Master of Contemporary Education Symposium Proceedings 2020

MASTER OF CONTEMPORARY EDUCATION SYMPOSIUM PROCEEDINGS 2020

The Mind Lab

The Mind Lab ePress

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Contents

Foreword

Professor Paul Kayes

The Mind Lab offers the Master of Contemporary Education (MCE) across New Zealand. This degree, aimed at educators across all sectors, has shaken up the graduate education sector with the sheer number of enrolments it has attracted. Many graduates credit the MCE as being integral to their recent promotions.

This edition of The Mind Lab e-Press presents the executive summaries of 38 graduates' final reports. All have a change management focus. Many included staff IT development and / or innovations in online learning in their projects – timely, given the impact of COVID-19 during 2020.

It was exciting to see that STEM, STEAM and STREAM were the focus of several projects. The addition of A (art) and R (religion) to the more traditional STEM made for an interesting read.

Culturally responsive practice is evident in all the projects. The effort these educators have made to reflect on and challenge their own teaching practice, and in several Principals' cases, that of their entire staff, is important given our ever-increasing diversity.

These executive summaries are a rewarding read and reflect well on The Mind Lab and the 46 educators who have been awarded their MCE degrees.

Nāku noa

Professor Paul Kayes

Te Whare Wānanga o Awanuiārangi

[PART I]

Executive summaries

The following executive summaries are from the C1P Cohort (July 2018).

[1]

The design and implementation of a non-linear, design-based, problem-solving framework for primary school teachers

Alexander Juma

Throughout practice as a classroom and specialist teacher, along with discussions with school leaders and other teachers, there has been a distinct pattern among primary age students from Years 1 to 8 who attempt problem-solving outside of Mathematics. These patterns suggest that students are expecting failure in a problem-solving task but then state that they have failed and ask for the next problem. This is an unproductive failure as students do not take anything from the process of problem-solving (Kapur, 2011). Teachers of these students have difficulty translating problem-solving theory into practical activities, compounded by the lack of suitable primary age studies into problem-solving outside of Mathematics (Andrews & Xenofontos, 2015; Cornoldi, Carretti, Drusi, & Tencati, 2015; Van Bommel & Palmér, 2015).

From this rationale, this project had the aim to develop a tangible problem-solving framework that could be used in most (if not all) curriculum areas for primary aged students. This framework would be an adaptation and implementation of existing secondary and tertiary level research into facilitating

problem-solving – from a primary school perspective. The framework would allow teachers to repeatedly plan and implement problem-solving activities that would encourage students to learn from the process of problem-solving rather than concentrating on the result. This would help minimise both unproductive successes and failures leading to meaning and authenticity in student learning (Bolstad et al., 2012; Kapur, 2010).

As students progress through the framework, a method of recording the process and thoughts of the students will also be needed. This was achieved by the development of a companion app, providing a means for students, teachers, and stakeholders to be able to reflect on the learning process during problem-solving. A professional development plan was created and implemented to train the staff of the trial school in the use of this framework.

Each 'stage' of the framework process is called a 'lens' to help reduce the confusion around non-linearity. The lenses are designed to be addressed in order going forwards, but students are able to go back to a previous lens at any time to address issues and problems encountered during the process.

Educational design research methodology was chosen for this project as this approach would enable iterative evaluation of the thoughts, feelings, and efficacy of teachers and students using the problem-solving framework. It would also allow for the incremental development of the framework as the research progresses. A mixture of qualitative and quantitative analysis was used. This research intervention was conducted within a semi-rural primary school of around 450 students. Approximately 70% of the school population is Pākehā, 20% Māori, with the other 10% representing other cultures.

Participants were chosen through convenience sampling. While this could prove a problem statistically, realistically in the scope of this project this was the best method as it made use of the available people. From the initial identification of early adopters within the trial school, seven teachers were approached for consent. These teachers spanned the junior, middle, and senior syndicates. The legal guardians of all their students, ranging from Year 1 to Year 6, provided written

consent to be involved in this research project of approximately 190 students.

The journey through designing and implementing a problem-solving framework has shown that there is a need for a primary- focused framework to plan and teach problem-solving. It has been very difficult to develop a framework suitable for Years 1 to 8 – however, the first iteration has shown promise and adaptations can be made to suit any year level.

There was a dramatic change in student efficacy concerning problem-solving. This alone is cause for excitement in that teachers were able to take what can be considered a difficult knowledge creation method and distil it to a simple five to six-step non-linear process. The framework is a praxis curriculum method that has allowed teachers and students to have an intentional learning experience, along with a direction of learning, even though that direction is only grounded in the starting point and can change based on communication with others and experiences gained along the learning journey.

As a result of this research, primary teachers now have an easy-to-follow framework for co-constructing problem-solving scenarios in any curriculum area. This allows problem-solving to be taken out of the 'too hard' basket and used frequently so that students can take ownership of their learning and develop critical thinking skills and empathy to use in everyday life. The development of 21st-century skills is essential for today's students to prosper in tomorrow's environment (Voogt & Knezek, 2018).

Teachers now have a standard method to collect evidence from students about the process of problem-solving. The teacher and student now have a record of the process so that teachers can assess the process rather than the end product. Students are more likely to experience 'productive failure' as they can easily reflect on recorded evidence rather than just their memories, and management can see the process in action rather than getting a glimpse of part of a session.

This educational design-based project was introduced as an intervention to address a need for teachers to be able to plan and implement a non-linear design-based project solving activity with their students, to reduce unproductive failures and

success experienced with the students. While the national lockdown hampered the ability to complete more than one iteration, the results from this are positive. More work is needed to reduce the barrier to learning for junior students. This is planned in future iterations. However, the success of the first iteration of the framework was the dramatic positive change of student efficacy with problem-solving, with evidence that students are now using the framework independently.

This project is worth continuing, based on initial successful. The framework would benefit from being trialled and iterated in schools with differing contexts to gain insights into the influence of contextual factors. The student companion app will need to be developed further, as discussed earlier, to provide a better user experience for the student (and any adult use) as it is functional but not child-friendly in its current form.

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[2]

Maximising metacognition in the middle

Anna Ballantine

Metacognitive thinking has the potential to amplify students' academic achievement. Through the explicit teaching of metacognitive skills and the opportunity for independent collaborative tasks to action these, both Brown (1975) and Flavell (1979) would argue that metacognitive ability serves as a foundation for learning. Metacognitive thinking, while not a new concept, is being revisited and is emerging as a crucial tool in the learning process. As educators we are beginning to step away from the traditional learning approach of teaching strictly content and 'what to think' and are beginning to utilise other models which allow students the chance to explore 'how to think'. This project investigates how the implementation of a Project Based Learning approach allows for the explicit teaching of metacognitive thinking and to what extent this has an impact on student achievement.

The primary goal of this project was to investigate Project Based Learning and explore its impact on both student metacognition and achievement within the Middle School (Year 4 – Year 6).

Other goals included:

- developing a diagnostic interview and tasks that would

allow for insight into individual student metacognition;

- identifying and defining where individual student metacognition currently sits and the "next steps" for their metacognitive development; and
- developing specific metacognitive thinking so students become the self- regulators of this.

In pursuance of these goals, the project sought to make a connection between the classroom and home environments to allow for metacognition to continue developing in different contexts.

Investigating the relationship between Project Based Learning, its impact on metacognition and student achievement was a complex issue.

Prior to delving into the significance of metacognition, a method for identifying its presence and ways of measuring the degree to which it was present, were required. David Perkins' (1992) levels of Metacognitive Learners helped to inform baseline data and observations. I then followed the action research design model to collaboratively implement a Project Based Learning approach within our Middle Hub (Year 4 -Year 6). The development and implementation of a diagnostic interview and tasks, allowed me insight into individual student metacognition. I collected quantitative and qualitative data from existing student achievement data, observations, interviews and a survey.

This informed how I could align pedagogical approaches to better support the development of student metacognition through the implementation of Project Based Learning.

The findings illustrate that Project Based Learning promotes a learning environment where metacognitive development can be integrated naturally. Through authentic projects that Fullan & Langworthy (2013), describe as purposeful learning through doing, students are not only exposed to the explicit teaching of how to think in a metacognitive way but also acquire the opportunity to put this thinking into practise in a genuine sense. Notably, Project Based Learning allowed students to work collaboratively, think creatively and engage their ability to think critically. Engagement in these activities saw an increase in

motivation towards learning but also an increase in academic achievement. Furthermore, being able to utilise theoretical concepts across the curriculum in authentic contexts to solve authentic problems, provided memorable contexts where the learning of these appeared to "stick", more so than they seemed to have in the past for a significant number of students. Findings suggest that Project Based Learning provides a sound context for students to make significant progress in their ability to think about their own thinking.

While this change project analysed Project Based Learning, with a focus on explicit metacognitive development and how this might be enhanced, it also provides insight into a learning approach less common in contemporary New Zealand primary educational environments. In developing our students' ability to think about their own cognitive processes through the Metacognitive Cycle we equip them with a transferable skill set applicable to many contexts in the foreseeable future. The development of student metacognitive activity not simply as a domain skill, nor as a way to build knowledge about themselves as learners, but rather as habits of mind is critical for developing a cognitively balanced and socially competent learner (Lin, 2001). From my findings I have created several deliverables I believe make the explicit teaching of metacognitive thinking more accessible to teachers, all of which appear to be the first of their kind. Future research could focus on how these deliverables could be leveraged to support learning, to what extent these aid in the acquisition of metacognitive thinking and the impact of this on student ability to obtain and apply skills in varied contexts.

