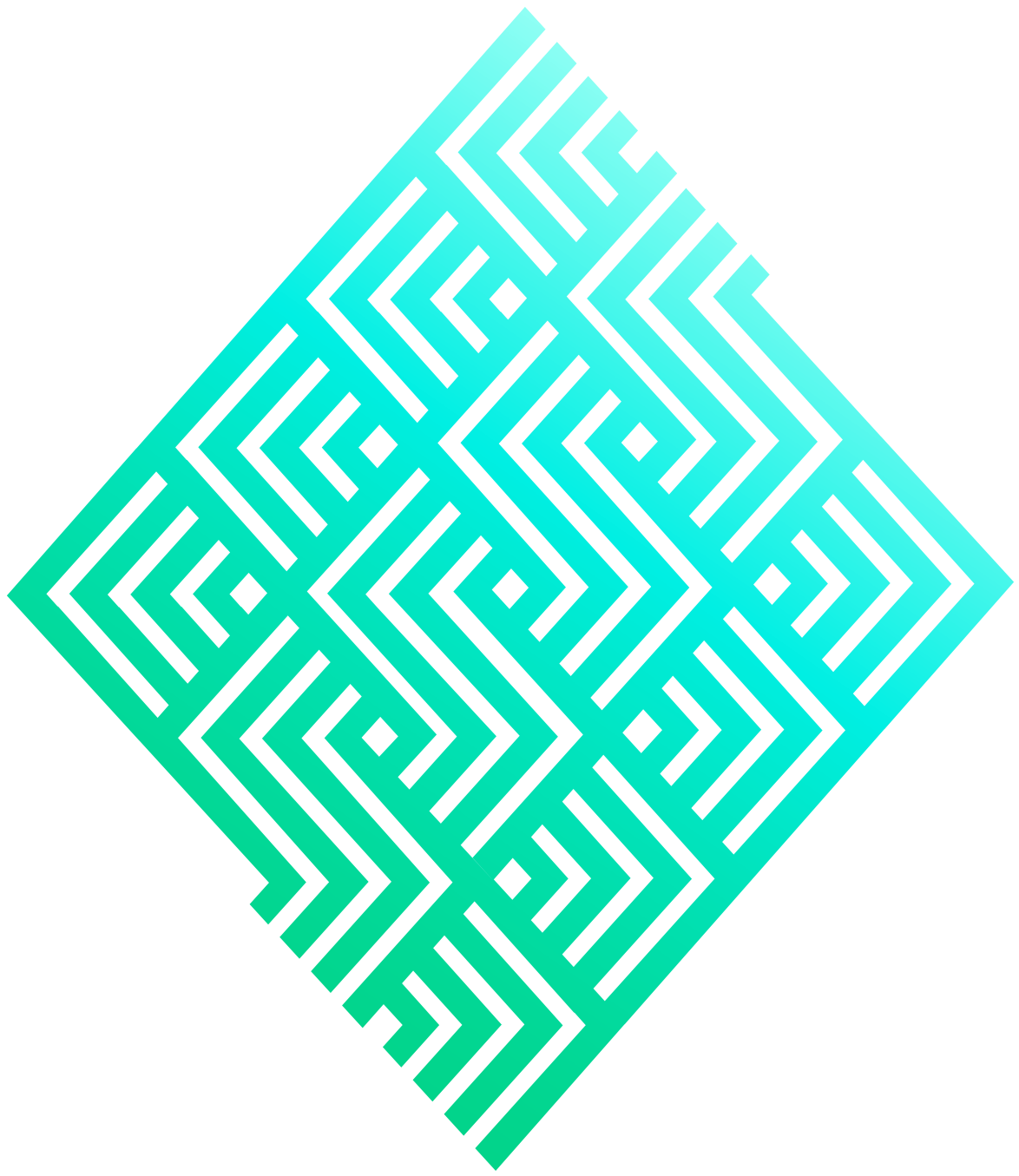
THE ROU

Volume 1
Issue 1 2021



THE MIND LAB®

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He Rourou

HE ROUROU

Volume 1, Issue 1

THE MIND LAB

The Mind Lab ePress

Auckland

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CONTENTS

FOREWORD

LISA DAVIS

Ko Māhuhu ki te rangi te waka

Ko Maungakiekie te maunga

Ko Waitematā te moana

Ko Ngā Oho, Te Taoū, Ko Te Uringutu ngā hapū

Ko Ngāti Whātua te iwi

I am honoured to be the first guest editor of He Rourou, a gathering of shared thoughts to elevate collective potential, symbolising the journey to success, exchange of knowledge, and achievement. He Rourou is about empowering, growing, and engaging collective voices and knowledge and sharing them to generate kōrero, collaboration and maybe some magic.

As you read through the papers, you will gain insight into the complicated web of an indigenous approach, how systems, whether knowingly or unknowingly, perpetuate inequitable institutions, inspiring stories of change-makers, teaching methods creating positive effects on learners and the significance of mindset above all else.

As you dive into the presentations from the Authors we begin with a piece from Mere Waaka (Ngāi Tūhoe). He Reo Rāitu highlights a problem that many of our marae and papakainga face in today's world. Whānau discuss Karanga, the embodiment of mana wahine, and the needs to ensure that our rangatahi and future generations embody the Karanga tradition. As many of our whānau relocate to the big cities and our kaumatua pass away, the community shares whakaaro on how things are now and how we might use digital technologies to ensure our marae thrive, ensuring tikanga is learned and karanga is heard across generations of whānau.

The Effect of Wānanga-Based Learning in Supporting the Development of Teacher Agency in Computational Thinking by Jessica Petersen examines how Digital technologies concepts and initiatives can boost secondary-school kaiako's (teachers') confidence. Their confidence in creating, developing, and delivering computational thinking-focused learning experiences, as well as the importance of collaboration and peer coaching. She emphasises the value of Māori kaupapa and how it can help guide learning responsively. Specifically looking at wananga as a dynamic learning environment to share knowledge, experiences, feedback, and debate and Ako, the idea that all people have valuable knowledge to share and that learning occurs as kōrero (conversation)

between equals. It was exciting to read that participants found the learning activities applicable and effective across various learning areas during their sessions. As it is becoming more critical to continuously be on the lookout for strategies Jessica helps teachers gain agency and construct to create lessons compatible with ever-changing technologies to enhance their own experience and those they inspire and guide in the classroom.

Jeska Martin's paper on How student stress, anxiety, and confidence during COVID-19 influence student wellbeing provides insights into a student's first-year NCEA testing experiences and how the COVID19 outbreak impacted their general health. Like everyone else, kids are anxious about their academic achievement when they're afraid of failing. To be a more effective instructor, Jeska emphasises vulnerability throughout her evaluation when modelling excellent wellbeing practises for her pupils, especially our young Pasifika kids. Creating safe environments for people to communicate and share their concerns is as important as being honest and vulnerable. Apply what you can learn from Jeska's essay about student support by putting her ideas into action.

Begin Where You Are: Developing a Critical Place Pedagogy in a Bicultural Senior English Class in Te Tai Tokerau by Tim McVicar challenges his teaching through action research to engage pākehā learners in critical dialogue about local history in this thought-provoking paper. Inspired after a talk with a friend while working in Nablus, Palestine. Tim looks at techniques to engage learners from a dominant culture to study, think, and suggest solutions to acknowledged discrepancies. Tim, explores the Northern wars, colonisation, institutional discrimination, and inequality that Māori faced, as well as the conscientiousness-raising of learners, by employing a critical paedagogy of place within the English curriculum. His research portrayed a positive conclusion as well as a method for schools to legitimise, support, and equip students with the tools and a safe space to investigate difficult aspects of New Zealand's past and present. The time has come to evaluate and expose colonial baggage, as well as how we might foster more tolerance and respect across ethnic communities in Aotearoa.

Devender Chendri explores flipped learning and discovers that utilising a flipped paedagogy method has positive effects on learners. To assess the impact of this practitioner research, the study follows guidance from Russel Bishop,]such as 'Teaching to the North East.' Devender's primary purpose was to develop flipped-learning tailoring and customising learning content to meet individual learning demands. This method clearly demonstrated an improved and faster way to learn topics, increased student interaction, and provided more control over the learning process. In essence, the flipped-learning pedagogical technique boosted student academic achievement and advancement notably more than the traditional teaching style. This approach has been amplified in it's usability in light of recent lockdowns and learning from home. If you're searching for new methods to approach things in the classroom, Devender definitely delivers in terms of giving a way to utilise these technologies.

Master of Technological Futures graduate, Iulia Leilua (Ngāti Hāua, Ngāti Hekeāwai) investigates systemic racism through an indigenous lens. Placing herself in a vulnerable position Iulia unpacks what systemic racism and unconscious bias looks like in our workplaces, and how we might address these issues. The project enabled Iulia to speak candidly about systemic racism, discrimination and their cause and effects. Initially, words such as 'unconscious bias' and 'cognitive bias' were used to cushion her conversations with subject matter experts so as not to cause offence, as the research project developed confidence grew and interviewees reflected on the social license that the world had been given to talk about structural racism and white privilege. Using systems practice, Iulia created a cultural intelligence framework and two systems maps that

chart the deep structures of systemic racism and the behaviours that underpin them. With this in our kete we can confront bias and inequity and strive for social justice.

Airana Ngarewa (Ngāti Ruanui) thoughtfully reflects as an early career teacher by casting light on what it means to be Māori in today's classrooms. He discusses the displacement of our children, the necessity to indigenise the curriculum, and the homogenisation of Te Ao Māori. The study got me thinking about how we can lower the obstacles to entry. How do we begin to normalise Māori culture in our society? He offers some answers to these issues and suggestions for how we may begin to untangle this complicated web by working together.

In an audio recording Joni Angeli-Gordon (Ngāpuhi, Ngāti Whātua, Te Roroa) talks to Sara Stratton (Ngāti Hine, Ngāti Kahu) about her recent work on Algorithmic Bias and Māori. By using technology tools we are gaining some visible benefits, but do we always see the negative effects? Joni and Sara discuss unconscious bias and how technology can exponentially worsen many of the analog inequities that exist in society. This kōrero shares practical analogies to explain how algorithms work and what we can do to understand the challenges that are associated with them.

Continuing the theme of data bias Bex Taylor provides a moving assessment of Invisible Woman by Caroline Criado-Perez, a book which exposes how algorithms contribute to the gender equality gap. As a wahine Māori it is something I have experienced and continue to experience in our society, and it reinforces the sense that this is the result of a long-standing style of thinking, a world created for the default male. But don't worry, there is a light at the end of the tunnel, and this is one of them! She discusses the present state of affairs in Aotearoa and how you can make a difference. In the words of Criado-Perez…'Do it like a woman…and change the world'!

Understanding the working of privilege systems must be unpacked. Hayley Sparks discusses privilege systems in her review of "Elite education and everyday encounters: Examining the multiple dimensions of privilege in young people's lives." The project examines inequality, privilege as a system, and the misconception that New Zealand is a classless society, while also exposing some of the difficulties in discussing advantage and how privilege remains unidentified. Hayley's investigation into young people and how they are impacted is fascinating since it plays a role in replicating privilege and the methods by which privilege happens, and that there is a need to investigate more.

Everything changed in 2020, but one common thread that runs through all the submissions is by working together, we can go beyond mere survival and propel ourselves into prosperity. As a collective, our voices and knowledge can have an incredible impact.

Nā to rourou, nā taku rourou, ka ora ai te iwi.

About the Author

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Lisa Davis is a tenth generation descendant of Tuperiri, the common ancestor of everyone who whakapapa to Ngāti Whātua ki Ōrākei. Lisa Davis is the Deputy Chief Executive for Ngāti Whātua ki Ōrākei Trust where she contributes to the design, long-term strategies and engagement activities for the Trust's 6000+ members contributing to the advancement of whānau.

She is also a member of the ASB Community Council and newly established ASB Tuia Māori Advisory Council and serves as a representative on the Māori advisory board for the University of Auckland's Cyber Security Research Programme.

A descendant of Auckland's founding father, Lisa was born into a family of leaders and pulls strength from her homelands of Takaparawhau. Guided by powerful and brave people, past and present, Lisa strives to make a difference every day and contribute to the progress of whānau, community, and the legacy of our many tūpuna.

HE ROUROU WHAKAPAPA

Design by Tracey Gardner – Hīwai Creative

The whakapapa of the design for He Rourou is a bringing together of collective 'threads'. The patterns interweave collective threads to elevate the collective potential and shared mana – together representing the pathway of collective success, knowledge sharing and attainment. The overall Pātiki design (diamond shape) forms the basis of the design and is inspired by the whakatauki: Nā tō rourou, nā taku rourou ka ora ai te iwi, With your food basket and my food basket we will thrive. Pātiki in this design has been used to represent 'prosperity' – the collective purpose or outcome of He Rourou being to empower, grow and engage collective voices and knowledge. The design is intended to be used as a repeatable pattern to represent the many themes, contributors, learners and collaborators.

PART I.

RESEARCH

HE REO REITŪ

He Rourou, Volume 1, Issue 1, 2-4, 2021
MERE WAAKA

“He wahine te kaitohu i te tapu, ko te wahine hoki te kai-whakanoa i te tapu.”

I runga ngā kōrero whakawhiti a tōkū tumuaki o te Kura a Rohe o Uawa me Kahukuranui, ka kōrero hoki ki ētahi o ngā kaumātua / pakeke, otira mai ngā kai korero katoa, mai i te hāpori o Uawa ka whakaurahia te tauihu o tēnei kaupapa, kia tūteitei ai ki ngā whakangarungaru o te ao hurihuri nei, kia ora mo ake tonu atu. Ka karapinepine i ngā māramatanga me ngā kōrero tuku iho ā rātau mā ka whakatakoto i waenga i ngā reiputa o te iwi o Te Aitanga a Hauiti kia whiriwhiria mai ngā whenu o te karanga.

I au e whakaritorito i ngā pūkōrero, ngā kai kōrero, ki ngā kōtiro hoki mai te whārua o Uawa, ka tō te aro, ki te hanga he rauemi, ki te whai take a hangarau, ki te pāhekoheko ki te ahurea wānanga, ki ngā horopaki o tēnei wā, ko te karanga hei ako. No reira, nā runga i te rongo i te karanga a te kura, te karanga a te hāpori kei te mimiti te reo karanga ki runga i ngā marae, ka pūmina ake te whakaaro, “he reo reitū” te kaupapa.

Ko tōna tikanga ka āhei te ākonga ki te whanake, ki te whakapakari, ki te whakangungu, i runga i te tika me te pono, ngā whenu o te karanga. Ko rātau hoki te reo reitū, mo apōpō, hei kanohi mo te reo okawa, hei pupuri te reo mana-aki o te marae, kia ora ai tēnei taonga ki tua o pae.

No reira ko te ahunga o te reo reitū kīhai ki ōku tīpuna, koinei te reo ka rangonatia ake e te ao wairua kārekau rawa e ōrite ana ki te kōrero ā-waha.

To watch the video follow this link or watch the embedded version below (web only)

A YouTube element has been excluded from this version of the text. You can view it online here: https://herourouv1.pressbooks.com/?p=5

The opinions expressed are those of the paper author(s) and not He Rourou or The Mind Lab.
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About the Author

Mere Waaka

Having grown up in a small Māori community Rūātoki situated in the Eastern Bay of Plenty, where the first language is Te Reo o Tūhoe, inevitably I was groomed to become an advocate of te reo Māori and its traditions. The marae was the castle, the focal point for all the whānau from dawn to sunrise, the homes were sleeping quarters. Each morning our elders and mothers would rise early and prepare breakfast at the marae, for the children before going to school. At the end

of each day, get dropped off by the school bus we would all rush into the marae hall to have our afternoon tea, freshly fried bread, or scones and fermented or whakamara puha will be served. Our main form of transport was our horses, you had to be pretty rich to own a car in the 50's and 60's. The playground was the river in summer and Te Urewera National Park in winter. Ohh how simple life was back in those years, we were raised to care for each other, more importantly, to maintain our identity. Little did we know this way of life was going to be disrupted by the urban shift in the late 60's early 70's. I purposely mentioned these early times of my life, to demonstrate how we were being educated with Mātauranga Māori from conception to time we left our Native School. I had the best of both worlds in terms of my education, the marae provided learning for Māori practices and school for western teaching.

Following school, I worked in several places, from Tūhoe Trust Board to NZ Income Support, Television NZ, and for twenty years as an Independent Producer/Director broadcaster. Here, I have held roles that involved managing people, planning and developing projects, working under pressure, as well as fostering and maintaining relationships with whānau, hapū, iwi, and key stakeholders. I have been an advocate of Te Reo Māori me ōna tikanga in all the projects that I have been involved with and have forged some wonderful relationships.

In the last chapter of my working career, I decided to retire from broadcasting and enter the education system and bring my experiences and knowledge into the classroom and make a difference to help students reach their potential additionally to eliminate educational inequality in Aotearoa. To do this I applied to Te Ako Mātātupu (Teach First NZ) programme to teach for a minimum of two years completing all elements of the programme, including the Masters of Teaching and Education Leadership (MTEL), delivered with their tertiary partner, The Mind Lab. After gaining the Masters's degree, I am currently employed by Tolaga Bay Area School & Kahukuranui as the Senior Leader for Kahukuranui. I teach Te Reo Māori and Media Studies to students from level 7 -13.

I am a daughter, a mother, and a grandmother, who has been and forever be supportive and passionate about championing te reo Māori me ōna Tikanga. I believe to survive in this climate knowing who you are, where you belong is paramount. "If you talk to a man in a language he understands, it goes to his head, if you talk to him in his language that goes to his heart." (*Nelson Mandela).* No reira he kōrero whakamutunga. ahakoa kei hea koe, no hea koe, me mau ki ō tikanga kia pono, kia ū kia tika ki tau e manako ana, hei oranga hinengaro, oranga tinana, oranga wairua. "*iti rearea teitei kahikatoa ka taea*".

THE EFFECT OF WĀNANGA-BASED LEARNING IN SUPPORTING THE DEVELOPMENT OF TEACHER AGENCY IN COMPUTATIONAL THINKING

He Rourou, Volume 1, Issue 1, 5-16, 2021

JESSICA PETERSEN

ABSTRACT

As of 2020, all schools and kura in Aotearoa New Zealand were expected to teach digital technologies as part of the core curriculum. Our digital world is rapidly expanding and in order to be successful in this space, our rangatahi (youth) need to be capable of both using and creating digital tools. This project seeks to support secondary-school teachers of different subject-specialty areas to authentically integrate computational thinking concepts into their regular teaching practice. This was accomplished through a series of wānanga and exploration phases, with a focus on critically reflective practice and ako (reciprocal learning). Questionnaires and recording of kōrero (conversation) were used to understand changes in teacher confidence in the areas of understanding, lesson design, and ability to give feedback in relation to computational thinking principles. Results of this research have shown that using wānanga to support teachers to learn and apply computational thinking in their classrooms positively impacts their agency in developing high-quality lessons that are aligned with digital technologies curriculum. The findings from this project are intended to support other schools in Aotearoa New Zealand to develop their own frameworks of professional development in this area.

Keywords: *Computational Thinking, Professional Learning and Development, Digital Technologies, Education, Wānanga*

INTRODUCTION

Digital technologies concepts and skills are increasingly required in New Zealand education settings and in the workplace (Ministry of Education, 2018b). Revisions to the New Zealand curriculum have emphasised the importance of digital technologies in supporting our tamariki to become confident, connected, actively-involved and lifelong learners (Ministry of Education, 2007). These revisions require students in all schools in Aotearoa from year one to year ten to meet digital technologies progress outcomes throughout their studies (Ministry of Education, 2018a). These progress outcomes are in the areas of computational thinking, and designing and developing digital outcomes. Therefore all schools within Aotearoa will deliver this new curriculum to ensure all students have the opportunity to learn about digital technology concepts.

This project was an initiative developed to enhance secondary-school kaiako (teachers) confidence to create, develop, and deliver computational thinking-focused learning experiences. This was done through the teacher (in collaboration with a digital technologies specialist) creating subject specific lessons, as well as a number of hui (meetings): an initial introduction to the concepts

surrounding computational thinking and ideas of implementation in different subject areas; the creation of three lessons aligned with computational thinking concepts over the course of the project; and three wānanga (educational meetings) in which teachers gathered to discuss their experiences and further iterate on their lessons. Through this, I hoped to answer the question of how wānanga can support teachers in subject areas other than digital technologies to build agency in developing lessons that are aligned with digital technologies curriculum.

The participating school is a state secondary school located in South Auckland, New Zealand. It is situated in a relatively low-income community, and has an ethnically diverse student population. At the time of the research project the school had no plans to provide professional development opportunities to teachers in regards to digital technologies curriculum changes. This school has a well-established, comprehensive senior digital technologies programme, but its junior digital technologies programme is optional. As the participating high school does not offer digital technologies as a compulsory subject at a junior level, the school is required to integrate digital technologies concepts into other subject areas in order to meet new expectations set by the Ministry of Education. This also has the added benefit of ensuring that computational thinking concepts are explored in authentic and familiar contexts to the students. For this to be successful, however, teachers need to be confident in their abilities to develop and deliver digital technologies content.

LITERATURE REVIEW

Best Practice in Professional Learning Development

Best practice in professional learning development suggests that iterative programmes that allow for theoretical applications into existing practice are more effective at impacting student outcomes than one-time, prescribed practice initiatives (Joyce & Showers, 1980).

Expert Led vs Exploration Driven

Almost all of the studies that were reviewed took this format, and all included some kind of expert either delivering presentations, presenting demonstrations, or both. The Ministry of Education states that there is little evidence that supports the idea that these activities actually affect teacher practice enough to impact student outcomes (Timperley et al., 2007). Joyce and Showers (2002) discovered that professional learning that included a component of collaboration and peer coaching was almost three times more effective than training that only included explanations, demonstrations, and practice. Garet et al. (2001) say that active engagement in meaningful discussion, planning and practice is a core feature of effective professional learning and development. Yadav et al. (2017) agree with this, adding that the context of information is also incredibly important. Participants need to be involved in more than just listening to speakers and the emphasis should be on developing skills instead of absorbing knowledge (active learning and cooperative learning). This approach – used by many professional development courses and conferences – leave participants in a passive and ineffective state of learning.

Collaboration and a Māori Lens

In Aotearoa (New Zealand), we have the benefit of Māori kaupapa that can help guide our learning in responsive ways that are specific to our unique context. Two core concepts of te ao Māori (the Māori world) that can directly support active learning are wānanga and ako. Wānanga describes a dynamic learning environment reliant on the sharing of knowledge, experiences, feedback, and debate. Ako is the idea that all people have valuable knowledge to share and that

learning takes place as kōrero (conversation) between equals, rather than expert-led instruction (Bishop et al., 2007). This concept is usually seen in New Zealand classrooms as teachers learning from their students. This kaupapa Māori (Māori concept) contrasts directly with the approach of most existing research in the area of teacher professional learning and development in the area of computational thinking, and is supported by the recommendations of best practice in New Zealand (Allan et al., 2010; Blum & Cortina, 2007; Garet et al., 2007; Hickmott & Prieto-Rodriguez, 2018; Imberman et al., 2014; Morreale et al., 2010; Yadav et al., 2014). Professional learning and development should follow these principles in order to provide an active learning environment that is most beneficial to the learning of our teachers.

Providing Resources vs Transformation of Teaching Practice

A large number of the existing studies highlight that professional learning development focuses on tools or provided resources, rather than the teaching practice that supports them (Allan et al., 2010; Blum & Cortina, 2007; Hickmott & Prieto-Rodriguez, 2018; Imberman et al., 2014; Morreale & Joiner, 2011; Morreale et al., 2010; Yadav et al., 2014). While this in itself is not problematic, research says that the most effective change in teaching practice occurs when teachers utilise tools and techniques provided by professional learning opportunities to influence their individual teaching practice (Timperley et al,, 2007). For true change to occur, resources and tools provided during professional learning need to be adaptable to each teacher's context (Yadav et al., 2017). Joyce and Showers (2002) found that teachers who did not have the skills to utilise learning in their own curriculum areas often abandoned new practices after running out of activities provided or demonstrated to them. In order for practice changes to be sustained, professional learning needs to equip teachers with the skills to innovate with new practices. In addition to this, as Guskey and Yoon (2009) mention, the focus on tools and provided resources also has the inherent risk of creating an "echo chamber", where practice and tools that participants already believe to be effective are emphasised, rather than encouraging the use of methods that are proven to produce results. The individualisation of learning programmes is just as important to student success as it is to professional learning development for teacher practice, and in this project, a focus will be put on this to further encourage change in student outcomes.

Single-Occurance Workshops vs a Learning Journey

According to the New Zealand Ministry of Education, powerful professional learning experiences should allow for teachers to revisit, reflect, and grow in their knowledge and understanding over a period of time (Timperley et al., 2007). This does not mean that time in itself is impactful, but rather that time spent engaging with new ideas and understanding their implications for teacher practice were important for growth (Garet et al., 2001; Timperley et al., 2007). Joyce and Showers (2002) identify that training programmes that allow for follow-up training, and peer collaboration and support lead to more consistent implementation in regular classroom practice than single-occurrence, training-focused workshops. Guskey and Yoon (2009) acknowledge this, but argue that one-time initiatives like workshops have been proven to result in positive improvements in student outcomes. However, the workshops they studied focused heavily on active learning activities and opportunities for practice adaptation, which have been described as key to effective professional learning and development by the New Zealand Ministry of Education (Timperley et al., 2007). Additionally, in that research, only nine of the 1343 studies were deemed "credible" enough to be used to inform their opinions. Timperley et al. (2007) agree with the New Zealand Ministry of Education (2008) and stress the importance of learning taking place in everyday contexts in order to accurately and authentically experience the new knowledge. Despite this,

many of the existing professional learning development studies in the area of computational thinking are one-off workshop efforts, and do not provide support over a period of time and follow a one-time model (Allan et al., 2010; Blum & Cortina, 2007; Hickmott & Prieto-Rodriguez, 2018; Imberman et al., 2014; Morreale & Joiner, 2011; Morreale et al., 2010; Yadav et al., 2014).

Of the eight projects reviewed, only one aligned with an extended, iterative, and adaptive practice-based approach, as suggested by best practice research explained above.

METHODOLOGY

This project relied on gathering a range of qualitative and quantitative data from teachers participating in the project. The project was intended to be a series of workshops with time for exploration of content between them. Data was gathered to understand supporting teachers in learning areas other than digital technologies helps them to build their agency in developing high-quality lessons that are aligned with digital technologies curriculum. This data came in the form of questionnaire responses and kōrero from wānanga.

Recruitment of Teachers

Participating teachers were invited openly from core subject areas, and as a result of this I recruited a diverse range of teachers from different cultures, values, and preferred learning-styles. This means that participants were able to draw from the experiences and world-views of a wide range of practitioners and through this, improve the accessibility of their lessons to meet the needs of all of their learners. This was a vital part of this project as it was focused on reducing inequality of access to quality computational thinking education, both within and outside the classroom. For the participants, the major outcomes for the project were aimed to be growth in their own understanding of computational thinking concepts and confidence in applying this knowledge to lessons in their own classrooms.

Ethics

Participating teachers were provided with an information sheet detailing the process and expectations of their involvement. They were also given an opportunity to ask any questions related to the kaupapa. Participating teachers then indicated their written consent to take part in the research with the opportunity to opt out of participation at any time, use of their images, and use of data produced by their participation. Ethics were approved by an IRB.

Wānanga

The project focused on wānanga principles in order to meet best professional learning practice identified earlier (Joyce & Showers, 1980). Wānanga allowed teachers to explore the learning together through collaboration and ako over a number of sessions. Joyce and Showers (2002) suggest that the peer coaching and reflection linked to this process is almost three times more effective than learning that involves only explanation, demonstration, and practice. Wānanga also encouraged teachers to explore what computational thinking could look like in their own contexts, and develop ideas that could support learning specific to their own subject areas. As suggested by Timperley et al. (2007) learning that can directly be applied to teachers' existing practice is most effective when compared to learning that can not. Current in-school professional learning practice at the participating school relies on single-occurrence, one hour sessions, most often with only explanation and demonstration. This does not align with best professional

development practice. Wānanga was intentionally utilised by this project to align closely with best professional development practice and culturally sustaining kaupapa.

