership: Journal of the Department of Supervision and Curriculum Development, N.E.A. 68, 38-43.

Talebi, K. (2015). John Dewey - Philosopher and educational reformer. European Journal of Education Studies. Vol1 Issue1. ED564712.pdf

Todd, R. (2002, August 18-24). Librarians as teachers: Learning outcomes and evidence-based practice. [Paper presentation]. 68th IFLA Council and General Conference, Glasgow. https://files.eric.ed.gov/fulltext/ED472883.pdf

UDL IRN. (2018, April 12). Introduction to Universal Design for Learning. [Video]. YouTube. https://www.youtube.com/watch?v=bo2aZ8hJHz0

Vander, A.T., Liebtag, E., & McClennen, N. (2020). The power of place: Authentic learning through place-based education. Association for Supervision & Curriculum Development. https://ebookcentral.proquest.com/lib/themindlab/detail.action?docID=6130473

Walker, J.M., Cruse, C. & Barker, K. (2020). Supporting an inquiry mindset: Resisting the lack of curiosity by design model. Journal of International Social Studies. 10(1), 2020, 221-229. https://files.eric.ed.gov/fulltext/EJ1251409.pdf

Wenger, E. (1998). Communities of practice: Learning, meaning, and identity. Cambridge University Press.

White, S. (2021). Collaborating in the school library - wielding the magic together. In L. Emerson, K. Kilpin & H. Lamond. (Eds.), Literacy across the divide: Information literacy as the key to student transition. (pp. 65-75). NZCER Press.

White, S. (2018). Developing collaborative practice models from Year 7-10. Collected Magazine. (22). http://www.slanza.org.nz/uploads/9/7/5/5/9755821/collected_22__4_.pdf

---

Senga White

Senga White is an information knowledge specialist and educator with a passion for lifelong learning. She is also a library professional with more than 20 years of experience working in the schools sector, including a term as president of SLANZA, the School Library Association of New Zealand.

Through this work, she has created the Tertiary Prep Programme, enabling those seeking academic success to realise their goals, and the Information Literacy Skills Framework, a collaborative learning tool designed to embed information literacy and critical thinking skills iteratively through the Year 7–13 curriculum.

She is passionate about all facets of education, gaining her Master of Contemporary Education in 2021, and she was selected as a NEXT expert teacher finalist in 2019. She is a member of the Information Literacy Spaces research team whose findings culminated in a book about the project, Literacy Across the Divide: Information Literacy as the Key to Student Transition, published by NZCER in 2021. She also received a scholarship in 2019, enabling her to travel to the UK to build on her research into collaborative practices between teachers and librarians.

She describes her philosophy for lifelong, life-wide learning as being underpinned by harnessing the power of collaboration, sharing ideas, and growing knowledge, which she enacts through her work as a coach, mentor and presenter at conferences and workshops. To find out more about the History Detectives in Action programme, you can contact her at sengaw@windowslive.com

White, S. (2011, November 29). What's obvious to you is amazing to me. *Senga's Space*. https://sengawhite.nz/2011/11/29/whats-obvious-to-you-is-amazing-to-me/

Research Article

The Impact of Design Thinking and Steam Learning on Student Engagement

He Rourou, Volume 2, Issue 1, 109-125, 2022

Sarah Cooke

Abstract

Global opportunities in steam-related employment have contributed to the need for students to engage in developing skills of critical thinking, collaboration and problem solving. This need aligns well with Design Thinking, where students are encouraged to address big picture problem solving (Ideaco, 2013). Student engagement is strongly linked to achievement. It has long been the focus of educational researchers and is of increasing importance as educators grapple with preparing students for an emerging future (Fredricks et al., 2004). This research evaluates the impact of steam learning and Design Thinking on student engagement. The participants were a focus group of Year 4 students, plus students and teachers (Years 0–6), in a junior school environment. The findings of this project suggest that steam learning provides an excellent platform for students to use Design Thinking, be creative and feel successfully engaged in their learning. Furthermore, many students found collaboratively constructing learning in a personalised way using digital tools was very engaging.

Introduction

With our constantly changing educational landscape, there has never been a greater need for students to engage deeply with learning. Emerging challenges such as providing flexible learning opportunities whilst keeping pace with changes in technology have provided the impetus for pedagogical change. As educators, providing real and relevant learning that will help students thrive in their world is of paramount importance (Hannon, 2017). Davis (1998) alludes to the gaps in current pedagogies that fail to develop 21st-century skills for students.

So how are New Zealand schools dealing with these gaps? Is it possible that incorporating steam learning and Design Thinking into classrooms is a way to provide enriched understanding and engagement for learners?

In New Zealand, steam education is a relatively new concept within the New Zealand curriculum. It sits within the technology curriculum which was revised in 2017 to include the technological areas of computational thinking, designing and developing digital outcomes, designing and developing material outcomes, designing and developing processed outcomes, and design and visual communication (Ministry of Education, 2018). With these modifications to the curriculum, teachers are looking for the means to which they can be implemented into inquiry and project-based learning authentically (Bolstad et al., 2012).

Literature Review

Student Engagement

Teachers have often considered that students who show purposeful effort in their learning activities are engaged learners. However, there is much more to consider when defining student engagement.

Christenson et al. (2012) note three types of student engagement. They stated that behavioural engagement is positive participation, cognitive engagement refers to an eagerness to learn, and emotional engagement is positive or negative reactions to teachers, classmates and the learning activity. All of these factors contribute greatly to student outcomes and impact academic achievement.

Additionally, Groccia (2018) describes student engagement in the more simplified terms of doing, feeling and thinking. For the purposes of this project, student engagement was defined as what students think, feel and do in the context of steam learning and Design Thinking.

Extensively reviewed research on student engagement by Fredricks et al. (2004) also indicated three main characteristics of student engagement: behavioural, emotional and cognitive. These characteristics describe a range of student actions during learning, from students simply being compliant and extrinsically motivated to engage, to students who are intrinsically motivated to engage.

Steam Learning

Defined as an educational approach that uses Science, Technology, Engineering, the Arts and Mathematics, steam learning is a means for guiding student inquiry (Bertrand & Namukasa, 2020). However, by fostering engaging steam practices, Sousa and Pilecki (2013) found that engagement, creativity, cognitive growth and long-term

memory capabilities increased when taking part in steam learning. Similarly Rich (TKI, 2019) identified that students are multifaceted, so steam learning can tap into this by leveraging students' strengths to develop new learning.

Challenges faced by teachers when implementing steam learning include developing a deeper understanding of how steam differs from their current practice, to resourcing and planning. In a study by Taylor and Lowe (2021) it was found the integration of steam was challenging for teachers, as it involved learning about new topics requiring extra planning and resource development time. Additionally, adjustment to this new pedagogy is necessary, as the teacher's role is to guide and advise, "both the student and the tutor have to tolerate great risk along the journey to a solution" (Shreeve, 2015, p. 83).

Design Thinking

Alongside steam learning, Design Thinking was initially used in the 1960s and developed further in the 1980s. It continues to be a relevant way to collaborate and generate new thinking around problems (Rowe, 1987). It is used widely, in many secondary schools, tertiary institutions and workplaces.

There is some evidence that it is being developed in primary schools in New Zealand (TKI, 2021), however, it is yet to become an integral part of teaching and learning practice. This may be because of the lack of understanding surrounding Design Thinking and its practical use in primary schools. However, in Australia, there is significant support and resource material for teachers in New South Wales to implement Design Thinking processes (Taylor, 2020).

Davis (1998) refers to Design Thinking as an innovative way to problem solve, allowing students to be at its centre and providing a platform for divergent thinking. It refers to the cognitive, strategic and practical processes by which design concepts are developed. This thinking originated as a way of teaching engineers how to creatively solve problems, like designers do. In this capacity it was used to work through highly complex, "wicked" problems.