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[3]

The Hub

Billie-Lee Franklin Browne

In Rotorua, the engagement of Māori students is low regarding their learning and attendance at school. Attendance rates had dropped significantly across 8 schools in a local Kahui Ako and there were, and still are, many school-aged students truant in the township during school hours. Students aren't connecting with schools and schools are finding it hard to connect with students and their whanau.

In this project, I set out to design, develop and implement an online platform called The Hub. The Hub is a way of breaking down barriers and increasing student engagement in their learning once again. The primary goal was to produce an online platform that supports both students and teachers in a bilingual forum to help increase student engagement in their learning and provide a kete of resources for teachers of Māori students.

The Hub provides lesson plans and resources for teachers to use in both Māori and English which help to support them in the classroom and their professional development in Te Ao Māori, and Tikanga and Kawa. Students also have access to learning tools, activities, and tuition within The Hub in Māori and English to help support their learning, whether at school or at home.

The project was broken up into 3 main aspects/goals to make the workload manageable. These goals included: Production, Stakeholders and Partnerships, and Administration. I worked

closely with a Project Partner in developing lesson units, lesson plans, and resources to support these lessons. We decided to focus on one particular area of the curriculum – Mathematics, as this was my partner's subject of teaching. We also decided to focus on a year level each and a particular strand – Geometry. Between us, we were able to accommodate the needs of Primary/Intermediate and Secondary school students and teachers.

A mixed method approach, governed by aspects of Action Research and Longitudinal Design, was employed. Mixed-method design is focused on research problems that require an examination of real-life issues from multi-level perspectives, and cultural influences.

The conclusions I have drawn from an interim evaluation of this this project include:

- there is a definite need for The Hub;
- The Hub can become a barrier to relationships between teachers and students but it also offers an alternative better suited to the educational needs of whanau and their children who are learning from home;
- students need a certain level of self-regulation,, especially in the area of motivation, as students need to be motivated enough to use The Hub to pursue their education (Quigley, Muijs & Stringer, 2018);
- as the developer of The Hub, I needed to be digitally fluent myself; I needed to have an understanding of how the internet works – especially websites;
- by building relationships with external organisations and tapping into their services, barriers regarding access to digital devices can be broken;
- support for teachers who are utilising The Hub is needed by providing professional learning opportunities and online support through chat – including support for Māori teachers (Bishop & Berryman, 2006).

A good leader is someone who leads by example and learns

alongside the team. Good leaders: support their team members; enable individual growth; share roles and responsibilities; openly share information and knowledge;, and encourage suggestions and ideas. They have an understanding of how individuals within the team work and what their strengths and weaknesses are. They have good emotional intelligence: they have self-awareness; can self-manage; have empathy; and have good social skills. These are all key aspects of not only good leadership, but also collaboration.

I believe that, while leadership is an important aspect of the success of a project or innovation, collaboration is fundamental to the success of any situation. Without collaboration, leadership of any kind would fail.

Building relationships is paramount for the success of The Hub and also success in student engagement. Relationships need to be strong and built on trust, and this is an important aspect of collaboration – having the ability to work together to achieve a common goal. Building partnerships between whanau, staff and students provides insights into: cultural backgrounds; student needs and requirements; and barriers in the way of student learning.

The Hub is an evolving project. It is incomplete but will continue to be developed.

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[4]

Student anxiety and developing resilience in an online learning environment

Bruce Ngataierua

The purpose of this project was to use personalised learning to address student anxiety and develop student resilience in an online learning environment. The following project goals were formulated as a means to achieving this purpose:

1. develop a research-informed conceptual framework that documents the causes of student anxiety and the relationship between anxiety and resilience;
2. interview staff and students to establish causes of anxiety;
3. interview students to gain their voice on why they have enrolled at Te Kura; and
4. evaluate data against the conceptual framework and design a teaching / learning strategy for incorporating resilience in the curriculum for Year 11-13 students studying NCEA at Te Kura.

Anxiety is a major issue affecting students' ability to achieve their learning goals. Resilience, on the other hand, is one characteristic students need in order to succeed. The project

set out to document the relationships between anxiety and resilience, with specific reference to student achievement and well being. Understanding these relationships should help educators understand these ideas and support their students better.

Project implementation consisted of four phases:

Phase 1 – introduction – complete Project Scope, Learning Agreement and Ethics forms;

Phase 2 – study literature in order to develop a conceptual base of the project;

Phase 3 – set up and conduct face-to-face interviews with stakeholders, identify and and investigate student case studies, and gather staff "voice"; and

Phase 4 – analyse data, create deliverable and complete final report.

A review of relevant literature produced the following key insights relevant to this project.

1. All students experience varying levels of anxiety that can affect their achievement – as a student's academic performance suffers, the anxiety level related to certain academic tasks increases (Huberty, 2012).
2. Social anxiety can also affect a student's academic performance. If a student has social anxiety, the student might not be able to complete group tasks or might not feel comfortable asking for help in class. Social anxiety can go along with or even lead to academic anxiety. Teaching students self-regulation can reduce anxiety and increase academic performance (Ader & Erktin, 2010).
3. Students who experience anxiety feel supported in an individualised learning environment. The literature highlighted some of the challenges students faced in their learning environments and how these challenges fuelled their motivation to find an environment that they felt comfortable to work in (Dobson, 2012).

At the beginning of this journey I thought about what I wanted to do for my project and student achievement was the first thing

that came to my mind. In the initial stages of planning and developing my project, I was thinking about how my students were struggling with life issues. It occurred to me that many of their learning issues related to the topic of mental health and anxiety. Anxiety is a major issue affecting students' ability to achieve their learning goals. As my project evolved, the literature I reviewed gave me information about the psychological impact of anxiety but did not provide explicit information about the impact of anxiety on students and educators.

The best way to collect the rich personal data I needed was to conduct face-to-face interviews with those stakeholders who deal with these issues on a daily basis.

From an analysis of this data, I identified common themes and drew conclusions that contributed to the development of a framework that could be used by teachers in their classroom to support students experiencing anxiety. The aim of using the framework would be to support students in their learning but also to enable students to build self-reliance and resilience.

My project has had a profound influence on my teaching practice. I deal with students with individualised programs on a daily basis. What I didn't realise until my project was well underway was how important this approach was as a method to help students feel confident about taking control of their learning and their learning goals. As such I am more of an advocate now of finding better ways to support my students who are struggling in this area and hopefully develop resilience.

My project has far reaching consequences for the future generations of student learning all over the world. It could have become more successful if there was more research and literature related mental health in education. Given time and resources this can happen and I think will become more important for future students and educators. It is my hope that the framework I have created will become an organic and living and evolving document that will be added to by all educators.

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[5]

The Mathematics Hub

Ceylan Bekar

This project was motivated by encountering the following problems throughout my high school Mathematics teaching career to date:

- the majority of students don't enjoy Mathematics – they are not engaged in lessons and teachers do not enjoy teaching Mathematics;
- students underachieve in Mathematics; and
- students and whānau do not understand mathematical terminology.

Discussing these issues with my peers, I found myself a partner who, like me, sought to improve the attitudes and attainment of our students in Mathematics. Thus the creation of The Hub was born.

My overall goals in developing and implementing The Hub were:

- raising attainment and enjoyment in Mathematics for Māori students – and ensuring that Māori students enjoy success as Māori; and
- reducing the barriers to enjoyment of and achievement in Mathematics by developing agile learners.

The Hub is an online learning platform that contains a bank of resources in English that will be translated into Te Reo Māori for the Mathematics strand Geometry. In my opinion, this online learning space will benefit all learners, especially Māori learners. Māori student engagement is low, especially within the subject of Mathematics. In my 10 years of teaching, I have often come across the phrase 'I don't like Maths' or 'I am not good at Maths'. I want to address this barrier for students who think in this way. For The Hub, I created lesson plans and resources for teacher access on the Level 5 Mathematics strand, Geometry. Meeting with the Kahui Ako Across school Lead for Engagement and Attendance, provided me with the data I required to further understand the disengagement of some of our students in our community of learners – and the majority of influences that affect them.

Additionally, students and whānau do not tend to use recognised mathematical or educational terminology and having these terms explained on The Hub should help overcome this issue. I want to be able to raise achievement and attainment in Mathematics for all students. I also want to work towards the Ministry goal of engaging Māori learners and raising their attainment. I believe teachers need to find ways of engaging their students in learning and making the learning accessible to students and their whānau at all times. As Scott (2015) indicates, teachers who form positive and supportive relationships with their students, their whānau, and local community will effectively develop deeper learning experiences with their students.

The reason why I think The Hub will improve attitudes and performance in Mathematics is due to the fact it is online and can be used to enhance personalised learning. Students can access the topics they find interesting to further their own interests and knowledge. If we can build The Hub to address the learning needs of a pilot group of learners, then it could be a resource that is developed to serve learners from Year 0 to Year 13. Through flipped learning, it also has the opportunity to change the classroom – transforming the pedagogy of what happens in the classroom. It can become a more collaborative working space – rather than having teachers explaining

everything. In this way, we could create a more contemporary pedagogy, helping to develop our students into 21st Century citizens. As Leadbeater (2006) suggests, if students have control over their own learning and the targets they set, it would turn them into more active learners. Heutagogy is at the heart of personalised learning. A heutagogical approach places great emphasis on building learner capacity in order to develop our students into becoming discerning 21st Century citizens (Blaschke, 2012).