DATA COLLECTION

Questionnaire

Questionnaires were used to monitor the progress of participants in the areas of how they are feeling in regards to their skills of developing digital technologies-aligned lesson plans as the project progressed. These questionnaires allowed participants to describe their confidence in lesson planning, confidence in giving feedback and feedforward, and understanding and awareness in relation to computational thinking. The questionnaire was given four times – once before the first hui, and three further times after each hui. This was to ensure that participants were given time to make connections with new learning, and to allow them to explore what new ideas mean in their own contexts. Each questionnaire contained the same questions, and asked participants to rate their confidence in each area of study on a scale of one to six.

Questionnaire was chosen as the appropriate method to formally gather this quantitative data because of its efficiency and consistency. Questions were focused on the specific data that was needed, which meant that this data was always reliably collected when it may not have been identified through discussion. Consistent data was essential in seeing the growth of participants in each area over time. Using the same set of questions throughout the data gathering process meant that there could be no discrepancies caused by differences in the wording of and understanding of questions. Reliability of data collection can sometimes be a concern with surveys, especially in regards to response rate. A high response rate was encouraged in this research through the use of allocated time to complete the survey during hui. The questionnaire was made intentionally very short to avoid burdening participants with a longer time commitment. There was only one incidence of non-response and this was a result of the participant being absent from the hui. Efficiency in questioning came at the cost of the richness of data gathered, especially as interviews could have provided more information. To limit the impact of this, kōrero during wānanga was also recorded to support the formal data gathered as well as provide additional insight into each teacher's experience.

Unfortunately due to the long periods between questionnaires, it was common for participants to forget their previous responses, and therefore accurately identify changes in understanding. This is another situation where observed kōrero was key to supporting any questionnaire responses given by participants.

Kōrero

It is important to recognise that while the questionnaire was the formal avenue of data collection, observation and kōrero during wānanga was key to the findings as well.

Kōrero during wānanga was recorded to better understand the process of each participant's learning. This was recorded as my own informal observations, and made available to participants on request for their own records. Observations included the descriptions and reflections on lessons delivered as part of the project, as well as any additional kōrero that was observed in relation to the project aims.

The recording of kōrero was a suitable method of data gathering because it allowed for rich qualitative data and genuine responses. The data gathered from conversations at the hui was

rich in content and substantiated statements made by participants in the questionnaire. It gave better clarity on why they answered the questionnaire in each way, and the relatively unstructured flow of the hui meant that participants could freely offer perspectives and improve their own understanding through ako. A structured approach is often used for focus groups in order to ensure completeness and continuity between interviewees, but this was not a priority in this case as the data was supplementary to quantitative data gathered by the questionnaire. For this research, the main purpose of hui was both ako and reflecting on the journey that we were undertaking as a rōpū (group). The structure was left intentionally fluid to enable an organic flow of conversation and provide a safe space to encourage the discussion and debate of ideas. Additionally, this process was intended to enable a relaxed environment where all parties involved in the kōrero were treated as equals, as a more structured focus group setting may have established an impression of power imbalance between myself and the participants and affected the data that was gathered.

Refinements to Wānanga

Changes were made between wānanga to strengthen the data gathering process. The questionnaire was presented more clearly after the first wānanga, and participants were expected to complete it before they left the hui. This was as a result of late responses that could have impacted on results as participant's understanding of computational thinking concepts and their applications grew over time. Notes from the wānanga were shared with participants after each session were shared with participants in order to ensure their validity. This change was made after participants expressed interest in the notes that had been taken.

FINDINGS

Overall, the biggest change in all areas (awareness and understanding of computational thinking; confidence in designing lessons with computational thinking elements; confidence in giving feedback/feed-forward/clarification in regards to computational thinking concepts) came after the first hui where participants were introduced to the decomposition and algorithm design areas of computational thinking (Figure1, Figure 2, Figure 3). Beyond this, there was generally a gradual increase over time in confidence as further lessons were developed and delivered, as shown in Figures 1, 2, and 3. This aligns with Timperley et al. (2007) who highlight that practice-transforming professional learning development is most effective as a journey, or learning, experimenting and reflection, rather than a one-time experience.

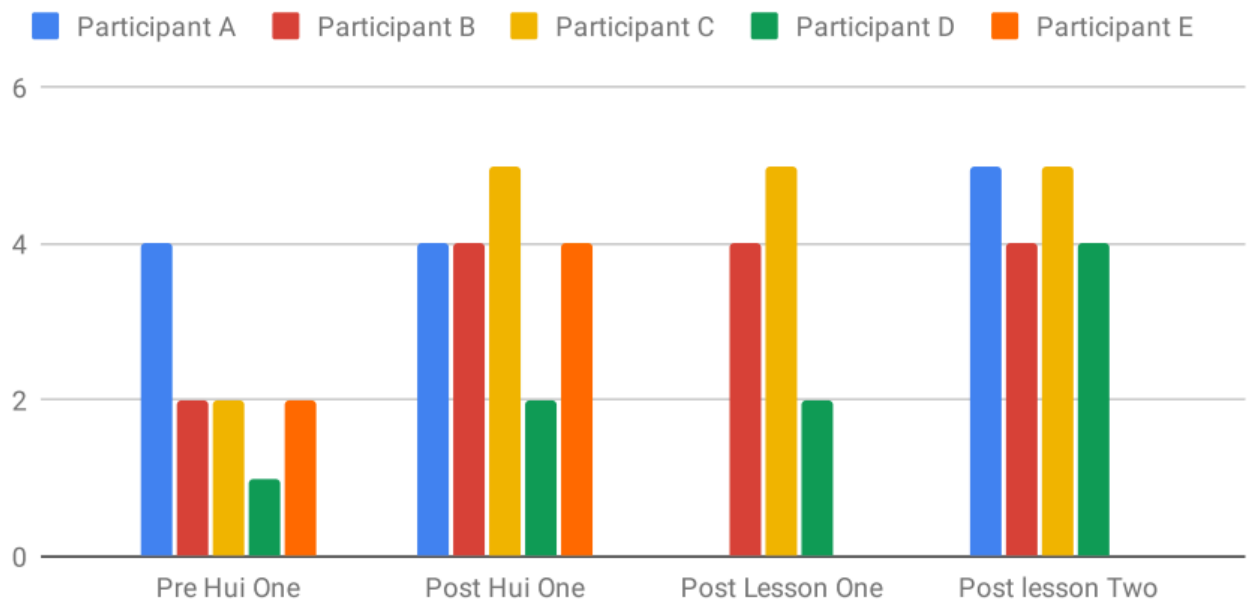

***Figure 1**. Awareness and Understanding of Computational Thinking as Reported by Participants Over the Duration of the Project*

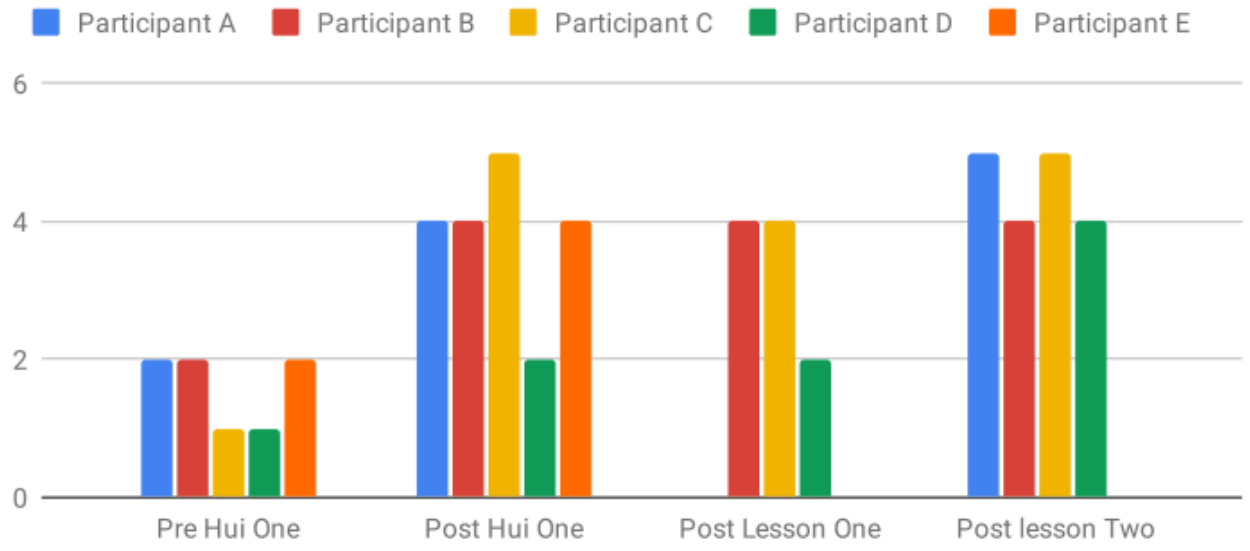

***Figure 2.** Confidence in Designing Lessons with Computational Thinking Elements as Reported by Participants Over the Duration of the Project*

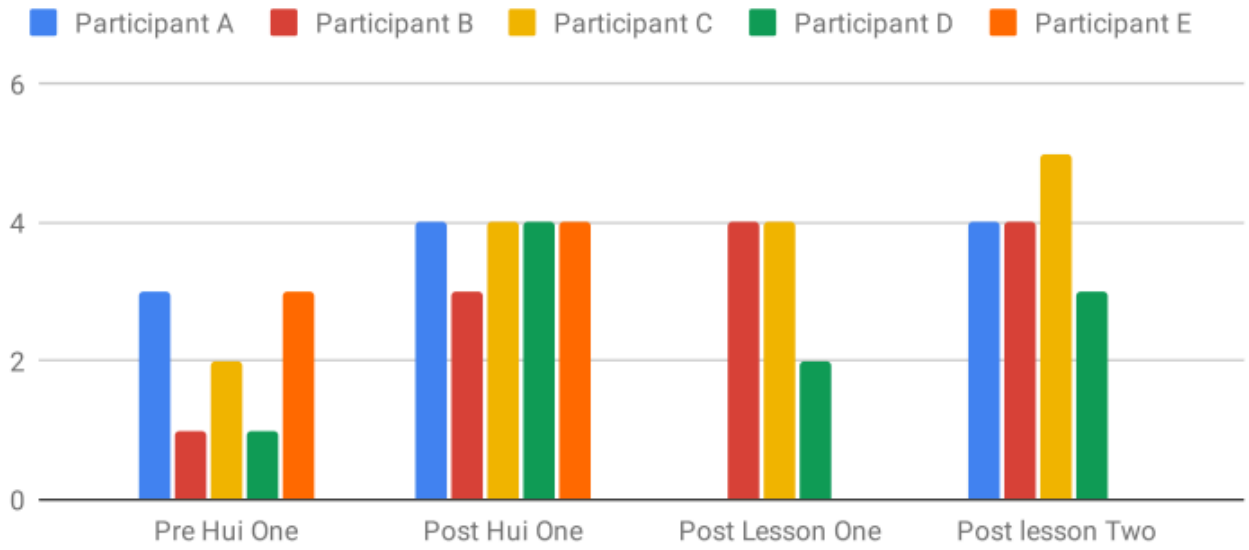

Figure 3. *Confidence in Giving Feedback/Feed-forward/Clarification in regards to Computational Thinking Concepts as Reported by Participants Over the Duration of the Project*

The exception to this was participant 'A', who only had an increase in confidence in lesson design and ability to give feedback after the first hui, while their awareness and understanding of computational thinking remained the same, as shown in Figure 1. This was due to the participant's prior knowledge of the topic as they identified that they had studied computational thinking in the past. The benefit for them came through utilising the knowledge in the context of their practice, rather than just being aware of it, as suggested by their increase in confidence in the other two areas over the course of the project, as shown in Figures 2and 3. This is consistent with Yadav et al's (2017) findings that recognise contextualisation to be at the heart of knowledge application, rather than a knowledge of the subject matter itself.

The data suggests that in most cases, the initial hui prompted significantly more growth than the creation, delivery, and reflection of lessons over the course of the project, but I found that this was inconsistent with kōrero from participants. When asked about the usefulness of the introductory hui in comparison with the collaborative wānanga, participants stated that they "learned a lot from the practical activities of the first hui" (observation, July 26, 2019), but found the wānanga to be especially valuable, particularly in the areas of sharing ideas and hearing about what other participants were trying in their learning areas. This is important because it meant that participants found benefit and growth in the process of sharing and reflecting on their experiences, which was a key part of the support provided by the project and aligns directly with the Māori concepts of ako and wānanga.

All four participants specifically mentioned that wānanga were a highlight of their experiences, and participants often found that learning activities were both applicable and effective across several learning areas. Participants regularly made suggestions to each other about ways that their activities could be improved and how they could apply similar ideas to their own learning areas. They mentioned sharing resources with other participants, as well as other teachers within the school who weren't participating in the project (observation, July 26, 2019). This demonstration of integrated ako was key to my own vision of success for the project. These findings demonstrate the value of exploration in transformation of practice over the use of expert-led instruction and provided resources, as found by Garet et al. (2001). This also indicates that participants felt

a degree of confidence and understanding of the activity and content that it explores, and by extension, an understanding of computational thinking.

Participants identified that simplification of concepts, as well as providing ample time to reflect, discuss, and explore the implementation of the concepts in their own classroom was key to growth in their confidence and understanding (observation, July 26, 2019).

Overall, all four participants stated that they felt more confident in their ability to develop and deliver lessons that use computational thinking concepts than they did before the project (Figure 1, Figure 2, Figure 3). Two of the four participants also added that while they do feel somewhat more confident, additional time, experimentation, and exploration (especially in the area of student outcomes) are key to affirming their understanding and application of their learning (observation, July 26, 2019). This means that supporting these teachers helped them to build their agency in developing high-quality lessons that are aligned with digital technologies curriculum.

IMPACT AND NEXT STEPS

The goal of this project was to understand how supporting teachers in subject areas other than digital technologies helps them to build their agency in developing lessons that are aligned with digital technologies curriculum. This project has allowed teachers and students to apply and explore computational thinking principles with a greater level of confidence. The teachers who participated gained confidence in the areas of understanding, lesson design, and feedback and feedforward in relation to computational thinking. While participants have identified that they are still not entirely comfortable in this area, this confidence will benefit them as they continue to explore aspects of computational thinking in their own learning areas.

Some limitations of the project include a lack of participants, and insufficient follow-up to determine the long-term impact on teacher practice. The project began with five participants, which was reduced to four after the initial hui. This meant that the data was limited to the experiences of the sample group, and findings may not be accurate if replicated with a larger group of participants. The project scope did not allow for any follow-up with participants beyond the initial project. As a result of this, there is no data on the long-term impact of the learning, including whether lessons continued to be delivered after the project's conclusion.

As a result of the project and its findings, the school involved is looking at ways that they can now implement the learning from the pilot programme across other areas of the school. Some of this will involve delivering similar content on a whole staff level, but also looking at ways of encouraging learning areas to identify where they are already using computational thinking in their units. The overall objective is to create a school-wide unit plan that allows learning areas to identify where computational thinking is taught in their units and which progress outcomes they fulfil.

The participating school has begun exploring potential ways of supporting non-participating teachers with the applications of computational thinking concepts to their lessons. The initial project required extensive resources to relieve participating teachers of their classes so that they would be able to attend hui, and unfortunately, this means that the direct continuation of the project with all teachers at the school is not possible. It is possible that the project takes a similar approach to other initiatives in the school, where one teacher from each learning area is appointed the "champion" who engages directly with the content and then disseminates information to other learning area members afterwards. While this is a much more cost-effective route, it means that

"non-champions" would not be exposed to the same direct learning, and wānanga aspect of the original project – something that participants identified as a significant benefit of the project. By extension, "non-champion" teachers may not see the same understanding and growth as teachers who participated in the initial project. The aim of this project was to improve access to quality digital technologies education in New Zealand, and this course of action may not contribute to this aim as effectively.

Another iteration of this project has been planned to be run in the future. Changes to content and structure have been made based on the feedback of participants from this project. This feedback was received after the results of the research had been disseminated to participants during the final hui. Some of these changes will include the simplification of hui one content, and the inclusion of more interactive activities to support a strong foundation of understanding. Other changes may include monitoring the effects of the lessons on student outcomes, lengthening the project duration, and weaving observation into the process to ensure quality of computational thinking education. These changes would strengthen the research component of the project, provide insight into the effects on student learning, and increase the project's value to the education community.

Towards the end of this project I reached out to Kia Takatū ā-Matihiko, an initiative developed by the New Zealand Ministry of Education to support schools to implement the new digital technologies curriculum. Kia Takatū ā-Matihiko were impressed by the impact of the approach used and how the collaborative and reflective nature of the process improved the confidence of participating teachers in developing and delivering lessons that teach computational thinking concepts. They offered to support me in sharing the work we had done through Collaborative Kete with other schools in the country through the creation of a showcase video. This video would be made available to other schools on the Kia Takatū ā-Matihiko website. This was an excellent opportunity for our journey through this kaupapa to inform other schools in their own learning and support them to gain more equal access to quality digital technologies education than they otherwise might have had.

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Jessica holds a Master of Teaching and Education Leadership and a Bachelor of Information and Communication Technologies, specialising in software engineering. Currently, she is pursuing another Masters degree in Contemporary Education giving her a broader understanding of education in Aotearoa New Zealand and its outcomes.

In line with her vision of using education to combat inequality in our school systems, she has a deep interest in te ao Māori and its power to revolutionise the way we learn, live, and interact with the world.

"I DIDN'T KNOW IT WAS NORMAL": HOW STUDENT STRESS, ANXIETY, AND CONFIDENCE DURING COVID-19 INFLUENCE STUDENT WELLBEING

He Rourou, Volume 1, Issue 1, 17-31, 2021

JESKA MARTIN

ABSTRACT

Students in 2020 experienced unprecedented levels of anxiety and stress as a result of the global COVID-19 pandemic. The pandemic affected not only students' experiences of academic achievement in their first year of NCEA assessments, but also their wellbeing. This action research project, which was conducted with 23 female Pasifika Year 11 students, looked at the drivers of stress and anxiety in students, and investigated methods of minimising and managing these stressors. Another focus was the impact confidence has on agency and expectations of achievement in Level 1 NCEA. Data was collected through student voice, using small-group talanoa, one-on-one conversations, surveys, and conversations with staff.

My research findings indicate that students are not aware of the prevalence, nor normalcy, of anxiety and stress experienced by people in daily life. Conversations are presented confirming that students struggle to know how to manage achievement-related anxiety or cope in a learning environment when it becomes overwhelming. This work finds that students would appreciate teachers and adults being more transparent and vulnerable about their own anxieties, and that teacher practice would improve in turn. It suggests that classrooms that serve as safe spaces for mutual sharing about anxiety allow for the sharing and construction of healthy methods for dealing with achievement-related anxiety.

INTRODUCTION

This research began as a personal journey to build the confidence of Level 1 NCEA (National Certificate of Educational Achievement) Science students by scaffolding the breakdown of NCEA-style questions. The aim was, through creative activities designed around the specific language of NCEA, to improve the confidence of students thus giving them a better chance of success in Year 11 Science and therefore a future in Science, Technology, Engineering, and/or Mathematics (STEM). A lack of confidence is one of the most significant contributing factors for failure in Science (Cheema & Skultety, 2017). My initial hope was that by building the confidence of my students through these activities, more Pasifika students would continue taking Science at Years 12 and 13, and even choose a STEM pathway when they leave school. There is a discrepancy in the number of Māori and Pasifika women in Science in Aotearoa (Karmoka & Whittington, 2017), and I hoped to explore whether a lack of confidence during secondary school is a motivator for this.

Due to the effects of COVID-19, my project evolved to suit the needs of my students. It became clear, after returning from the second lockdown in Auckland, that my students needed support in

a different way. They were still equally (if not more so) worried about their end of year exams, but for different reasons. My students were still lacking confidence, but what I also learned from them was that their worries were the result of time management, standards being cut due to time and so achieving fewer credits, and an inability to work from home due to a lack of a working device or internet access. Many students had to prioritise looking after younger family members during their "remote learning" time, with an example of several students studying overnight when the house was quiet, the computer free, or the internet accessible.

As the focus of what my students wanted to discuss with each other and with me shifted, I had a choice; would I stay on track with my initial project design, or would I be true to action research, and follow student voice and the needs of my participants? I chose the latter. As a result of this, the reasoning behind my research evolved and the method of data collection was revised. The overall motivation remained the same, but the focus shifted to unpacking the stress and anxiety students were experiencing that was impacting their confidence, and finding ways to manage and overcome those feelings.

LITERATURE REVIEW

The Impact of NCEA Assessment

The type of assessment has an impact on the type and level of anxiety experienced by students (Hipkins, Johnston, & Sheehan, 2016). I have observed that students find preparing for assessments (tests, exams, written assignments) more stressful than completing the assessment itself. The move from School Certificate to the New Zealand Curriculum was made to allow for vocational subjects (such as music, drama, woodwork, etc.) to be assessed and qualifications obtained in these areas. The move to NCEA has increased the number of students leaving with qualifications, and has become a more flexible and inclusive model of assessment. Despite this, NCEA still receives a lot of criticism (Hipkins, 2005; Hipkins et al, 2016). While traditional forms of examination do still exist, NCEA has been at the forefront of new and improved forms of assessment by allowing multiple assessments throughout the school year, rather than leaving all examinations until November; however, prior and alternative forms of assessment often result in higher levels of anxiety and stress, and there is some critique that by spreading assessment throughout the year (Hipkins et al, 2016), it is possible that we are building student anxiety throughout every day of a student's existence at school. The way in which NCEA assessments have been changed has been a positive move, but is far from perfect. While a critique on the NCEA curriculum deserves its own thesis, it is important to consider this impact on student stress and anxiety when attempting to lessen these experiences in students.

The Impact of COVID-19 on Confidence

Confidence and self-efficacy are two similar terms with slightly different meanings. Bandura (1997) states that confidence is a colloquial term that refers to how much someone believes in themself, while self-efficacy refers to the belief in how agentic one can be, and how successful one will be in their chosen endeavour. While confidence and self-efficacy cannot be used interchangeably, for the sake of this research, I decided to look at both. The primary reason for this is that, as this research was done with 15-16 year olds, confidence is a term they are more familiar with and a term that is more relatable and therefore the term that was used in discussions with students; however, in many aspects, self-efficacy was technically more appropriate.

I have seen firsthand students lose their confidence when they cannot answer or complete the

work they are given, and it proves a massive barrier to their learning. I can recount hundreds of examples where students can perfectly explain answers to me in person, but when given the same question written down they fumble and lose confidence. My personal experiences from 2019 were the initial influence for exploring confidence through research; however, it was the unprecedented 2020 global pandemic, and the student responses to this pandemic, that caused this research to flow and change in the way that it did. My conversations with students showed that they were less confident in upcoming assessments than in 2019 as a result of COVID-19 and its impact on in-classroom learning compared to remote learning.

The COVID-19 pandemic caused large amounts of stress for secondary school students. According to the Health Promotion Agency (HPA, 2020), the COVID-19 lockdown period showed that youth in Aotearoa were disproportionately impacted by distressing events such as this, the Christchurch mosque shooting in 2019, and the Christchurch 2011 earthquakes. Katherine Liberty, a retired associate professor in child health, stated that the number of traumatic events, alongside their severity and duration, is a strong predictor for onset of psychological issues in adults (Graham-McLay, 2020). She stated that those that grew up in Christchurch during the series of earthquakes in 2010/2011 were five times more likely to suffer from post-traumatic stress disorder, including those who were in utero during those events. Secondly, Connolly (2013) states that existing inequalities, both educational and systemic, were expanded during the 2010 Christchurch earthquake disaster. Following the Christchurch 2010/2011 earthquakes, gaps in learning in students were widened as a result. Furthermore, when analysing the results of students who did NCEA in 2011, Connolly identified that there were greater discrepancies in achievement in the students who attended a low decile school when compared to results from 2009 (prior to major earthquakes in Christchurch). Additionally, distressing events such as the COVID-19 pandemic exacerbated existing stressors and inequities (HPA, 2020). Many youth were reported to be worried about living in unsafe homes, and research has consistently shown that young people are particularly vulnerable to mental illnesses, and experiencing a traumatic event, such as COVID-19, can trigger the onset of genetically predisposed mental illness (HPA, 2020).

PROJECT AIM AND QUESTIONS

My Project Question was: How does stress and anxiety towards achievement as a result of COVID-19 impact confidence and self-efficacy leading up to NCEA examinations?

The sub-questions were:

1. What does confidence look like in secondary school students?
2. How does confidence affect students entering external examinations?
3. What does anxiety look like in secondary school students?
4. How does anxiety affect students entering exams?
5. What strategies can be implemented to alleviate and manage stress and anxiety in school?

METHODOLOGY

Action Research

Action research was chosen to utilise a collaborative and interactive research project that works closely with the students (participants). The research was highly collaborative, and action research recognises the position of the researcher as being an active participant rather than an at-the-

front leader (Bishop, 1999; Walker, Eketone, & Gibbs, 2001). In this way, action research is closely aligned with the idea of ako (reciprocal learning). Ozanne and Anderson (2010) comment that action research allows both researcher and participant to have a voice; a method widely encouraged in indigenous methodologies.

PROJECT DESIGN

This research was completed at an all-girls' Decile 3 secondary school in central Auckland, which has a predominantly Māori and Pasifika community, and this project took place exclusively with Pasifika students. Ethnic communities in New Zealand, including Māori and Pasifika students, regularly suffer great inequity and marginalisation due to Euro-colonially traditional learning in Aotearoa (Milne, 2016). Tomlins-Jahnke (2007) describes a *mainstream* school as one which privileges Western/Euro-centric education and traditions; similarly, Anne Milne (2016), finds the term mainstream to be an offensive term, and one which is judgemental and detrimental to Māori and Pasifika learners that do not excel in these environments. From my experience, most secondary schools (Kura Kaupapa Māori and designated character schools excluded) are structured around a Euro-Colonially traditional learning curriculum, particularly designed in the early 2000s, but based on a structure from much earlier. Maurie Abraham, Principal of Hobsonville Point Secondary School, said that "secondary school students today are the first time travellers – they leave their house in 2020, arrive at school in the 80s, and when they leave they return to 2020" (personal communication, September 25, 2020).

The main form of data collection was through talanoa. Talanoa loosely translates to "talk" or "speak", and refers to a Pacific method of sharing ideas in a relaxed environment (Lemanu, 2014). Most data was collected through small-group talanoa (rather than whole class), one-on-one conversations, and anonymous google forms.

As a result of COVID-19, the data collection and therefore phases of action research were altered. What originally started as large iterations taking several weeks, each phase evolved into smaller iterations and shorter time frames. Table 1 outlines the updated methodology and phases that occured. Due to the lack of research time, phases two and three no longer occurred repeatedly and concurrently.

Table 1: ***Updated Methodology Detailing the New Three-Phase Cycle and Methods of Data Collection.***

	Who does it involve?	What does it involve?	How will data be collected?	Research Question
Phase One (1 week)	The participants and researcher	Establish the needs of the participants due to the impact of the pandemic	Classroom activities designed by researcher/small group discussions	Sub-Qs 1, 2, 3, 4
Phase Two (2-3 weeks)	The researcher and class volunteers	Collection baseline data, develop tutor time "activities"	Observations of participants, small group discussions, one-on-one discussions	Sub-Qs 2, 4, 5
Phase Three (2-3 weeks)	Small selection of participants School counsellor and Year 11 Dean	Implement use of diary Interviews	Small group discussions, one-on-one discussions, anonymous survey Voice recording/written transcription/ email	Sub-Q 5 Sub-Qs 1, 2, 3, 4

SUMMARY OF ACTION

Phase One – Establishing the Needs

When we first returned to school post-lockdown I asked my students "How do the upcoming NCEA exams make you feel?", and students wrote down the key words that came to mind on a piece of paper (Figure 1.). The students were not given a list to work from, although I gave examples to clarify the activity ("For example, you might write down *worried* because you are worried about your exams, or you might write down *prepared* because that's how you feel.").