Moreover Kelly (2012) highlights that Design Thinking is a means for students to address real-world problems in a systematic way. Through its five modes, the students are able to *Empathise*, *Define*, *Ideate*, *Prototype*, and *Test*. These modes of thinking are all interconnected and students may cycle in and out of each mode, making refinements.

With an emphasis on empathy, Design Thinking is a valuable social emotional commodity for all individuals. Empathy is a skill that is needed not only for students to collaborate and work well with others, but is a crucial skill in many work environments.

A study by Chen (2015) affirmed that through experience with Design Thinking, children will be able to grow into empathetic adults who can be successful in their life.

In addition, Davis (1998) states that the use of design thinking to deliver existing learning content would help improve academic outcomes for students. Davis found that the social and collaborative nature of learning through Design Thinking created a shared ownership of learning and contributed greatly to students' making of meaning. This is a key finding as it is fundamental that students understand their learning. Engaging collaboratively with Design Thinking could therefore be a means of supporting meaning making for learners.

Steam Learning, Design Thinking and Differentiated Learning Needs

Steam learning removes barriers to higher level thinking involved in risk taking because multiple solutions to problems are possible. This coupled with Design Thinking allows for a heutagogical pathway where students have the opportunity for learning what they need to know when they need to know it (Hase & Kenyon, 2007). The transdisciplinary approach of Design Thinking has the potential to develop improved literacy in the technologies (TKI, 2018). Steam gives multiple entry points across contexts and therefore does not discriminate against students because of learning needs (Klyn, 2018). By understanding that steam learning allows for personalised and differentiated learning, teachers adopting new pedagogical approaches may be able to engage students further and empower them to think critically.

Teacher scaffolding of learning is an important consideration when teaching Design Thinking (Muramatsu et al., 2019). A study by Groccia (2018) also found that providing structured fun in learning activities resulted in engagement and therefore made lessons memorable and well understood and that teachers who praised learning processes saw increased confidence in thinking shown by students. Students therefore showed a willingness to engage and be open minded to new learning experiences.

Research Questions

1. What is the impact of steam learning and Design Thinking practices on student engagement?
2. What factors contribute to improved student engagement when utilising steam learning and Design Thinking practices?
3. What factors contribute to teacher collaboration when delivering steam learning?

Specific goals for this research project aimed to:

1. Increase student engagement through steam learning and Design Thinking processes
2. Co-construct learning enabling collaborative use of digital tools and a culturally responsive approach
3. Create a community of practice with teachers to enable the implementation of steam learning across the school.

Methodology

The methodology chosen for this project is Action Research because it is a practice-based method of research (McNiff & Whitehead, 2005). It has an iterative approach to evaluation and allowed me to build on cycles of activity to improve practice.

In order to obtain a clear picture of student engagement across the project, mixed methods of data collection were implemented. Real-life situations, such as teaching and learning, may be best described by using a mixed methods approach (Cohen et al., 2018).

When dealing with younger students, interviews helped me to tell their story about how they engaged with learning (Cresswell & Clark, 2011). Teacher interviews and discussions consisted of questions that were open and allowed for critical feedback/feed forward and a flow of ideas that could be shared. Quantitative data was also used to inform practice during each iteration of the project. This was gathered by means of student surveys. The surveys served the purpose of creating response data and were a means to measure levels of engagement. The instruments used for collection of data were interviews of participants, Google form surveys, observational field notes and reflective journaling.

During observations, the Leuven Well-being and Involvement scale was used to indicate student engagement (Laevers,1997). This scale proved to be a useful tool to show how students adapt to new activities and environments. Snapshots of involvement and well-being were taken as field notes and reflected upon.

A dual approach was developed to address the goals of this project. Firstly, with the focus group of Year 4 students, two iterative cycles of the International Baccalaureate Primary Years Programme (PYP) concept-based inquiry were implemented. Secondly, a new collaborative pedagogy for delivering steam learning was developed for Years 0–6 students across the school. The makerspace in the junior school was utilised as a resource and learning space for staff and students.

These goals were measured through gathering qualitative and quantitative data by means of observations, interviews, surveys and discussions with participants and stakeholders to inform practice.

Initially, the focus group participants were interviewed. This was an important phase of the project as it was an opportunity for the students to talk about who they are and how they see themselves as learners. The students were able to describe how they liked to work and what strengths and barriers to learning they had experienced.

During the first iteration, my role was to work with the Year 4 team to introduce the science and technology elements of our unit of inquiry. In this inquiry about Innovations and Inventions, students were introduced for the first time to Design Thinking. This process would be used to solve the problem of designing an invention, a fast America's Cup boat. Design Thinking would provide a framework for students to anchor their ideas and processes to. Making this pedagogical change, I hoped to deliver content in a different way to improve understanding and academic outcomes (Davis, 1998).

The focus group used a hands-on experience with an optimist boat as a provocation to think like a designer. Students looked carefully at the technology used on this boat and began researching ideas for their own boats by framing their learning with the five Design Thinking modes. They engaged fully with this process and were able to use this to design prototypes to test.

Students followed the process well, however, I was mindful of this being the students' first exposure to Design Thinking. I felt the Design Thinking modes needed to be worded in a way to be more suited to primary-aged students. I also learned that there is a gap in the research, with no Design Thinking model specifically for primary-aged students. Students co-constructed research and learning around student ideas structured by the Design Thinking modes. This learning was recorded in a slides presentation modelling book and was used as a guide for teachers and students. Documenting the learning process for students was in the form of a book creator book. Students were scaffolded to write or take photos to reflect on their learning. This iteration also demonstrated culturally responsive practice where the students' cultural funds of knowledge were incorporated (Siilata, 2015), as students recorded introductions about themselves and their families in their mother tongue.

Although students had influence on the construction of their learning in this first iteration, my role was more of a facilitator. Upon reflection, I would move on to eliciting students' ideas further, to devise more detailed success criteria for their tasks. Using the 21st-century learning design rubrics, I redefined learning, so students are more actively constructing it.

The collaborative delivery of steam learning to several classes across the school was occurring alongside work with my focus group. To start with, my aim was developing relational trust with teachers (Robinson, 2010). This occurred quite naturally, as we had the opportunity to plan collaboratively at PYP planning meetings across

several year groups. Regular check-ins were made to see which directions student inquiries were taking them and how connections could be made to this learning. I had begun to develop a community of practice with teachers to enable the implementation of steam across the school (Wenger, 2002).

A pedagogical change was needed to deliver steam learning collaboratively and make it more engaging for students. This was initially challenging as teachers had in previous years come to "Do" science and technology in the makerspace. A shift in thinking and methodology was required. To support the change in pedagogy, shared slides documents and resources were created that supported students and teachers to help deliver PCK (pedagogical content knowledge) (Nixon & Lizaire, 2007). Initially there was a range of uptake from teachers depending on their comfort with teaching science and technology.

The purpose of this collaboration was to enable teachers to explore new ways to design, implement and evaluate knowledge construction through inquiry-based steam learning. Students brought their prior knowledge to sessions then both students and teachers collectively built on this through concept-based activities and discussion.

Initially teacher efficacy was limited by their confidence and lack of experience teaching science and technology (Aydin, 2020, as cited in Bassachs, 2020). This explained for me how some teachers were more readily able to work collaboratively with steam lessons than others. Through modelling open-ended, hands-on activities, students were able to develop practical knowledge of phenomena. Subsequent units of inquiry involved teachers working as guides to student-led learning relating to key concepts. Teachers worked together to plan and promote a heutagogical approach allowing for students to explore anytime, anywhere learning (Hase & Kenyon, 2007).

Data was collected throughout the first iteration and was used to inform the second iteration of this project. To gain further knowledge of the Design Thinking process, a rubric was developed to help students gauge how they were going in each of the modes. It was a way to break down skills and thinking to support students' learning.