Owing to the size of the project, the online platform was not completed but is a project I will continue to complete in future. The conclusion I have drawn from this an interim evaluation of the project is that this will be a valuable resource for not only my own use, but also for the use of my department, my school and our Kahui Ako Community. From the meeting with the Kahui Ako Across School Lead for Engagement and Attendance, it is evident that it is a resource she is keen to have available to all eight schools within the community of learners. Informal feedback from teachers within my department in my school was also very positive and they are awaiting completion of The Hub in order to start using it with their own students.

The significance of The Hub is that it has been created to overcome barriers to attainment in Mathematics for students who are at risk of underachieving. It will be a beneficial online learning tool which, if adopted by our Kahui Ako Community of Learners, will mean that the eight schools involved will be using the same language regardless of whether they are primary, intermediate or high school students.

Moreover, seeing a teacher enthusiastic about a topic in their teaching rubs off on students and encourages them to be enthusiastic about it too. I have seen this within my own classroom. Whenever I get excited about teaching a topic, my students tend to enjoy the topic more – particularly when they are not huge fans of Mathematics in the first place.

Furthermore, teachers may use The Hub as a platform to enable students to become more discerning 21st Century students through the use of flipped and personalised learning. With all resources available on The Hub, planning for teachers becomes a little easier as everything is online, available to them.

Therefore, they can use the resources more effectively to facilitate and empower their students to become a future focussed 21st Century learner.

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[6]

Implementing project-based learning as a culturally responsive learning strategy in Technology

Cobus Botes

I am a teacher of Technology – Building and Engineering, and Assistant Leader of Learning – Technology at a Decile 3 state school educating boys from Year 9 to Year 13, with roughly 70% of the boys being Māori. A large majority of learners in our Technology faculty choose to pursue a vocational pathway through training at either tertiary institutions or apprenticeships.

Statistics indicate that apprenticeships are the prefered option for vocational education over tertiary training by nearly double the number, however, according to research data, a large proportion of candidates in apprenticeships fail to complete their studies. Kerehoma, Connor, Garrow and Young (2013) attribute the lack of motivation, self-direction, confidence, and literacy and numeracy skills to the inability of apprentices to complete apprenticeships. Unfortunately, a large majority of these candidates are Māori.

According to Metge (2015), Māori thrive in collaborative learning situations where learning is contextualised. By allowing for learner agency to occur, increased opportunities are created for Māori students to develop self-efficacy. These strategies are

solidified when teachers create learning environments that are culturally responsive, and that focus on positive relationships and trust. The New Zealand education system often neglects the educational interests and needs of Māori, which results in a lack of 21st century skills being developed that are critical for success in tertiary study, as well as being critical to the creation of life-long learners.

Current programmes of work offered in technology place heavy focus on what is taught instead of what is learned. Learning is often not contextualised, and not designed for 21st century skills to be developed. Mills and Treagust (2003) suggest that vocational graduates enter the workforce with adequate knowledge, but lack the skills necessary to apply this knowledge. Education practices, both secondary and tertiary, are outdated and are in desperate need of reform.

The purpose of my project was to select and implement a contemporary learning strategy that would benefit Māori learners in a culturally responsive manner while developing a variety of 21st century skills that would ensure success in school and beyond. Project-based learning and heutagogy represent a learning strategy that allows for the construction of knowledge through self-determined challenges. In order to prepare my learners for this learning approach, I structured the academic year in three learning phases that would build knowledge through pedagogy, andragogy and heutagogy. I wanted practice-based evidence that project-based learning is a suitable contemporary strategy for our predominantly Māori school.

Sagor (2000) points out a variety of benefits of action research in education, including guaranteed relevance of data to the educator, and developing efficacy in practise through inquiry. Qualitative and quantitative data, generated through my action-based research approach, indicated that learners favoured this form of learning over traditional practical projects. The vast variety of activities included in PBL offered every learner an opportunity to share prior knowledge, and to learn from peers. The data also suggested that PBL is a culturally responsive learning strategy as the collaborative nature and contextualisation of learning create learner efficacy. Building and sustaining positive relationships and trust is not only the

cornerstone of a culturally responsive learning environment, but are also critical for PBL to be successful.

The implementation of this project has given me new insights into how I can be a better teacher, and more beneficial to the development of my learners. I have developed knowledge of a large variety of contemporary learning strategies that allow for learning efficacy to occur, as well as the development of critical soft skills needed for success in life. However, the most important knowledge that I have gained is that no matter how creative you get in delivering contemporary schemes of work, without a critical focus on building strong teacher-student relationships, the contemporary strategies will be in vain. The success of constructing knowledge relies heavily on a high level of trust within learning environments, trust that is built through regularly displaying the Ministry of Education's (2011) cultural competencies. These competencies, also called Tataiako, place focus on wananga, whanaungatanga, manaakitanga, tangata whenuatanga and ako.

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[7]

Using a mini-MOOC to develop teacher digital literacy

Diego Rodriguez

The purpose of this project was to develop, implement, monitor, and review an in-house ICTPD platform that could be used as a mini-MOOC (collaborative, open, interactive, flexible) to develop staff digital literacy. The following were the main project goals:

1. to create a road map of school-based ICT learning and proficiency requirements;
2. to create an immersive digital learning environment in which teachers can learn how to use ICT tools at their disposal;
3. to align ICTPD to the school strategic plan, the requirements of the new Digital Curriculum, and ICT PD initiatives in my school;
4. to facilitate an understanding of the importance of developing teachers' digital literacies in order to enhance student digital literacy;
5. to kick-start collaboration and self-directed learning in relation to the development of digital literacy; and
6. to help staff to develop their digital literacy.

One of the main ideas behind this project was that resource acquisition is not enough to transform teaching practice (Flanagan & Jacobsen, 2003). In order to shift current practices, teachers must engage in collaboration so they can experience teaching with technologies (Hedberg, 2006) and are enabled to design activities that require learners to develop their digital literacy. Promoting learners' diversification of online activities is the only way to foster the development of digital literacy, and teachers cannot do this if they do not understand firstly, the affordances of the tools at hand; and, secondly, the reality of operating in a digital environment.

This project used a digital platform as a medium to deliver this ICTPD in order to 'immerse' teachers in the environment that they needed to master. This idea was loosely based on Craik and Lockhart's (1972) notion that learning and retention is related to the depth of mental processing, but is also related to the concept that ICT has become a "constitutive technology... which partly constitutes the things to which it is applied" (Van der Hoven, 2006, p68). This ubiquitous adoption of technology has had an effect on the structure of the human brain and changed the way individuals learn and interact (Kurtweil, 2005, as quoted in White, 2011). Therefore, teachers must engage with technology in order to be able to engage with their learners.

The project aimed at extending digital literacy amongst staff in order to help them to produce tasks that will encourage diversification of online activities as a way to foster the development of digital literacy. Although most teachers have an understanding of the notion of digital literacy, it still does not have the same stature as traditional literacies.

The benefits of developing an in-house ICTPD platform include the following: (a) it can tackle problems perceived as relevant by the school community; (b) it can link onto other PD initiatives in the organisation; (c) it can contribute to the delegation of responsibilities and the emergence of distributed leadership; and (d) it can react rapidly to the immediate demands of the staff.

ICT is an ever-changing field and a constant cause of teacher anxiety. Defining in-house parameters around teachers' proficiency expectations provides teachers with a Road Map to

guide their own learning. If staff are provided with a tool to develop their digital literacy, which they perceive as effective, they would engage with it.

Although it was an assumption that gaining badges/microcredentials would increase staff motivation to engage with the program, this was disproved. Unfavourable teacher perceptions about school badges was reflected in the initial surveys and, again, in the low uptake of level certifications. This could possibly be linked to teacher preference for discrete learning (although this assertion needs to be tested further).

The most effective way to encourage collaboration is to create a learning climate that values peoples' personal experiences; addresses individuals' cultural stand; promotes trust; and values personal contributions. An in-house ICTPD program can strengthen faculty links through knowledge sharing. That collegiality, in turn, can help to cement trust and resilience (by emphasising the knowledge construction process) and facilitate further learning. Creating an immersive digital learning experience can help to extend teachers' digital capabilities; showcase the affordances of certain platforms, and provide them with ideas that they can bring into their classroom.

Effective PD initiatives face a number of challenges. In this particular project, the following aspects proved to be the most challenging: time (Haydn and Barton 2008); workload (Peeraer and Van Petegem 2012); and confidence (Hammond et al. 2009). However, the creation of an-in house ICTPD solution means that the particular needs of staff can be accommodated into the program, which means that pertinent information can be delivered in a timely and accessible way, leading to learning in a respectful and professional environment. That responsiveness also has an impact on staff buy-in and engagement. However, PD should not be an exercise on content distribution; real-world problem-solving is one of the main drivers of motivation. Effective PD should try to mimic these conditions where learning is needed to overcome an obstacle.

However, it is also important to build a relationship of trust, not only at a personal level. PD success relies as much on relational trust amongst staff as it does on staff perceived value of the tools presented to them. Both personal interactions and

the resources at hand must be perceived by the stakeholders as effective tools to consolidate their sense of competence.