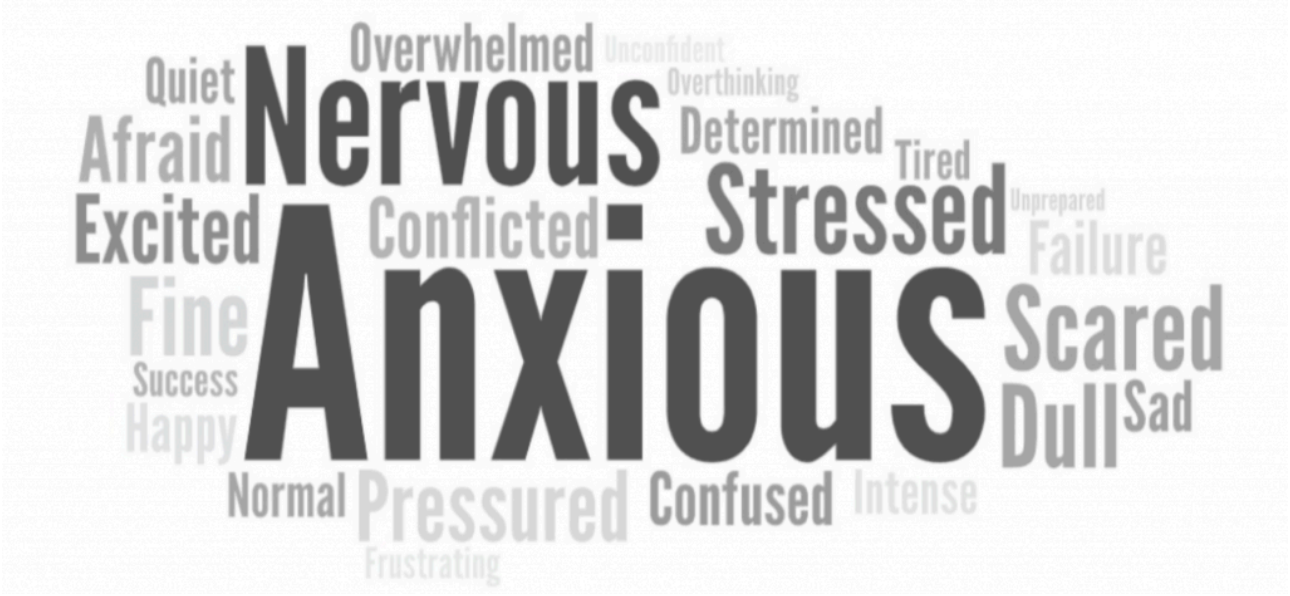

Figure 1. *Student Responses to 'How do the upcoming NCEA exams make you feel?'*

The second and final class activity in this phase involved using The Blob Tree. The Blob Tree, designed by Pip Wilson and Ian Long (1980) shows images of "Blobs" that are neither male nor female, human nor non-human, and can be used to pinpoint feelings in a certain moment in time. In the image, the Blobs are standing, sitting, and falling off a tree. The Blob Tree can be used with young children or elderly, and is a way for people to open up about their feelings without having to use words. I first asked the students to look at each of the Blobs and identify one or a couple of Blobs that they related to when thinking about their exam preparation, and write that number down. I then asked them to write one sentence trying to explain why they felt they related to that particular Blob.

The below are comments from students about where they would place themselves on the Blob Tree, and why:

"Number 1 – I feel like I'm behind trying to catch up and everything is going fast."

"Number 5 – I have no motivation to do anything. I can't wait for this year to end."

"Number 14 – I used to feel on track for everything but now everything is overwhelming and I'm behind."

"Number 19 – I study but I fall asleep and I know I have to wake up and study again."

"Number 21 – I feel like I'm watching everyone pass while I struggle."

The Blob Tree website states "Without words, the Blobs can be interpreted in a hundred different

ways. There is no right and wrong about the Blobs. […] The selection of a Blob is a snap-shot of how that person is feeling at that very moment" (Wilson & Long, 1980). I had used the Blob Tree previously with adults and had found the outcomes to be both thought-provoking and amusing. However, I did not expect such honest and open responses from my students about their feelings. While I am not trying to give any meaning to these comments made by students, it was these responses to the Blob Tree that made me pause; I did not expect so many of my students to feel worried, stressed, and overwhelmed about their end of year exams.

Both the word cloud and Blob Tree activities were implemented in July, after the first lockdown in Auckland. These responses were the data that impacted me, and made me think; the data that caused me to change the direction of my project. Having learned that students were caught up in their own stress and anxiety, my research changed from helping my students gain confidence through creative literacy activities, to helping my students with their feelings about themselves and their upcoming exams. I knew that if I wanted my students to feel more confident in their abilities, I needed to first help them identify their stressors and what was causing them to feel anxious and nervous and follow the direction that my students (my participants and collaborators) needed the most. The next time I saw my students, I asked them what they thought, and what they wanted to do; I reiterated my original plan to break down NCEA questions and make them more manageable, and mentioned that I had been thinking about looking at the worries they were feeling about their external examinations. I was met with excitement, enthusiasm, but most importantly, relief; I could see in my students' faces a slight weight lift from their shoulders.

Unfortunately, shortly after the first phase of my research, Auckland went into a second lockdown in August 2020, and we returned to learning remotely. This shook a lot of the students, especially at the immediacy of the second lockdown. Despite this, students seemed to cope better than I had anticipated, and I learned that it was because we had done it before and came through the other side. When we returned to school, we discussed their (now even greater) worries about exams; however, their concerns were now not just about exams, but about their achievement in general. To achieve Level 1 NCEA, students must attain a certain number of credits, and many students aim to be endorsed with Merit or Excellence. Most teachers decided to cut down on the number of standards they were to cover in class, so that they could focus on getting the remaining standards achieved well, rather than attempt to rush through the original number of standards and have poor results. This caused many students stress because now they had fewer "chances" to achieve (there were fewer credits they could achieve in total, so it was more important that they achieve all of the remaining standards). This was reflected through a conversation I had with the school counsellor, who said:

> There has been a significant increase in the number of students who are feeling overwhelmed, doubting their ability to achieve, and are concerned about their future. For many of the students I have worked with, the cloud of worry has affected their ability or confidence to stay engaged in their learning, to actually return to school, or to complete assessments to their usual standard.

Seeing the stress that my students were feeling, and hearing the school counsellor confirm their worries, I knew that I wanted to try and minimise the stress that my students were experiencing after hearing every teacher, every day, talk about how important it is to stay focused and study hard.

Phase Two – "You Time"

One thing I implemented to try and reduce my students' stress while at school was to adapt tutor

time, which is usually used for relaying notices, catching up on schoolwork, or studying, into "You Time"; free time that students could use in whichever way was most beneficial to them. I tried a couple of small iterations of this early on, so that I could use student responses to guide my next steps. By changing tutor time to become "You Time", I hoped students could do whatever they needed at that time, on that day. Previously (between lockdowns), when I tried to engage students during tutor time with activities such as quizzes, making flash cards, or re-teaching challenging concepts, it was rare to get more than 50% involvement; by allowing students to choose their activity, the students were more engaged in the activity of their choosing. This changed daily depending on each student's needs, but included activities such as relaxing on their devices, chatting with their peers, catching up on assignments, preparing for tests, researching future career choices and requirements, and sometimes taking a nap. This time was often quiet with students working individually or in small groups. I found that the students who needed to be catching up on work were doing this – there were students doing Mathematics practice, working on an English assignment, or making flash cards. The following are excerpts from conversations with students, and responses from an anonymous survey.

"I like [You Time] because I just get to 'chill' with my friends, & it gives us a break from all the work we did in the previous periods."

"Tutor time is the only time where I can relax. I usually use our breaks to revise and maybe finish homework for other classes."

"It is nice to have a break from having continually done work the whole day."

"I think having free time is good for us to just catch up on other work. Especially next term with exams coming up, I think it would be really helpful if everyone could have that time."

This began as a trial activity, to see if I could notice any changes in my students when they came to tutor time. Many students began to ask "Miss, are we doing anything in tutor time?", and were always happy to hear it was "You Time". During the second week, I noticed that opening up tutor time was having a positive impact on student wellbeing; my students were coming to tutor time happier, and many were choosing to stay in the same space during lunch time as well. To me, this meant that tutor time had become a safe space, which I hoped meant that they could relax here, but continue to turn up to their classes energized and ready to learn.

Phase Three – "Diary Day"

Another change I implemented to reduce the stress and anxiety identified by the students was to introduce "Diary Day" during tutor time on a Monday. Students were each given a small notebook which they could use however they wanted, though guidance was provided. The students were ensured these diaries were completely private. I often suggested that students use one page to write down anything that was making them stressed or worried, and on the next page write down all the little things they can do to overcome some of those tasks. The following are excerpts from conversations with students, and responses from an anonymous survey.

"Using the diary helps me to keep track of my learning."

"I like having a dedicated space to write all my worries down."

"Knowing that no one else would read what I was writing or judge me for what I was worrying about was really nice."

"I like that I am able to write all my stressful school assignments down and know that I can plan for them."

"I like that I can express my feelings in this little notebook. It's refreshing and a stress relief writing about my to-do's for the week & what's stressing me out. I like seeing those things on paper and realising what I have to work on."

"I like using my journal because sometimes the things I write down on paper help me identify what things I should stop worrying about or should focus on getting better at."

All students who responded to the survey shared positive statements about their diary. When reflecting on these comments, I was pleased to see that they were getting something useful and positive out of the diaries – be it to organise and plan, or a way to express their feelings. I was glad that my students had a place to write their worries down and know they wouldn't feel judged for what they were writing. A conversation with the school counsellor highlighted this as something many students are lacking. "Many of the students I have been supporting have kept their anxiety to themselves at home, as talking about their stress, showing vulnerability, or asking for help is not something that is encouraged or they feel comfortable doing."

After about two weeks, it became normal that tutor time could be for whatever was needed. Students were happy entering the room, and the class was a lot less disruptive. It wasn't until one day when a senior colleague walked through my classroom and acknowledged that students weren't studying that I realised something: what was happening in my classroom was a break away from the norm. I was "taking a risk" by allowing my students "free time" instead of organising revision activities or ensuring every student was studying. Below is an excerpt from my own journal after this encounter.

> Today a senior colleague walked through my class during tutor time, and said to my students, "Why aren't you studying? Don't you have exams in three weeks? You know you have a Science teacher here who will happily help you with your Science revision!" I could see that my students were taken aback, and felt guilty. One student even asked "Miss, why did she tell us off for not studying when you said it was okay?"

This event made me particularly uncomfortable, but it was not until a later reflection that I realised why this was. My students had finally become comfortable, after two major disruptions due to COVID-19, and it was important to me that my students kept that sense of comfort in my class during these unprecedented times. It is part of my duty as tutor teacher of the Pacific Health Science Academy to provide extra Science support during tutor time – this may come in the form of recapping content taught in class, giving tutorials, or providing resources to prepare for exams. At the time, my role as tutor teacher in the Pacific Health Science Academy made me feel guilty for not providing that Science support, but as I pondered over the coming days and weeks I realised that I was still supporting my students; in fact, I was supporting them in the way they needed the most.

Perhaps most importantly, in terms of my change in thinking, was something a student said to me one day, after I was sharing how I was also stressed because of the circumstances; I had to plan lessons, complete marking, write assignments, and respond to emails, as well as everyday household chores. I was describing how everyone experiences stress, and how stress can be a good thing, until it becomes too much and impacts your daily life. The student said to me:

"Most adults or teachers don't talk to us when they are feeling stressed, so I didn't know that it's normal."

This was met with nods and noises of agreement from other students. To me, this is one of the most integral findings of my whole research; to learn that students and youth do not know how common it is to experience stress in daily life. While I will argue that experiencing major stressors every day is not normal, it is expected that in life every individual will experience some kind of regular stress as well as some major stressors.

DISCUSSION OF FINDINGS

Anxiety and Stress

When considering stress and anxiety in students, we must also consider that both are expected and normal in students, and people in general. Lisa Damour (2019) claims that anxiety and stress are normal, and essential for human growth and development; however, there are both "healthy" and "unhealthy" states of stress and anxiety. She states that healthy forms of stress can occur when an individual takes on new challenges or does something that feels uncomfortable and threatening. By continually doing things that challenge us, we gradually build our capacity to tolerate stress. This explains why most adults are more adept at handling stressful situations compared to children and teenagers.

Damour (2019) also mentions that stress can be divided into three distinct categories: chronic stress, life events, and daily hassles. Students in 2020 are often experiencing all three kinds of stress, and often at the same time: their daily hassles may include chores, and looking after younger family members; upcoming NCEA internal and external examinations come under life events; and the global pandemic COVID-19 can be suitably classified as a chronic stress. It is unsurprising that students and children are feeling more stress than usual in these unprecedented times. Furthermore, Damour indicates that the number of daily stressors an individual must overcome has a significant impact on how well a person can cope with a major stressor. Through conversations with Pasifika students, I am well aware of the wealth of responsibilities that they are expected to fulfill outside of their education. We can therefore infer that these extra responsibilities may have impacted their ability to cope with the immediacy of the pandemic.

Most of what children learn about stress and responses to stress comes from seeing how adults in their life manage stressors (Damour, 2019), and so I come back to this quote by a student:

"Most adults or teachers don't talk to us when they are feeling stressed so we didn't know that it's normal."

As an adult and teacher I try to protect my students from having to undergo unnecessary anxiety and stress; this may be by not fully sharing the worries I have when it comes to their achievement or number of credits attained, sheltering students from the words I have heard from other teachers, or by not (at least trying to not) display my own stress and anxiety when I am with them in the classroom. I make a particular effort not to bring my personal difficulties to my students and instead try to always bring my best self. As a result of this, this version of me is what they always see; an adult who is put together, organised, and confident – a person that I am not! I am riddled with anxieties and stress, often disorganised, and rarely confident in myself, especially when presenting "in front of a crowd", but I put these aside when I walk in the door so that my students can see someone who they expect to see as a teacher. Reflecting on the statement by a student above on knowing that it is normal to experience anxiety and stress, I wonder; should adults and other role-models for children be more open about their lives when it comes to stress and other problems they are experiencing? Opening up about these struggles makes one more

vulnerable, which is not always a position one wants to be in as a teacher; however, I argue that sharing these thoughts and feelings with our students, when appropriate, is a valuable life lesson. I wonder if, by sharing these experiences with students, we not only become more "human" but also more relatable, and if we are more relatable, we are able to have better relationships, and therefore be able to teach and help our students to learn and achieve more successfully. As a teacher I rely on using relational leadership, and by building those relationships with my students first, I become a better teacher and therefore my students are more successful learners.

Lastly, Damour (2019) states that barriers and hurdles only make us stronger if we can overcome them, and Morony et al. (2012) states that students regularly avoid stressors due to the negative experience. Thus, how are students able to grow and build their stress capacity? I have seen, at least within the context of my own school, that teachers often "coddle" students over the line of achievement so that they can achieve their credits. Whether this "coddling" is done for the benefit of the student, or benefit of the teacher and their end of year data, is sometimes questionable. Firstly, this is a strong disadvantage of using NCEA as a measure of achievement especially considering that missing one key word can be the difference between achieving and not achieving (Hipkins et al., 2016); however, this is a discussion too large in the context of this research. Secondly, this "coddling" of students does not help students in terms of overcoming a challenge; if we are constantly helping to ensure students achieve we are actually disadvantaging our students by not allowing them the challenge to overcome this obstacle, this daily stressor, on their own, so that they can build up their "stress capacity" and continue to overcome more and more challenging stressors as they reach adulthood and are burdened with more responsibility. This is a point of contention in my school environment, and one that at this stage I do not know the answer to; however, I will now be thinking much more carefully when helping or advising my students. From now on, I will try to lead more often by providing help, but not by providing answers.

Student Wellbeing

It is concerning to me that students are experiencing stress and anxiety in several different areas of their life, exacerbated by COVID-19; there is stress at home, at school due to assessment, in friendships, at work, and in extracurricular activities. In many young people, quality of life is greatly influenced by happiness, enjoyment, and a sense of wellbeing at school (De Róiste et al., 2012), and when this is missing, students are likely to feel sad and depressed. I believe this is what is happening with my students, and most students, this year, which was confirmed in a conversation with the school counsellor:

> There has been a significant increase in the number of students who are feeling overwhelmed, doubting their ability to achieve, and are concerned about their future. For many of the students I have worked with, the cloud of worry has affected their ability or confidence to stay engaged in their learning, to actually return to school, or to complete assessments to their usual standard.

I posit that if a student is experiencing this amount of stress, which is affecting their happiness and enjoyment not only at school but of life in general, that the wellbeing and quality of life of students must also be on the decline. Both Oakley-Browne et al. (2006) and Gibson et al. (2017) claim that Pasifika youth are twice as likely to suffer from serious mental health diagnoses (including anxiety and depression) than the rest of the population. It should also be considered that Pasifika youth are less likely to be diagnosed with any mental health conditions (HPA, 2020). The Year 11 Dean noted a change in student wellbeing this year, as quoted below.

> In students (and staff) the little moments that trigger big explosions are on the rise. We are trying to

> "keep the small things small" [and] I think that is becoming more difficult, both in terms of relationships between students, between staff and students and also in terms of how students talk to themselves. I see this as a sign of stress… It is almost as though once we have addressed the low level of credits and put plans into place to catch them up they then break down in tears and tell me other stuff about how they are feeling.

The Dean also noted a change in the behaviour of staff as a result of added stress from COVID-19, and that it was affecting relationships between staff and students which, according to relational leadership, is the key to being a good leader and therefore a successful teacher. The school counsellor also noted the effect of staff stress on students' wellbeing.

> Some students were really affected by their teacher's response. Particularly after the first lockdown, many students said they felt so overwhelmed by the emails teachers bombarded them with that they didn't know where to start or how they could possibly meet the perceived teachers' endless demands.

To me, this all comes back to finding the fine line between modelling life stress as an adult and teacher by being vulnerable and sharing successful and beneficial coping mechanisms, whilst also remaining professional and demonstrating positive leadership.

Confidence

The students/participants who were involved in this research are primarily a very agentic group; these students voluntarily complete work during tutor time, and are rarely (if ever) in "trouble" with other teachers. They had to apply to be part of the Pacific Health Science Academy, producing an essay and handing in an application form before the due date. These things, as well as knowing the students personally, leads me to believe they have average if not high levels of agency; the question I now ask is, do the students know this, and does their agency (or self-efficacy) affect their confidence in themselves? When I asked the Year 11 Dean about confidence in students this year, she said:

"[There are] more students who feel that they will not be able to achieve [this year]."

This could indicate that students are more anxious this year as a result of COVID-19, the decreased in-school learning time, and the reduction in assessment opportunities. Furthermore, when talking about the implications of COVID-19 and its effect on confidence in Year 11 students, the Year 11 Dean said:

> My concern is that some [poor] habits may have formed. In many ways, NCEA Level 1 is where we set the patterns and habits for Level 2 and 3 which are far more important. That is why it is important that students learn about planning their time, keeping to deadlines and going to the externals even if they have already passed the course.

Reinforcing some of these effective study skills during tutor time by providing diaries where students wrote their stressors and plans to overcome or reduce these, and hearing about the importance of developing study skills from the Year 11 Dean, gave me hope that I was providing my students with some lifelong strengths. This comment also reinforces that, as teachers and educators, while we know Year 11 is useful, (particularly at this secondary school where it is the students' first experience of exams), in the scheme of things, the following two years are of a greater importance, both in terms of the number of credits and achieving NCEA, but also in terms of further education. Despite this, it is also important for educators to recognise that the stress and anxiety experienced by students at Level 1 is just as real and formidable as those experiencing the same feelings at Level 2 and 3.

I do, however, wonder about the students who did not have regular access to devices and the internet and therefore struggled with an online learning environment. According to the school counsellor:

> [Students are] absolutely less confident because this experience has been so foreign to them, and had such an impact on their usual routine and way of learning that they've found it hard to be hopeful or feel that they have it together. […] In addition to the usual stressor of having to adjust to remote learning, many of our students had to juggle huge family responsibilities and try and muddle their way through their learning with massively limited resources e.g. no laptop or wifi or sharing a device. The inequity that I saw as a result of COVID, experienced by many [of our] students, only served to heighten their stress and distress.

This comment confirms a link between a lack of confidence in students and the stress experienced by students, which was further exacerbated by remote learning and the challenges this presented.

There have not been many large-scale studies looking at confidence in education (Morony et al., 2012). I theorise that this is in part due to the difficult nature of measuring confidence, particularly as it cannot be universally defined or put upon a scale. When I considered confidence in terms of my participants, I looked at the language they were using with their peers when discussing upcoming assessments. I did not hear any students openly admitting they "felt confident"; however, students were not shy to say that they had studied the best they could and "hoped" they would do well, which I inferred to mean they felt partially or fully confident. Other students often said they were "scared" or "worried" about an assessment, which I inferred to mean they were feeling unconfident. Interestingly, Morony et al. (2012) found that, despite boys and girls achieving similarly, girls rated their confidence (in achieving in mathematics) and self-efficacy much lower, and anxiety much higher, than their male counterparts.

CONCLUSION

It is too early at this point to conclude from this research that a causal relationship exists between helping students recognise their anxieties and seeing positive outcomes for their wellbeing (and therefore achievement); however, comments from students have suggested that using a diary or journal to plan, prepare, and identify potential stressors has helped them feel more in control. Further conversations with students have prompted the idea that adults need to be more open in terms of when they are experiencing stress, and what methods and strategies they use to manage and overcome these stressors, so that students can learn and continue to grow as people.

Action research and inquiry-based research were key methodologies to this project's success, as it not only allowed for quick changes to be made in implementation, but meant that student voice was the predominant leader with respect to the direction of this project. I learned that, by taking a risk in shifting away from "the norm", I provided students with a dedicated time to relax, destress, and then show up to their next class with a positive attitude towards learning.

As a teacher, I have learned that there is a need for me to exhibit vulnerability in order to be a more effective educator, particularly when modelling positive wellbeing practices for my young female Pasifika students. Moreover, this project has shown me that participating in being vulnerable as a practitioner allowed me to discover unexpected learnings about the enormous stress that students experience in order to achieve – even (and especially) when academic achievement is not a student's top priority.

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AN EVALUATION OF THE FLIPPED-LEARNING PEDAGOGICAL APPROACH

He Rourou, Volume 1, Issue 1, 32-48, 2021
DEVENDER CHENDRI

ABSTRACT

In recent years the emerging possibilities in the education system are flexibility (Nuhoğlu et al., 2020) and self-paced learning (Priscila, 2020). The flexibility of studying anywhere and anytime can provide opportunities for learners to achieve their educational goals. A self-paced and customized learning environment could enhance the learning experience of the students. This research evaluates flipped-learning pedagogical approaches for year 13 Maths students. Quantitative and qualitative data collection methods track and monitor students' academic outcomes. The findings suggest that flipped-learning improved students' academic achievement and progress. Additionally, students who missed the lessons could understand the concept and complete learning activities before coming to the next lesson. A flipped-learning approach has encouraged the students to make them responsible for their learning, bringing questions to the classroom to extend their conceptual understanding, and develop mathematical reasoning and thinking skills.

INTRODUCTION

A shift of flexible and self-paced learning is underway in the education system, and the pace of change is mandating smarter methods with an emphasis on teaching to learning. However, the emerging challenges such as the demand to learn anytime, anywhere at your own pace are shifting gears towards the use of technology that caters to different learning styles. Indeed, due to the covid-19 situation during the lockdown period, this researcher has scheduled Zoom online sessions for teaching and learning. Students who are turning up for these sessions enjoy this new paradigm in their education. However, this approach partially addresses the challenges because the students have to be available online to understand the lesson.

To overcome this, the study of Yoshida (2016) reveals that the requirements of flipped-learning are where the learners are expected to study at home and do collaborative learning in class, autonomously take responsibility for their learning, and personalized education. Hence, these emerging challenges motivated this researcher to come up with a solution and provide a flexible platform for the learners to continue learning at their own pace.

This research was carried out at a school where there are several initiatives to raise student achievement and progress. In recent years the school arranged professional development programs for teachers to focus on "Visible Learning" (Hattie, 2012) and "Teaching to the North-East" (Bishop, 2019).

Hattie (2012) states that visible learning and teaching means making teaching visible to students to know what to do and how to do it, and learning visible to the teachers so that they know whether learning is occurring or not. In successful classrooms, visible learning occurs when the learning goals are explicit and challenging, learners become their own teachers, teachers become learners of their own teaching, teacher-student relationships, teachers provide feedback, and set high expectations for students. Bishop (2019) found that teaching to the North-East promotes learning for everyone and envisages increasing equity in the education system by responding to diverse groups of students that consign learners prior knowledge, indigenous, culture and language, students with learning difficulties, and any other unique qualities they bring to the classroom rather than being seen as barriers in their learning. Thus, the purpose of this research is to evaluate the impact of the flipped-learning pedagogical approach on "Visible Learning" and "Teaching to the North-East".

LITERATURE REVIEW

Flipped Learning

The definition of flipping the classroom by Maciejewski (2015) is shifting the content instruction out of class time by posting relevant online videos for students to understand on their own and assigning in-class time for conceptual practice, one-on-one and group discussions to reinforce interactive student engagement, achievement, and meet the learning needs of the students. Similarly, Yoshida (2016) defines flipped-learning as the process that learners go through a blending of direct-instruction with constructivist-learning to become skilled at the subject contents.

Flipped-Learning as a Pedagogy

Bishop and Verleger (2013) emphasize that the flipped-learning classroom approach is a technology-supported pedagogy because of the direct video-based individual instructional approach outside the classroom and interactive small-group learning activities inside the classroom.

Similarly, Francl (2014) states that flipped learning pedagogy appears to decrease the workload because of the elimination of in-class instruction time about the topic. Instead, the teacher facilitates in-class time for individual, small-group, and whole-class discussions and learning activities and reviewing the pieces of the automated instructional video where appropriate to support the learning. The teacher's workload is changing from an explainer to a responsive-knowledge provider by automating the instruction through videos, enabling self-pacing instruction based on learners response, facilitating to view the online resources on any device at any time and anywhere, setting up an online task for students to explore themselves, encouraging the learners to watch the instructional video out of class time and complete their homework in-class time, either individually or in small groups, conducting in-class discussions about the concept, and testing learners retention and understanding with formal assessments. Bishop and Verleger (2013) highlight that various pedagogies such as problem-based learning, cooperative-learning can be used to enhance the design of flipped-learning as a pedagogy.

A Hancock, Shepherd, Lawrence & Zubrick (2013) study reveals that attendance matters for academic achievement and progress and highlights that as absence rates of the learners increase, their educational achievement continues to decline. In contrast, Harmon (2017) highlights that flipped learning helps students to catch up either at home or once they are back at school, and

the students who do not have access to the internet or devices at home could use school devices to watch the required information to carry on with the task. The videos developed for flipped-learning must have a good image and sound quality, and a variety of online approaches for the learners to catch up on the missed lessons, meet the learning outcomes and curriculum standards. Additionally, the flipped instruction refers to moving the teaching aspects into the homework environment, differentiated teaching to meet individual learning needs, allows more time to work collaboratively in the classroom, and promotes high-level thinking among the students.

Lo & Hew (2017) found that using a flipped-learning approach, the impact on student performance was significantly improved compared to the traditional-teaching approach. Interestingly, Bhagat, Chang, & Chang (2016) study reveals that using a flipped-learning approach, low-achievers performed better. In contrast, the average and high-achievers performance remained the same when compared to the traditional teacher-centered approach. In contrast, the study of Gundlach et al. (2015) critique that using a traditional-teaching had an impact on student performance was significantly better than the flipped-learning approach.