The second unit of inquiry with the focus group was Sharing the Planet. Students were delving into the real-world concept of the impact of how humans dispose of waste. During this inquiry, students were guided to construct their learning. More emphasis was placed on unlimited creative thinking, as students planned to solve their real-world problems. Students used their newly constructed Design Thinking modes and were asked to think about, how might I solve the problem of waste around the junior school? The focus group *empathised* by interviewing members of the school community about the school waste problem. From this, students *defined* the problem and began researching possible solutions. Their research included auditing school rubbish and

learning about alternative waste solutions such as composting and bokashi systems. In the *ideate* phase students used sketching and annotating to think of unlimited creative solutions. In the *prototyping* phase students chose how and what they would create. Students worked their way through Design Thinking modes. They produced and tested prototypes. These included making a 3D-printed hand, a rubbish claw hand, rubbish sorting machine complete with sensors, and themed scratch games that highlighted solutions to the school waste problem. They *tested* their prototypes and sought feedback about them, making necessary changes. Students then revisited their end users to *share and evaluate* the solution to the problem of school waste.

Focus group participants used a variety of digital tools to enhance their learning including, book creator journals, Tinkercad drawing, 3D printing and Scratch Junior coding.

Artefacts produced were a series of slides modelling books for teachers and students. These books helped gather thoughts, methods and resources and were used to generate a Google site connected to the junior school cloud. This site was made to support delivery of steam learning and Design Thinking processes.

A Design Thinking model has been developed for the junior school in collaboration with teachers which included an exemplar rubric to be used to guide students and teachers with the process.

Results and Analysis

Through analysing data, it was found that there were many contributing factors to increased student engagement in this project. These factors have been categorised into the three characteristics of engagement, cognitive, emotional and behavioural (Table 1) as discussed in Fredericks & McColskey, (2012).

Key factors impacting student engagement in steam learning and Design Thinking processes
Cognitive (Think) - encouraging curiosity - asking relevant open-ended questions - open-ended activities provided - teaching more explicitly, modifying to meet the needs of students - breakdown of individual skills - clarifying ideas for students through discussion - age/pace appropriate - journaling to justify and record ideas

Emotional (Feel) - establishing trust - allowing for students' preferred modes of learning (utilising cultural funds of knowledge) - learning is structured fun - encouraging students to make meaning through questioning - students being agile developing a mindset for trialling through new processes - articulating learning to whānau, enabling following on with learning at home - involving whānau – experts + support - establishing perceived success from students - enabling connectedness so students feel value for learning - student support – personalising, modes of learning/engagement - confidence and resilience encouraged when the problem solving
Behavioural (Do) - students constructing learning using prior knowledge - moving with students' ideas - creativity – no limitations on original ideas for finding solutions - connecting to real-world problems - hands-on scientific making and constructing - collaborating with others to confirm and support learning - valuing the process of learning not just the outcome - making connections between class learning and physical construction - engaging open-ended activities - student led, student driven, agency, CHOICE - teachers guiding and empowering students to find solutions

Table 1 Teacher Factors impacting student engagement

Through observation, it was evident that the level of engagement for students began to lift because of the hands-on nature of sessions. Many students were achieving success as teachers were emphasising the process of learning rather than the end product. Because steam learning instructional practices have a constructivist approach that impacts directly on metacognition, students felt more involved and began to show a more intrinsic motivation to engage. This is a significant finding as the physical construction of learning enabled students to engage because they could see and understand what they were doing (Prince, 2004).

Students were able see their thinking in action by building understanding through reflective journals, thus connecting thoughts and making learning coherent.

They linked new experiences with existing knowledge and skills, thus building metacognition and feelings of success (Aydon, 2020, as cited by Bassachs, 2020).

Perceived Success Influencing Student Engagement

From the analysis of data, discussions and interviews, it was found that students who felt successful and thought they were making progress were influenced to feel more engaged. The factors in this study that led to students perceiving success were understanding the tasks, feeling like they were making progress, and a connection or relationship to the teacher and students in the focus group.

Although there is limited research to connect perceived success with student engagement with steam learning and Design Thinking in primary schools, Howard and McInnes (2012), found that students who perceived they were doing "fun play activities" were more engaged than when they were using the same equipment to do "learning activities."

Parallels can be drawn from this research and how students' perceptions of learning positively affected their engagement and well-being. In this project students perceived they were having fun and felt good about what they were doing. Students thought steam learning and Design Thinking was fun, and they felt successful and engaged. They experienced flow when students were so engrossed in their work that they lost track of time (Nakamura & Csikszentmihalyi, 2014). As students adjusted to new methodologies, they felt more secure and gained more intense interest in learning (Figure 2).

Student engagement through being involved in hands-on learning grew, with clusters of high and extremely high involvement evident as students made and trialled prototypes (Figures 1 and 2). Levels of student *well-being* and *involvement* were observed and recorded to track engagement of students in iterations 1 and 2.