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[8]

‘Tuia 250’ as a vehicle for enhancing Mātauranga Māori

Elizabeth Kaye-Ivitu

The change project focuses on the effectiveness of schooling improvement initiatives for Māori in order to address the dilemma facing some of the long-standing inequities and the unequal power relations in the education system. Māori whānau are disillusioned and feel despondent about the success and achievement outcomes of their tamariki. Many have expressed a need to shift ‘power’ by establishing closer partnerships between whanau and schools. Although many teachers employ culturally relevant pedagogy and consciously create social interactions to ensure that their students are successful, it is debatable whether Māori preferred pedagogy (mātauranga) is fully recognised as an approach to strengthen provision of bicultural aspirations and achievement for whanau, students and the local iwi.

The importance of achieving equity for Māori students in teaching and learning is still not fully appreciated in mainstream schools, as many Māori are confronted with barriers that infringe on the parity of outcomes. The goal is to change attitudes, and shift power, by recognising that Māori knowledge (mātauranga) matters.

This project is based on the development of providing an exemplar of the enhancement of student learning through an

integrated local programme. Students and whānau are able to learn about the development of our national identity via a plethora of 'Tuia 250' commemorations that were held at Whitianga during October 2019. For many students, it was their first experience of seeing the ritual wero (warriors' challenge), of participating in a mass haka pōwhiri (welcoming chant) and whakakīnaki whaikōrero (ritually embellishing the offerings of orators).

The focus of contemporary teaching and pedagogy, integrated Mātauranga Māori, Te Reo and Te Ao Māori, is a Māori approach that provides an insight into the different aspects of accessing knowledge. It is holistic, and includes an appreciation of the rich interconnections between humans, the natural environment and the rich resources that the natural environment provides. Students come to understand the connections and relationships between all things human and non-human (whakapapa). They are able to engage with and explore the concepts and theories of kawa, tikanga, traditional values, language and culture which are founded on the basis of indigenous perspectives.

The lens of kaupapa Māori principles of tino rangatiratanga (relative autonomy/self-determination), taonga tuku iho (cultural aspirations), ako (reciprocal learning), kia piki ake i nga raruraru o te kainga (mediation of socio-economic and home difficulties), whānau (family) and kaupapa (collective vision, philosophy) provide opportunities to change power relationships in classrooms and schooling through a range of approaches. In a heutagogical approach to teaching and learning, learners are given opportunities to be autonomous and self-determined in order to develop learner capacity and capability with the goal of producing learners who are well-prepared for the complexities of real-life issues and situations. Māori-centric methodologies and kaupapa Māori approaches create new and exciting ways to approach Māori cosmology and Mātauranga (Walton & Cohen, 2011).

During project implementation, a highly creative blended space allowed students to use a range of technologies to enhance their learning. Digital tools and platforms enabled students to collaborate and co-construct information so that they were able

to conduct student conferencing by presenting their learning in creative ways. Hangarau Matihiko is an approach where Māori practices and knowledge reinforces the kaupapa of understanding how students are able to build on their digital capability and enhance their computational thinking (Mezirow, 1997).

The collection of qualitative data allowed participants to identify their current positioning within a community, as whānau were able to confront some of the discourses that they had experienced. Whānau perspectives were acknowledged and examined through feedback – or through recording collective data as a means to measuring qualitative outcomes and participating in decision-making. Salmond (1975) describes the key qualities of 'Hui' as rich in cultural practices that value the concepts of relative tapu (potentiality for power) and mana for all participants. It is here that relationships are formed through the rituals of 'take' (topic, subject, matter, issues, concerns).

The implementation of multidisciplinary and interdisciplinary approaches, nurtured a passion for learning in and out of the classroom, where students explored knowledge in a range of subjects in various environments. For example, students demonstrated and developed their knowledge using a thematic approach of learning through an integration of subjects: 'Tikanga a iwi; Māori history; Karawhiua; Kapa Haka; Manāki marae; Technologies; Te Reo Māori; English; Visual Arts; or Music. Students were active in synergistic teaching, where the learning was holistic and hands on.

The theme around the 'Tuia 250 celebrations', addressed and gave relevance and meaning to student learning, because it was authentic, purposeful, and naturally occurring where all participants were motivated about the kaupapa. Evidence showed that the information collated was established through names of tangata whenua, helping bring to the forefront their stories and knowledge of their encounters and relationships between Māori and Pākehā. The intention was to bring some type of rebalancing of the mana of Mātauranga Māori and cultural identity, through the revitalization of te reo, waiata, moteatea and growing capability and capacity within the iwi.

Students were given the opportunity to increase their

knowledge by visiting significant local areas that related to local narratives. It provided a culturally authentic forum for students to engage with kaumātua and local experts – to share oral histories and indigenous knowledge. Through close observations and learning conversations with students and whānau, different contexts gave more tangible data that provided socio-cultural and affective outcomes.

The intention was to develop a secure, conscientized cultural identity that addressed issues of power and social justice, through a critical pedagogy that asserted mana motuhake (self-determination) where all participants were able to make choices and decisions to create a community for the transmission of Mātauranga Māori. This collective learning experience proves that making diverse cultural identity central to curriculum and best practices is possible, by allowing whānau to drive and lead programs such as this. (Brayboy, 2005).

This change project is a resource that challenges mainstream schools to empower all diverse students to be self-determined learners. Although this remains problematic in many schools, the initiative to give our tamariki the educational sovereignty that they are entitled to is fundamental. Interactive patterns between teachers, students and whānau have to be collaborative and achievement has to be multi-faceted and holistic. The kaupapa of race and cultural identity are central to driving any type of curriculum and practice, but, most importantly, learning programmes have to be supported and led by whānau and the community in order to reach shared goals and aspirations.

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[9]

Dynamic digital online support for Kaiako at Bowen Early Childhood Education Centre

Emma Schofield

As we progress further into the 21st Century, it is clear that our tamariki need to be prepared for what technological educational journey they will be facing as they head through to primary and secondary school. This means that early childhood educators need to be both knowledgeable in 21st Century skills and also fluent in digital technology. This will ensure that these key skills and dispositions are being developed amongst our tamariki through their teaching practice.

The purpose of the project was to develop a dynamic online resource for kaiako at Bowen Early Childhood Centre. This online resource increases their use of digital technology and improves their digital fluency. In the process, they prepare our tamariki for the transition to primary school from early childhood education. Engagement with the online resource is bolstered by professional development (PD) sessions.

The goals of this project were:

1. to work with colleagues to define what technology is/means at our Centre;
2. to build kaiako capacity in integrating digital

technologies in ECE;

3. to develop a dynamic online resource that kaiako can access for ideas and support around various aspects of the Te Whāriki curriculum; and
4. to observe tamariki in play and evaluate their use of technology.

Kaiako participated in anonymous surveys to find out about their personal viewpoints on technology and what they thought of it being used in the broader ECE sector – as well as in their context. This helped to build the vision for this project and complete Goal 1. Professional Development (PD) sessions were run fortnightly at staff meetings. These were designed to upskill kaiako's digital literacy and fluency. It gave them a chance to interact with the technology we already currently had at the Centre and allowed them opportunities to collaborate, interact and problem-solve with the technology.

Staff PD was supported by the development and introduction of a 'dynamic online resource' website. A weekly survey assessed what technology was being used, during what time of the day, and whether it was teacher-led or child-led. This data was collected for eight weeks and analysis of the data provided an insight into whether the website and the PD were benefiting the kaiako. In addition, analysis of the data indicated the extent to which their knowledge and confidence were building their digital literacy and fluency. Analysis of the data also helped to gauge how well kaiako were incorporating technology into their teaching practice.

Observations were made in the process of undertaking this project, and I observed how – with ongoing PD sessions and access to my 'digital platform' website – kaiako built professional capacity with the technology, becoming more digitally fluent over this time frame. Through this increased confidence and fluency, they started to utilise technology within their teaching practice.

Through the change-based project, kaiako were able to build and foster the relationships between themselves as they worked collaboratively in small groups, as well as in pairs. This was key for learning conversations between themselves (kaiako) as well

as subsequent learning conversations with tamariki about the technology. Relationships encouraged collective responsibility for supporting each other, taking risks and providing an environment where each other's belief sets were challenged – but in a positive way.

The knowledge gained from this change-based project highlighted just how important professional development is, especially when introducing something new like digital technology, to an ECE centre, where levels of exposure and expertise differ. It also highlighted the importance of giving kaiako a time and place to be able to adopt and adapt the learning and make it their own.

Having technology is not enough. Understanding how to best use it and how to incorporate it into our already established teaching practices, is necessary for moving our teaching further forward through the 21st century. Cloonan, Hutchison and Paatsch reference in their research, teachers who, after having had successful PD and gained digital literacy and fluency, "developed an attitude of exploring and creating that embraces these ever-innovating tools. It is not one thing; more an attitude and approach, to not be afraid of the technology and being okay with the students knowing more than you at times – actually lots of the time" (2014, p.589). It is this fearless attitude that all early childhood educators need to embrace around using technology.

This project's results will be useful to other ECE centres in New Zealand who are facing the same initial dilemma of having digital technology but not supporting kaiako to use it effectively to enhance their teaching practice. This is important because kaiako will not use tools or resources that they are not comfortable with, fearing they will fail in even the simplest of digital tasks in front of tamariki or colleagues – as I came to find out at Bowen, prior to my change-based project.

I have grown a lot as a teacher since implementing this change-based project at Bowen Early Childhood Centre, specifically learning about, and implementing, different leadership styles and developing pedagogical content knowledge, within my context. It also highlighted the importance of giving kaiako a time and place to be able to

express and talk through their thoughts and opinions about using technology, how they can utilise it and adapt it into their teaching practice and personal teaching philosophy.