Main Benefits and Key Challenges

The study of Mayer, Fiorella, & Stull (2020) states that the students learn better with the teacher creating instructional videos as they will be on the screen instructor with innovative graphics and the delivering content contains engaging and summarizing resourceful explanations. The other benefits include preparing the learners for in-class discussion, understand the concept before coming to the class, promotes on-demand learning, flexibility to watch and re-watch the videos if they have any questions, enabling learners to self-manage and take ownership of their own learning, extending teacher reach outside the classroom including the learners who are unable to attend the class and in need of extra time for their learning.

The three challenges of implementing flipped learning approach are student-related, teacher, and operational (Lo & Hew, 2017). Firstly, the student-related challenges are not being familiar with the routines, could not focus on watching videos, needed more precise instructions for in-class activities, increased workload because of pre-class activities at home, and out-of-class support such as could not ask questions immediately while watching the videos. Secondly, the teacher challenges are not entirely familiar with this instructional approach and increased workload for preparing videos and online learning materials. Lastly, the operational challenges are students computing resources at home – may not have internet access to watch the videos, monitoring students outside the class – challenging to ensure that the student has watched the video, teachers computing skills to incorporate flipped learning, and availability of well equipped IT resources to support this new learning.

To overcome some of these challenges, Taffard (2020) states that open-ended questions do not have one specific answer; instead, there will be many possible answers and can be solved in multiple ways and on different levels. Therefore, incorporating open-ended questioning helps learners develop reasoning skills and make mathematical decisions, and teachers listen to learners' thinking and then prompt and probe where necessary. Additionally, the research of Neely (2019) outlines that an effective way to challenge the learners and make them learn better and think more is the usage of open-ended questions.

The depth of knowledge (DOK) matrix of Robert (2015) distinguishes between cognitively demanding DOK levels (1 to 4) that feature open-ended questions. For instance, calculate an area and perimeter: a) Level 1 recall question – "Find the perimeter of a rectangle that measures 8 units

by 4 units". b) Level 2 skill/concept question – "List the measurements of three different rectangles that each has a perimeter of 20 units". c) Level 3 strategic thinking question – "What is the greatest area you can make with a rectangle that has a perimeter of 24 units". d) Level 4 extended thinking question relates to create, analyze, connect, critique, design, apply, prove, and synthesize.

Moreover, the swift evolution of technology and its implementation creates gaps in recent literature regarding the application of flipped-learning instructional pedagogy, online open-ended questions, and educational outcomes. Hence, to fill this gap, the present research evaluates the impact of flipped-learning approaches on mathematics concepts for Year 13 students in a secondary school.

RESEARCH QUESTIONS

The main objective of this research is to develop a flipped-learning environment by creating instructional videos with interactive online content to enhance learner-driven education. Furthermore, creating own instructional videos helps personalize and customize learning content to meet individual learning needs based on learner's profiles in the classroom and New Zealand Mathematics Curriculum levels.

Research Question 1 (RQ1):

What is the impact of flipped-learning as a pedagogy on students' academic achievement?

Research Question 2 (RQ2):

What factors contribute to students' progress using flipped-learning pedagogical approaches?

METHODOLOGY

Action Research and Inquiry Framework

The Action-Research methodology process takes place gradually and intends to have both appropriate research and action outcomes. Moreover, it is a cyclic, qualitative, participative, reflective, and responsive approach to the emerging needs of the learners (Bob, 2020).

Figure 1. *MTEL Teacher Inquiry Framework V.1.0*

Within this, the MTEL teacher inquiry framework has been selected as an appropriate method to research because it allows the researcher to go through an iterative process of taking action, analyzing, and evaluating. Therefore, there may be several iterations during the implementation of this project. To determine the success of the flipped-learning, the researcher has decided on a mixed-methods approach to data collection Wisdom and Creswell (2013) highlights that: a) mixed-methods approach helps to understand contradictions between the results of the quantitative approach and the findings of the qualitative approach, b) give a voice to study and reflect on participants point of view, c) provides methodological flexibility and adaptable, d) collects rich and comprehensive data, and e) compare and validate findings, and creates a concrete foundation for drawing conclusions.

The main stakeholders are all students from the researcher's Year 13 maths class who will participate in flipped-learning activities as their regular lessons. Furthermore, the three stages of incorporating flipped-learning approaches such as Pre-Class, In-Class, and Post-Class, allow the researcher to reflect on the teaching practice for every lesson, analyze and address learning needs and evaluate the outcome of this approach.

Flipped-Learning Pedagogy Intervention

Pre-Class: The researcher has created own instructional videos and open-ended questions by using the Screencast-o-matics, Lucidchart, Geogebra, and NZGrapher apps as these tools were very effective for collaborating in real-time, accelerating understanding with powerful diagramming and data visualization, and helps to work from anywhere by using automation features to diagram faster and see mathematical ideas in a whole new light. The content in the videos was interactive and incorporated dynamic graphical representation, and this learning approach has enhanced students' visual conceptualization; moreover, teaching these kinds of concepts on the board would be difficult. Therefore, this researcher has planned, prepared, and presented ten flipped-learning lessons. All the materials relevant to the concept were posted on Google Classroom a day before the actual flipped-learning lesson to prepare for class. All students are expected to watch this instructional video and answer the open-ended question before coming to the class. This approach will shift the content instruction out of class time, and the learners are anticipated to study at home autonomously.

In-Class: The researcher aimed to prepare the students to demonstrate the concept by setting up the instructional videos, open-ended questions, flipped-learning score-points sheet, and Google Forms to fill in the student's voice. Additionally, the score-points sheet shared with students contains a maximum of four points and explained how they could achieve these points for each flipped-learning lesson as follows: 1 point for discussion about the video, 1 point for discussion about the open-ended question, 1 point for demonstrating leadership and collaboration, and 1 point for answering an open-ended question.

The lesson starts with a bit of discourse about the concept. Then, all students will spend more time learning collaboratively in the classroom by participating in conceptual practice, small group and whole-class discussions, and learning activities to reinforce student achievement. The researcher will have more time to reach every student and meet the individual learning needs and review the pieces of an automated instructional video to support the learning. The students who could not attend the lesson can still work collaboratively online with their group members, classmates, and teachers.

During the flipped-learning collaboration, students' names in groups were written on the board, got them to discuss their understanding of the concept from the video, and then wrote up their responses. Then asked the students to understand the open-ended question, discuss it in groups, and then again write up their responses on the board about their approach to the problem. Subsequently, the whole class review took place by putting what they all said altogether and co-constructed a plan to know what they should do next from those responses written on the board. Following this, at the end of the lesson, the students were informed about the score points they achieved for the lesson based on their participation.

Post-Class: Finally, to know the learners' flipped-learning experience, an exit slip was created on google forms and sent to all Year 13 Maths class students at the end of each flipped-learning lesson.

DATA COLLECTION METHODS

According to Hattie (2012), one of the tools to understand student achievement and progress is effect-size. The effect-size measures the impact of teaching and learning approaches on student achievement and determines the efficacy of an educational intervention relative to a comparison approach. Two sets of data are required to calculate the effect-size. If the value of effect-size is positive, the intervention has an increased effect on achievement. Similarly, if the value of effect-size is negative, the intervention has a decreased effect on achievement. Using effect-sizes benefits teachers to estimate student progress and re-evaluate instructional pedagogy to customize learning for individuals and groups of students.

Subsequently, the innovation of the VLPAT (Visible Learning Progress and Achievement Tool) graph by Hattie (2012) measures individual student progress and achievement. It outlines that the x-axis represents "student-progress" or effect size, and the y-axis represents "student-achievement" or score. 1) The first quadrant (Q1 – upper right-hand corner) of the graph, where both x and y-axis are positive, identifies learners with high progress and high achievement. 2) The second quadrant (Q2 – upper left-hand corner) of the graph, where the x-axis is negative and the y-axis is positive, identifies learners with low progress and high achievement. 3) The third quadrant (lower left-hand corner) of the graph, where both the x and y-axis are negative, identifies learners with low progress and low achievement. 4) The fourth quadrant (lower right-hand corner) of the

graph, where the x-axis is positive, and the y-axis is negative, identifies learners with high progress and low achievement.

Similarly, the research of Bishop (2019) highlights that teaching to the North-East enhances "High Teaching Skills and High Relationships" with the learners like an extended family-like context (Whānau) that puts relational leadership at the center of learning and leads to develop both culturally responsive and sustaining teaching practice.

Indeed, Bishop (2019) study states that effective teachers are positioned in Q1 with "High Teaching skills and High Relationships" is a metaphor of Hattie (2012) study where learning is highly visible in Q1 with "High Progress and High Achievement."

Hence, the analysis of the data collected will determine the impact of flipped-learning pedagogy in terms of visible learning quadrants such as Q1, Q2, Q3, Q4, and teaching to the north-east (Q1), north-west (Q2), south-west (Q3), south-east (Q4).

In addition the Education Perfect (EP) online learning platform is based on the core concepts of self-paced learning, provides learners with personalized learning, offers flexibility to learn anytime, anywhere, and gamification to improve student engagement (Education Perfect, 2020). EP is an innovative and creative tool that builds efficacy in independent learners. Moreover, the students who were using the Education Perfect tool for their learning outperformed in NZQA national pilot online maths assessment program (Education Perfect, 2020).

During the implementation stage of this project, two approaches such as "conventional pedagogy" followed by "flipped-learning as a pedagogy," have been applied.

The following methods were used to address RQ1 and RQ2:

Conventional Pedagogy: Initially, all students from Year 13 Maths class participated in a "conventional pedagogy" approach. This researcher taught the concept AS 3.2 Linear Programming using standard methods; then, this researcher conducted a test and collected the score points (out of 40).

Flipped-Learning Pedagogy: Following this, all students from the same Year 13 Maths class participated in a "flipped-learning pedagogy" approach. This researcher taught the concepts AS 3.4 Critical Path and AS 3.8 Time Series using flipped-learning methods, conducted 10 tests where students can score a maximum of 4 points in each test, and then collected the overall score points (out of 40).

VLPAT Analysis: Then, the score points of these two approaches were recorded and compared using the Visible Learning Progress and Achievement Tool (VLPAT) to calculate the effect-size and display the outcome of each student's achievement and progress on the graph. Hence, the outcome and effect-size value for all students from Year 13 Maths class will determine the success of flipped-learning as a pedagogy.

Education Perfect (EP) Analysis: The EP tool evaluates the impact of flipped-learning pedagogy to determine the individual student and overall class achievement and progress based on the comparison of the pretest conventional-pedagogy and post-test flipped-learning pedagogy score points.

Absent Work Analysis: The absent students' data has been collected from each flipped-learning

lesson to evaluate whether the learners should still catch up on the lesson by watching the instructional videos to understand the concept and complete open-ended tasks before coming to the next class.

ANALYSIS, FINDINGS, AND RESULTS

This section focuses on results and findings of VLPAT analysis, EP analysis, and Absent Work analysis to evaluate the impact of the flipped-learning pedagogical approach on student academic achievement and progress and factors contributing to them.

VLPAT Analysis

According to Lalongo (2016), the effect size is a measure for quantifying the difference between the same groups or two different groups over time on a common scale, and effect size help in measuring both learners' achievement improvement for a group of students and variation of learner performances expressed on a standardized scale.

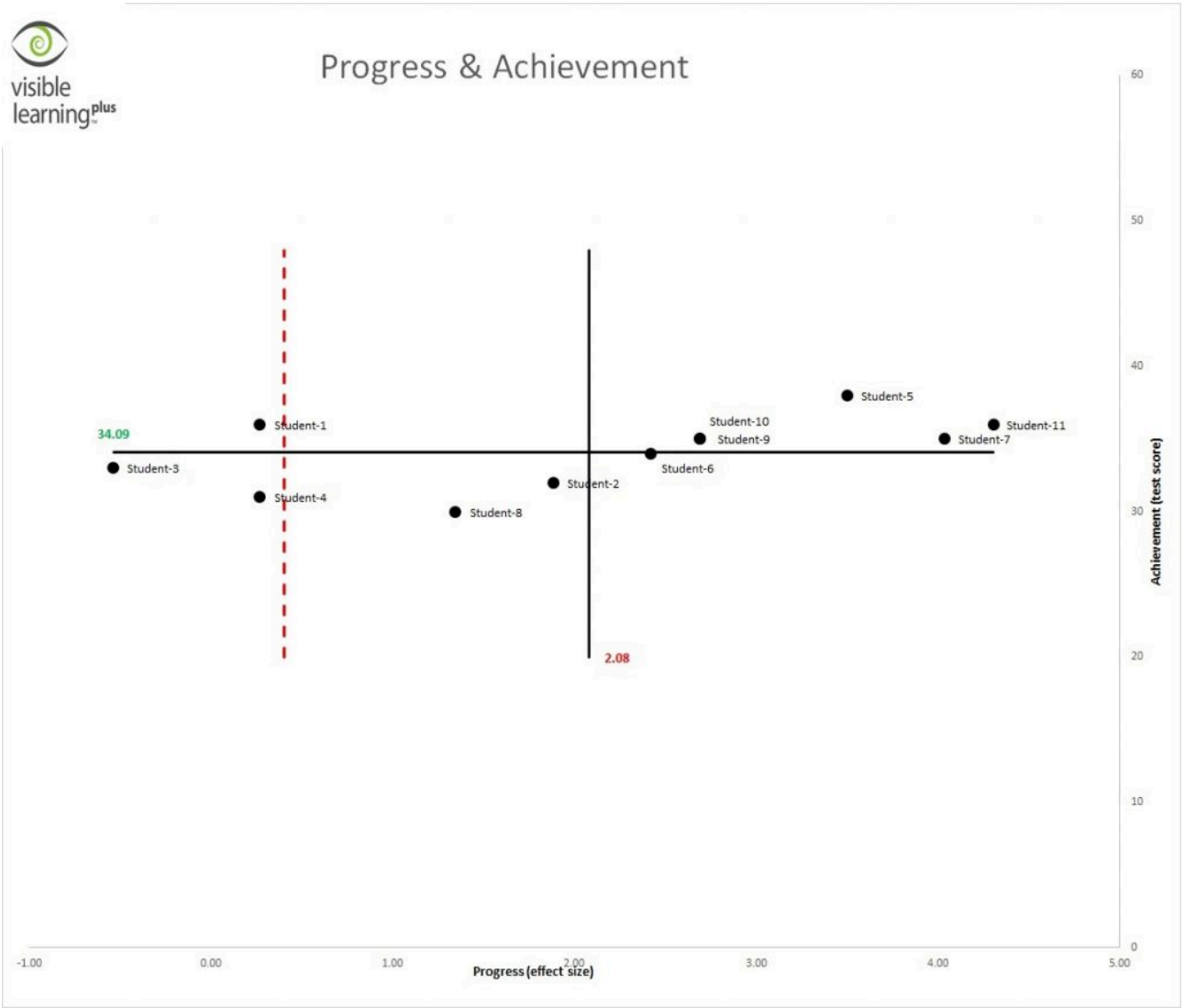

Figure 2. *Visible Learning Progress & Achievement Tool (VLPAT) Graph*

In the VLPAT graph (Figure 2), the x-axis represents "Student Progress (Effect Size)," and the y – axis represents "Student Achievement (Score Points)." The VLPAT graph has generated all students' academic achievement on average is 34.09 out of 40 score points (85.2%), and academic progress on average is 2.08 effect size. According to Hattie (2012), the average effect-size is 0.4,

considered the Hinge-Point. Therefore, if the effect size is less than the hinge-point (0.4), student academic progress occurs below the average, effect-size between 0.4 and 0.6 to be considered above average, and effect-size above 0.6 to be considered excellent. Thus, the impact of flipped-learning as a pedagogy on overall students' progress is excellent with effect-size 2.08, and students' achievement is 85.2%. Additionally, TKI (2019) states that an effect size of above 0.4 would show that innovation is working more than expected in a classroom setting. Table 1 highlights the calulation for effect size.

CP - Conventional Pedagogy **FP** - Flipped Learning Pedagogy **STDEV** - Standard Deviation **d** - Effect Size	**Calculating Effect Size (d):** $\text{Effect Size (d)} = \frac{(FP_{AverageScore} - CP_{AverageScore})}{STDEV_{Average}}$
$FP_{AverageScore} = 34.09$ $CP_{AverageScore} = 26.36$	Effect Size (d) = (34.09 - 26.36) / 3.72
Flipped Learning ($STDEV_{Average}$) = 2.39 Conventional Pedagogy ($STDEV_{Average}$) = 5.05 $STDEV_{Average} = (2.39 + 5.05) / 2 = 3.72$	Effect Size (d) = 7.73 / 3.72 **Effect Size (d) = 2.08**

Table 1. *Calculation of effect size*

Student	Conventional	Flipped-Learning	Effect size
Student-1	35	36	*0.27*
Student-2	25	32	*1.88*
Student-3	35	33	*-0.54*
Student-4	30	31	*0.27*
Student-5	25	38	*3.50*
Student-6	25	34	*2.42*
Student-7	20	35	*4.04*
Student-8	25	30	*1.35*
Student-9	25	35	*2.69*
Student-10	25	35	*2.69*
Student-11	20	36	*4.31*
Average	26.36	34.09	**2.08**
STDEV	5.05	2.39	
AV Stdev		**3.72**	

Table 2*. Score Points Out of 40*

Additionally, an evaluation of flipped-learning pedagogy with year 13 maths learners revealed in Table 3 that the student academic progress is recorded highest for "Student – 11" with 4.31 effect-size and lowest for "Student – 3" with -0.54 effect-size, whereas the student academic achievement is recorded highest for "Student – 5" with score points 95% and lowest for "Student – 8" with 75%.

Second Quadrant (Q2) X-Axis: Low Progress (Effect Size) Y-Axis: High Achievement (Score Points) Student-1 (0.27, 36)	**First Quadrant (Q1)** X-Axis: High Progress (Effect Size) Y-Axis: High Achievement (Score Points) Student-11 (4.31, 36) Student-9 (2.69, 35)) Student-7 (4.04, 35) Student-10 (2.69, 35) Student-5 (3.50, 38) Student-6 (2.42, 34)
Third Quadrant (Q3) X-Axis: Low Progress (Effect Size) Y-Axis: Low Achievement (Score Points) Student-4 (0.27, 31) Student-3 (-0.54, 33)	**Fourth Quadrant (Q4)** X-Axis: High Progress (Effect Size) Y-Axis: Low Achievement (Score Points) Student-2 (1.88, 32) Student-8 (1.35, 30)

Table 3. *The Impact on Student Academic Achievement and Progress*

In Figure 2, the VLPAT graph, four quadrants determine the students' academic progress and achievement. The results are summarised in Table 3. First Quadrant Q1: The students with high progress and high achievement belong to Q1, and they are as follows: 1) "Student – 11" with effect size 4.31 and score points 90%. 2) "Student – 7" with effect size 4.04 and score points 88%. 3) "Student – 5" with effect size 3.50 and score points 95%. 4) "Student – 9" with effect size 2.69 and score points 88%. 5) "Student – 10" with effect size 2.69 and score points 88%. 6) "Student – 6" with effect size 2.42 and score points 85%.

Second Quadrant Q2: The students with low progress and high achievement belong to Q2, and he is "Student – 1" with effect-size 0.27 and score points 90%. Third Quadrant Q3: The students with low progress and low achievement belong to Q3, and they are as follows: 1) "Student – 4" with effect size 0.27 and score points 78%. 2) "Student – 3" with effect size -0.54 and score points 83%. Fourth Quadrant Q4: The students with high progress and low achievement belong to Q4, and they are as follows: 1) "Student – 2" with effect size 1.88 and score points 80%. 2) "Student – 8" with effect size 1.35 and score points 75%.

Indeed Bishop (2019) study states that effective teachers are positioned in Q1 (teaching to the north-east) with "High Teaching skills and High Relationships" with the learners is a metaphor of Hattie (2012) study where learning is highly visible in Q1 (High Progress and High Achievement).

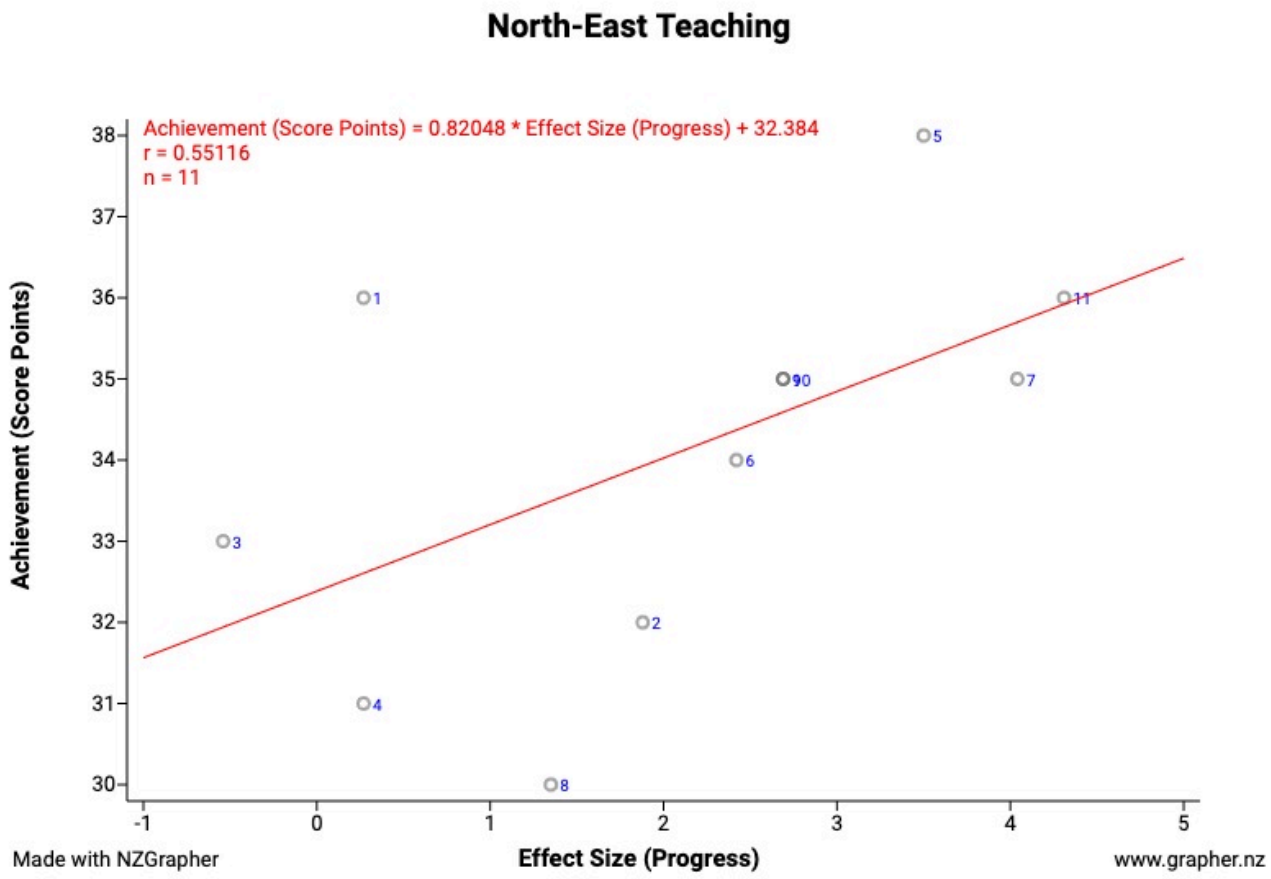

Figure 3. *Teaching to the North-East Graph*

Thus, the "Teaching to the North-East" graph has been generated using the NZGrapher tool, see Figure 3. The red line clearly shows that the impact of flipped-learning pedagogy is positive, and moving towards north-east Q1 puts relational leadership at the center of learning to raise students' academic achievement and progress.

EP Analysis

Figure 4 show an evaluation of flipped-learning pedagogy using the Education Perfect (EP) tool. This resulted in 19.3% academic improvement on average for all year 13 maths students compared to conventional pedagogy. In saying this, the average academic outcome of conventional pedagogy is 65.9%, whereas flipped-learning pedagogy is 85.2%.

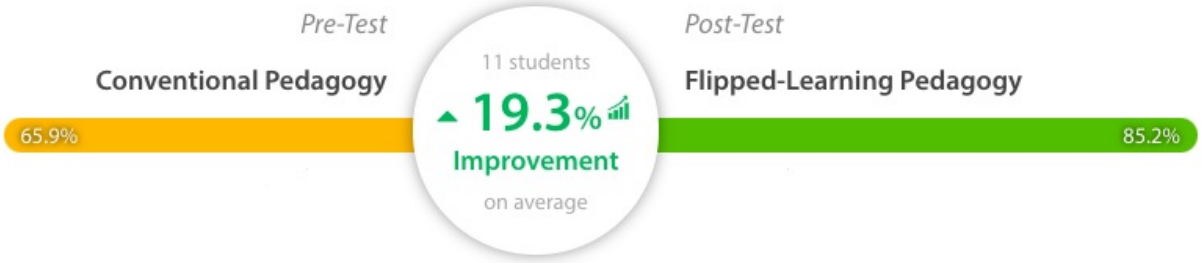

Figure 4. *Overall Flipped Learning Improvement on Average*

Additionally, the student academic improvement using flipped-learning is recorded highest for "Student – 11" with 40% and lowest for "Student – 3" with -5%, as shown in Table 4. Furthermore, summary statistics and graphs of year 13 maths students show that using flipped-learning pedagogy improves students' academic achievement and progress. Thus, low and average-

achieving students will struggle to reach their full potential if there is no flipped-learning pedagogical approach in place.

First Name	Surname ▲	Pre-Test	Post-Test	Change
[redacted]		88%	90%	▲ 3% Student-1
[redacted]		63%	80%	▲ 18% Student-2
[redacted]		88%	83%	▼ -5% Student-3
[redacted]		75%	78%	▲ 3% Student-4
[redacted]		63%	95%	▲ 33% Student-5
[redacted]		63%	85%	▲ 23% Student-6
[redacted]		50%	88%	▲ 38% Student-7
[redacted]		63%	75%	▲ 13% Student-8
[redacted]		63%	88%	▲ 25% Student-9
[redacted]		63%	88%	▲ 25% Student-10
[redacted]		50%	90%	▲ 40% Student-11

Table 4. *Individual Student Flipped Learning Improvement on Average*

According to Melville (2019), the biggest challenge of being a teacher is balancing teacher time in the class; therefore, tools such as Education Perfect (EP) help teachers to be more effective, efficient, and responsive to the students' requirements. Similarly, Cabi (2018) study states that the results of flipped learning environments revealed that using mathematics software, digital content, and instructional videos doubled the learners' academic progress and facilitated learning by visualizing mathematics content that enhanced permanent learning.

Absent Work Analysis

Table 5 shows the list of absent students for each flipped-learning lesson and also displays whether each absent student has completed the tasks or not. The tasks include watching the instructional video, understanding and answering open-ended questions, and collaborating with other students and the teacher.