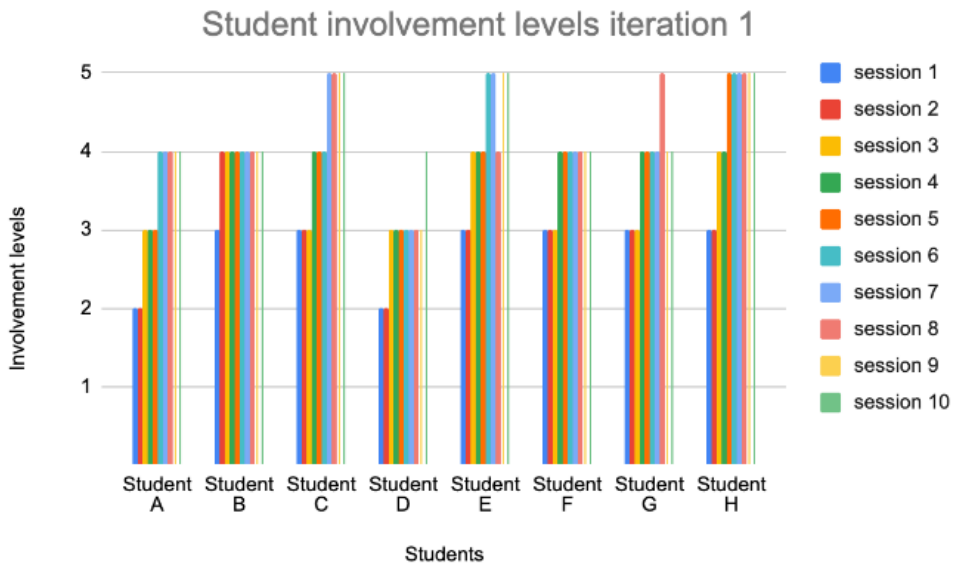


Figure 1. Leuven Scale Involvement levels iteration 1

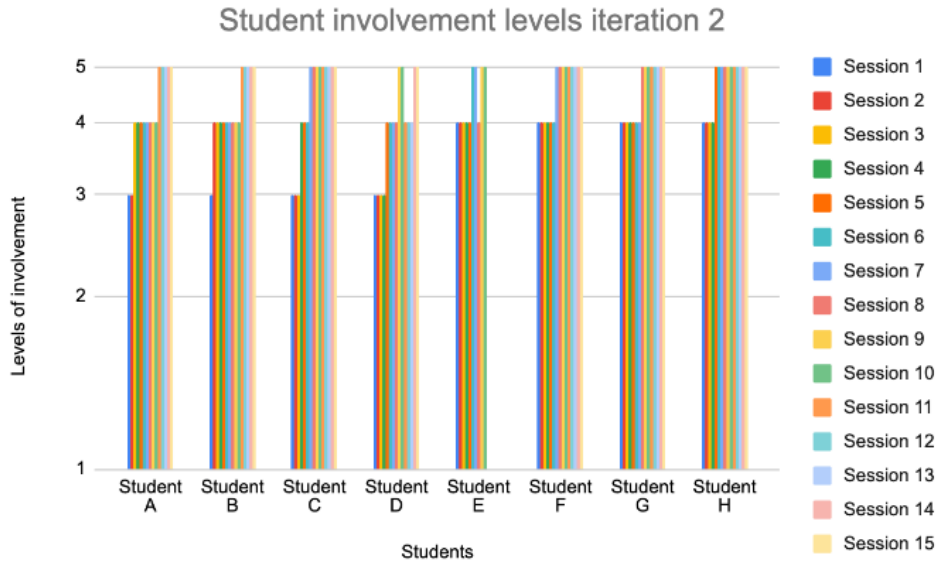


Figure 2. Leuven Scale Involvement levels iteration 2

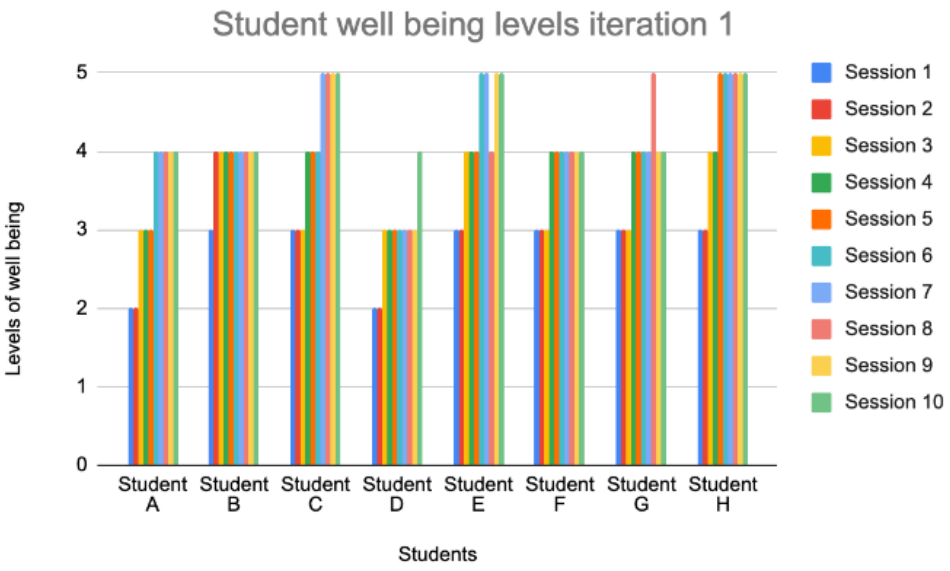


Figure 3. Leuven Scale Well-being levels iteration 1

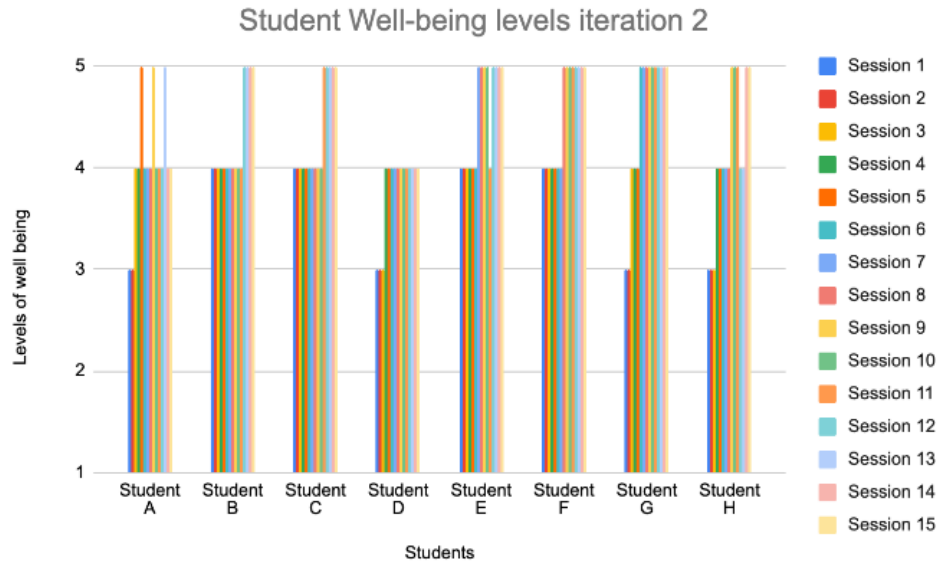


Figure 4. Leuven Scale Well-being levels iteration 1

Key: (1 = Extremely low, 2 = Low, 3 = Moderate, 4 =High, 5 = Extremely high) (adapted from Laevers, 2008).

In iteration 2, prior learning was built on and improved instructional strategies were implemented (such as more explicitly teaching, journaling and rubrics) to support learning. This impacted students' learning as they showed a marked improvement in

emotional, behavioural and cognitive engagement. This is likely to be because the changes implemented had an impact on outcomes. Particular excitement and more active involvement was noted as students completed and tested prototypes seen in Figures 1–4.

Outliers in well-being data can be explained by understanding the differentiated learning needs of focus group students and the time these students took to settle into new learning. Many students showed increased engagement and involvement in learning because of the choices they had in sessions and the increased value they felt towards Design Thinking.

Through informal interviews with teachers, it became evident that many key characteristics of collaboration were validated in our community of practice. Examples of this were, having a shared vision, feelings of inclusiveness and good communication. Fullen (2015) confirms that relationships are key to collaborative teaching and learning.

New pedagogical strategies were trialled, these included co- construction of learning with students and using a range of digital tools to create learning. Teachers found that improved questioning techniques were developed and learning sessions were dynamic and fun for them also.

For most students, Design Thinking modes supported cognitive engagement as they were able to make meaning from their learning experiences. The modes also helped provide a systematic framework for students to find solutions for problems posed through their inquiry learning. Observed student behaviours that demonstrated increased engagement through steam learning processes were: continuous activity, students being excited about next steps, and intense moments where students were involved and not easily distracted from learning (Laevers, 2008).

When students had choice and had unlimited opportunities to be creative, they felt empowered by this. Allowing for students to become aware of their creativity in the classroom includes “Fostering open ended activities, accepting students as they are and boosting self-confidence” (Fleith, 2000, p. 150).

Recommendations

This project identified several noteworthy factors to demonstrate that steam learning and Design Thinking processes had a positive impact on student engagement.

One factor that supported improved engagement was the co-construction of learning, enabling students to think critically and creatively to solve real-world problems in innovative ways. Additionally Design Thinking has provided a framework for thinking and has challenged the way students felt about failure because students were constantly revising their thinking. It has encouraged out-of-the-box thinking to

resolve problems (Dweck, 2016). The impact of hands-on learning experiences combined with students' perception of learning being fun increased, leading to increased involvement and engagement.

An essential component of leading the collaborative teaching in this project has been developing relationships with teachers and enhancing their practice through building on their strengths. As a result of the project and its findings, many teachers found they have improved their practice to include greater student involvement in learning processes.

Limitations

Student surveys were used to get an insight into engagement in this project. However, with younger students there are variables that could bias their accuracy; the ability to read and understand questions, and students wanting to please the teacher to name a few (Christensen et al., 2012). I found measuring student engagement is challenging during active hands-on steam learning situations. The primary tool used was teacher observation. The Leuven Scale indicators were useful but in reality, using these coupled with informal questioning enabled me to get a clearer picture of how well learners were engaged. For future reference, having an outside observer would also enrich data collection, allowing for uninterrupted observation of students.

Throughout this project many teachers have embraced new methodologies that have challenged their thinking. This has required my leadership to be supportive and adaptive to cater for the needs of individual teachers. The project has highlighted steps towards developing students' lifelong learning skills. It has provided a platform for future steam learning and Design Thinking collaborative teaching opportunities in our school.