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[10]

Students teaching students: What difference can it make towards increasing digital fluency within a school?

Faye Chilvers

The purpose of my project was to develop the digital fluency of students across a number of classes by using a Tuakana-Teina vehicle. This was achieved by, firstly, developing the digital fluency of the students in my own class and, secondly, enabling my students to develop the digital fluency of students in other classes.

The following project goals were formulated to provide a pathway towards achieving the project purpose:

- develop the digital fluency of students in my own class;
- equip my students with skills that would enable them to develop the digital fluency of students in other classes;
- use a tuakana-teina model to enact the development of digital fluency skills;
- include whanau in student learning, through the sharing of student work; and
- implement an open day of workshops during which

> students plan, implement and provide feedback on their own learning.

My class came into Year 5 with digital fluency skills equivalent to those specified at Level 1 of Magana's (2017, 2019) T3 Framework. At Level 1 students are able to use digital technology to consume information. They are also able to convert existing tasks into a digital format in the interests of saving time or enhancing accuracy. My goal was to raise the level of all my 27 students to L2 on Magana's framework. At Level 2, students are able to produce digital artefacts and are able to contribute to the learning of other students, using digital technologies. This I did by aiming to include a digital element in each learning task:

- In mathematics, I used a digital whiteboard, ShowMe, so that students could record their thinking as they worked;
- in reading, the information that they summarised was recorded in Scratch;
- Comic Life was used to construct narratives and ideas were represented in Word Clouds;
- project-based learning was represented in Scratch and information was presented by way of a QR Code; and
- students programmed Ozobot, Dash and Sphero robots in Blockly code.

Once I had built a good foundation of skills amongst my own students, I invited colleagues to participate in my project by having their classes taught the digital skills that they saw a need for, by my class. The best method of asking staff, I found, was to approach them personally. I was fortunate at this time that it was expected of students in all classes to post two pieces of work each term on the school management system for parents to access. I found Spillane's recommendation of working with classes in close proximity to my own a valid suggestion as these are the classes I have social and collegial contact with (Spillane, 2006). We are members of the same team and hence plan

together and we are comfortable with each other as our paths cross frequently throughout the day.

Employing Action Research (AR) methodology in my project required a distributed form of leadership. Ernie Stringer, (Dustin et al, 2008), who was an early adopter of AR as a valid research method, advocated that it was best to start with small beginnings, provide scaffolding, and when those outcomes developed, then it was possible to remove the support. The people who are the subjects of the research should choose the paths that they follow – the researcher being a facilitator and supporter. My colleagues decided what they would like my students to work on with their students, depending on their teaching goals. At times, I needed to go back to my class and teach them what had been asked for, or even ask them whether they thought that task was possible. Inevitably, my students set out on a path of discovery and came back with a solution to the problem. Distributed leadership also featured in our room.

Enabling my students to give feedback to those they were teaching proved valuable. Initially, I gave this feedback to my colleagues so that they could work at their leisure with their own students but I soon found that it was more valuable to address this written feedback directly to the individual student who had been taught by my students. My next step is to train my students to give quality feedback to the students that they work with. In addition to this, Student Digital Summits were held within the school, with students offering workshops and other students choosing the workshops they wished to attend. Year 3 and Year 4 students found that they could be the teachers of Year 6 students, at times.

The conclusions that can be drawn from this project are that this method is one way of spreading a teacher's expertise across a number of classes. It is a way of providing staff with a range of professional development opportunities when other options are not available. It is also a means that works without colleagues feeling threatened and, unlike professional providers who come in periodically and demonstrate skills, the expertise of the teacher is in the school whenever it is needed. Furthermore, the classroom teacher concerned can be involved in carrying the project on, knowing that there is support nearby. Finally, this

method is sustainable as students in one class are likely to be able to go into other classrooms and repeat the process.

The significance of such a project is that it encourages collaboration, both from teacher and student perspectives. Students working in a tuakana-teina way is a culturally responsive practice that is very much part of Māori culture. Students are encouraged to work collaboratively even if they are working on independent projects. In addition, having to explain a concept to another student helps clarify the ideas in the tutor's mind as well. The significance of holding a Summit with students leading workshops does not need to pertain necessarily to digital technologies but students could teach others about their cultural heritage, science or mathematics concepts. It is likely that workshops will contain a digital element and such use is classed as L2 on the T3 framework.

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[11]

The role of social and emotional intelligence in student success

Gillian Trigg

Many of my students had little belief in themselves as learners and were often very social in class, distracting those who did want to learn. There seemed to be a gap in their intrinsic motivation and desire to improve themselves, or belief that such an improvement was even possible. I wanted my project to be a way of teaching students skills related to social and emotional intelligence – such as self-regulation and empathy – and then evaluate whether this had a positive effect on their learning and achievement. Learners would be taught how to set realistic and achievable goals and how to reduce negative self-talk. My belief was that, as their skills and learning capabilities grew, they would begin to see themselves as learners (Hochanadel & Finamore, 2015).

The goal of the project was to identify systems and strategies which could support students to develop social and emotional intelligence, thus giving them the capacity to manage their emotions and behaviour within whatever situation they found themselves in. Furthermore, I wanted them to demonstrate resilience when they failed. The lesson plans and rubrics which we created supported students to evaluate and reflect upon their learning performance in light of the social and emotional intelligences that they had been learning about.

The project was an action research study which took place over two terms. The lessons were based on the work of Wolfe (2019), who induced stress in her students, using the situation as a base for identifying associated emotions and unpacking them with her students. The situation at the intermediate school where I work offered daily opportunities for real-life events to offer us the context within which to have small 10 – 15 minute teaching and learning opportunities, making the learning meaningful and real for the students. The lessons often involved videos or role play and lots of discussion and sense-making of events that were occurring in class or at the school. It also included the coaching and mentoring of students and opportunities for tuakana-teina work.

The research literature suggested that students who had been identified as less socially and emotionally intelligent had the potential to make the most gains from this project (Wolfe, 2019). Additionally, research indicated that students who improved their social and emotional intelligence scores would demonstrate less propensity to be bullies, victims or bystanders and would exhibit fewer symptoms of anxiety (Massari, 2011). I had hoped to discover both of these findings as a result of my project, however, the findings were inconclusive owing to the unsettled conditions at school during both iterations. In order to determine with certainty whether the students who participated in the study had benefited positively from the social and emotional learning that they undertook, I will need to conduct a third iteration under more settled conditions.

I can conclude that my students benefited from working closely with me during both iterations as their data and narratives show an improvement in both social and emotional competencies – to some degree. How much more they might have benefitted and learned had we had a stable end to the year for the first iteration, and had we not had to close school suddenly owing to Covid-19 during the second iteration, is a moot point and the reason why I believe that a third iteration would confirm or negate my findings.

The significance and insights gained from this study are that social and emotional intelligence is not an innate quality in humans and these competencies need to be deliberately taught

in context. Students often know, intellectually, what they should be doing, but lack the knowledge of how to go about it (McIntyre, 2018). To set our students up for success, not just at school, but in their lives, social and emotional intelligences should be embedded into the school curriculum and taught as part of life skills. With the spotlight on bullying in schools and the workplace, the effects of this on victims and associated anxiety and depression, arming young people with the skills to both recognize and deflect such behaviours is important. The Ministry of Education is recognizing the importance of these skills with the publication of new resources for the early childhood sector. We need the same resources to be made fit for purpose in the primary sector.

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[12]

Developing a collective understanding of effective integration of play-based learning in New Zealand primary schools

Heike Micheel

In order to support my team members in building a collective understanding of play-based learning and effectively integrating it into their learning space, I designed and implemented a project that focused on a critical evaluation of ways in which contemporary learning theories and the pedagogy/ andragogy / heutagogy continuum inform play-based learning in New Zealand primary schools. While free play appears to be extremely popular among New Zealand educators, in order to achieve academic curricular goals, adapted formats of play will have to be negotiated.

The goals of this project were the following. First, I wanted to identify learning theories and approaches that inform play-based learning. The purpose of this literature review was to determine essential criteria for an effectively integrated play-based learning model in the context of mainstream primary school in New Zealand. The second goal was to send out a questionnaire to participants. The objective of this questionnaire was to identify the proficiency of participants' knowledge about learning theories underpinning play-based

learning. Respondents were to investigate their take on integrating play-based learning in their learning spaces as well as identify hindrances and struggles they had encountered. The third goal involved returning to literature and designing a series of professional learning sessions that would inform participants' knowledge and awareness of underpinning educational theories relevant to play-based learning. Furthermore, the plan was to utilise the interaction during the professional learning sessions to develop a deeper understanding of participants' beliefs and the struggles they were facing. The professional learning sessions were designed to utilise a collaborative, reflective model. The final goal consisted of conducting a survey among participants. The objective of this survey was to determine whether participants' play-based learning understanding and implementation had been impacted by the professional learning sessions. Another aspect of this survey was to confirm whether assumptions about teachers' perception about possibilities, hindrances and barriers could be validated.

The project adopted a case study approach and involved, initially, nine participants from three different New Zealand primary schools. The questions of the initial survey had been assembled after a thorough scan of the relevant literature and by picking up what was presumed important knowledge in the play-based learning setting and what the hindrances and struggles experienced by teachers – and observed by leading scholars – were. Seven participants responded to the survey. The analysis of these responses were utilised to design four professional learning sessions. The structure of the professional learning sessions followed the model of the framework of the Pedagogical Core (OECD, 2013):

- pedagogy & role of educator;
- content & resources;
- the learner & organisation; and
- 'Putting it all together'.