Flipped-Learning	Absent Students	Tasks Completed	
		YES	NO
1	1) Student-11	Yes	-
2	1) Student-1	Yes	-
	2) Student-4	Yes	-
	3) Student-8	Yes	-
	4) Student-11	Yes	-
3	1) Student-1	Yes	-
	2) Student-4	Yes	-
	3) Student-6	Yes	-
	4) Student-8	_	No
	5) Student-10	Yes	-
4	1) Student-2	Yes	-
	2) Student-7	Yes	-
	3) Student-9	Yes	-
	4) Student-10	Yes	-
	5) Student-11	Yes	-
5	1) Student-1	Yes	-
	2) Student-2	Yes	-
	3) Student-5	Yes	-
	4) Student-9	Yes	-
	5) Student-10	Yes	-
	6) Student-11	Yes	-

Flipped-Learning	Absent Students	Tasks Completed	
		YES	NO
6	1) Student-2	-	No
7	1) Student-4	Yes	-
	2) Student-6	Yes	-
	3) Student-7	Yes	-
8	1) Student-2	Yes	-
	2) Student-4	Yes	-
	3) Student-6	Yes	-
	4) Student-7	Yes	-
9	1) Student-2	Yes	-
	2) Student-4	Yes	-
	3) Student-6	Yes	-
	4) Student-7	Yes	-
10	1) Student-1	Yes	-
	2) Student-2	-	No
	3) Student-3	-	No
	4) Student-4	-	No
	5) Student-8	-	No
	6) Student-9	Yes	
Total Students Tasks Completed (Yes/No)		33	6
Overall Students		39	
Tasks Completed Percentage (Yes/No)		84.60%	15.40%

Table 5. *Absent Students Work Analysis*

The results of absent work analysis show that 33 out of 39 students who were absent for the ten flipped-learning lessons were able to successfully catch up on the lessons they missed by watching the instructional videos from home in their own time, understanding the concept, and completing open-ended tasks. Thus, the impact of the flipped-learning pedagogical approach on year 13 maths students who were absent was 84.6% successful in completing their work before coming to the next lesson. Furthermore, overall 39 students missed 10 flipped-learning lessons, which means, on average, 3.9 students (approximately 4 students) were absent for each flipped-learning lesson. Hence, this indicates that about 4 students in each lesson and may not be the same students in every lesson will struggle to establish the link with the previous lesson if there is no flipped-learning pedagogical approach in place.

CONCLUSION AND RECOMMENDATIONS

This research report, however, makes several noteworthy contributions to the flipped-learning approaches. The significant findings from the flipped-learning collaborations revealed the factors that contributed to students' progress are as follows: a) Instructional videos were very clear with concise instructions and easy to understand the concept, flexibility to catch up on the lesson anytime anywhere for those who were absent, able to revisit the lesson when students had any questions and have more information than a teacher can do on the board or in the classroom. b) Open-ended tasks allowed the students to develop their ideas with multiple correct answers and apply in-depth curriculum knowledge by working at their own pace, in multiple ways, and at different levels. c) Leadership and collaboration met individual learning needs by reaching every student in every lesson, catching up with the absent students, allowed sharing ideas in small groups and with the whole class, and hearing different views of discussions to find the solution, enhanced the faster way to learn the concepts, encouraged learners participation and gave more control on the learning process.

The results of the VLPAT analysis show that the learning is visible and teaching is to the north-east, the impact of flipped-learning as a pedagogy on overall students progress is strong with effect-size 2.08, and students academic achievement is 85.2%. Additionally, the student academic progress is recorded highest for "Student – 11" with 4.31 effect-size and lowest for "Student – 3"

with -0.54 effect-size, whereas the student academic achievement is recorded highest for "Student – 5" with score points 95% and lowest for "Student – 8" with 75%. The outcomes of EP Analysis have resulted in 19.3% academic improvement on average compared to conventional pedagogy. Furthermore, the student academic improvement using flipped-learning is recorded highest for "Student – 11" with 40% and lowest for "Student – 3" with -5%. The Absent Work Analysis highlights that 84.6% of absent students could successfully catch up on the lessons they missed because of flipped-learning pedagogy. Therefore, using a flipped-learning pedagogical approach significantly improved student academic achievement and progress than the conventional teaching approach. However, in-depth evaluation highlights that the low and average achievers performed better using a flipped-learning approach, whereas the high-achievers academic outcomes remained nearly the same.

Future research could include incorporating Edpuzzle in the instructional videos to add more dynamic open-ended tasks. This technique will make the video lessons more interactive and encourage students to self-paced learning. Similarly, Baker (2016) studies found that EdPuzzle is an excellent tool for teachers who use flipped-learning pedagogical approaches because it offers interactive features such as open-ended questions students answered in the instructional video and helps redefine learning.

LIMITATIONS

This researcher acknowledges there are some limitations, such as comparability of the data collected. For example, although the topics taught using conventional pedagogy and flipped-learning approach were equivalent in terms of difficulty and at the same level based on NCEA Year 13 curriculum standards, perhaps collecting the data from the same number of tests (eg. 10 tests – Conventional Pedagogy and 10 tests – Flipped-learning) would have been more credible. For example, in this research, the data collected (scores) from the flipped-learning approach comprises 10 tests (4 marks each test) that totals up to 40 marks. Whereas the data collected (scores) from the conventional pedagogy was from one 40 marks test, instead of collecting data from 10 tests (4 marks each test) could have resulted in more reliable and valid data.

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BEGIN WHERE YOU ARE STANDING: DEVELOPING A CRITICAL PEDAGOGY OF PLACE IN A BICULTURAL SENIOR ENGLISH CLASS IN TE TAI TOKERAU

He Rourou, Volume 1, Issue 1, 49-66, 2021
TIM MCVICAR

ABSTRACT

This project employed an iterative research approach to examine the effects of a critical pedagogy of place (Milne, 2016; Gordon, 2018; Gruenewald, 2013; Penetito, 2018) on Pākehā learners in a Level 1 English class in Northland, New Zealand. The project tracked Pākehā learners' engagement and achievement outcomes and examined if there were notable shifts in their perspectives about Māori inequality in Northland as a result of the project.

The project results showed that a critical pedagogy of place was initially confronting for Pākehā learners, and participants displayed low engagement in the project's early stages. However, by the end of the project, Pākehā learners began to articulate more nuanced and constructive understandings of the effects of the Northern wars, colonisation, institutional discrimination, and inequality faced by Māori. A marked increase in engagement was evidenced, and final assessment results in the standard were notability high.

A critical pedagogy of place, in this sense, was 'consciousness-raising.' Participants' formal writing outputs, as well as small group interviews at the project's conclusion, showed increased empathy to Māori concerns within their communities. These positive outcomes depict how schools can legitimise and offer safe spaces to analyse challenging aspects of New Zealand's past and present.

INTRODUCTION

This project analysed the inclusion of a critical pedagogy of place (Gruenewald, 2003; Penetito, 2008; Milne 2013; Gordon 2018) to teaching and learning within the context of an NCEA Level 1 English class at a Northland Public High School. The project involved implementing a five-week teaching unit that explored the Northern Land Wars, particularly the battles of Kororāreka and Ruapekapeka, as platforms for investigations into imperial motivations, colonial legacies, iwi (tribe) and hapū (sub-tribe) responses to these wars and the impact such histories have on cultural identity presently. The project tracked Pākehā (New Zealander of European descent) learners' engagement and assessment results and examined if the content provoked dispositional changes in their understandings. AS90053, 1.5 Produce Formal Writing is the aligned assessment standard.

The school where the study was undertaken recognises the centrality of the bicultural dynamic in community and school life in Northland and instructs teachers to 'actively nurture te reo Māori (Māori language) including local dialect te reo o Ngāpuhi, tikanga (Māori customary practices, values and behaviours) and our bicultural heritage.' School kaumātua (elders), whānau (families),

senior leaders, teachers and learners agree that the school needs to develop authentic learning environments for Māori learners. Like many mainstream schools in New Zealand, the school seeks insight from Māori-medium education pathways which continue to deliver exceptional results for many Māori learners because progressive pedagogies such as critical pedagogy can thrive in such an ethnically homogeneous environment. Indeed, it is often research and experiences in these contexts that inform national policy about what works and what does not for Māori learners, even though the majority of Māori learners remain in mainstream settings. Yet, this is perhaps where contemporary critical pedagogy in New Zealand falls short: it empowers minority voices to challenge social injustices in society but without engagement, exposure and critical reflection from members of the dominant culture themselves. Surprisingly, little research on how such pedagogies would work within mainstream bicultural schools in New Zealand has been undertaken. Potentially, the large number of learners from the dominant culture complicates the introduction of critical pedagogies, and it is this potential complication that this project seeks to examine.

Within Te Tai Tokerau (Northland) English departments, authenticating indigenous perspectives necessitates implementing content and curriculum that faithfully reflects and incorporates Te Tai Tokerau Māori worldviews, histories and knowledge. The English curriculum at the school where the project was undertaken may be enriched if its teachers develop units that foster critical approaches and encourage learners to question and challenge ideologies, beliefs, and value systems that dominate within a society and perpetuate injustices and inequalities. This could involve the localisation of social justice themes through the study of texts embedded in and about the places that learners are from. This would ensure that the learner is at the centre of their learning and encourage them to consider the social-cultural and political forces that impinge on their lives, not indirectly but directly.

Exposing Pākehā learners to such content supports those from the dominant culture to engage with and respond to non-dominant perspectives. Learners rather naturally avoid addressing subjects that may force reflections on their place in society. In my teaching experience, this is the same for Māori learners as it is for Pākehā. While non-Māori learners tend to have a surface understanding of Te Tiriti o Waitangi they often remain unaware of the contested and complex interactions between Māori and Māori, Māori and the Settler Government, and Pākehā and Māori. Yet, learners can not understand the lingering effects of systemic inequality without exploring the impacts of colonisation on indigenous Māori. As O'Malley (2019) states: "Any discussion of contemporary Māori poverty that fails to acknowledge the long history of invasion, dispossession and confiscation is missing a vital part of the story." While this can be confronting for Pākehā learners, such knowledge and the empathy it produces is becoming increasingly essential.

LITERATURE REVIEW

David Gruenewald (2003) has linked the theoretical strands of critical pedagogy and place-based education. Understanding his synthesis and its relevance to English Classrooms at the Northland school necessitates an overview of the two discourses.

Critical Pedagogy

Developed by Paolo Freire (1972), a critical pedagogy of education places the raising of learners' critical understanding at the heart of education. The goal of education, Freire, and later theorists such as bell hooks (1994), Ira Shor (1992), and Henry Giroux (2011) asserts, is not simply the transfer of knowledge to support learners' economic opportunities; instead, the goal of education

is to raise learners' critical consciousness through an understanding of the social-political forces at play within societies so that the learner, the learning environment and society as a whole can be transformed. As an influential theorist, Peter Mclaren states:

Critical pedagogy is a way of thinking about, negotiating, and transforming the relationship among classroom teaching, the production of knowledge, the institutional structure of the school, and the social and material relations of the wider community, society, and nation-state. (McLaren: 1998, p.45).

The need to transform education, and through it, broader society is fundamental to critical pedagogy. Theorists contend that in many countries, the dominant social-political power structures are the products of an ongoing colonial-capitalist framework that normalised control over indigenous populations and embedded the racial-cultural superiority of the colonisers. Disrupting the global monoculture of neoliberal economics and decolonising the institutions that perpetuate cultural narratives that concentrate power and privilege within a dominant group and exclude nondominant voices, worldviews, or alternatives is at the heart of critical pedagogy (Gruenewald, 2013). The aim is to critique, disrupt and remove the social, political, economic and cultural norms that 'oppress' non-dominant groups so that societies become more equitable.

Place-based Education

The other important strand is place-based education (PBE). A key component of PBE is the application of learning to real-life situations. PBE contends that a school's location is a springboard. However, questions remain over a perceived disconnect between the mediated and constructed experience of school education and the embodied immersive experience of the learners' real lives. PBE often has an overt environmental concern, and like critical pedagogy, PBE is a reaction to globalisation and the neo-liberal economic homogenisation of contemporary schooling and culture. The effect is "social disintegration occurs as basic connections to the land fray and communities become less resilient and less able to deal with the dislocations that globalization and ecological deterioration bring about. A community's health— human and more-than-human—suffers" (Sobel, 2004, p.3).

A Critical Pedagogy of Place

Gruenewald believes that as independent discourses both, critical pedagogy and place-based Education have shortcomings. He contends that PBE tends to focus on the ecological dimension of place without a necessary focus on the social relationships that make up physical spaces. On the other hand, critical pedagogy often "betrays a sweeping disinterest in the fact that human culture has been, is, and always will be nested in ecological systems" (Gruenewald, 2013, p3). Without grounding in particular places, critical pedagogies remain too focused on the macro-level of society and general forces of oppression than to those attuned to the immediate environments that learners live in:

> Place, in other words, foregrounds a narrative of local and regional politics that is attuned to the particularities of where people actually live, and that is connected to global development trends that impact local places… Place-based pedagogies are needed so that the education of citizens might have some direct bearing on the wellbeing of the social and ecological places people actually inhabit. (Gruenewald, 2003, p.3)

Bowers (2008) provided an important amendment to Greuewald's earlier position. He argues that Grunewald ignores the cultural commons shared between people from different ethnicities within

a place. Different cultural groups within a place have often reached a cultural consensus and share cultural legacies. He believes that not everything needs to be decolonised and transformed. Not all change is positive, and some knowledge should be preserved:

> Gruenewald does not acknowledge that conserving involves, among other things, an awareness of the ecological importance of the many forms of intergenerational knowledge, skills and patterns of interdependence and support that can also be understood as traditions. (Bowers, 2008, p. 328)

According to Bowers, rehabilitation and decolonisation must work together for the betterment of all members of a society and construct an authentic critical pedagogy of place where thick descriptions (Geertz, 1973) of cultural places and histories can lead to greater empathy, consensus and awareness of other cultural groups that make up spaces. Unlike critical pedagogy, it allows individuals and groups to construct their own narratives about the world they live in and how they are affected by it. Thus a reformed critical pedagogy of place aims to "(a) identify, recover, and create material spaces and places that teach us how to live well in our total environments (reinhabitation); and (b) identify and change ways of thinking that injure and exploit other people and places (decolonization)" (Gruenewald, 2003, p. 9).

As a general philosophical framework, a critical pedagogy of place that promotes rehabilitation, decolonisation and equality is relevant to the bicultural context of this study. Significantly, it avoids an exclusivist focus on decolonising education and de-legitimising the lived experiences of non-Māori groups. Rather it supports the recovery of shared histories and encourages learners to appreciate the complexity and legitimacy of their own culture.

Applying a Critical Pedagogy of Place

Critical pedagogy and place-based education have been explored within educational spaces in New Zealand. Ann Milne (2013; 2016) has explored how critical pedagogy can address shortcomings in the New Zealand schooling system. She (2016) claims that the neo-liberal capitalist framework has negatively impacted education systems and created a push for globalised sameness. As a result, indigenous learners remain alienated because their norms and values are different from the dominant culture. Milne contends that mainstream schools in New Zealand are, in fact, "whitestream schools". She believes schools project value judgements about whose knowledge counts in a system that "damages Māori and Pacific learners" (Milne, 2013, p.4). Milne uses the metaphor of a colouring book to describe the experience of Māori and Pasifika learners within mainstream schools. This colouring book is not blank but is ubiquitously white. To enter such schools, Māori and Pasifika learners are required to leave their identities at the door. Thus: "not only is the background uniformly white, the lines on the page dictate where the colour is allowed to go" (Mile, 2013, p.1). In such an educational context, it is obvious why Pākehā learners are more successful. She champions a critical curriculum that empowers Māori and Pasifika learners to contest the forces that marginalise them.

If we are serious about providing authentic spaces in our schools for indigenous and minority ethnic groups we have to ask the hard questions about the purpose of schools, whose knowledge counts, who decides on literacy and numeracy as the primary indicator of achievement and success? We have to name racism, prejudice, stereotyping, deficit thinking, policy and decision-making, power, curriculum, funding, community, school structure, timetabling, choice, equity instead of equality, enrolment procedures, disciplinary processes, poverty, and social justice. We have to eliminate these white spaces and mitigate the damage they have caused. (Milne, 2016, p.4)

Milne's research is an important critique of the New Zealand education system. She highlights the need for the decolonisation of schools if there is any chance of educational equity. However, questions remain: Milne, like many critical theorists before her, does not present a framework for how decolonisation can occur within whitestream schools themselves – nor does she present ways to navigate this decolonisation so that members of the dominant culture can navigate it and remain supportive. Instead, her solution is a panacea to the problem by promoting a differentiated curriculum for Māori and Pacific learners and, by extension, the assumption that indigenous/minority learners need separate schools. Milne faces the criticism expressed by Bowers that rehabilitation is as vital as decolonisation:

> [A teacher should not] set out to decolonize or emancipate students from the intergenerational knowledge and skills that the critical pedagogy theorist has relegated to the realm of silence or has prejudged as backward. (Bowers, 2008, p. 332)

Certainly, within the context of an English classroom with a bicultural composition of its learners, Milne's critical pedagogy would struggle to gain traction. Such contexts are complex and necessitate continual negotiations and empathy between learners and whānau from dominant and indigenous cultures. As Bowers points out, thick descriptions of such a learning space would highlight the organic overlapping of identities within larger ethnic identities. While her approach can help shape the critical questions asked, a more nuanced approach is needed.

Wally Penetito (2008) may provide such an approach. Penetito provides an important element missing in Milne's writings. He articulates a perspective that more closely fits a critical pedagogy of place adapted for the English classroom. He contends that the principles and practices of place-based education should be adopted by all compulsory schools in New Zealand. PBE is not just for non-Pākehā learners but has relevance to all learners. Echoing a critical perspective, Penetito notes that PBE should investigate questions that are often ignored or disregarded because of the normative educational focus on what works for the mainstream and a subsidiary focus on how indigenous schools compare to the mainstream. Indeed, Milne's approach can be read as an example of the latter, while Penetito's PBE strives for the establishment of critical consciousness in all New Zealand learners. Penetito contends that PBE is not an indigenous alternative, rather it satisfies "indigenous people's aspirations as a priority, but in every case, the objectives and strategies recommended are of benefit to everyone" (Penetito, 2008, p.6). Like Milne, he sees the need for an education that reacts against the homogenisation of culture and detachment from place through globalising economic forces. He notes that you have to get people to think about changing something: the invisible needs to be made visible. As Gruenwald, Milne, and others above have noted, one way to make something visible is to subtract or interrupt it.

One of the most important characteristics of Penetito's PBE is the expectation of its enriching nature, which is in contrast to the often confrontational modus operandi of critical pedagogy. Penetito hopes that learners develop a love of and a sense of responsibility for the places they inhabit, regardless of ethnicity. PBE attempts to instil an awareness in learners about how people have and continue to respond to the places that the learner resides. Following Grunewald's critical pedagogy of place, as amended by Bowers, It is as much about the rehabilitation of identities as it is about their decolonisation. PBE is relevant to all learners because it strives to answer two fundamental questions: "What is this place?" and "What is our relationship to it?"(Penetito, 2008. p.5).

Penetito's framework encourages curriculums within English departments that motivate learners to explore and reflect on the places and histories that shape them. Penetito documents how a

critical pedagogy of place could be adopted throughout mainstream schools. The next important step is to see how such a framework plays out at the chalkface.

RESEARCH QUESTIONS AND AIMS

The guiding research question for this project was: How does a critical pedagogy of place-based approach to teaching English affect assessment outcomes and lead to dispositional changes in Pākehā learners?

The aim was to see how learners from a class of primarily Pākehā learners engaged with and reflected on critical perspectives about Māori-Pākehā relationships in New Zealand. Sub questions included:

1. How is Pākehā engagement affected by an English Unit focussed on the critical questions about power, race, inequality and privilege in New Zealand?
2. Does a critical pedagogy of place change learners' perception of Pākehā / Māori relations?
3. Is there any quantitative influence – negative or positive – on assessment results for Pākehā learners when bicultural identity is examined through the lens of a critical pedagogy of place?

Participants

Data for this project were derived from twenty participants from a co-educational Level 1 English Class in a Northland High School. According to Kamar learner records: seven participants were female; thirteen were male. Five learners were Māori (four female, one male) of Ngāpuhi descent. One male learner was of Korean descent, while another male learner was of mixed Pākehā-Japanese descent.

The remainder of the participants were of Pākehā descent; most were male (ten males; three females). The class was intentionally chosen because of the high level of Pākehā learners in the class.

METHODOLOGY: ACTION RESEARCH

The methodology employed for the collection and analysis of data is action research. This spiral of inquiry methodology frames how data has been collected and analysed. Crucially, action research binds teaching and research to the location and people involved in analysis, a perspective supported by a critical pedagogy of place.

Action Research is an evidence-based approach developed to overcome artificial distinctions between pure research and pure practise (action). Action research sees practice and research as intimately linked (Ferrance, 2000). Researchers are often practitioners themselves, who address and seek to resolve issues and challenges they experience in their context (Ferrance, 2000). A focus on practice in situ is the theoretical backbone of the action research process of inquiry. Action research readily aligns with a critical pedagogy of place as both aims to transform the classroom space.

An integral feature of action research is that researchers are expected to engage in self-reflective inquiry to strengthen learner outcomes and maximise social justice within their sphere of influence (Ferrance, 2000). Thus action research aligns with a critical pedagogy of place because

it is a reflective undertaking that involves experimentation with different content and classroom procedures, reflection on success and challenges, and the cyclic refining of practice in the pursuit of educational achievement and equality for learners.

Because action research encourages analysis of my responses and reflections as part of the inquiry process, it places my narrative experiences within the interpretation of data, authenticating the learning journey that I shared with my learners. This project is one cycle of inquiry amongst many more to follow as I develop as an authentically biculturally responsive practitioner. Importantly, this project is not intended as a standalone piece of research. To be meaningful for my practice and learners, it necessitates multiple iterations and spirals of inquiry to produce the best results for learners.

The project began in Week 6 of Term 2, 2020; a week after school reopened due to COVID 19. The course ran for five weeks, with time given in the sixth week for learners to finalise their writings. At the beginning of the project, before any content was delivered,learners were given an anonymous survey to complete – this tracked their pre-exposure perspectives and understanding. In the second week, as part of content study on implicit bias and institutional discrimination, participants completed an Implicit Association (IA) test), this was used as paltifom to address the complexity of how bias works and to prompt reactions in relation to their own potential bias. After three more weeks of content delivery and classroom activities, learners began to write up their own research papers for submission as part of the assessment in week 11 of the term. Final small group discussion occurred in week 12, after the completion of the course.

DATA COLLECTION AND ANALYSIS

The sample size of this project is small. This fact, combined with the target research questions, meant that data collection and analysis was mixed involving both quantitative and qualitative analysis. Because I tracked dispositional changes, I have compared and contrasted data sets from the beginning of the project and those at the end of the project. Information was gathered from participants via the following:

- anonymous response to a Google Form;
- small group interviews;
- reflective writings on class content;
- formal writing outputs.

The combination of anonymous, reflective, peer-mediated and formal responses provided a solid foundation to answer the research question. The range of data collection tools was intentional because what learners' stated in a given context was influenced by who can hear/read what they say. As expected, participants gave different answers depending on context and tool. For example, formal writing outputs were developed over time, in contrast to other data tools which encourage spontaneous answers.

The study did not track Individual learners. This was because participants were told perception survey responses were anonymous and so that individuals felt safe to offer their opinions. Furthermore, the research questions only required analysis of responses about participants' ethnicity. Accordingly, participants' responses are analysed according to ethnic identity only.

Survey and interview questions were intentionally open-ended, encouraging learners to respond

to them as they interpreted them. Indeed, the interpretative nature of survey questions provided interesting results in themselves. For example, several learners interpreted 'place' to refer to the house and immediate neighbourhood rather than a wider geographical area. Often these interpretations were as important as the answer to the question itself.

The small sample size made considerations of quantitative changes in perspectives less meaningful. However, with data sets compiled by ethnic groups, it was possible to make general comparisons based on shifts in what proportion of the class responded in a given way. Where possible, data was categorised in relation to similar ideas/themes. To mitigate bias in the data analysis a project collaborator supported the coding of responses. A positive response was given if the respondent gave an empathetic answer to a question and a negative for a dismissive response.

Formal writing outputs were submitted as part of an assessment from which the learners would receive 4 NCEA credits. The formal writing output was an opinion piece on the question: Equality in New Zealand: Fact or Fiction? This output provided significant data because it allowed learners to write a considered response to the themes covered in the unit.

Discussion groups were composed of learners who usually sit together as this offered a comfortable setting for ideas to be expressed. These discussions captured learners' statements amongst their peer group and encouraged extended discussion and reflection on target questions. Questions targeted perceptions of course content and if this knowledge had changed their perceptions about social inequality in New Zealand. Another tool that I used was a journal of my reflections during the project. Action research and critical pedagogy highlight that the researcher is part of what is being researched. To this end, reflecting on and modifying the project was integral to providing detailed evidence to answer research questions.

FINDINGS: 'CONSCIOUSNESS RAISING' RESULTS?

To provide the most robust data set to analyse the research question, I will compare and contrast 'formative' participant data and statements with 'summative' participant responses at the end of the project as overviewed in the data collection and analysis section.

FORMATIVE FINDINGS

Learner Perception Survey

A learner perception survey was created specifically for this project and titled The Identity Survey. This was completed by participants before the introduction of the content on day one of term three. The survey encouraged participants to respond to nine open-ended questions about ethnicity, ancestry, the New Zealand land wars, Māori culture and perceived ethnic privileges and inequality in New Zealand.

Participants were advised that their responses would be anonymous but may be read in a public space or by the school's new principal. I emphasised that the results could be shared publicly to encourage participants not to give answers they perceive I as the researcher and their teacher would want and also to consider the language they used to express themselves.

For clarity in analysis, while individual expressions in such a small pool of participants should not be seen necessarily indicative of general group perceptions, meaningful data can be extracted if participants are grouped and analysed as 'Pākehā' (21 participants) and 'Māori / Māori-Pākehā.' (7 participants) Analysis of gender is beyond the scope of this initial survey.

Due to space constraints, I will only discuss two questions though these are not representative. For example, both Pākehā and Māori gave nuanced answers about their own family histories and the relevance of ethnicity to identity. Below I focus on questions that drew the most confronting responses. Two questions targeted perceptions of discrimination and privilege based on the participant's ethnicity. Two Māori participants stated they were unsure —the remaining five perceived discrimination against Māori. Only one Māori participant stated that Māori have some privileges. Māori perceptions of disadvantages included: "automatically being portrayed as a criminal, hard to get jobs when they see you have a Maori name" and "people believe we are all the same people and we are all bad."

As Figure 1 depicts, Pākehā respondents were split relatively evenly on whether they believed they faced discrimination based on ethnicity. Examples of discrimination for Pākehā included "Maori only teams and courses" and the expectation to "work hard and get jobs and pay taxed well they [Māori] just sit in OT [occupational therapy] living off the doll smoking dope."The survey highlighted that most Pākehā participants do not believe that Pākehā have privileges over other ethnic groups. Rejecting privilege, two participants responded: "everyone is equal." Participants that thought they had privilege stated: "I probably do have some privileges since I'm white and not homeless and all that", and another "We are treated better by the police." Two respondents answered "probably" without further detail.