References

Bassachs, M., Cañabate, D., Nogué, L., Serra, T., Bubnys, R., & Colomer, J. (2020). *Fostering Critical Reflection in Primary Education through Steam Approaches*. Educ. Sci. 2020, 10, 384; www.mdpi.com/journal/education

Bolstad, R., Gilbert, J., McDowall, S., Boyd, S., & Hipkins, R. (2012). *Supporting future-oriented learning & teaching – a New Zealand perspective*. Report to the Ministry of Education NZ.

Bertrand, M. & Namukasa, I. (2020). *Steam education: student learning and transferable skills*. Journal of Research in Innovative Teaching & Learning Vol. 13 No. 1, 2020 pp. 43-56.

Chen, A., Kiersma, M., Yehle, K., & Plake, K. (2015). *Impact of an Ageing Simulation Game on Pharmacy Students' Empathy for Older Adults*. Retrieved November 14, 2015, from http://www.ajpe.org/

Cohen, L., Manion, L., Morrison, H. (2018). *Research Methods in Education*. Routledge.

Christenson, S., Reschy, A., & Wylie, C. (2012). *Australian Handbook of student engagement*. Springer.

Cresell, J. W., & Plano Clark, V. L. (2011). *Designing and conducting mixed-method research*. 2nd Sage.

Davis, M. (1998).*Thinking like an engineer*. Oxford University Press Inc.

Dweck C,. (2016). *What having a growth mindset actually means*. Harvard Business Publishing Education.

Fullan, M. (2015). Leadership from the Middle: A system strategy. Education Canada.

Fleith, D. (2000). Teacher and student perceptions of creativity in the classroom environment. Roeper Review 22:3, 148-153, DOI: *10.1080/02783190009554022*

Fredricks, J., Blumenfeld, P., & Paris, A. (2004). *School engagement: Potential of* the concept, state of the evidence. Review of Educational Research, 74 , p59–109.

Fredricks, J., McColskey, W., Meli, J., Mordica, J., Montrosse, B., & Mooney, K. (2011). Measuring student engagement in upper elementary through high school: A description of 21 instruments. (Issues & Answers Report, REL 2011–No. 098).

Groccia, J. (2018). *What is student engagement? New directions for learning and teaching*. Volume 2018, issue 154 Special issue: Student Engagement: A Multidimensional Perspective p 11-20.

Hannon, V. & Peterson, A. (2017) Thrive: Schools Reinvented for the Real Challenges We Face. Innovation Unit Press.

Hase, S. & Kenyon, C. (2007). *Heutagogy: A child of complexity theory*. Complicity: An International Journal of Complexity and Education, 4(1), 111-119.

Howard, J., McInnes. (2012). *The impact of children's perception of an activity as play rather than not play on emotional well-being*. Child: care, health and development, 39, 5. https://elearning.tki.org.nz/Teaching/Future-focused-learning/STEM-steam

Ideaco design thinking model http://www.ideaco.org/2013/07/standfords-design-process-for-kids-teaching-big-picture-problem-solving/

ITL Research. (2012). *21CLD Learning Activity Rubrics*. https://education.microsoft.com/GetTrained/ITL-Research

Kelly, D. (2012). *http://www.theagileelephant.com/what-is-design-thinking/*

Klyn, L. (2018). Steam Design Thinking And Innovation: A Collaborative, Interdisciplinary, Authentic Approach To Problem Solving In Mathematics. tone Projects. 212. https://digitalcommons.hamline.edu/hse_cp/212

Laevers, F. (2008). Making care and education more effective through wellbeing and involvement. *An introduction to Experiential Education. Research Centre for Experiential Education* – University of Leuven.

Mc Niff, J. & Whitehead, J. (2005). Action Research for Teachers: A practical guide. Fulton.

Ministry of Education. (2018). Technology in the New Zealand curriculum. http://nzcurriculum.tki.org.nz/content/download/167461/1235900/file/Technology%20in%20th e%20New%20Zealand%20Curriculum%202017.pdf

Muramatsu, K., Wangmo, S. & Wangchuk, Y. (2019). *e-Design Education Using a 3D Printer Based on Design Thinking at Primary School*. ECEL 2019 18th European Conference on e-Learning, 412.

Nakamura J., Csikszentmihalyi M. (2014) *The Concept of Flow. In: Flow and the Foundations of Positive Psychology*. Springer, Dordrecht. https://doi.org/10.1007/978-94-017-9088-8_16

Nixon, C., Lizaire, F.(2007). *Elementary Science Literature Review*. Alberta Education Publication.

Prince, M. 2004. *Does active learning work? A review of the research*. Journal of Engineering Education. 93: p 223-231.

Rich, C. (2019). https://elearning.tki.org.nz/Teaching/Future-focused-learning/STEM-steam#js-tabcontainer-1-tab-3

Robinson, Viviane. (2010). From Instructional Leadership to Leadership Capabilities: Empirical Findings and Methodological Challenges. *Leadership and Policy in Schools*. 9. 1-26. 10.1080/15700760903026748.

Rowe, P. 1987. *Design Thinking*. MIT press. Massachusetts.

Shreeve, A. (2015). *Signature Pedagogies in Design In Design Pedagogy* (p 83-94). Dorchester: Gower.

Siilata, R. (2015) https://nzcurriculum.tki.org.nz/Curriculum-resources/Media-gallery/Cultural-diversity/Cultural-diversity-in-the-classroom

Sousa, D., & Pilecki T. (2013) From STEM to steam: Using brain-compatible strategies to integrate the arts. Thousand Oaks CA: Sage.

Taylor, T. (2020). *Design thinking across the curriculum*. Scan, 39 (2) Resource: Website - Design thinking across the curriculum by NSW Department of Education 2019.

Taylor, S., & Lowe, P. (2021). *Steam integration*. Teachers and Curriculum, 21(2), 45–53. https://doi.org/10.15663/tandc.v21i0.382

Wenger, E. (2002). Cultivating communities of practice: a guide to managing knowledge. Harvard Business Press.

Sarah Cooke

Sarah Cooke is a specialist Science and Technology teacher at Diocesan Junior School in Auckland. With over 30 years' experience as a primary school teacher, Sarah is passionate about providing innovative steam learning opportunities for students to develop skills for their future learning. Her research interests include steam learning, Design Thinking, collaborative teaching and learning, and incorporating the technologies into the classroom. She recently completed a Master of Contemporary Education through The Mind Lab and hopes to share her learning and continue her pathway as a lifelong learner.

sarahmartincooke@gmail.com

Practitioner Reflections

Ka muri, ka mua – Walking backwards into the future

He Rourou, Volume 2, Issue 1, 126-131, 2022

Violet Aydon-Pou

Inspired by Mind Lab colleague Sonia Johnston's (May 2022) feedback to my first draft of this article, "…that learning journeys are susceptible to disruption, but it is important to be open and remain positive as you re-search … for invariably what you are looking for is something that is already inside your heart."

I reflected and then recalled conversations had with my mentor Elaine Lynskey, English teacher and Deputy Principal at Wellington High School (1991). Elaine strongly advocated for teaching from the heart – if something makes your heart race with passion or pain, it is then that you are in the best state to engage in learning, and your passion or pain will drive you to higher realms of consciousness.

In 2021, I thought my Part 3 Research Project would be embedded in Karen Koopu's Talking Sticks (TS) programme, an innovative story approach to nurturing oral language skills with five- and six-year-old children. This was my passion. In March 2022, the Talking Sticks innovation came under scrutiny. Rather than allow the scrutiny process to "takahia te mana o te kaupapa, me te kaihanga" (trample the integrity of the innovation and the innovator) I chose to "re-search" and find something that would honour the Talking Sticks programme yet still make my heart sing.

I drew upon my knowledge and experience of creating social stories for students with special social needs and fused this with author Patricia Grace's drive to write reader stories that reflected the lives of New Zealand children, especially Māori children. When Grace started teaching in the 1960s, she considered many of the stories to be discriminatory, so she picked up a pen and started writing stories that Māori children could relate to, stories about kids just like them.