Participants were split into two focus groups: one group had been engaged in professional learning sessions face-to-face until the measures of Covid-19 Alert Level 4 took place (sessions

1&2). The other group participated in professional learning sessions online via Zoom and therefore were not interrupted by Covid-19 measures. The group that participated in online sessions seemed to draw great value and benefit from these professional learning sessions. Not only were they very interactively involved, generously sharing their own thoughts, ideas and experiences, they also rated the sessions highly in the final survey. However, they did decline that they had altered their view about play and play-based learning. It was hoped that they would pick up that there is a significant difference between including play in your programme and integrating play-based learning.

The face-to-face group was significantly less interactive and the feedback they gave indicates that they felt overwhelmed with the content presented in the professional learning sessions. They questioned the relevance of some of the material to their currently applied teaching practice. These participants did not respond to the final survey.

Data indicates that participants:

- value the notion of direction and choice of activities by children during play episodes – which points to a passive teacher role;
- varied widely in their perspective on play; the only consensus seemed to be about child direction and choice; other aspects such as the process-oriented nature of play were far less often commented on; and
- hold a dichotomous view of play and learning – participants are mostly involved in small group teaching or observation while children have access to play (even during play episodes, not one participant mentioned they had been involved in partner play.

Most participants mentioned that actions of middle and senior school leaders impeded on the implementation of play-based learning, despite the fact that all participants had the support of their senior leadership team. Another hindrance mentioned was the focus of school-wide professional development on other subjects and the high demand for generating data.

Literature asserts that appropriately participatory teachers produce the best learning outcomes in their classroom (Walsh, McGuiness & Sproule, 2019). Bodrova and Leong (2012) inform that the significant role of the teacher, even in play, had been established by Vygotsky and Post Vygotskians. They highlight the benefits of make-believe and mature make-believe play for cognitive and social emotional development but – in particular – for developing self-regulation. The content of the professional learning sessions has been utilised to create a Google Site.

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[13]

digiYARNS

Hillary Gregory

digiYARNS (Yak & Record New Zealand Stories) is a storytelling partnership. Through senior mentor and student partnerships, personal stories are shared, retold creatively, and recorded digitally, enhancing student appreciation of place, identity, and wellbeing – as envisaged in the New Zealand Health Curriculum. A key focus throughout is one of personal wellbeing.

digiYARNS is a guided but flexible inquiry process with the deeper purpose to embrace dialogue around social and cultural perspectives that affect and shape our 21st Century learners. Through this approach, it is intended students will further develop empathetic skills by learning to recognise different emotive states through discussion of real experiences shared – and responding to others positively. Participants are encouraged to work collaboratively, contributing to the collecting and collating of responses.

digiYARNS began in Term Four of 2019 with 10, Year 6 student leaders. They were joined by 30 more students from Years 4,5 and 6 in Term One of 2020. The 40-strong squad have a shared digital portfolio to record evidence of their learning. Videoed stories, mapping and New Zealand history sites are all aspects of the inquiry digital journey – with wellbeing remaining at the core of the process.

digiYARNS supports and upholds the Grit/Respect/Own It

& Whanaungatanga (G.R.O.W) values that form the basis of Birchwood School's PB4L (Positive Behaviour for Learning) approach. It also embraces the Nayland Kahui Ako 2020 Goal – "Developing a Relationship with the Land". The Kahui collective statement reads: "As staff we collectively agree that we can contribute to and create rich opportunities for our students in order to help them develop a sense of mana and identity with our place."

Through the 'weaving of the yarns', students are encouraged to develop a richer understanding of how people think, act and feel. This collaborative process develops a wide range of skills. It strongly promotes Tuakana/Teina partnerships and Teina/Teina bonding that assists in the strengthening of communication and critical thinking.

digiYARNS supports the implementation of the 2020 Technology Curriculum goal of: 'Designing and Developing Digital Outcomes' to "ensure all learners have opportunity to become digitally capable individuals" (New Zealand Ministry of Education, 2015a, p.1). During 2021, the focus will fall on students being innovative creators of digital solutions rather than merely using tools.

The New Zealand Health Curriculum states, "In health and physical education, the focus is on the well-being of the students themselves, of other people, and of society through learning in health-related and movement contexts" (New Zealand Ministry of Education, 2015b, p.22). digiYARNS embraces four underlying and independent concepts: Hauora; attitudes & values; socio-ecological perspectives; and health promotion. To guide these concepts throughout their inquiries, participants reference the holistic Te Whare Tapa Whā health model (Rochford, 2004). The four cornerstones of Māori health are: whānau (family health), tinana (physical health), hinengaro (mental health) and wairua (spiritual health).

Additionally, the use of the "Iceberg Model" (Hall,1976) provides a manageable analogy that has helped our digiYARNS participants to think more deeply. Hall reasoned that, although there are some aspects of culture visible above the water, there is a larger portion hidden beneath the surface that holds the values and thought patterns that underlie behaviour.

digiYARNS is a digital inquiry process whereby students learn to care about others and communicate critically. It encourages students to think and question as to why things are done the way they are and what effect that has on groups and individuals. Cultural references provide the hub around which we construct our identities.

The digiYARNS programme promotes Jones & Fennimore's (1990) definition of what it means to be a successful learner – namely the intertwining of knowledge, self-determination, strategy and emotional intelligence. Empathy development researcher, Kathleen Cotton (1992). also concludes that many educators regard empathy as 'a key attribute of a successful learner.

Empathy and communication are key attributes required of each student within the digiYARNS collaborative environment and each is encouraged to recognise that 'success' in their own learning involves their ability to communicate with others and being able to view themselves and the world through the eyes of others. Success for students will not be gained through programmes, systems or even digiYARNS, but through the opportunities these provide to place importance on communication and empathy.

He aha te mea nui o te ao? He tangata! He tangata! He tangata!

What is the most important thing in the world? It is people! It is people! It is people!

This whakatauki speaks to the importance of connection and relationships. COVID-19 is certainly reminding us of that.

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[14]

Implementation of project-based learning and digital technology

Imteeaz Mohammed

The Board of Trustees suggested the senior leadership team create a responsive curriculum so that all learners can benefit from it and show improvement in school-wide achievement. The task of localizing the curriculum was given to me because I was a member of the Senior Leadership team and a member of the Board. In addition, I was in the process of completing the Master of Contemporary Education (MCE). The MCE programme impressed the Board as they felt that I would be able to implement current and updated contemporary practices to foster student achievement. In localizing the curriculum, I introduced project-based learning (PBL) as a tool to incorporate students' languages, cultures and experiences into their learning. To support PBL, I also introduced learners digital technologies (DTs) enabling them to carry out Inquiry-based learning. DT gave students the experience to upskill their digital literacy and fluency skills to amplify their learning in PBL lessons.

In facilitating PBL and DT, leadership was a very important facet of teacher development and student achievement. My leadership was necessary to drive PBL across the school by utilizing teacher resources we had at the school. I orchestrated the pedagogical knowledge necessary for staff development and

demonstrated PBL learning so that it could be carried out consistently across school.

The aim of this project was to implement project-based learning in elected classrooms, using digital technologies in a culturally responsive manner.

The following project goals were formulated at the beginning of the project:

- Raise student's achievement across school;
- encourage culturally responsive practice by utilizing strengths amongst parents and community members;
- provide authentic and collaborative learning opportunities in meeting the needs of all learners through the use of digital technologies;
- engage learners in problem-solving through inquiry and research; and
- evaluate student achievement through the lens of the Culturally Responsive Curriculum Scorecard (CRCS) (Bryan-Gooden, Hester & Peoples, 2019).

The CRCS tool would assist me to collect information on PBL implementation and the extent to which this was culturally responsive. This would also give me insights as to howa culturally responsive curriculum raises student achievement.

The learners were able to express themselves more confidently in the learning as they were learning in a more authentic context. They were able to connect with other learners in, and out, of class using DT to manage their projects. The use of DT forced in a project-based environment encouraged learners to be more responsible in getting the work completed on time – with good information. The learners learnt how to monitor their own progress in their PBL lessons as they were not dependent on the teacher for information all the time.

In addition, teamwork was essential in bringing about change across school and in supporting student learning and engagement. More teacher trust was built in PBL lessons as the teachers were able to discuss their ability with their leaders and

peers to have more success in the lessons. Teacher leadership and creativity was admired by the SLT in supporting their peers so that no teacher felt neglected in achieving the school goal.

Having implemented PBL and DT over the course of five school terms, I administered two surveys to measure the success of implementation. It was overwhelming to see from the results that some significant shifts in student achievement had taken place. The initiatives are now part of the local curriculum and the school wishes to continue on this journey in order to benefit from what PBL and DT offers student achievement.

The learners in PBL lessons demonstrated more responsibility as they were able to use their culture, experience, and language skills to engage in the lesson. The learners were also motivated, as they were able to present their projects to their parents once every term. The parents formed learning partnerships with their children. The learners carried out their own inquiries on their projects and parents were happy to support their children in a culturally responsive manner.

The teachers implemented a new way of learning, characterised by more student agency. In doing so, the teachers also had to adapt to this new way of learning by carrying out their own inquiries on DT and PBL – so that they were able to give expert advice to their learners.