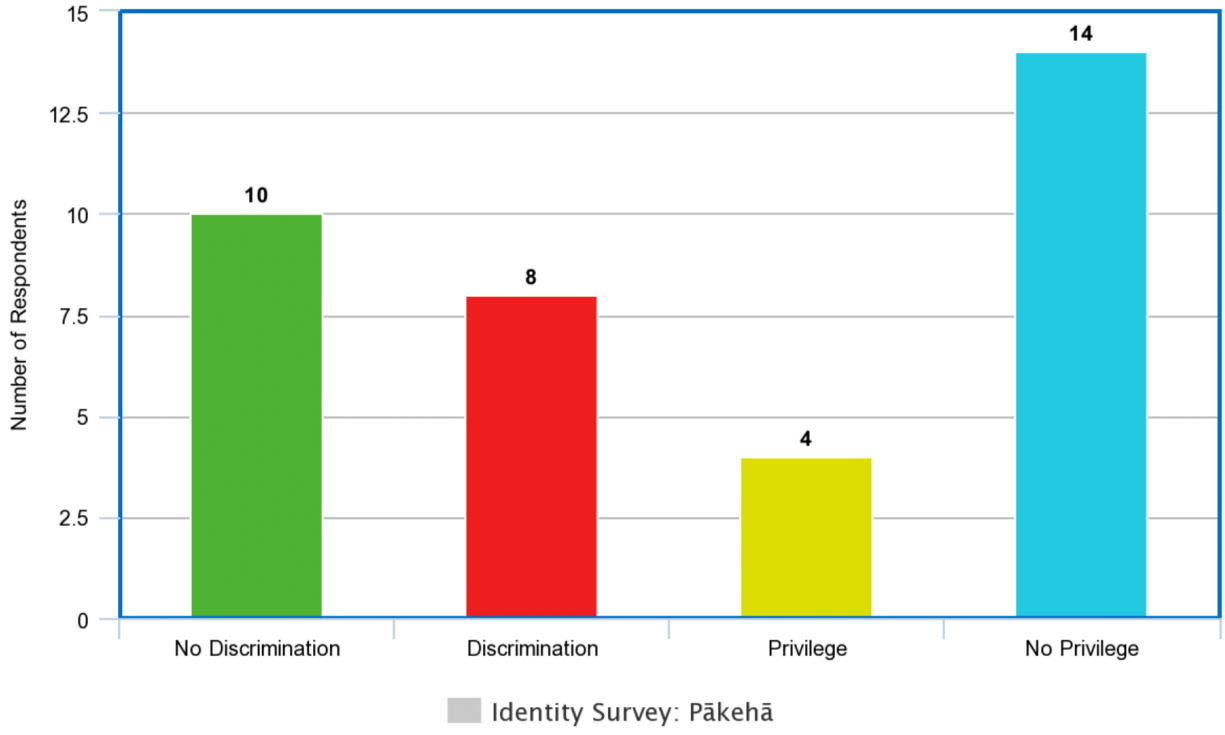

Figure 1. *Pākehā perceptions of Discrimination and Privilege*

The question "Who was involved in the NZ Wars and what were they about?" drew varied responses. Four Pākehā and two Māori respondents stated that they did not know. Māori that provided answers noted that Māori tribes and colonial forces fought over land. One said that the wars "were all about claiming land but ultimately came to an agreement to live in peace together."

Most Pākehā similarly noted the wars were between the Colonial Government and Māori, and some identified that they involved land disputes, without reference to the Te-Tiriti o Waitangi. Responses by Pākehā included: "our ancestors"; "New Zealanders and the British over land" and "The British Government and the Maoris". Two Pākehā respondents expressed overtly negative

statements that referred to the superiority of British force/culture over Māori. These statements will not be repeated here, but it is essential in the context of this project that it is noted that such perceptions exist in the participants and that they are willing to write these down without reflection on a wider audience. Significantly, most learners have already spent two years at the school, and this dispositional mindset in some of the students has yet to be addressed. While it is clear that these perspectives are not supported by the ethos of the school, it highlights that more needs to be done to challenge such views.

Participants were also asked "Do you think it is important for you to learn about Māori culture and traditions? Why or Why not?" Māori respondents were unanimously in support. Reasons given included to ensure cultural survival, because it is a part of their identity and to understand New Zealand history: "Yes, as a citizen of New Zealand I believe it is important to learn about the culture of my country", "Because it is a New Zealand culture and everyone in New Zealand should know about Maori!!!!! Because that is this countries NATIVE CULTURE and the culture and traditions DIED because of this fucked up white system." Pākehā responses are displayed in Figure 2 and note a split between participants about the relevance of learning about Māori culture. Like a few Māori participants, some appear to have interpreted the question to refer to whether learning about Māori culture should be compulsory in schools. Again, the results highlight that some believe it is not relevant to those who see it as very important. Furthermore, some responses were overtly racist.

Figure 2. *Do you think it is important for you to learn about Māori culture and traditions? Why or Why not?*

Implicit Association Test Response

The second formative activity used a critical pedagogical approach by getting learners to take Harvard race-based University's Implicit Association Test (IAT) (Greenwald, et al. 1998) to explore their own implicit beliefs and attitudes. The IAT tracks automatic associations between concepts (African American children / European children) and evaluations (good/ bad). The test tracks if participants display a disparity between explicitly stated associations and associations they may hold subconsciously. According to the test, the quicker a participant's responses, the more likely an association between a concept and an evaluation is. Responses are scored 'no preference', 'slight', 'moderate' or 'strong'. Unlike the survey, this response would not be anonymous. Before taking the test, a discussion was held in class about the test, what it tracks and potential issues with the test's design.

An analysis of the responses provides some valuable data. All learners present in the class completed the test and the written response sheet. All learners answered correctly to the control question, which required them to define what an implicit bias was. Learners were then asked to comment on their results from the IAT. Sharing their results was optional, and some abstained. The two learners of Asian descent noted that no preference was recorded between African American children over European children. Two Pākehā learners recorded a preference for African American children. One Pākehā noted a strong preference for European children and found it unsurprising. Of the two Māori learners that provided comments: one reported a slight bias towards European children, and the other that the test said they had no preference.

Several Pākehā learners were alarmed with their results which showed a slight to moderate automatic preference for European American children compared to African American children: "It kind of surprised me because I don't think I prefer anyone" and "I slightly prefer white people, i think that this happened because i was delayed when categorizing black people because i wanted to categorize them correctly." Many blamed the test itself: "I don't understand how the test actually proves an implicit bias when the test is based on pressing keys." It was clear from the test that some Pākehā participants' felt confronted by their test results and challenged the validity of the findings.

SUMMATIVE FINDINGS

Assessment results

While enhanced social justice awareness is difficult to track, assessment results are not. The project answers the sub-question about assessment outcomes for Pākehā learners engaged in a critical pedagogy of place. All twenty participants achieved formal writing credits for the assessment. Six participants produced writing at Excellence level; another seven at Merit and six at Achieved. Results for female Māori participants showed stability with previous results with two Merits and two achieved. The one Māori male participant received his first Merit in the class. Like Māori females, the assessment results for Pākehā females were strong, with two Excellence responses and one Merit and consistent with previous assessments' results.

The most significant increase in achievement results was for Pākehā males, evidenced by a comparison of results for a relatively comparable assessment "1.11 Close Viewing". Four learners received the same grade for both assessments. Two received a lower grade for formal writing than for Close Viewing. However, one of the results was an anomaly; the learner was marked down because of a sentence structuring error that restricted them from receiving higher markers despite strong content. For five participants, their results improved, with three learners moving from a Merit in Close Viewing to an Excellence grade for Formal Writing. Two other participants went from an Achieved in their Close Viewing essay to a Merit in their formal writing. All learners who focused on ethnicity – bar one with a sentence structuring issue – received the same or higher grades in the previous assessment.

These results are significant. They answer one of the project's key research questions. They show quite clearly in the accessible currency of assessment results that members from a society's dominant culture and gender are not adversely affected academically when compelled to examine the structures of privilege and historical forces that account for their status in society. For some participants, their results improved through independent research and reflection. It is also significant that only one Pākehā male participant used the opportunity to counter a defence of males concerning the gender pay gap. Pākehā that felt uncomfortable and/or disinterested in the topic, did not suffer academically due to the Unit focus.

Formal Writing Outputs

All learners submitted persuasive writing pieces and passed the assessment. All wrote on topics of discrimination and inequality in New Zealand. The guiding question that participants were given as an essay prompt was: "Equality in New Zealand: Fact or Fiction?" Learners needed to choose one area where equality/inequality may be present to focus their writing. While issues between ethnicities in New Zealand were the basis of the course as demanded by a critical pedagogy of place, learners could make their own choices about the topics they wrote on.

In line with the literature on the efficacy of critical pedagogy for indigenous learners (Milne etc.), all Māori participants (four female, one male) wrote about the evidence for, causes of and solutions to Māori inequality in New Zealand. Seven non-Māori male participants also chose to write on this issue, with three Pākehā self-selecting an examination of pre-Treaty relations in New Zealand.

Following a trend I have seen in a previous class where I have trialled critical pedagogy, Pākehā female participants (n=3) were the least likely to write about ethnic issues. Pākehā female social justice focuses included the gender pay gap, abortion legalisation and discrimination against the LGBTQ+ community. In contrast, for Māori females, ethnic issues appear to dominate gender concerns even if they are closely interrelated. As with males from the dominant cultural group, Pākehā females examinations of the effects of their own culture on others is challenging. Another reason was possibly that the course did not present a strong female Pākehā voice on the issue, compared to the many Pākehā male voices who wrote and presented texts.

The remaining participants chose not to examine ethnic and cultural inequality directly. One male Pākehā learner wrote a piece arguing that the gender pay gap is not a significant issue and not an example of inequality between men and women. He was the only participant to write a defensive piece of writing. Another participant examined economic inequality in New Zealand, focusing on population growth, wage rates and house prices. Learners used evidence for this inequality from numerous statistical sources, as compiled in a news article. It was notable that when discussing the causes for these inequalities, all Pākehā learners referred to structural/ institutional discrimination/ racism as a leading cause of Māori inequality. One learner referred to the marginalising strategy of the early settler government.

While participants were adept at finding and evaluating evidence, presenting solutions to the problem proved more difficult, and two found the solutions they researched as implausible. Of the seven Pākehā learners that addressed Māori social disadvantage, all noted it was a significant problem; five were optimistic that it could be reduced in the future, while two were sceptical it could be resolved in the short term because of generational old inequalities and discrimination. Two participants referred to the need for greater equity for Māori, a topic covered in class, while two learners argued that equity is not going to overcome prejudice and that it may cause a backlash by Pākehā, who see it as unfair. One participant referred to the need to teach tolerance to young people.

The three learners who examined relationships before and after the Treaty relied on evidence from "NZ history" and "Te Ara – The Encyclopedia of New Zealand". One learner's thesis statement was "I strongly believe that the relationship was positive at the arrival of Pākehā and then turned negative once the Pākehā tried to evolve New Zealand." Two respondents noted that the relationship was poor and worsened because of the Treaty. All three believed the relationship between Māori and Pākehā is still problematic and that solutions are required, such as

compensation for land. One participant, who self-identified as making racist comments in the initial survey, argued that while there is a clear social disadvantage for Māori, he believes that there is too much focus on supporting Māori over other people in New Zealand.

Small Group Discussions

In the first week of Term 4, interviews were conducted with two small groups of Pākehā participants. They were asked to reflect on the project content, what they learned, their assessment results and whether or not they have a greater understanding of inequalities in New Zealand. Because I expected that some participants would dominate the discussions, I encouraged them to write down their answers before the discussion. This was to prime them and ensure that participants' answers were not swayed as a result of the opinions of others. The participants' responses confirmed the positions they had developed in their formal writing. One participant stated that his perspective had changed because he "did not know the reason for the bad relationship between Māori and Pākehā was because of the past actions of Pākehā." The remaining Pākehā males agreed with him, with one noting, "I definitely have a better understanding of the problems this country faces." However, one participant was an outlier. He insisted that his perspective did not change because "everything was done for a reason" and that it "should remain a choice for learners whether or not to learn about Maori culture."

The three Pākehā girls were specifically asked why they chose not to focus on ethnicity. One participant noted that there had already been a lot of focus on race in English throughout the year, and she wanted to do something different. Another participant said she chose her topic because it was something that she is extremely passionate about as she is a member of the LGBTQ+ community and directly affected by social discrimination. None of the participants in the small group discussions noted any discomfort with the topic. However, it must be recalled that there was some discomfort in the larger participant pool.

ANALYSIS OF SUMMATIVE FINDINGS

The summative data for most Pākehā males, especially in relation to their formative data, show that a critical pedagogy of place achieves its social justice aspirations of raising consciousness and encouraging a greater understanding of significant social-political issues in their society. Assessment results remain strong, and the depth in which the learners engaged with their chosen topics shows the efficacy of critical pedagogy. The depth of analysis and independent research that the learners undertook highlights that the participants believed that the theme and topics were meaningful to them and deserved investigation. As the writings of one participant highlight, this investigation process is not easy. Bowers (2008) reminds us Pākehā need not reject their own cultural identities and histories to acknowledge that inequality is a problem that needs to be addressed in their society. By adapting the theoretical framework outlined by Penetitio to suit a bicultural English classroom in a mainstream school, showed that members of the dominant culture can directly address issues of power and privilege within their communities and not become alienated as a result. A critical pedagogy of place therefore meaningful and relevant to all New Zealand learners.

Further analysis and research are required to investigate how female Pākehā can be encouraged to explore this topic and for those who feel confronted by the topic to be guided through their initial strong reactions into a place where they are comfortable to address the topic, hopefully resulting in a reduction of ILPS and greater uptake of learners willing to participate.

LIMITATIONS OF STUDY AND NEXT STEPS

Iterations of this teaching unit would include changes. Future teaching units would be much more collaborative and run concurrently or with support from other departments in the school. This could consist of the curriculum standard of formal writing aligning with an assessment standard in another department to broaden the scope of the learning. Broadening the diversity of voices heard in the literature presented to the learners would also significantly strengthen content delivery. In a subsequent iteration, it would be useful to expose the learners directly to the writings of Ann Milne and others.

Feedback from colleagues suggests that Year 12/13 classes may be better suited for such a unit because of the dispositional maturity the topic requires. This is debatable, the project highlighted that many Pākehā Year 11 learners become cognizant of the topic's relevance by the end of the unit. Furthermore, Junior English has recently developed a unit on inclusivity that could scaffold learners toward the themes of the senior school unit. The unit content was stripped back significantly due to the unexpectedly limited knowledge of the learners about the New Zealand Wars and even the Treaty. A greater understanding of these issues in junior school would allow for more nuanced content exposure.

The safety of Māori learners within the classroom requires more focus. Comments made by some Pākehā learners could be quite offensive and greater safeguards are needed. It was also notable that Māori learners were also less likely to speak up in mixed ethnicity audiences. Some Pākehā whānau had questions about the project, and in the future, I would begin with direct correspondence to whānau to explain the relevance of the unit to their child and their place in 21st century New Zealand. This communication would highlight that learners are not taught ideological or political positions but rather supported in their own inquiries into the subject. Learners remain free to opt-out and begin ILPs at any time if disengagement and or extended discomfort are experienced.

Lastly, an authentic critical pedagogy of place necessitates experiences outside of the classroom walls. In a Covid free world, a field trip to Kororāreka, Ōhaeawai, Ruapekapeka and/or Rangihoua would be a necessary experience, as would visits to local marae. The project would benefit from including direct discussions with Māori such as representatives from Ngati-Hine and experts rather than mediated experiences through texts. It would be interesting to trial the experience with a different assessment outcome other than formal writing. Both Māori and Pākehā learners reacted best to skits, satire and humour than to didactic historical documentaries. Indeed, while the subject matter is serious and significant, greater uptake and engagement would be achieved through more diverse content and assessment options.

CONCLUSION

This project explored the academic and dispositional effects on non-Māori learners of an English curriculum unit modelled on a critical pedagogy of place in a bicultural school in Northland. The unit encouraged learners from a dominant culture to research, reflect and consider solutions to evidenced inequalities for Māori. The motivation for this project was the increasing popularity of critically conscious and responsive pedagogy in New Zealand which is proving highly effective for Māori and Pasifika learners in ethnically homogenous schools. In schools of mixed ethnicities of Pākehā and Māori learners, the effects of such a programme are likely to be more complicated, as it has aspects of Pākehā learners' culture that is being exposed to criticism.

The project's primary objective was to track the assessment results and dispositional change

in Pākehā learners' understanding of Māori grievances and the socio-economic situation in contemporary New Zealand society. However, the project also highlighted that both Māori and Pākehā young learners had limited knowledge of their country and region's history and the sociocultural context that has shaped it. The analysis of various written, visual and spoken texts on the issues exposed learners to perspectives and research they may not encounter in their everyday lives and communities. This resulted in a small but significant change in the perspectives of a target group of Pākehā learners. Some of them displayed quite considerable awareness by the end of the course, even though they were initially apathetic. Furthermore, with various degrees of success, the unit encouraged all learners to go beyond the surface of ethnic issues in their communities and address reasons and solutions for these. The results support the theoretical perspectives of Bowers (2008) and especially Penitito (2008) that a critical pedagogy of place can be meaningful to learners from the dominant culture provided that they explore the critical topic in a non-confrontational manner.

The methodological backbone of the project was a critical pedagogy of place, combined with the interactive approach of action research, which resulted in research and teaching occurring concurrently and the implementation of changes, some crucial, as the project developed. By locating myself in the research, I presented my own confusion and anxiety to my learners as normal and evidence of a shared learning experience.

The project has highlighted the potential for a critical pedagogy of place within the English curriculum to explore themes and topics at the heart of real-world concerns in Northland societies. The project depicted a way that schools can legitimise, support, provide the tools, and the safe space to analyse challenging aspects of New Zealand's past and present. Having this analysis in school may depoliticise the discussion. It is hoped that there is the potential for developing greater tolerance and respect between ethnic groups in Aotearoa by doing so.

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Tim McVicar is a Te Tai Tokerau, New Zealand-based educator, writer and researcher who has lived and worked in the Republic of Georgia, Sudan and Palestine. He served as a writer and lead development editor for the National Sudanese English Language Curriculum and has published articles for Women's History of New Zealand and the Lovepost. He holds an MA from Victoria University of Wellington and a Master of Teaching and Education Leadership from the Mind Lab.

Tim has an interest in curriculum design and development, seeking to foster critical reflection by exploring sociopolitical realities that impinge directly on the lives of young learners.

"As well as professional motivations to reduce racial inequality in New Zealand, I have strong personal reasons for this project and the research into changing the dispositional nature of Pākehā males, an ethnic group and gender that I belong to. Like my learners, I grew up with a set of privileges and access to the mainstream that I was unaware of; grievances and social injustices were things that need not concern me, and I was not responsible for. A significant moment in my life was when I was working in Nablus, Palestine. I was discussing the effects of the Israeli occupation and settlements with a Palestinian friend. I had strong feelings against Israel's encroachment. I often saw the Israeli-Palestine conflict as a form of colonisation, where a dominant force subjugated and dictated conditions to a more vulnerable group of people. Unlike in much of the world presently, this colonisation was overt and obvious, just as it was in the past for indigenous populations. My friend asked me, "What are settlers like in your country," assuming I was indigenous to New Zealand. Until this point, it had been relatively easy to look at the injustice of the Israelis as another actioned it, and I was removed from it. However, what we were really witnessing was direct colonisation in action. My friends' words were unintentional, but I had never considered myself a settler before and that I was in some way related to the forces of colonisation. I admitted to my friend that I indeed was a settler in my country, and having to articulate that, in that particular international context, highlighted to me that I need to return home to address the colonial baggage in my country, as much as to support Palestinians with their own."

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BRIDGING CULTURAL PERSPECTIVES THROUGH EMERGING DISRUPTIVE TECHNOLOGY

He Rourou, Volume 1, Issue 1, 67-88, 2021

IULIA LEILUA

ABSTRACT

This research was conducted in Auckland, New Zealand between November 2019 and April 2021. It outlines how emerging disruptive technology might help subject matter experts or professionals increase their Māori and Pacific cultural intelligence and disrupt systemic racism.

Bridging Cultural Perspectives looks at how subject matter experts might embed this knowledge so interactions with their Māori and Pacific stakeholders are more empathetic and culturally competent. It also explores the attitudes and behaviours that subject matter experts (SMEs) have that prevent them from becoming culturally competent or empathetic.

Phase 1 of this research identified the cultural intelligence challenges faced by subject matter experts and the types of support they needed. The aim was not only to improve their cultural ways of working but to unpack what systemic racism and unconscious bias at work looked like and how they might address these issues. Phase 2's focus was to understand the drivers of systemic racism and to plan, execute, complete and evaluate a digital prototype that would disrupt these drivers. The aim was to achieve mutually beneficial outcomes when working with and for Māori and Pacific peoples.

This has resulted in two prototypes – the first is a digital platform for workplaces that uses nudge learning to raise peoples' cultural intelligence through an organisation's digital channels and devices. The second is a cultural intelligence academy that uses blended learning to raise the cultural intelligence of subject matter experts. Using systems practice, I also created a cultural intelligence framework and two systems maps that chart the deep structures of systemic racism and the behaviours that underpin them.

INTRODUCTION

Systemic racism impacts many aspects of Māori and Pacific peoples' lives from health, justice and socio-economic wellbeing to media, business and housing. When organisations engage with Māori and Pacific peoples, cultural intelligence can help to disrupt this systemic racism. Cultural intelligence is the ability to cross boundaries, operate and work effectively in culturally diverse situations (Soon Ang, Linn Van Dyne 2009). This can only happen when people are interested and self-motivated to build relationships and work inclusively with people from other cultures. Structural discrimination occurs when an entire network of rules and practices disadvantages less empowered groups while serving at the same time to advantage the dominant group. (New

Zealand Human Rights Commission, 2012). Participation by minorities is "conditional on their subjugating their own values and systems to those of 'the system' of the power culture" (p.19).

This project has given me the opportunity to speak candidly about systemic racism, discrimination and their cause and effects. Initially, words such as 'unconscious bias' and 'cognitive bias' were used to cushion my conversations with subject matter experts so as not to cause offence. That changed after the murder of black Minneapolis man George Floyd by a white police officer in May 2020. The fierce global response to his death and ensuing Black Lives Matters protests meant different conversations about racism were expected. Several of the subject matter experts I interviewed reflected on the social license that the world had been given to talk about structural racism and white privilege. At the same time, in New Zealand there were several moves to address and acknowledge racism. Media outlet Stuff acknowledged it had inflamed race relations through historic bias in its reporting and failing to provide balance and fairness to Māori. It promised to ensure that editorial staff were armed with knowledge of Māori tikanga and language and were committed to genuine diversity. Then in January 2021, the Ministry of Education released a draft new Aotearoa history curriculum for public feedback, which includes a deeper look at Māori history and colonisation. The content will then be taught in schools and kura in 2022 from entry-level in year 1 to year 10. From year 11, when students elect their subjects, it will be optional. As ground-breaking as these initiatives are though, widespread discussion on racism can be forgotten or diluted (Smith et al., 2021). For these reasons, shining a light on continued racism and their impacts on Māori and Pacific peoples is needed. It also means that innovative solutions using emerging disruptive technology are not only timely but important to changing the narrative about Māori and Pacific peoples.

LITERATURE REVIEW

In Phase 1 of this research, I conducted a literature review that focussed on understanding cultural intelligence and theories of achieving this. Cultural Intelligence (CQ) is defined as the ability to cross boundaries and thrive in multiple cultures (Middleton, 2014). Middleton says business teams made up of people from different backgrounds will out-perform those from homogenous teams – but only if they're led by someone with a high CQ.

> Leaders who have CQ don't just cross the divides, they also build bridges for others to use. That is how they counterbalance the herding instinct that drags everyone back towards homogeneity – the default human preference for talking and working and sticking with 'people like me'.
>
> Cultural intelligence is about more than bridging national borders and developing your capability to operate globally. It is about crossing all kinds of cultural borders, learning to operate effectively in unfamiliar surroundings and finding a way to break down barriers that may well not be geographical at all. (Middleton, 2014, p.11-13)

In a 2006 report for the Economist Intelligence Unit, 90% of leading executives from sixty-eight countries identified cross-cultural leadership as the top management challenge for the next century. The executives said cultural intelligence was needed for:

- diverse markets
- a multicultural workforce
- attracting and retaining top talent
- profitability and cost savings (Livermore, 2015, p.17).

While many studies show diverse teams lead to greater innovation, Livermore (2015) indicates the benefits of that diversity can be squandered if leaders don't have the cultural intelligence to ensure that all voices are heard.

In New Zealand, cultural intelligence is described as a critical skill in surviving and thriving in today's global environment. Thomas and Inkson (2017) write that CQ means being skilled and flexible about understanding a culture, interacting with it to learn more about it and reshaping your thinking when interacting with others. The co-authors assert that cultural intelligence is developed through repetitive experiences over time in which each repetition of the cycle builds on the previous one. It involves both acquiring knowledge and applying that knowledge. Ways of developing cultural intelligence can include formal education and training, experiential learning and immersive experiences such as living and working in a foreign country.

Phase 1 of my research cast a wide net in terms of the literature I reviewed and theories I considered for understanding cultural intelligence and indigenous thinking. Because of this I explored five themes:

1. Cultural intelligence – what is understood by the term 'cultural intelligence' both nationally and internationally, why it's considered an important capability and how this is acquired (Middleton, 2014; Livermore, 2015; Inkson & Thomas, 2017).

2. Indigenous thinking – what is understood by the term 'Indigenous thinking' both nationally and internationally, and how these can be applied by SMEs (Tuhiwai Smith, 1999, 2012; Simpson, 2004; Pihama & Penehira, 2005; Tuhiwai Smith and & Te Rito, 2006; Yunkaporta, 2020)

3. Barriers to cultural intelligence and Indigenous thinking – the barriers to raising cultural intelligence and indigenous thinking and contrasting rational, linear thinking with indigenous circular thinking (Tolich, 2002; Williams, 2008).

4. Systemic racism and unconscious bias – exploring white fragility, implicit race bias and systemic racism and its impact on raising cultural intelligence and understanding of indigenous thinking. (Torrie et al., 2015; Banaji & Greenwald, 2016; Blank, Houkamau & Kingi, 2016; Diangelo, 2018; Kempf, 2020, Bergner, 2020).

5. Positive models of cultural intelligence and Indigenous thinking – exploring positive models both nationally and internationally of how SMEs could raise their cultural intelligence and indigenous thinking (Spiller, Craze, Dell & Mudford, 2017; Arago-Kemp & Hong, 2018.)

Phase 2 of my Bridging Cultural Perspectives research brought more clarity around understanding institutional racism and the human behaviours that drive it. I looked at other literature to understand prior work done on disrupting systemic racism as well as raising cultural intelligence. Global literature from Saad (2020) explores the elements that make up white supremacy including white privilege, white fragility, tone policing, white silence, white superiority, white exceptionalism, anti-blackness, racial stereotypes, cultural appropriation, white apathy, tokenism, optical allyship and more. Diangelo (2018) discusses what white fragility is, how it's developed and how it protects racial inequality. Both Saad and Diangelo have chapters in their books which offer practical teaching tools for anti-racism education.

In New Zealand however, I found useful information from a network of Pākehā allies whose anti-racism and pro-Treaty of Waitangi work for social justice I have drawn on in this research:

Kotare Research – a Pākehā NZ organisation dedicated to research and education for social change. Their structural analysis research helped me to understand the workings of powers that drive systemic racism.

The **Treaty Resource Centre** – a Pākehā NZ organisation that educates New Zealanders about the Treaty of Waitangi. Its examples of white privilege and list of anti-Māori themes informed my systems mapping work. The anti-Māori themes included Pākehā as the norm, 'One People', Māori privilege, good Māori/bad Māori, stirrers, Māori violence, ignorance and insensitivity, the Treaty of Waitangi etc.

Network Otautahi is another Pākehā NZ organisation that educates New Zealanders about the Treaty of Waitangi. Its decolonisation posters for tauiwi (non-Māori) led organisations and non-Māori Kiwis clarified the way Pākehā educators teach anti-racism to other Pākehā.

Awea – a Pākehā NZ organisation dedicated to education for social justice. Awea's resources for working as allies helps Pākehā understand how to support indigenous struggles for equality and anti-racism work in a range of social justice contexts. This includes understanding the term ally, their role as an ally, the qualities for being an ally and challenges and responses.

Groundwork – a Pākehā NZ organisation invested in creating systemic change and addressing systemic injustice. Groundwork offers workshops on the Treaty of Waitangi and organisational change and is led by Jen Margaret whose work on allyship informed my systems mapping.

As well as helping me understand and validate the elements of systemic racism that I included in my systems map, these research sources all offered solutions for disrupting systemic racism – and answering my research questions. Analysing the work of these system disruptors has been valuable for understanding the barriers and cognitive biases that subject matter experts have when raising their Māori and Pacific cultural intelligence. It has also been valuable for understanding the messaging that Pākehā system disrupters use when educating their own about the Treaty of Waitangi and systemic racism.

RESEARCH QUESTIONS

In order to achieve the aims and objectives described above, this research seeks to answer the main question:

How might emerging disruptive technology raise subject matter experts' (SMEs') cultural intelligence to disrupt systemic racism in the development of policies, systems practices, cultural engagement and strategies that affect Maori and Pacific peoples?