It occurred to me, who better to write stories about Māori children, stories about "kids like theirs," than their whānau. And what better way to honour the Talking Sticks programme than to develop 10 digital templates (writing frames) using 10 TS simple sentence patterns. So just as children *creating and sharing stories with*

Cuisenaire rods is at the heart of TS, *whānau creating and sharing stories* is also at the heart of my research study, "Te Ripo: whānau as authors of digital stories."

"Te Ripo'' speaks to the ripple effect of a change in my practice – kia poipoia te whānau – nurturing and supporting whānau to be active participants in their child's education. By providing whānau with simple sentence story templates in digital form, they had writing frames to flesh out with their words and their pictures. They gained insights into the features of early reader stories including the repetitive use of a simple sentence pattern throughout a story. There were opportunities to develop and extend their digital literacy skills. Perhaps, most important of all, whānau had a *purposeful* and active role to play in their child's learning.

Story as first voice narrative (Graveline, 2000) is a thick strand running throughout my methodology, a methodology that is anchored in kaupapa Māori because mine was a study involving tangata whenua in their home setting, thus resonating Linda Tuhiwai Smith's concept of kaupapa Māori being by Māori, for Māori with Māori (Smith, 2015). I used the cyclical process to consider the most appropriate digital format for whānau to access and manage story templates, a Google doc booklet versus a Book Creator e-book.

Adorned with the huruhuru (feathers) of Peter Walker's Teina/Tuakana research model (2003) I see the potential of changing shoes - the researcher becomes the learner/receiver, and the participants self-determined lead learners, and in their new shoes they now have a strong voice, a voice that must be heard and honored if only to address the balance/imbalance of power of the traditional position of researcher and research participant. The challenge for me (as teina), is to 'stop, think, speak' because I tend to free-flow speak...and in the process I end up over-talking others. This I have been told, on more than one occasion, is the hallmark of a teacher. My challenge, to remain in 'teina' position throughout the research journey. Perhaps that is why I needed to add Taina Pohatu's "Ata" approach to my methodology, it served as my 'stop, think, speak' button and led me to build and maintain respectful relationships (2013) that now travel beyond the zone of research.

It is the *huruhuru* of Walker and Pohatu that flipped the corpus of power – from the researcher to the participants – creating a safe space for muted voices to be retrieved; and in due course, the manifestation of Tino Rangatiratanga, participant actions resonating full decision-making power. For example, when I shared with whānau story template #6 they responded: "we've already developed our own template, 'Fortnite'." They had used two simple sentence patterns from earlier digital stories then added "X is good/or bad" because it offered a space for them to discuss notions of good and bad actions versus good or bad human traits with their child. In

creating a space for muted voices to speak, and be heard, I considered myself to be ethically bound to two primal threads of engagement with whānau:

- Whakawhiti kōrero – active discussion and negotiation
- Kōrerorero – to talk, discuss, converse, chat – a conversational method that serves as a means for gathering knowledge through story.

According to Kovach (2010), the conversational method is of significance to Indigenous methodologies because it is a method of gathering knowledge based on oral storytelling tradition congruent with an Indigenous paradigm. Key to the conversational method, is dialogic participation.

Battiste (2000) contends that within Indigenous knowledge systems, generation of knowledge starts with "stories" as the base units of knowledge, proceeds to "knowledge" as the integration of values and processes described in the stories, culminating in "wisdom" – an experiential distillation of knowledge. The process of distillation – ordering and filtering lived experience into a comprehensive body of knowledge (Bulme, 2016) – is viewed by Battiste as cyclic, with wisdom keepers generating new stories as a way of disseminating what they know (Battiste, 2000).

In undertaking this research, I have come to reflect upon my preferred modus operandi as an RTLB practitioner, and realise that I work, think, speak, and connect predominantly in story mode. I wonder whether this is a DNA fingerprint from tūpuna (ancestors) for whom oral language was the dominant mode of communication, transmitted in a range of forms – mōteatea, karakia, pao, haka, karanga, whaikōrero – every form a conduit for story. Every story a space for metaphor. Our greatest orators, likened to the bellbird, korimako.

The use of metaphor invites other ways of seeing and understanding the world, offering perspicacious insights into the past. For example, ika (fish) was a common metaphorical image used, and in the context of warfare, "fish" represented the victims of battle. Krupa cites the metaphor "tautenga o te kaharoa" (the kaharoa harvest) from Ngā Mōteatea 1959:112 wherein "tautenga" should be interpreted as the "hauling ashore of nets … and scaling, gutting, drying and roasting the victims killed in the battle" (Krupa, 2006, p. 25), a treatment similar to that of a fish.

In sharing this story with The Mind Lab peers, (with an invitation to critique), Karen Paku (May 2022) responded, "...Māori elders are very clever because they speak in pictures …" however, the challenge for non-fluent speakers of Te Reo Māori is interpreting the "pictures" sharedThe depth and breadth of metaphor so easily lost in translation.

My journey of learning, and in particular, my unconscious bias sway/inclination towards story mode and metaphor-speak has led me to name this article "Ka muri, ka mua," a whakataukī that literally translates as walking backwards into tomorrow, or the

future. Given my reflections derive from an academic journey that traversed a contemporary education landscape, the concept of walking backwards into the future might appear to some, to be completely at odds with a 21st-century paradigm. Yet there is a school of thought that recognises the value in recalling the knowledge of the past, knowing and reading the patterns and tohu of the present, in order to navigate the uncertainties and challenges of the future. Concepts presented in Panoho et al.'s book, *Wayfinding Leadership* (2015).

There is much we can draw on from the past, and the challenge for me (and possibly for others walking backwards into their future) is "kia tui tuia" (Tapsell, 2000), being able to stitch together the past … in the present … for the future.

My journey of learning has been a myriad of surrender, change, collaboration, innovation, and digital creativity. It has also been a journey of cultural reclamation – claiming the right for whānau to pen their own stories for their child, stories about people like them, about their world, their values, their beliefs, using their pictures, their words, and their icons.

Mā te huruhuru, ka rere te manu (With feathers, the bird can fly)

References

Battiste, M. (2000). (Ed) *Reclaiming Indigenous* Voice and Vision. Vancouver. University of British Columbia Press.

Blume, S. (2016) In search of experiential knowledge Innovation *Eur. J. Soc. Sci. Res.*

Bishop, R. (2005). Freeing ourselves from neo-colonial domination in research: A Māori approach to creating knowledge. In N. K. Denzin & Y. S. Lincoln (Eds.). Sage.

Graveline, F.J. (2000), "Circle as methodology: Enacting an Aboriginal paradigm" Aboriginal Policy Research Consortium International (APRCi). 293. https://ir.lib.uwo.ca/aprci/293

Hill, R., Aydon-Pou, V., & Koopu, K. (2021). Talking Sticks: An innovative method of building students' oral language (page 18). *Literacy Forum N.Z.* Vol. 36 No. 3 2021.

Kovach, M. (2010). Conversational Method in Indigenous Research. First Peoples Child & Family Review. *An Interdisciplinary Journal Honoring the Voices: Perspectives and Knowledges of First Peoples through Research, Critical Analyses, Stories, Standpoints and Media Reviews*. Vo. 5, Number 1, 2010, P. 40 – 48.

Krupa, V. (2006). Metaphors in Māori Vocabulary and Traditional Poetry. *Asian and African Studies,* 15, 2006, 1, 18-31.

Panoho, J., Spiller, C., Barclay-Kerr, H. (2015). *Wayfinding Leadership*. Huia Publications.

Pohatu, T. W. (2013). Ata: growing respectful relationships. *Ata: Journal of Psychotherapy Aotearoa New Zealand*, 17(1), 13-26. doi:10.9791/ajpanz.2013.02.