The Board also appreciated the effort the staff has put into lifting student achievement. The positive impact of PBL and DT encouraged the Board to provide more support in order to sustain student achievement across school the school and with all learners.

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[15]

Using flipped and personalised learning to develop student agency

Jacqueline van der Beek

As teachers, we often reflect that we don't have enough time to get to all children in our classrooms so that we can differentiate and personalise learning. We wish to be in many places at once.

My goal was to use in-class flipped learning to build more personalised learning programmes that could encourage student agency. Flipped learning can be defined as:

a pedagogical approach in which the first contact with new concepts moves from the group learning space to the individual learning space in the form of structured activity, and the resulting space is transformed into a dynamic, interactive learning environment where the educator guides students as they apply concepts and engage creatively in the subject matter (Talbert, 2017).

In-class flipping has the potential to enable students to have more control over what they learn and when they learn it. In-class flipping allows the teacher to deliver information and new concepts through videos to a range of students according to their learning preferences and needs.

The project focuses on the contemporary practices of personalised learning and self-determined learning, leading to culturally responsive practice. Leadbeater (2005) describes personalised learning as a form of learning that encourages

children and their families to participate actively in the learning process. Deep personalisation of learning gives students and their families more responsibility for solving problems and engaging in their learning. The connection between families, the community and the school are essential when building more culturally responsive practice and developing a personalised learning programme.

The project was a qualitative study that captured the experiences of a class of 28 Year 3 and 4 students during 2019. The focus of the in-class experiences was literacy – more specifically writing. The project was an action research project with many iterations. We were experimenting with new ideas and strategies and reflecting upon problems faced on a daily basis. We then searched for solutions and improvements. During 2019, we were focused on whether the flipped video delivery of writing instruction and concepts helped personalise the writing programme and enabled students to have greater agency in the classroom.

Students were surveyed before the project began and at the conclusion of the project in 2019. In addition, anecdotal records of student reactions and feedback to concepts delivered in the flipped classroom were gathered and interviews were conducted with individual students. Furthermore, teacher judgements on student writing samples at the beginning and end of the project were recorded.

Analysis of the data revealed that 80% of students felt they had control over what they learned in writing when using the videos. In addition, 70% of students felt they could identify their next steps in writing when using the videos. Students were more focused and able to give precise and relevant feedback to others as the videos scaffolded the learning goals and success criteria. Students were able to apply the new sentence structures in their writing – which demonstrates understanding and application of a skill.

End-of-year writing data shows accelerated progress for the highest priority students during the implementation of the project. These students had minimal interaction with the videos but had more one-to-one time with the teacher owing to the other students being more independent and engaged in self-

determined learning. The data collected supports the statement that 'the use of flipped videos can help deliver a personalised writing programme'. The videos were an excellent companion to the existing programme. The goals of increasing student agency and personalised learning were achieved with the fluent writers in the class. More effective culturally responsive practice was achieved owing to the time the videos gave the teacher to interact and build deeper relationships with some of the Māori learners.

Flipped videos can be an effective delivery tool that can connect with our students to give them choices around their learning. We need to dedicate time to developing flipped video resources that reflect and cater for different learning approaches. Our Māori students responded to videos that used humour and narrative. Zaretta Hammond (2015) suggests that culturally responsive teaching can only be achieved if the programme mimics the students' cultural learning styles, as culturally responsive teaching leverages the brain's memory systems and information processing structures. This is where group learning, oral language and storytelling can make connections with our Māori learners in a way that more traditional pedagogies do not. The introduction and use of the videos needs to be carefully managed so that students can use the videos to help them be more independent and have greater student agency. The videos free the teacher up to interact with students in a more creative and engaging way. Rather than delivering knowledge, we can be more involved in supporting our students in the application of skills that scaffold deep and active learning.

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[16]

Improving teacher competency in learning and using digital skills

Jordan Priestley

The digital divide in teacher competency with learning and using digital skills is overwhelmingly evident in school contexts across New Zealand. Relevant literature (Besser, 2001; Cruz and Diaz, 2016; Russell, Finger and Russell, 2000; Warschauer, Knobel and Stone, 2004) suggests that the digital divide relates not only to access to devices, but also to the knowledge and skill needed to successfully integrate these into learning outcomes and school opportunities. The purpose of my project was to develop teacher digital skills and digital competency with a view to addressing the digital divide in my school.

Amongst teachers in my school, there was limited knowledge of technology: what was out there; what could be used, and how to use it. I wanted to increase teacher knowledge and skill in using digital tools, and wanted teachers to be able to transfer and develop this knowledge further into teaching and learning across the curriculum. My project was to develop a professional development (PD) plan for teachers in Digital Fluency . I developed a number of PD sessions for staff at weekly meetings and created workshops to support teachers to implement these changes. To evaluate my project and to evaluate teaching and learning, I implemented surveys, observations and field notes to gather data (via Google forms and sheets). In addition, teachers

shared something they had learnt at an end-of-year shared action meeting. Student observations and surveys were also carried out in order to assess the extent to which teacher PD sessions had influenced what happened in the classroom.

An analysis of the data showed clear evidence that teacher confidence and competence with using digital skills had improved over the duration of the project. This was documented most clearly in responses to surveys and in researcher observations (captured in field notes). Despite the positive data and improvement, it was also clear that teachers wanted more PD and more time to unpack and learn the skills being taught. A shift in school strategic priorities towards the end of my project impacted negatively on time that might have been spent on expanding project goals and project outcomes.

The insights gained from my project confirm assertions of the digital divide that is out there in New Zealand schools – amongst both teachers and students. Schools need access to experts – whether that is teachers, students or outside providers – to be able to address the digital divide and provide learning that can help fill this gap. They also need continued support at all levels of implementation, with a commitment of time from the leadership team to continue offering support for teachers over the course of such a project.

As Cruz and Diaz (2016) suggest, developing the ability of teachers to be able to enhance digital learning outcomes for their students is becoming more challenging. This could, in part, be a result of the generational divide between teachers and students – or it could be the disconnect that is evident between teacher knowledge and required digital fluency. Teachers and school contexts can't possibly begin to be able to meet the needs of their students if they don't possess the knowledge to make it happen. It will continue to be challenging for schools if teachers are not supported in developing digital technology skills – and the 'divide' will continue to get grow.

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[17]

Personalised learning for enhanced student engagement in writing

Karl Vasau

In the history of education there is no student like today's 21st Century learner. They are complex, energetic, and are tech-savvy individuals who want to be challenged and inspired in their learning. They also like to learn collaboratively, work with their peers and want to incorporate technology into their classroom experiences as much as they can (Watanabe-Crockett, 2016). In my own context, our school vision is 'We Grow our People'. This means that we ask ourselves all the time "how have we grown our students or staff or community today?". To realise this vision and desire for our school, especially our students, we need to look at what we are doing as a school to cater for the needs of our very diverse students.

My project involved working with a team of teachers to build their knowledge and understanding of what personalised learning is. I then led them to collaborate on ways in which they could implement personalised learning to strengthen their use of digital technologies and agentic behaviour to raise the engagement and achievement levels of their students in writing and across our school. If teachers know and understand what quality teaching in writing looks like and have had good feedback on their delivery and practices, they will be more effective in the classroom. More than ever in education, schools

and educators need to ensure that they interact with students and families in a culturally responsive way. Cultural diversity is one of the eight principles in the NZ Curriculum: "The curriculum reflects New Zealand's cultural diversity and values the histories and traditions of all its people" (Ministry of Education, 2007). Teachers need to create an extended family-like context across their classrooms and use pedagogical interactions that improve student learning (Bishop, 2019).

Personalised learning is something that I would consider an emerging challenge and opportunity in contemporary teaching practice. There is no one-size-fits-all model of personalised learning that will work for all students. It is about students being able to make choices about what settings to study in and what styles of learning to employ (Leadbeater, 2005).

The most important findings of the project include a set of non-negotiables that need to be included in writing programmes if shifts in writing engagement and achievement are to be pursued:

- you need to know your student not just as a learner;
- topics must be of interest to the students and planning for writing must include their voice;
- devices may be used to complete all aspects of the writing process;
- you need to ensure that you have enough devices to be used by your students;
- effective feedback and feed-forward needs to be provided to students;
- high standards and expectations need to be set for students; and
- a caring, nurturing and well-managed environment needs to be created for students.

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[18]

Building self-efficacy through personalised learning

Koron Oliver

The aim of the project was to build self-efficacy across two senior classes using personalised learning and inquiry. The identified problem was that students across two senior classes lacked engagement because of environmental structural conditions that limited their potential to act, creating a passive approach towards learning. Inquiry-based learning was chosen to change this approach and to build the students' self-efficacy. Self-efficacy is the judgement that a person makes about their own capability to achieve a future task or activity (Bandura, 1994). It can also affect which activity a child chooses to complete or avoid. Lack of self-efficacy was identified as the problem because the majority of students across the team would choose to avoid tasks or complete tasks only with the support of the teacher or teacher aide.Students with high self-efficacy have confidence or a strong belief in themselves while students with low self-efficacy avoid difficult tasks and have a low commitment to goals (Education Hub, 2018). The project aimed to nurture students' independence by gradually encouraging them to take greater responsibility for their learning – thereby developing their self-efficacy.