It also aims to answer the sub-questions:

1. What are the key barriers to subject matter experts raising their cultural intelligence and applying this to disrupt systemic racism in their policies, systems practices, cultural engagement or strategic work with or for Māori and Pacific peoples?

2. How might my findings inform subject matter experts and enable them to incorporate cultural intelligence in a way that disrupts systemic racism into their practice?

METHODOLOGY

Implicit throughout my research was recognition of the values that underpin Māori and Pacific approaches to community, knowledge and learning and teaching. In the field of Māori and Pacific cultural research, this methodology is standard practice. However, when it comes to studying systemic racism, the focus tends to be more on indigenous experiences of racism and colonisation.

This research was conducted using both kaupapa Māori and Pacific frameworks incorporating eight key cultural values as guidance.

Whakapapa

Whakapapa means genealogy, but for me, it also means recognising the diverse ancestral connections of my key stakeholders. In practice it means connecting with subject matter experts in a human centred way rather than having a one-dimensional view of them as leader or practitioner. This can be done through introductions and reflections.

Tika and Pono

Tika and pono mean having integrity and doing the right thing. In the context of my research, it means behaving ethically and ensuring that my work is peer reviewed and checked for accuracy and authenticity. In practice it means creating a safe space for people to talk to me without judgement. It also means respecting their confidentiality.

Mana Tangata

Mana tangata in my project means empowering people and not denigrating them if they have lack of cultural knowledge. It means creating best practices for them to achieve good outcomes in the future when they work with Māori and Pacific peoples. It also means building their cultural confidence and capacity from a strengths-based approach.

Tautua

Tautua is a Samoa term which talks about leadership through service and humility. In practice it means having respectful relationships and professional behaviours when engaging with key stakeholders. Humility does not mean putting myself down, instead it means putting the needs of my key stakeholders first without making assumptions or judgement.

Manaakitanga

Manaakitanga means caring for people, but it could also mean caring for the information that is shared with me and ensuring it is used respectfully. In practice it means trying to reciprocate where I can by sharing about myself and keeping people updated about my research, even after it is implemented.

Fa'aloalo

Fa'aloalo is another Samoan term which means respect for people. In the context of my research, it means allowing people to define their own space and meet on their terms. As the researcher I will need to be flexible and responsive. In practice it also means acknowledging that peoples' worldviews and ways of thinking are underpinned by their identities, languages and culture.

Kaitiakitanga

Kaitiakitanga means guardianship and protection. In the context of my research, it means acknowledging the trust that is given to me when key stakeholders share their knowledge. It recognises that with their trust comes expectation that I will create something beneficial using what they've shared. Kaitiakitanga for me also means nurturing relationships even after the project has ended.

Wairuatanga

Wairuatanga means spirituality and for me that comes with a Christian lens. In practice it wraps around all the other values like a cloak and expresses aroha to people regardless of their race, religion, gender or political beliefs. It acknowledges that design thinking, communications and technology draw from creativity and talents we were blessed with.

My approach to answering the research question was to use in-depth, qualitative exploration rather than quantitative numerical measurements, although I did conduct a survey with 34 people. A qualitative approach was the most suitable to answering my research question because I needed to contextualise the problem and gather deeper insights behind the causes and effects of racist attitudes and cognitive biases.

In Phase 1, I sought to understand the kinds of barriers that subject matter experts have that stop them from gaining cultural intelligence. In Phase 2, I went deeper into this investigation by mapping behaviours that affect cultural intelligence. I also sought to contextualise the system of racism by mapping it to find leverage points for changing peoples' racist attitudes and behaviours or cognitive biases. The methods I used included critical thinking, systems thinking, design thinking, agile and theory of change. My aim was to find ways to disrupt systemic racism by providing practical solutions through emerging disruptive technology. This extended to gaining a deep understanding of the needs of subject matter experts and the kinds of cultural content and curriculums that would nudge them towards change. Through this methodology I arrived at several unexpected ideas and the implementation phase required specialised know-how from a team who has technical capacity and a wide network of subject matter experts.

Ensuring rigour and reliability

As an indigenous researcher it is not common for someone like me to research white subject matter experts about their biases and how to change their thinking through the use of technology. Despite looking for indigenous research about this topic, most of what I found focused on indigenous experiences of racism and colonisation.

During Phase 2 of this research I challenged myself to cultivate moral imagination when questioning or analysing Pākehā who hold power. Moral imagination, according to Jacqueline Novogratz, CEO of Acumen Academy and author of *Manifesto for a Moral Revolution*, is to have the humility to see the world as it is, and the audacity to imagine what it could be.

> "It starts by putting yourself in another's shoes and building solutions from their perspectives. Moral imagination starts with empathy. But it does not end with empathy. Empathy alone risks reinforcing the status quo. Rather, the moral imagination requires immersing, understanding another's problems, the situation around them, analyzing the system that has implication for those problems and then, importantly, taking action." (Novogratz, 2020, p.17)

Practicing moral imagination was important for me during this research because of the lived

experiences my family and I have had as victims of systemic racism. It also helped me find common ground with subject matter experts and decision makers who knowingly or unknowingly perpetuate systemic racism.

Interviews

To gain insight into the problems and solutions from my research question from a subject matter expert's perspective, I conducted a series of semi-structured interviews with 13 subject matter experts. They were chosen from private, public, social enterprise and NGO organisations in tier 1-3 management categories and are decision makers, experts and influencers in their fields. These fields included Fintech, Construction, Commercial Communications, Economic Development, Human Resources, Global Research and Co-Design, Business Management and Design Thinking, Website Design, Government Procurement, Government Policy, Digital Inclusion and Digital Strategy. Because of Covid-19 or peoples' geographic locations, most of the interviews were conducted over Zoom with just two done in person. Interviews were recorded and transcribed with the participants' permissions.

There were five key questions that interviewees were asked:

1. How they connect with Māori and Pacific stakeholders;

2. The challenges they face with that;

3. Where they go to for Māori or Pacific cultural advice and support;

4. The kind of support they think would be helpful, particularly through the use of emerging disruptive technology.

5. How they would measure the ROI of becoming more culturally competent.

The questions were designed to be empathetic to help interviewees feel safe with sharing their personal and professional perspectives of Māori and Pacific cultural competency. Once the interviews were completed and transcribed, they were analysed to compare the similarities and differences between different interviewees' experiences. I also conducted desk research, attended relevant webinars and online courses and reviewed presentations from our Tech Futures Lab advisors and guest lecturers.

RESULTS AND ANALYSIS

Cognitive bias and behavioural change

Cognitive bias' can be used to describe people's systematic but purportedly flawed patterns of responses to judgment and decision problems (Wilke & Mata, 2012). Some of the common types of cognitive biases include confirmation bias, conjunction fallacy, fundamental attribution error and in-group bias. Understanding biases and the way they can distort thinking was important for Phase 1 of this research because of the causes and effects they have on systemic racism. Unconscious bias or implicit bias is the bias you don't know you have. It's about the way your decisions and assessments are shaped by your background, cultural environment and personal experiences. Research shows that people who have very strong negative implicit biases about ethnic minorities consciously consider themselves fair-minded. (Banaji & Greenwald, 2013).

Implicit race bias (IRB) has become a popular cultural topic in mainstream media, a popular area

of research and debate in social psychology, and the common foundation for diversity training in countless corporate contexts (Kempf, 2020). But while implicit race bias offers a "relatively simple explanation of a very complex thing. It does not call for decolonization, for justice, or for the end of white supremacy". (Kempf, 2020, p.14.)

In Phase 2, I used systems mapping and the online software Kumu.io to map the deep structure of psychological, cultural, attitudinal, political, structural and perceptual barriers that subject matters face when it comes to raising their cultural intelligence. I was guided through this process by Acumen Academy's eleven-week Systems Practice programme from January to March 2021. It enabled me to:

- Map a complex system to gain clarity;
- Identify specific points in the system where a big impact can be made;
- Create leverage hypotheses to describe how systemic change might be created;
- Develop a framework for learning and adapting over time as the system changes.

This map is included in the key findings (Figure 1).

The data from the interviews was grouped into six categories of human behaviours; psychological, cultural, attitudinal, political, structural and perception barriers (Usha, 2016).

Disrupting systemic racism and embedding cultural intelligence

Systems practice and mapping

Researching complex challenges such as how to disrupt systemic racism and raise the cultural intelligence of subject matter experts has required big picture thinking and systems practice in my work.

In Phase 2 it has required me to map out the web of interrelations that make up systemic racism and which perpetuate the downstream effects among Māori and Pacific peoples (Figure 2). I have also needed to map the psychological barriers that prevent or inhibit subject matter experts from raising their cultural intelligence. Systems practice helped me identify leverage points for amplifying cultural intelligence among subject matter experts and nudging the system to change itself. Systemic and structural racism in the development of policies, practices, cultural engagement and strategies is not well understood and there is diversity of opinion on how to solve this problem.

Quantitative research

Although this research was predominantly qualitative, I also conducted a survey called the 'Bridging Cultural Perspectives Survey' using Survey Monkey. It was emailed to a range of Chief Executives, Senior Managers, HR Managers and Communications Managers in June 2020 and had 34 respondents. The survey was developed to answer my research questions and consisted of a range of multichoice questions. I decided to focus the questions on challenges engaging with Māori because there are subtle differences between Māori and Pacific cultures that would be hard to incorporate into just one survey. My intention was to run a separate survey related to Pacific peoples at the end of this project. Like the interviews, the survey work provided strategic opportunities to talk to subject matter experts, influencers and professionals that I wouldn't

normally connect with. My association as a Master of Technologies candidate with Tech Futures Lab gave credibility and weight to my work because of TFL's reputation.

In Phase 1, 13 respondents had filled out my online survey and during Phase 2, another 21 people had answered my questions, bringing the total to 34. 24 of the respondents opted in to receiving insights from my research. My insights report to them will summarise the findings from my research and be tailored around their comments and responses.

Analysis of interviews

To understand the problems as subject matter experts perceived them, I interviewed 13 Pākehā subject matter experts from various industries including Business Management, Construction, Commercial Communications and Government Procurement. They represented a mix of private, public, social enterprise and NGO organisations from tier 1-3 management categories and brought a wealth of lived experiences to my research.

The research described in this report so far has looked at emerging and disruptive technology and systems practice. It has also focussed on attitudes to systemic racism, cognitive bias and barriers to improving cultural intelligence. But underpinning this was the all-important question: What do subject matter experts say are the cultural intelligence barriers they're facing? An overview of these barriers can be seen in Figure 1 and described in more detail in the following section.

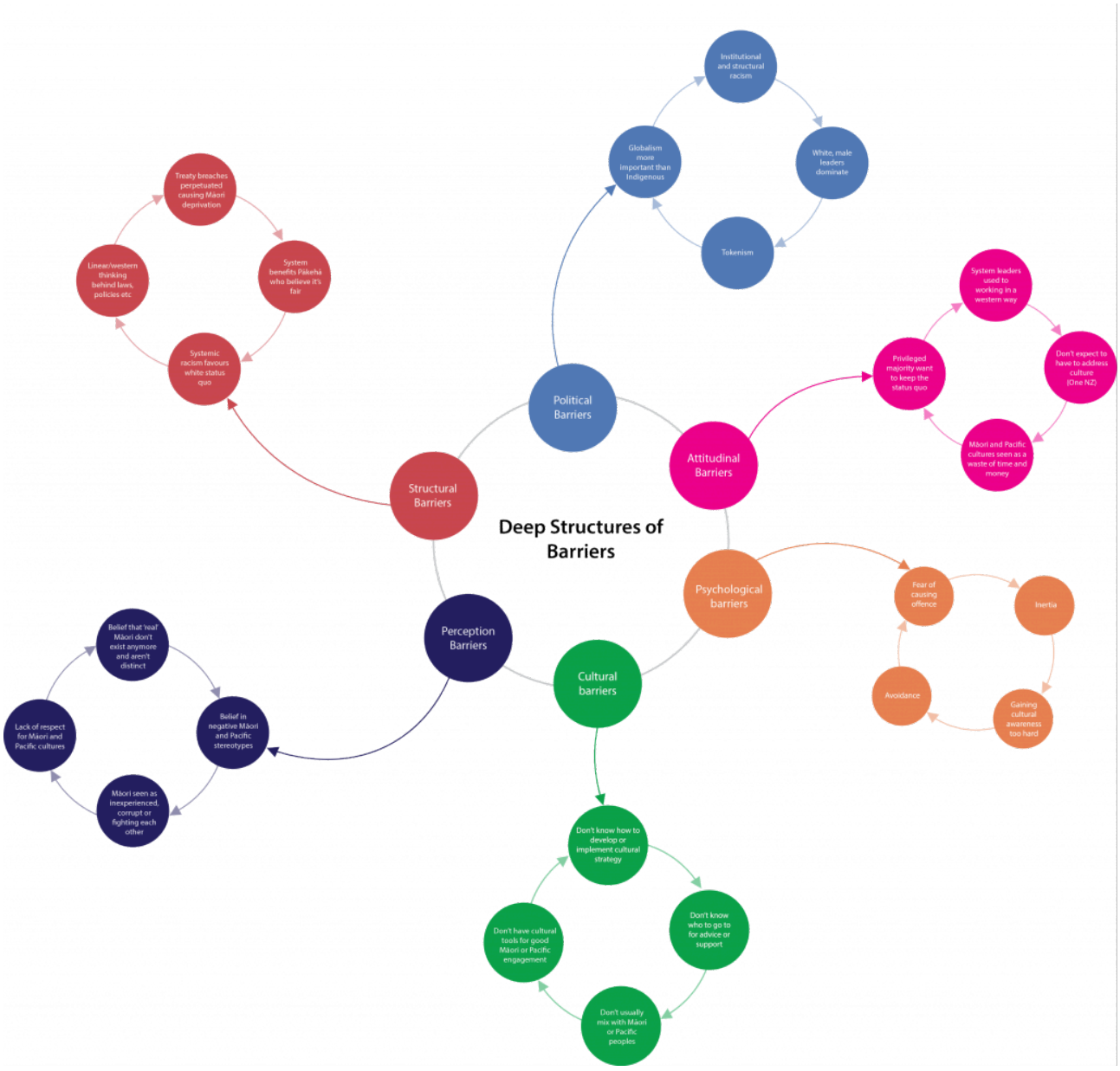

Figure 1. Barriers to Raising Cultural Intelligence (link to full size image)

Psychological barriers

In the 2015 research report *Finding our way: Cultural competence and Pākehā evaluators,* researchers assert that despite Pākehā dominance in New Zealand, many are not "fluent" in either the language or the culture of Māori or other ethnic groups. They say when such fluency is lacking, working in any cultural space other than their own is "to be ill-equipped to design and implement evaluations, or to analyse and interpret information that is gathered". (Torrie et al., 2015, p. 56.)

Martin Tolich, coined the phrase 'Pākehā Paralysis' to describe Pākehā nervousness and tentativeness about participating in research and evaluation with Māori. *"Words such as confusing, complex, fraught, and fear of getting it wrong still inhabit conversations with some Pākehā colleagues about working cross-culturally."* (Torrie et al., 2015, p. 54.)

The common psychological barriers among some of the subject matter experts I interviewed were :

· fear of engaging causing confusion, inaction or inertia.

· not understanding the complexities of Māori social structures.

· Not having cultural safety (Williams, 2008) processes in place.

Professor Tolich says one solution for a lack of cultural competency is to acknowledge that this problem is not Māori-centred but a Pākehā problem. "It is Pākehā who are paralysed here: unwilling or unable to think through this political minefield. Cultural safety has the potential to recognise and dissolve the Pākehā paralysis." (Tolich, 2002, (page 168)

Structural barriers

In 2010, NZ's State Services Commission's reported that the high proportion of young people within the Māori, Pacific and Asian populations could be one of the reasons for lack of ethnic diversity in senior management. It said while most public service headquarters were based in Wellington, the largest populations of Māori, Pacific and Asian people were in Auckland. However, these factors alone do not account for overall under-representation. The report says that *"*for Māori, Pacific and Asian peoples, cultural differences may also come into play, along with direct and indirect discrimination*"* (Human Rights Commission, 2010, p. 44.)

Eleven years later, some of the subject matter experts I interviewed were still grappling with the lack of Māori and Pacific representation in some workplaces and how to address this issue. They said this is because they:

· don't know how to address the lack of Māori and Pacific representation in the workplace.

· want to be more relevant, welcoming and supportive to recruit more Māori and Pacific peoples but don't know how.

Attitudinal barriers

This research report was not only written in the first year of Covid-19 in New Zealand but also the fierce global outrage at the murder of black Minneapolis man George Floyd at the hands of a white police officer. Several of the subject matter experts reflected on the impacts that has had on conversations about structural racism and white privilege in New Zealand.

Many said the dominance of older, Pākehā men across boards and leadership roles in New Zealand held the status quo conditions in place. They said:

· subject matter experts need to unlearn racist behaviours.

· subject matter experts need to call out racism and bias and not be bystanders.

· subject matter experts need to be responsive and keep up with global conversations on racism that others in their industries are having.

They also disagreed with the:

· insistence on Western ways of working and not considering Māori and Pacific wisdom as a benefit.

· lack of indigenous diversity and inclusion.

Perceptual barriers

Christian feminist and anti-racism worker, Mitzi Nairn, says she's a proud Pākehā New Zealander. For the past 45 years she has educated other Pākehā New Zealanders about the Treaty of Waitangi and says there is nothing to fear because, "as we are being reminded in this document, the spirit of Te Tiriti is one of wisdom and care for all people".

In her 2011 Waitangi essay published in a collection of Waitangi Day speeches and essays (Came & Zander, 2015), M itzi explored the question of what the Pākehā of the future might aspire to be. She said there was hope for Pākehā – but plenty of work needed to be done to become a thriving country for all under the Treaty of Waitangi.

For many of the people I interviewed, an important step to cultural understanding was recognising the need to think long term when it comes to engaging with Māori and Pacific stakeholders. Many believed there was a:

· false and distorted perception of the process of colonisation.

· false sense of entitlement.

· need to think long term and adopt patient capital thinking.

Patient capital is needed to create sustainable future solutions for complex problems such as systemic racism. It avoids quick fixes that sees problems being repeated, creating new problems or making things worse through well intended actions.

Cultural barriers

The subject matter experts in this research project say lack of Māori and Pacific cultural intelligence means that working in a Western way is seen as the norm. Many felt this needed to change because:

· there is a lack of indigenous diversity and inclusion in the workplace.

· many subject matter experts still work in a monocultural way

· they are unable to facilitate engagement with Māori unless they have a Māori adviser or specialist.

· some subject matter experts place Māori cultural competency responsibilities on ordinary Māori in the workplace

When asked about the type of support they needed to work in a more culturally intelligent way, subject matter experts spoke about training and building their networks.

Political barriers

Cultural competency depends on good relationships between Pākehā and Māori, however there are dynamics that sit between those who hold power and those who don't. According to the Human Rights Commission, negative politics can erode fragile relationships and the progress made in policies, partnerships, practices or processes.

The subject matter experts interviewed said that:

· the power dynamics between those who hold power and those who don't can affect fragile relationships with Māori.

· complex relationships between whānau, hapū and iwi and each other makes it difficult to know how to engage with them.

· there are a myriad of opinions about how to be culturally responsive.

· they need to differentiate between consultation and participation.

· they want to know how to co-design.

It's not just political barriers from within institutional structures that can affect relationships. Political conflict among whānau, hapū and iwi can also damage relationships if they are perceived as constantly in turmoil. These conditions may exist among Māori because of the downstream effects of systemic racism or the complicated Treaty settlement process.

From analysing the interview data and investigating the barriers, I then looked at the survey feedback for more insights from the subject matter experts.

Analysis of survey

As well as the interviews, I also received feedback from 34 subject matter experts in my Bridging Cultural Perspectives survey. 33 of the participants were Pākehā and 1 was Māori. They worked in a range of sectors, most notably in local government (other):

Like the subject matter interviewees, the people I surveyed had similar psychological, cultural, perceptual and structural barriers:

· Fear of causing offence and not having enough budget to engage properly;

· Not knowing how to start the engagement process with Māori;

· The different attitudes to time which meant deadlines weren't met;

· Unrealistic expectations from Māori about outcomes;

· Unrealistic expectations from participants' jobs about reaching outcomes.

One participant said that structural racism, conscious and unconscious bias were challenges as was the *"colonised view held by some Māori of their own identity and practice."*

Nearly 42% of those surveyed said the challenges they faced when engaging with Māori was having a moderate effect on their productivity or ability to achieve outcomes. However 23% said the effects were a lot or a great deal.

In many cases the people surveyed said they had internal cultural advisors they could turn to for cultural support. The majority though used personal contacts and reached out to iwi, kaumātua, kuia and whānau for help. One person did not know anyone.

Although nearly half of the survey participants worked for organisations that had internal cultural advisers, there was still an appetite for more cultural learning and resource tools. Many said an online directory of cultural experts and advisers would be useful to call for help.

Similarly, the subject matter experts I interviewed suggested a mix of tools to support their cultural competency needs:

· An online resource site – Māori dictionary links, tips for engaging with manawhenua, high ranking on search engines;

· Virtual reality – learn from the past, create what the future might look like;

· Digital stories – bring Māori and Pacific stories to life that connect to language. Build out resources over time that capture colours and vibrancy;

· A language app – how to pronounce something;

· Podcasts and short videos – use for learning and understanding context of culture;

· Augmented reality on mobile phones – information, shopping, history; smart phones need internet, camera, GPS, software and compass;

· Online learning – cultural intelligence training online;

· An online directory of experts, guides and coaches – trusted advisors who can network and create authentic engagements.

Before Covid-19, people weren't as willing to use online learning or communication tools, but a year after the pandemic hit, things have changed.

Interviewing and surveying these 46 Pākehā subject matter experts gave me deeper insight into the root causes that prevent them from raising their cultural intelligence. Fear or lack of knowledge about how to engage with Māori was common although many had internal cultural advisors they could refer to.

The inertia from predominantly older Pākehā male leaders who are used to Western ways of working keeps structural, psychological, attitudinal, cultural, perceptual and political barriers in place. The generations who came after them are more likely to have been exposed to Māori and Pacific cultures and are more likely to be receptive to change.

This is in line with important changes in the way that government, corporate and non-profit organisations seek to engage with Māori. The most significant change has been the recognition of the need to move away from one-off consultations to building meaningful and sustainable relationships (Bay of Plenty Regional Council Māori Policy Unit, 2011).

This survey suggests that subject matter experts want cultural intelligence to help them be more productive and successful in their work. The top topics that survey participants said they wanted to learn about were:

1. Building relationships with Māori;

2. Understanding and observing protocols;

3. Understanding Māori customer personas and Māori journey maps;

4. Understanding basic Māori language;

5. Understanding the Treaty of Waitangi.

I found the results overwhelmingly positive especially peoples' candour. Using the technique of moral imagination also gave me the confidence to speak to them about sensitive issues and allowed them to feel safe and heard.

DISCUSSION AND CHALLENGES

Having looked at the cultural intelligence barriers that subject matter experts face, it was now time to uncover the story of systemic and structural racism and the forces that persist and drive these systems. I needed to look at the deep structures that underpin them.

Structural discrimination is described by New Zealand's State Services Commission describes as occurring "when an entire network of rules and practices disadvantages less empowered groups while serving at the same time to advantage the dominant group".

My own views on the impacts of systemic racism on Māori formed part of a report on racism led by Māori research company Te Atawhai o te Ao. On Waitangi Day 2020, during a visit to Waitangi, I was invited to participate in their digital survey for a research report that was published in March 2021.

Called 'Whakatika: A Survey of Māori Experiences of Racism', it found the majority of Māori (93%) felt racism had a daily impact on them. Even more (96%) said that racism was a problem for their wider whānau.

The report defined four levels of racism as articulated in literature that they reviewed – internalised racism, interpersonal racism, institutional and/or systemic racism and societal racism. Systemic racism, as it pertains to my research question, is defined as:

> "Legislation, policies, practices, material conditions, processes or requirements that maintain and provide avoidable and unfair differences and access to power across ethnic/racial groups. This includes differential treatment and access to quality services in sectors such as education, health care, housing, employment and income as well as living in a clean environment. (Smith et al., 2021, p.16.)

Figure 2 highlights the map of systemic racism which helped me to gain clarity on the entities that make up this system. I was also able to identify specific points in the system where big impacts could be made.

- Create leverage hypotheses to describe how systemic change might be created;
- Develop a framework for learning and adapting over time as the system changes.

As well as looking at the systems and the stubborn problems they create both upstream and downstream, I also had to understand the people who make up these systems.

Using insights from the subject matter experts I interviewed and surveyed I mapped out the complex behavioural and structural elements that enable systemic racism to exist. I also added relevant insights from other publications and research.

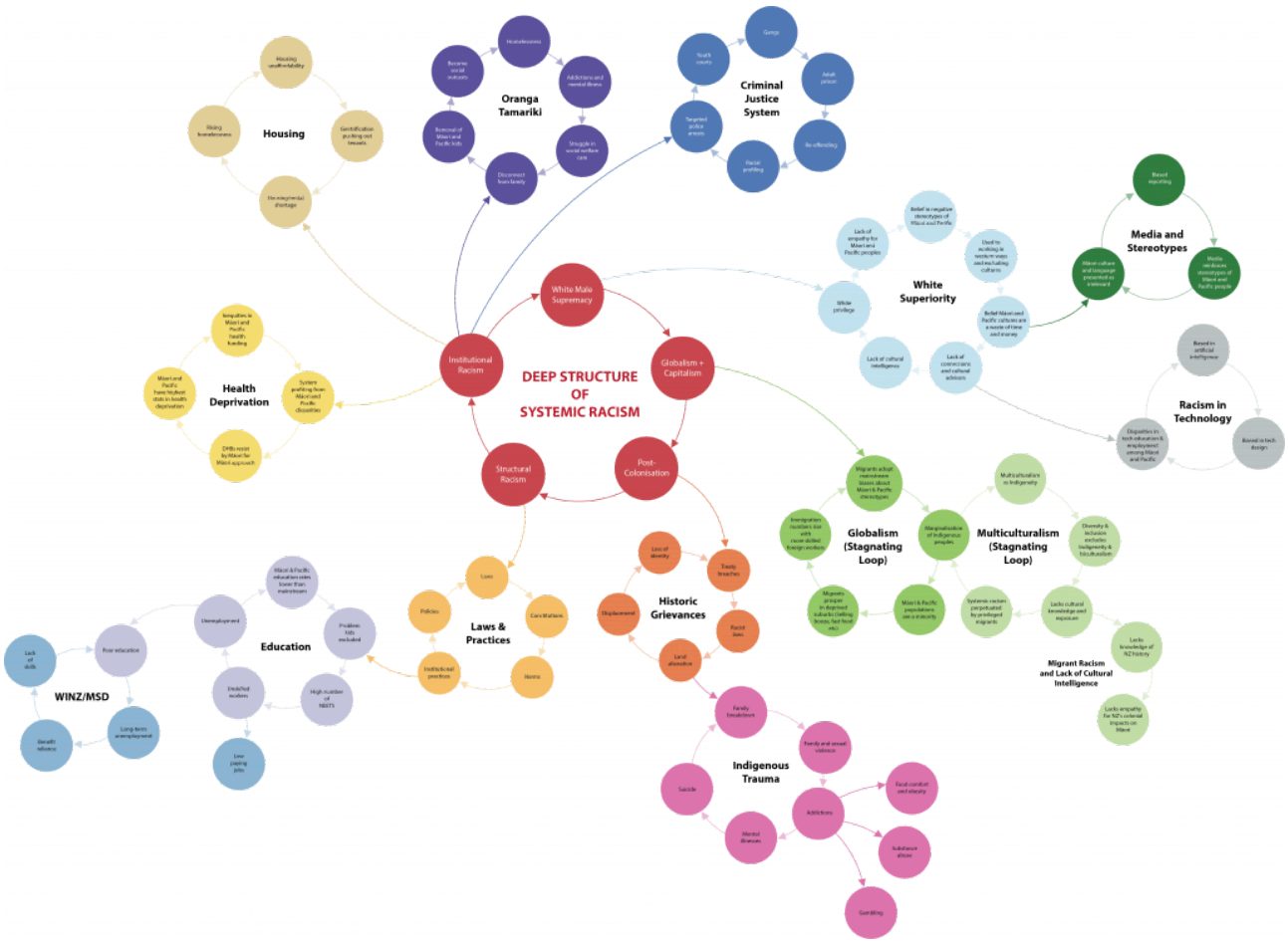

Figure 2. Systemic Racism Map (link to full size image)

As a form of peer review the deep structure of systemic racism map (Figure 2.) was shared with three Māori women who work in the tech industry but are also Māori cultural advisors.