Smith, L. (2015). Kaupapa Māori research: Some Kaupapa Māori principles. In L. T. Pihama, *Kaupapa Rangahau: A Reader – A collection of readings from the Kaupapa Rangahau Workshop Series*, 2nd ed. Hamilton: Te Kotahi Research Institute.

Stringer, E.T. (2007). *Action Research (Third Edition)*. London: Sage Publications.

Tapsell, P. (2000). *Pukaki: A Comet Returns*. Auckland, Reed.

Walker, P. (2003). *Partnership models within a Māori social service provider*. Dunedin, New Zealand: University of Otago.

Violet Aydon-Pou

Violet Aydon-Pou has whakapapa connections to Ngapuhi (Ngati Whakaeke, Ngati Rangi) and Ngati Porou (Ko te Whanau Hunara). With a background in education that spans nigh on 30 years, Violet started her teaching career at Wellington High School in the late 1980s. In the early 2000s, she moved from mainstream into special needs education when she secured an RTLB position in the Matamata Schools Cluster. Over the next 20 years, Violet won teacher study awards to complete in 2005 a Master in Social Sciences (Waikato University), and in 2022 a Master in Contemporary Education (Mind Lab). She has also had the privilege of securing 12 months' sabbatical leave from the RTLB Service to work as a regional co-ordinator on Te Kotahitanga Project in 2006/2007. The primary research themes running through Rangiwai (2005) and Te Ripo: whānau as authors (2022) are Tino Rangatiratanga, and the reclamation of first voice pedagogy.

Practitioner Reflection

Whanaungatanga in the Time of COVID: Strategic and Value-Based Responses to the Challenges of COVID-19 in a South Auckland Primary School

He Rourou, Volume 2, Issue 1, 132-138, 2022

Brendon Shaw

With the exception of Auckland hospitals, no institution has sat longer in the epicentre of the New Zealand COVID-19 hurricane than South Auckland schools. Within an educational context, these last two years of lockdowns, alert levels and traffic lights have seen paradigm shifts in how we as a school view our practice and pedagogy, as well as a change in the way we use online learning.

Looking back over the pandemic I find myself reflecting most on two things: how our delivery of online/distance learning has evolved over the last two years, and how traditional values, such as Whanaungatanga, helped us to address the Digital Divide in our community.

With the advent of online learning brought about by the lockdowns, the first analytical step we performed early on was to establish the extent to which digital devices were accessible within our school community. A digital availability survey carried out by the teachers at the start of the first lockdown revealed that almost half our families did not have a suitable device at home with which to do online work. The stop-gap solution from the school was to offer online classes for those that had devices and paper-based activities for those that did not. Upon reflection, I can see how our delivery of both has evolved over the last two years.

The online teaching we offered at the start of the pandemic could best be described as "emergency online teaching" (Bozkurt & Sharma, 2020; Hodges et al., 2020). This form of instruction is, as the name suggests, an ad-hoc reaction to an emergency, resulting in online delivery that has been put together quickly, and often without uniformity or strategy. Before COVID-19, my school had been moving to

uniformity and standardisation around the usage of devices in class but had not even begun to look at standards around online delivery.

Two years of COVID has helped us to move from emergency online teaching to a more structured version of online delivery through trial and error, conversations, and collaboratively creating systems and structures. As our systems improved, so did student engagement and technical knowledge of students and staff. It also increased the trust between the school and students when it came to device care. Since returning back to face-to-face classes, we have started a pilot programme where students can take devices home and bring them back the next day, which is proving to be successful and helping to extend digital learning into the home.

Our use of paper-based activities in the first lockdowns was also created under emergency conditions and suffered from issues. A problem we immediately faced was due to the paper activities having to be picked up from school. Several issues arose from this solution: families that did not have transport options were not able to pick up the work from the school, families that had COVID-affected members had to isolate and were not able to collect the work, and paper-based activities were school year based, not ability based, resulting in many students receiving work that was either too easy or too difficult. To address this, our creation of paper activities over the last two years has become more flexible and encourages the usage of "low floor, high ceiling" activities that are more accessible to a wider group of learners. We also began to deliver paper-based activities directly to the homes of students who were unable to pick up.

Once recovered from the first lockdown and with students back in classes, questions arose around such things as how we could improve online delivery, how best to deal with device distribution and how to better design paper-based activities. All of these were important and helped us to clarify and standardise systems around the delivery of online/distance learning, but nothing had been done that addressed the results of the digital availability survey we had performed. As a community it was clear that our students had a low ownership of devices with which to learn on. Our reality reflected the research, an obvious Digital Divide existed between the device availability of our low decile community and those of higher decile ones (Cullen, 2001). Some within the school felt the issue of device availability was urgent and needed immediate attention.

New leadership within the school agreed with the pressing nature of device availability, and with the support of the Board of Trustees a shift in attitude towards devices was made. Devices would no longer be "extra" to our students, but a guaranteed tool available to them as an integrated part of their education. By the time

the third lockdown occurred in mid-2021, funds had been released, hundreds of devices purchased, and we were a one-to-one device school.

One could consider that this act of transitioning to one-to-one devices cured the Digital Divide, but a series of issues still remained. Academics have argued that the Digital Divide is more than just device accessibility but also includes access to connectivity, training, teacher support and tech support (Bendici, 2020; King-Lee, 2021). The lesson we quickly learned was that it was not enough just to provide a service, we also had to create and maintain a robust system of maintaining that service. Not transitioning to one-to-one devices sooner meant we were unprepared for some of the issues that our school faced while juggling online learning and the integration of so many new devices.

The most prevalent of these issues was that our I.T. staff did not increase to keep pace with the huge increase in device ownership. Device numbers in our school tripled, yet the support team was the same size. To address this, teacher aides and support staff became ad-hoc I.T. staff and were integrated into our delivery and support system for the devices. This had the dual benefit of not only helping ease the work on our dedicated I.T. staff but also upskill the teacher aides' I.T. skills.

Another issue faced by staff and families with the devices was a lack of clarity about who to turn to when it came to troubleshooting hardware and software issues. Over time a clearer system was developed that included the teacher aides in their new roles, teaching staff working from home, and I.T. staff working remotely and on site. The continuous communication between teacher, school and home helped to tighten the troubleshooting system and chain-of-command I.T. support systems. Because of this new trouble shooting system, syndicate and school-wide best practices were also able to be set up for conventions around username and password storage, account resets and video conference invitations. Practical steps such as these are crucial in setting up and maintaining systems that can help address the Digital Divide, however, to understand the underlying causes of such a divide, we need to take a more critical approach.

Ultimately, the Digital Divide is not a technology issue but a social justice issue, and one that speaks to inequality not only across digital spheres but social, economic and inequality of opportunity. Because of this, our school's commitment to providing digital equality ended up connecting to and expanding upon deeper and broader value-based goals and commitments we have endeavoured to implement as a school.

The socio-economic and cultural demographics of our school are typical of our South Auckland setting. Higher than national average numbers of Māori and Pacific Island students make up a large quantity of our student body and it is these particular groups that are some of the most underrepresented in both Internet connectivity and

device ownership in New Zealand (2020.org.nz, 2020). This digital inequality, coupled with decades of governmental neglect (Truebridge, 2019) had the potential to exacerbate the already existing inequality present in South Auckland.

For us as a school, we could see a solid connection between the need to access technology within our community, and the need for access to other more basic needs. The same teams that delivered and distributed the digital devices were also delivering school-purchased food parcels, supermarket vouchers and books. In many cases the homes that were most in need of digital assistance were also in need of other financial and social support. Addressing the Digital Divide then, came hand in hand with our attempts at addressing the social divide as well as embodying our school values of Kindness, Whanaungatanga (connection) and Tautua (service).

These values then, became much more than just words on a noticeboard, but guiding principles that helped us navigate the pandemic over the last two years. Showing kindness, connecting with community, and looking for opportunities to serve have been touchstones for us to fall back on when making decisions about what would be best to do.