All three of the women were not surprised by the complexity of systemic racism. They resonated with the way the deep structure was laid out, and the connections between the loops that were put together. Also, they could see how their lives had been affected by the vicious loops that were plotted.

The question they asked is that, in every situation of systemic racism, where does the power sit and why is that? The participants talked about elements that were missing including digital racism, native language trauma, and white supremacy in the mental health and gender space.

There was concern about the future of work for Māori and Pacific peoples because of the inequitable access to internet connection, public services, public spaces, and job training in provincial and rural areas.

Although the system map was overwhelming for our participants to view (because of their own lived experiences), they appreciated the depth and clarity that the map gave. As a result, we will change our map to add some of their insights e.g. digital racism.

CONCLUSION AND RECOMMENDATIONS

Anti-racism education and solutions

Māori have consistently protested about how the Treaty of Waitangi has been violated, but as well as that, from the 1980s, small numbers of Pākehā have always supported Māori.

The Pākehā Treaty workers' movement emerged in the early 1980's in response to calls from Māori for Pākehā to learn about their responsibilities under the Treaty; Pākehā were challenged to educate their own people about it.

It was to these allies that I turned to when considering solutions to systemic racism. Some, like Mitzi Nairn, are still involved 45 years on. It is my intention to build relationships with them after my deadline for this research, as fighting racism is an ongoing process that needs to be done with allies.

Disrupting systemic racism with cultural intelligence

Now that I had insights from subject matter experts about the barriers they face to increasing their cultural intelligence; and the insights into systemic racism, my attention turned to how we could disrupt system racism through cultural intelligence.

Subject matter experts are at different places on the continuum to becoming culturally intelligent and this can be a lifelong journey. Below is a journey map that I developed to chart the various stages along this CQ (also known in business as cultural quotient) continuum and where people might be at. The steps are built on the original ideas of Arago-Kemp and Hong (2018) who suggest cultural awareness and cultural knowledge are essential in bridging cultural perspectives. Figure 3. outlines the different types of solutions that my subject matter expert interviewees suggested that could be tailored for each step of their journey. The steps are by no means static and elements can be interchangeable.

***Figure 3**. Bridging Cultural Perspectives Framework*

Step 0: Systemic racism – Anti-racism education.

Step 1: Unconscious bias – Anti-racism and unconscious bias training.

Step 2: Cultural awareness – Treaty training basics.

Step 3: Cultural competency – Treaty training advanced.

Step 4: Cultural responsiveness – Strategic communications and marketing plans.

Step 5: Cultural co-designing – Cultural expert directory.

Step 6: Best practise implementation – Guides for engaging with Māori and Pacific peoples.

Step 7: Cultural intelligence – Cultural intelligence training.

Step 8: Systemic disruption – share insights and strategies with others.

This research aims to create broad and sustained changes so that subject matter experts know how to incorporate cultural intelligence into their work, thereby disrupting systemic racism. One subject matter expert I interviewed said knowing cultural competency wasn't enough.

Helping them to journey from one end of the continuum isn't necessarily linear or a one-way journey, but it is a lifelong journey that everyone, not just them, needs to achieve cultural intelligence.

SUMMARY

The key findings outlined in this report provides an insight of the cultural intelligence barriers that subject matter experts face. It also adds insights into the complexities of the environments that they operate in, the vicious loops and areas of stagnation.

It has required the 'loose' holding of ideas and the ability to pivot from one idea to another. It has required moral imagination to gain the trust of subject matter experts.

Rather than focussing on the downstream effects of systemic racism on Māori we have traversed the upstream waters to understand those who hold power there.

The result is there are two prototypes now in the pipeline – both underpinned by systems thinking, critical thinking, design thinking, agile, theories of change, teaching pedagogy, stakeholder journey mapping and kaupapa Māori and Pacific.

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Iulia Leilua is of Māori (Ngāti Hāua, Ngāti Hekeāwai) and Samoan descent and was born and bred in Taumarunui. She's an award-winning journalist and communications consultant who began her media career at TVNZ in 1987 with Pacific TV show 'Tagata Pasifika'.

In 2001 she helped launch the Pacific Islands Media Association before becoming a founding member of Māori Television in 2003. She later became Head of News and Digital Content at

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Iulia has worked extensively with Māori and Pacific communities in New Zealand and the Pacific region. She's also a creative entrepreneur and owns the cultural communications company 'Brown Pages'.

In 2021 she completed her Masters of Technological Futures with Tech Futures Lab and launched the digital cultural intelligence platform 'Mana Moana' as a result of her masters.

PART II.

PRACTITIONER REFLECTIONS

TARANAKITANGA

He Rourou, Volume 1, Issue 1, 90-92, 2021
AIRANA NGAREWA

One of the unique problems I found myself navigating as a first-year teacher was how to authentically honour Te Tiriti o Waitangi in the classroom while at the same time balancing the localization of what I was delivering with the need to acknowledge and address mass diaspora in Te Ao Māori. This meant I had to work towards creating a learning environment that was specifically localized and generally culturally reinvigorating, especially for tauira Māori who had been displaced from their tribal lands and so displaced from their tribal identity, language and culture.

In practice, this has meant integrating Te Reo Māori, Mātauranga Māori, Kaupapa Māori, and Taranakitanga into the philosophy, framing, and content of the learning my learners engaged with. To cite an example of what this looked like in practice, in one lesson my tauira and I unpacked Kaupapa Māori that has an important place in the classroom. It was at its core about indigenizing our approach to education and coming to understand the special status of Te Ao Māori in Aotearoa New Zealand. But it did not stop there. It quickly evolved into an opportunity to bring to light some of the most basic philosophical assumptions we and the institutions of education had made about what learning is, what kinds of learning are most important and how it should take place. This began with a wānanga we had about the concept of Māiatanga.

This we came to understand as the recognition that a learner is not a static being but something that is always growing, changing, and adapting and so to properly respect a learner as a learner we had to recognize them as a thing that occupies two positions at all times: what they are and what they can be, will be or may be tomorrow. It is not difficult to see how the kōrero moved into adjacent spaces such as those which led into this discussion.

A natural question arises here, beyond the wānanga itself, how did the kōrero affect the classroom? To answer this question let's further analyze our wānanga about Māiatanga.

Our understanding of Māiatanga acted not as a rule (an instruction to do or not to do such a thing) but rather as a philosophy that we continued to explore and we used to guide and inform our behaviour within the classroom, ensuring all that we did aligned with our interpretation of the spirit of this philosophy. It was about being open-minded because our interests, passions and aspirations are not fixed. It was about having a growth mindset and so being ready to tackle that which has been difficult for us in the past because within these sorts of challenges is the unique capacity for growth and learning. It was about being humble and recognizing the uncertainty inherent in the future.

Circling back to Te Tiriti, this provided the unique opportunity for tauira Māori to tie in their

identity, language, and culture in a way that was authentic and individuated and so avoided the homogenization of Te Ao Māori whereby their Māoritanga would be reduced from a complex web of shared understanding, unique iwi identity and individual experience to over-simplified categories of what is and is not Māori.

In social justice terms, this was about equity. It was about removing, subverting, and navigating the barriers to entry and excellence so often entrenched in secondary school learning. This meant starting from a position where tauira Māori were granted the opportunity to engage in and connect with the learning regardless of their learning history while at the same time granted regular opportunities to tie in their prior knowledge and lived experience into activities of learning. As a Kaiako, it also allowed me the capacity to draw on local purakau and kōrero tuku iho as a means of demonstrating how one might discover and utilize the whakaaro of their culture and use it as a tool to inform or guide their learning. This particular approach had been inspired by my kura, Spotswood College, who have adopted the rising of Puanga (what the majority of Māori in Taranaki use in the place of Matariki as the new year star) as a time for reflection personally, as is the tikanga generally, and systemically, as a time to review all that we do as a kura.

In my pedagogical practice, this approach to equity centred mostly around identifying and developing means of solving problems at both a local and global level. For some tauira this was about learning karakia that they could share with their peers and whanau and so introduce more reo me te tikanga Māori into their lives and community. For others, it was about organizing massive cultural events where Te Ao Māori would be on display alongside many other indigenous cultures and so bring to light the value and power of indigenous peoples all over the world. One does not need to think too hard to grasp just how this approach was able to empower tauira Māori to take control of their learning, navigate traditional obstacles that prevented them from engaging and granted regular opportunities to tie in their prior knowledge and lived experience.

At the end of my first year in the classroom, I cannot be sure that I have solved the problem of authentically balancing the need for localization for tauira Māori with the need of addressing diaspora in Te Ao Māori. But I am confident that it is through this general approach, empowering my tauira through wānanga and the use of local pūrākau and kōrero tuku iho, that I will come to discover what this balance can look like.

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ALGORITHMIC BIAS AND MĀORI

He Rourou, Volume 1, Issue 1, 93-94, 2021

SARA STRATTON AND JONI ANGELI-GORDON

In this kōrero Sara Stratton (Ngāti Hine, Ngāti Kahu) shares her recent research on algorithmic bias and Māori with Joni Angeli-Gordon (Ngāpuhi, Ngāti Whātua, Te Roroa). Listen using the audio player below (web version only) or follow this link.

An audio element has been excluded from this version of the text. You can listen to it online here: https://herourouv1.pressbooks.com/?p=56

An audio transcript is available here

You can find out more about Sara's work at www.maorilab.maori.nz

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PART III.

BOOK REVIEWS

INVISIBLE WOMEN BY CAROLINE CRIADO-PEREZ

He Rourou, Volume 1, Issue 1, 96-98, 2021
BEX TAYLOR

Caroline Criado Perez, *Invisible Women: Exposing Data Bias in a World Designed for Men*, Abrams Press: New York, 2019. 432 pp. ISBN: 9781784741723

Invisible Women by Caroline Criado-Perez is a book about the gender data gap. An issue that is intrinsically weaved through our lives in countless ways. A silence, an absence of data, of perspective, of stories from 51% of the world's population. It's a book about why this gap exists, the consequences and how to reduce the gap.

The author, Criado-Perez is a writer, broadcaster, and feminist activist. She was named Liberty Human Rights Campaigner of the Year and OBE by the Queen. Invisible Women is her first book, published in 2019 and what a debut. She's been described as one of the most vocal and tenacious campaigners of her generation.

I know that gender equality is not a new topic, it has and always will be incredibly important. But with the rise in algorithms and artificial intelligence, Criado-Perez states it's never been more critical to act now. The gap will only grow, and the consequences, as Caroline Criado Perez details in her book, can be deadly. I had to pick my jaw off the ground at the end of each chapter, and at times wanted to throw it against the wall – not for dislike – but in total shock and frustration at how these situations existed and even as a woman, I felt like I didn't know enough. However, the purpose of the book is not to point fingers. She isn't interested in blaming anyone, or finding out if people were 'secretly sexist'. It's designed to inform, to educate, to show the patterns, and therefore illustrate that it is not just 'one big coincidence'.

"One of the most important things to say about the gender data gap is that it is not generally malicious, or even deliberate. Quite the opposite. It is simply the product of a way of thinking that has been around for millenia and is therefore a kind of not thinking. A double not thinking, even: men go without saying, and women don't get said at all. Because when we say human, on the whole, we mean man."

Criado-Perez's book can either be read from start to finish or a certain chapter can be selected for examples in that field or that industry – for example public transport, using the bathroom, or going to the doctor.

Criado-Perez's reason for writing this book was the urgency of the issue. Now more than ever we are seeing computer programming, algorithms etc and they are everywhere in our daily lives. With

these systems in place, if they are being built on this gap, the gap will stay there, or worse, continue to grow.

"The new context makes the need to close the gender data gap ever more urgent. Artificial intelligence that helps doctors with diagnoses, that scans through CVs, even that conducts interviews with potential job applicants, is already common. But AIs have been trained on data sets that are ridiculed with data gaps – and because algorithms are often protected as proprietary software, we can't even examine whether these gaps have been taken into account."

The book is written for change-makers. To give examples and statistics to back up the need to get women in the room, to evaluate any existing policies (whether in a company, an organisation, council, government, healthcare….) to see if they really are 'gender neutral' or in fact designed for 'the default male'.

Criado-Perez calls her early drafts "vomit drafts" as the book quite literally exploded out of her and she had to immediately get it on paper. After meticulous editing, fact-checking and help from friends and colleagues, the result is a book that is thoroughly well-researched and brimming with examples of what needs to change, and hopeful tellings of when things have changed.

At times the book made me laugh as Criado-Perez details the reaction when a professor at Georgetown University named her literature course "White Male Writers" but no-one blinks an eye when 'Women's Literature' is its own topic. Again, we are made aware of the man as the default. However, it's not all doom and gloom. Criado-Perez shares stories of success, of when the data gap is recognised, systems put in place to correct, and the result. For example, blind auditions for orchestras (traditionally male) have increased the percentage of women taking up roles. We've seen success across the globe, including this report showing how fair algorithms are creating citizens' assemblies – a fair and representative match of the community.

"As the recommendations made by citizens' assemblies increasingly affect public decision-making, the urgency that selection algorithms distribute this power fairly across constituents also grows."

Although this book has a global perspective, for me in Aotearoa, New Zealand, I was drawn to it after a recent survey. The Digital Skills Aotearoa Report, prepared by NZTech, was published in 2020, and included statistics of under-representation of women in a number of industries but primarily tech, science and engineering. Reading Invisible Women gave insight into just why this might be. And that it's not just one big coincidence.

The book will hopefully have a ripple effect. Women I know that have read the book feel equal parts frustrated and ignited to act. But perhaps more importantly, men need to read this book, not just women.

Criado-Perez says "When we are designing a world that is meant to work for everyone we need women in the room". So I urge you, if you are in any sort of capacity for decision making – look around that room. Get women in that room. This book is a call for change, a rallying cry and I thoroughly enjoyed it and recommend it to both women and men. Criado-Perez dedicated the book to "the women who persist: keep on being bloody difficult". Her second book, 'Do It Like a Woman… and change the world' has already received praise and is next on my list to read. Less jaw-dropping and fist-clenching, more inspiring and empowering for young women across the world.

Flanigan, B., Gölz, P., Gupta, A. et al. Fair algorithms for selecting citizens' assemblies. *Nature* (2021). https://doi.org/10.1038/s41586-021-03788-6

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PART IV.

RESEARCH REVIEW

ELITE EDUCATION AND EVERYDAY ENCOUNTERS: EXAMINING THE MULTIPLE DIMENSIONS OF PRIVILEGE IN YOUNG PEOPLE'S LIVES

He Rourou, Volume 1, Issue 1, 100-105, 2021
HAYLEY SPARKS

THE CONCEPT OF PRIVILEGE

This research review comes from research completed as part of a PhD in Geography at The University of Auckland. The research was titled: "Elite education and everyday encounters: Examining the multiple dimensions of privilege in young people's lives"

By embracing uncertainty, the research examined the geographies of privilege through engagement with young people who attend elite private schools in Auckland, New Zealand. The narratives and experiences of young people provided the empirical basis for this project, which is situated alongside extant literatures to develop a conceptual framework of privilege as a key structure shaping the encounters of everyday life. Young people engaged in the research through interactive focus groups and online dialogic diaries. This approach provided data on both an individual and collective level, and provided opportunities to engage in conversation with the young people. Content analysis of school websites and media texts was also conducted to provide insights into the institutional dimension of the contexts the young people were being educated in. In a context where discussing privilege is uncommon, examining the operation of systems of privilege through this research had implications for conceptualising privilege as well as comprehending the realities of everyday life for young people.

Explicitly marking the effects of privilege, understood as a system made up of institutional, symbolic, and individual dimensions, on the plurality of childhoods is critical. Until recently, research has focused on seeking to better understand discourses of oppression and deprivation, rather than privilege and advantage. As a result, privilege has become further normalised, through material, social, political, and economic manifestations in people and places. However, inequalities exist because some groups and individuals are privileged (Johnson, 2006). With this understanding, privilege has recently become the focus of a significant body of research. In public imaginaries, the term privilege conjures ideas of wealth. However, academic conceptualisations of privilege emphasise more than wealth; rather privilege is understood as paradoxical and socially constructed through psychological and social processes (Pease, 2010; Twine & Gardener, 2013). Privilege is conceptualised as a social and collective discourse which structures individuals' and groups' lived realities. McIntosh's (1989) foundational text explains how privilege consists of two dominant forms of advantage: unearned entitlements and conferred dominance. These components highlight the main premise of privilege understood through an academic lens, in that privilege exists "when one group has something of value that is denied to others simply because of the groups they belong to rather than because of anything they've done or failed to do" (Johnson,

2006, p. 21). It is therefore not the individual who is privileged, but the social categories that they are ascribed membership to which are privileged.

Three key messages emerged from the research and are summarised in this review:

1. conceptualising privilege as a system;
2. intersectionality;
3. the contextual specificities of privilege

PRIVILEGE AS A SYSTEM

Privilege can be understood as a system made up of components and practices which have institutional, symbolic, and individual dimensions. Systems of privilege are fluid, complex, and negotiated organisations of practices and components which are affected by a range of factors. In this way, systems of privilege are dynamic and composed of interconnected components. Systems, including systems of privilege, have no fixed spatial or temporal boundaries. In this context, elite private schools are not completely bounded spaces, but the practices of privilege transcend porous boundaries to have significant influences on young people's identities and experiences outside the school gates. Notwithstanding the often gated and walled nature of elite private school campuses, this claim highlights the dynamic and embedded nature of privilege in place. Practices such as consumption, mobility, education, and identity construction are entrenched in the system which enables the reproduction of privilege. The multiple dimensions and practices of privilege highlight how individual and cultural processes are involved in cultivating privilege (Howard et al., 2014). Therefore, it is argued that privilege is not existential per se, but produced and reproduced by multiple active agents working through many media.

The experiences and identities of young people who attend elite private schools presented in the research provide insight into how privilege structures everyday encounters, through the performance and resistance of privileged ways of knowing, being, and doing. Privilege is therefore an active construction which is relative, experiential, situated in place, acquired, learnt, enacted, and shaped by everyday actions and practices. The embodiment of privileged practices by young people is reflected in their narratives of identity and everyday experience. The identities young people construct, perform, and negotiate highlight how privilege influences young people's sense of self (Howard, 2008). This contention illustrates how identity is a product of discourses and sets of practices that are part of the fabric of everyday life, reinforcing Valentine's (2000, p. 257) claim that children are "located in narratives of identity not of their own making". The performance of identity is thus embedded in a complex web of social relations between bodies, texts, events, and technologies.

The structural and agentic components of systems of privilege must be acknowledged and examined to understand how privilege is produced and reproduced. It must also be recognised that privilege is relative, and therefore the operation of systems of privilege does not have the same outcome for all. The narratives reproduced by some participants in this research stress that not all students attending elite private schools experience the same degree of privileged affordances. While such young people are privileged in the sense of the education they are receiving, outside the school gates it became apparent that some participants found it difficult to 'keep up'. Again, linked to the symbolic dimensions of privilege, objects, tastes, and styles are coded with discourses of privilege, which young people on scholarship or being sponsored to attend elite private schools can decode because they have learnt what it means to be privileged. However, at the same time,

their relatively restricted access to resources means that being able to embody and enact these codes through ownership of objects and behaviours is not always possible. Therefore, this research shows how both inherited and learnt privilege is needed to sustain systems of privilege. Together, the individual, symbolic, and institutional dimensions and practices constitute systems of privilege which operate as part of the broader social fabric.

INTERSECTIONALITY: AGE AND PRIVILEGE

Seeking to understand how privilege shapes the geographies of young peoples' everyday lives is one means to make privilege visible and uncover the ways in which systems of privilege operate. The participants in the research occupy an ambivalent position within the systems of privilege discussed here. They are active members of society and possess agency to reproduce dominant discourses and social norms. In this way, young people are actively engaged in the practices which contribute to the construction of systems of privilege, even if they are not always consciously aware of their contributions. However, at the same time, by virtue of their chronological age and associated social norms, young people do not 'set the rules' by which systems of privilege operate. Young people can, however, contribute to its reproduction by performing as social selves through the different dimensions. This reproduction was evident in many experiences and encounters young people narrated, including, for example, following technology and clothing trends, aspirations for tertiary education, and extensive international travel experiences. Therefore, considering the intersectionality of age and privilege reveals how privilege is relative and actively constructed. This is because young people's actions and attitudes are shaped by privileged understandings of the world which are developed through socialisation in elite private schools. Further, the influence of structural components of the systems of privilege on young people's agency is also highlighted as young people's attitudes and actions are mediated. The research privileged the voices of the privileged (based on class and education), challenging and disrupting dominant discourses and narratives.

Privileging the voices of the privileged is a counter-cultural narrative to those that are usually produced in social and cultural geography where there is often a focus on 'studying down'. However, the benefits and insights gathered by investigating the narratives of young peoples' experiences, as well as focusing resolutely on privilege, are many and varied. By studying privilege, the nuances are investigated rather than simply reasserting its normative status. Privileging the voices of the privileged is not denying the importance of seeking to understand disadvantage and marginalisation, but rather acts as an alternative approach to further understanding how privilege actively contributes to the perpetuation of inequalities. This move fits with Wildman and Davis' (1995) contention that dominant vocabulary allows us to talk about oppression and disadvantage, but hides the mechanisms that perpetuate it. In this way, the absences and silences surrounding privilege are just as important to consider as visible markers of privilege. Young people's resistances to labelling themselves as privileged or acknowledging how their everyday experiences differ from other young people is telling. For example, the spectacular acts of transnational mobility in the form of international travel was accepted to be a privilege, but the attempts to suggest 'that we are all the same' reinforce how young people do not always see themselves as different. Therefore, it is necessary to find a vocabulary to discuss privilege. Focusing on the interconnected dimensions of systems of privilege is one way these conversations can be started, particularly in a context such as New Zealand, where dominant social norms present a discursive veneer of equal opportunity and discourage the naming of privilege.

THE SIGNIFICANCE OF CONTEXT

While broader conceptualisations of privilege, the relationship between privilege and young people's experiences, as well as the role of elite schools in understanding the wider social fabric have significant value, the contextual specificities of the research are also meaningful. It was evident through the research that privilege is lived in a particular way in New Zealand, influenced by culture, history, and geographic location. Therefore, following Borell et al. (2009), to highlight how the specificities of place influence the operation of systems of privilege, it is useful to think about whether the outcomes of this research would look different elsewhere. For example, British experiences of class are in stark contrast to New Zealand, and an American understanding of class differs again (in British and American societies there are much stronger demarcations of class, working class, middle class and elites, than in a New Zealand context). The effect of dominant understandings and approaches to discussing class in different contexts is critical to understanding the operation and effects of systems of privilege. Analysing young people's narratives and institutional tropes in this research exposes two dominant social narratives which prevail in New Zealand and shape how systems of privilege operate.

Firstly, the myth of New Zealand as a classless society structures how New Zealanders describe social relations. It is widely believed, but undermined when unpacking the realities of inequality, that New Zealand is a classless society. As such, discussions of privilege and class are somewhat silenced. In this way, I argue that class-based languages are moulded by dominant discourses. Countering notions of a classless society, young people's narratives expressed in this research reveal the ways in which privilege and class manifest in the form of education and wealth. Secondly, and connected to the myth, is the resistance to discuss individual success and advantage which are always framed as being a result of hard work, rather than unearned entitlements. These two ideas were clear in young people's autobiographical narratives, where there was a reluctance to label their experiences and lifestyles as privileged. Instead, descriptions of being lucky and fortunate dominated. The connection between parents' hard work and the young people being able to attend elite private schools is also illustrative of the tendency to attribute privilege to hard work rather than marking such experiences as an outcome of privilege. The research therefore highlights the centrality of place in the operation of systems of privilege. Just as systems of privilege have varied effects on individuals and groups, the operation of systems of privilege reflects broader social systems embedded in place.

The empirical evidence suggests that when trying to examine systems of privilege in a context such as New Zealand, a nuanced approach is required. Privileged lifestyles occupy an ambivalent position in New Zealand, but this ambivalence needs to be acknowledged and examined in more detail. Examinations must incorporate analysis of wider social, cultural, and economic factors to understand the geographies of privilege, and do so by privileging the voices of the privileged. This poses difficulties and brings to the surface feelings of uncertainty for researchers. However, embracing the unknown, rather than focusing only on those who are disadvantaged and using their experiences as a proxy for inequality, is critical. The reproduction of inequality will continue to be only partially understood unless the mechanisms by which this occurs are examined in greater detail. Without overcoming common perceptions of New Zealand as a classless society, and dominant resistance to discussing individual success and advantage, privilege remains unnamed. This contention does not dismiss the argument that privilege is invisible to those who are privileged (Borell et al., 2009; Johnson, 2006; Pease, 2010), but nuances the claim. Symbols and signs of privilege are evident in both material and embodied ways, such as through housing, employment, mobility, and consumption. Most participants' responses emphasise how privilege

remains unmarked from the perspective of those who are privileged (Borell et al., 2009), but privilege was covertly marked through experiences, identities, and symbols. One participant explicitly noted that he was privileged given where he lived, the resources he had access to, and the school he attended, but other participants were not as forthright in their claims. Therefore, I conclude that privilege remains largely unnamed, but the unnamed nature of privilege reinforces its dominance. Acknowledging the luxury of obliviousness privileged people can claim (Johnson, 2006) is therefore important to understanding how systems of privilege work. By not naming oneself as privileged, privilege continues to remain unnamed in society. This reinforces how language can mask and mark systems of privilege (Wildman & Davis, 1995). Explicitly naming and marking the effect of privilege (systems and practices) on childhood is important. Although the research examined privilege within the context of New Zealand, focusing on young people's experiences, the framework can be expanded and nuanced to further understand geographies of privilege in different contexts.

Exploring the construction, negotiation, and performance of young people's identities shows how discourses of privilege shape individuals' biographies, through the intersection of different social categories including class, age, and gender. In particular, the influence of structure and agency highlights some of the tensions and contradictions of privilege which arise because the young people in the study are part of the social elite by virtue of the schools they attend, but are also simultaneously disempowered in some contexts because of their age. In this way, I argue that young people are critical actors in practices which contribute to the reproduction of privilege, but do not have the status to create systems of privilege. Linked to this idea is the centrality of the institutional dimensions of privilege, which has implications for both the individual and symbolic dimensions. Institutions, elite private schools in this research, are shown to reproduce privilege through the normalisation of discourses and practices which reinforce privileged ways of knowing and being. While not all elite private schools operate in the same way, the signs and symbols of independence and exclusivity afford them the ability to prepare students for a future where success and status is continually reproduced. The symbolic dimensions of privilege are not only evident in the practices of institutions, but also in other material and metaphorical signs related to mobility and consumption which young people actively engage with. In this way, the conceptualisation of systems of privilege emphasises how privilege does not rest with individuals, but is encoded in discourses and symbols which shape how individuals and institutions construct, negotiate, and perform privileged identities. Of most importance to understanding the operation of systems of privilege is acknowledging and examining the intersections between different components. These components fit together as a system to shape everyday life, and thus underpin a key contention of the research; that narratives recorded by young people who attend elite private schools reveal how practices and encounters actively construct and reproduce privilege through institutional, symbolic, and individual dimensions.

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Nā tō rourou, nā taku rourou ka ora ai te iwi

With your food basket and my food basket we will thrive