Of these values, one I witnessed again and again was the traditional Māori value of Whanaungatanga. Although meaning different things to different people, I have always considered the value of Whanaungatanga to be primarily about connectedness and maintaining relationships. During the pandemic this was for me the most important value to maintain, yet cruelly one of the aspects of life that we were most robbed of, as lockdowns and restrictions kept us from each other, isolated in our own bubbles.

Whanaungatanga in a wider context is also about connecting to the community, and when looking at which teachers were able to make the quickest and most significant connections with families over the pandemic, I believe that teachers from the Māori Bilingual classes had an advantage over teachers from the mainstream classes. Teachers from the Māori Bilingual group are the living embodiments of Manaakitanga, Aroha and Whanaungatanga, and through their already deep connections with whānau, they were in a better position to connect to families.

This was especially true at the start of the 2022 school year where most students were beginning the year online, but in a new class with a teacher they had never met. In this case the bilingual classes already had built in relationships developed over years of wānanga and whanaunga building with their students and family. These teachers already knew which parents were essential workers or who not to call in the morning because they work late nights. This level of "knowing the learner" is baked into Māori education communities, and in many cases the Bilingual Māori teachers were intimately aware of not only their students' digital and educational needs, but their personal, financial and pastoral needs also.

Reflecting back on the importance of Whanaungatanga during the pandemic I can now see it in many things we did. Senior leadership going to the supermarket and buying groceries, administration staff separating that shopping into food parcels, classroom teachers driving to students' houses to drop off the food parcels, and also delivering a device that had just been prepared by a teacher aide. These acts were the real-world consequences of Whanaungatanga and not just words on a page or a term used in speeches. Traditional Māori values and the community-based nature of Māori relationship building, became a powerful tool in helping to bridge the gap not only between the school and the community, but also between those who were easily adapting to digital learning and those who were not.

While we made many positive steps in our implementation of digital learning, there is much we could have improved upon. It is clear to me now that we should not have waited for a pandemic to create uniform approaches to I.T. best practice. A strong digital support network for teachers, students and families should have been a priority from the beginning and while uniformity of practice has been a goal, there is still work to be done in orienting new staff and reminding current staff of what I.T. best practice looks like at our school.

I sit writing this reflection from a point of relative comfort in comparison to the often stressful and exhausting last two years of being a South Auckland teacher during the pandemic. Cases wise, our community has been among the hardest hit in New Zealand and the hangover from the effects of so much trauma will take years to unpack.

Despite the heaviness of these last two years, I also look back at examples of things we have worked hard at and areas we have progressed. I can see a clear progression over time from emergency online teaching to a more structured and quality system of online/distance delivery. I am also proud of the improvements we have made in addressing the Digital Divide in our school community, and I find it empowering to see how effective traditional Māori values such as Whanaungatanga were in helping to address that gap.

As I continue in my career as a teacher, I will continue to look for ways to bridge this divide and also keep looking for how traditional values from my culture can help my students thrive and succeed in even the most challenging of times.

References

2020.org.nz. (2020). Digital inclusion research. From: www.2020.org.nz

Bendici, R. (2020). Closing the digital divide: Educators work to ensure digital equity for all students by shifting mindsets and improving professional development. District Administration. Florida, U.S.A.

Bozkurt, A., & Sharma, R. C. (2020). Emergency remote teaching in a time of global crisis due to CoronaVirus pandemic. *Asian Journal of Distance Education*, 15(1), i-vi.

Cullen, R. (2001). Addressing the digital divide. Online information review.

Hodges, C. B., Moore, S., Lockee, B. B., Trust, T., & Bond, M. A. (2020). The difference between emergency remote teaching and online learning. https://vtechworks.lib.vt.edu/bitstream/handle/10919/104648/facdev-article.pdf?sequence=1

King-Lee, D. (2021). Mobile in the Library. Library Technology Reports, 57(2), 12.

Truebridge, N. (2019). South Auckland neglected under super city - Goff. Radio New Zealand. From: www.rnz.co.nz/news/ldr/403132/south-auckland-neglected-under-super-city-goff

---

Brendon Shaw

Born in Northland but raised in Southland and Canterbury, Brendon Shaw (Ngā Puhi) currently works as team-leader for Māori Bilingual classes at his South Auckland primary school. After 15 years teaching abroad in Asia and Latin America, Brendon returned to Aotearoa to teach in his home country and re-connect with Māori culture and language. His master's project is centred around Place Based Learning and his research interests tend to focus on Te Reo Māori in the classroom, as well as improving engagement between schools and mana whenua. You can contact Brendon via email:brendonshaw.pub@gmail.com

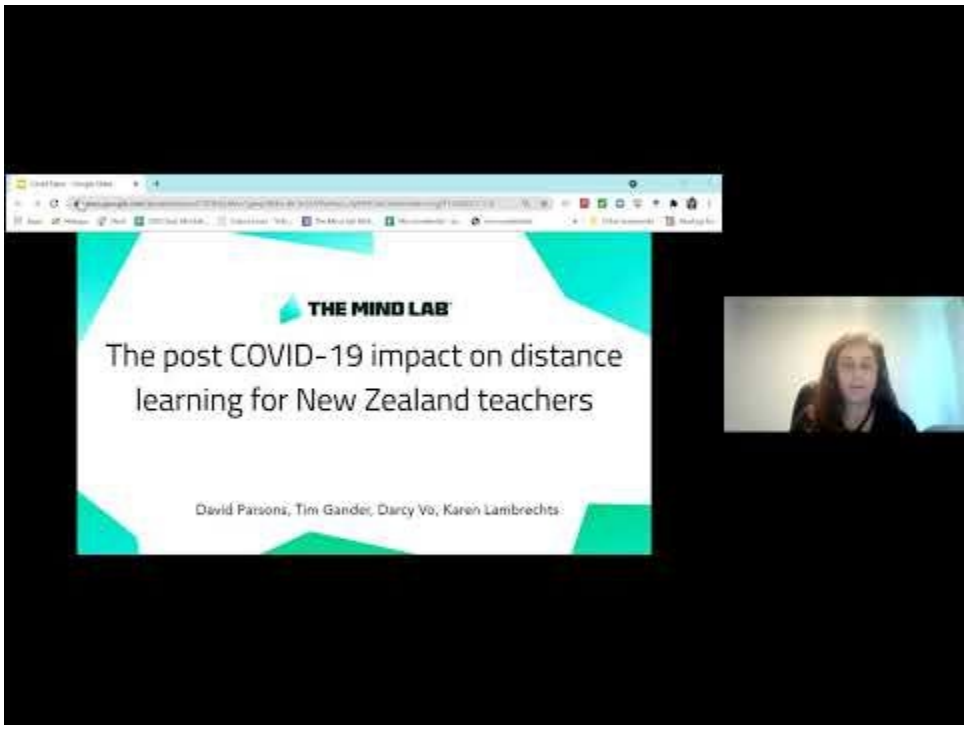
Research Review

The Post-Covid Impact on Distance Learning for New Zealand Teachers

He Rourou, Volume 2, Issue 1, 139-140, 2022

Darcy Vo and Karen Lambrechts

The Mind Lab



https://www.youtube.com/watch?v=lu0KfGRhoxg

Darcy Vo

Darcy Vo is a Postgraduate Director at The Mind Lab, based in Auckland, New Zealand. She has been working in the education sector for 17 years and has been involved in developing and delivering content on integrating digital technologies in teaching and learning. She is passionate about the use of technologies to enhance learning experiences and engage learners. Her research interest focuses on online interaction and sentiment analysis in education.

Karen Lambrechts

Karen Lambrechts has a Master of Educational Leadership and Management. She has taught at a postgraduate level for six years. Karen has over 13 years' experience teaching in New Zealand, one and half years in Australia in secondary schools, and one and a half years teaching in a language school in Japan. Her background is in humanities.