The project involved everybody in the senior team working together: teachers, students, whanau and the teacher aide. The

project was broken down into six main goals. These goals aimed to create a range of deliverables that would enhance and build students' self efficacy. These goals included the following:

1. to teach the Pembroke Inquiry language to the students across our team;
2. to develop a numeracy and literacy rubric to show the students their next learning steps;
3. to work with the teachers in my team to construct a learning program that incorporates literacy, numeracy and inquiry;
4. to group students across our team based on their learning goals;
5. to implement this program across our team and make adaptations based on student, parent and staff voice; and
6. to collect data and make changes based on reflections.

The PEMBROKE model was used throughout this project as the inquiry structure and framework. The model was previously created by the school principal to include the school's name in an acronym so that the students could easily follow it. The acronym stands for: Predict, Explore, Make connections, Build Understanding, Reflect, Organise, Knowledge construction and Express. I chose to use this model as a way to build up the students' confidence and their independence. The model was firstly taught to the teachers who then planned and created activities that would engage and connect students with the PEMBROKE model. Students were then led through a teacher-based inquiry, using the model, before constructing their own individualised inquiries.

The project consisted of an inquiry-based approach, which incorporated aspects of personalised learning, heutagogy and digital technology. The project was implemented using a transformational and a collective leadership approach.

In the project, I chose to follow an action research design. Action research was chosen to incorporate a wide range of research and data collection before conducting and taking

action. In order to collect data, a mixed method approach was used involving both quantitative and qualitative data. The methods used in this project included surveys, assessment data, observations, conferencing and student checklists. A range of artefacts were also created to support the data collection. These artefacts included a wide range of surveys, field notes, reflections, student conferencing sheets and student checklists. These artefacts were completed by the teachers, students and their whanau.

The end-of-project final data collection showed an overall improvement in student self-efficacy, as well as an improvement in student achievement data. Throughout the project, I developed new knowledge and enhanced my teaching pedagogy. The new knowledge I formed around the inquiry structure helped me to successfully implement and teach the PEMBROKE model. I was able to gain new insights into the importance of cognitive learning and develop my knowledge around transformational and collective Leadership.

The project highlighted the importance of student voice, student relationships and classroom culture. Self-efficacy can take time to develop, however, students need to have a relationship with their teacher in order to be able to engage with the classroom culture. Martin and Collie (2018) state that positive teacher-student relationships are important for students' academic development and success. It is through relationships that teachers can construct learning experiences that will hook their students in. These need to be experiences related to the students' interests and passions.

A major challenge in this project was time. The project took a long time to implement. It took time to teach the inquiry process, to engage learners in the inquiry cycle and to construct and teach the student rubrics. Spending more time teaching the inquiry language and the student rubrics is essential in developing the students self-efficacy.

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[19]

Personalised learning for responsive curriculum development

Kreas Padayachee

In this project I developed and implemented a more inclusive and responsive curriculum delivery plan that personalised learning for Year 0-6 learners.

The shift towards purposeful, personalised, concept-based inquiry learning enables teachers to become more culturally responsive to not only their learners but also the immediate contexts of these learners. backgrounds. The aspirational outcomes of this curriculum delivery method are that students develop problem-solving skills, collaboration and questioning skills in an authentic and relevant context. This will enable learners to take ownership of their learning and understand the purpose of their efforts. The skills and knowledge that learners acquire developed through relevant themes or contexts – rather than specific subjects that are sequentially followed in a predetermined pathway. As learners are driving their own learning, they develop their own ways of working and are able to access and share understanding in a variety of methods and, as such, achieve in previously unseen ways.

Project goals include the following:

- over the course of project implementation, evidence of student ownership of their learning will increase

(Conley & French, 2014);

- by the end of the project, a learner dispositions rubric will be developed (Schum & Crick, 2012);
- authentic and personalised learning opportunities will be evidenced over the project; and
- a bank of activities for each stage of the inquiry cycle will be produced.

In our school context, we needed to unpack our taught curriculum, which was our pedagogical approach. This came from the previous history of high achievement and adherence to existing programmes. We needed to develop a clearer understanding of our written curriculum which was how our key competencies (New Zealand Ministry of Education, 2015), values and skills are organised and delivered to our community. This allowed all members of the community to connect their learning to the localised context. As part of this change project we also looked to develop how this would be evaluated. It needed to draw on prior knowledge, provide contextual provocation to learning experiences and provide opportunities for internal and collaborative reflection – as well as consolidation of knowledge.

A curriculum delivery outline was designed in collaboration with the Senior Leadership Team. To promote the use of inquiry-based practices across the school, we developed Curriculum Delivery Guidelines that provided direction for the growth in understanding of all tamariki. The next step was to share these with our school community – online and hard copy.

A schoolwide inquiry cycle was introduced, capturing the school vision and providing structure to the learning process. Stages were named in English and Te Reo, A next step for our school community was for it to be translated into the languages of our school community.

A Learner Dispositions Rubric is still currently under development. The Rubric will include a set of draft indicators – to be unpacked with learners. In addition, a series of professional development presentations were designed and

shared with the wider staff. These resources allowed staff to be part of wider discussions and enabled them to contribute to the success of the project.

One of the takeaways I have from this project is the relationship focus needed to lead any initiative. Relational trust is needed for any organisational change at all levels of a school and/or organization. Conversations are windows into a school's culture. Without trust we will not get depth or meaningful engagement or improvement.

Students' understanding of what learning is and their ability to contextualise their knowledge and skills are key to the success of inquiry learning. Their own estimation of success is in accordance with their motivation to do so. To make learning relevant, plans or outlines need to include personal interest and a connection to their local context. The possibilities for social and intellectual interaction provide students with a pathway to authentic collaboration. Contextual knowledge and skills sustain learning over time in comparison to pure content. Participation, conduct, persistence and involvement are indicators of the students' perceptions of themselves as learners.

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[20]

Knowledge construction and Project-based Learning

Kylie Nixon

This study was motivated by seeing students struggling with transitioning from a play-based learning approach to a project-based learning approach. I surmised that, by strengthening teaching practices in developing knowledge construction through play-based learning experiences, students would be in a better position to meet the cognitive demands of project-based learning.

The project was implemented across four Year 0-3 classrooms with three beginning teachers. The project goals included:

- developing a collaborative culture amongst the teachers in order to create a cohesive and collaborative team;
- developing a shared understanding of pedagogical terms; and
- developing a supplementary planning template for teachers to use in order to support their planning of play-based learning experiences.

Strengthening transition practices is not a process that can be achieved alone. Oksanen, Lainema & Hämäläinen (2017) define knowledge construction as a collaborative process as it fosters new understandings or knowledge that surpasses something

individuals can achieve by themselves. At the beginning of this project, the teachers had very limited experience working collaboratively. This meant that a considerable amount of time and effort was required in order to unpack the pedagogy underpinning collaborative practices and what this could look like in a junior school context. The first step in assuring the success of the project was re-structuring the Junior School into whānau classes. This crucial step was designed to change the teachers' perspectives away from silo cohort teaching.

Data collection through unstructured interviews and classroom observations led to the identification of gaps in students' acquiring deep knowledge through their play-based learning experiences. Teachers were also grappling with the next step for students after play-based learning. Making connections with the school's inquiry framework, New Pedagogy for Deeper Learning (Fullan & Langworthy, 2014), I developed a supplementary planning template to support teachers in explicitly planning the scaffolding of knowledge construction in learning experiences. During several specifically designed professional development sessions, we unpacked the role knowledge construction plays in a child's cognitive development, particularly in developing critical thinking and metacognition skills (Wright, 2010). Under the headings of interpreting, analysing, synthesising and evaluating, teachers took a provocation and planned what deliberate acts of teaching they were going to employ in order to achieve deep learning.

While this project was focused, initially, on using the template when planning play-based learning experiences, teachers quickly recognised that play-based learning experiences were not particularly demanding of student metacognition. They felt a large majority of students, particularly Year 2-3 students, were already ready to transition into project-based learning. The planning template was repurposed for use alongside the planning of project-based learning.

The findings from this research project are significant in two respects. Firstly, for purposeful change to take place, the culture of the environment is vitally important. Using action research, I conducted evidence-informed collaborative inquiries (Timperley, Kaser and Halbert, 2014) to establish team culture,

collaborative practice and a shared understanding of what best teaching practice looks like. Without this solid foundation, maintaining traction for any change would have been difficult. Secondly, I have come to understand that transition is not a single point in time – instead, it is fluid. The transition between Play-Based Learning and Project-Based Learning is fluid in the sense that it is represented by two moving points rather than one single point in time. With the appropriate support from teachers, students are able to work across the two frameworks depending on the cognitive demands of the task. Students do not need to wait until they progress higher up through the school system to benefit from developing deeper metacognition.

This project has shown that transition does not take the form of a single event but, instead, depending on the cognitive demands, it can be a fluid point between two pedagogical approaches. The full capacity of the planning template is not yet known as the Covid-19 lockdown meant that teachers only had several weeks trialling it before learning at home came into effect.

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[21]

Culturally Responsive Practice in the Play-Based Learning Environment

Latu Lolohea

This project aimed to explore the impact of culturally responsive practice (Hammond, 2018) on the learning of Year 1 – 5 students in a play-based environment (Gray,2017). Two main research questions were posed: firstly,how does culturally responsive practice (CRP) affect the learning of culturally diverse students and, secondly, how does play-based learning (PBL) support culturally responsive practice?

The first project goal was to establish and clarify what the elements of CRP and PBL are and why they are relevant to our project team and our school. The second goal was to make the link between CRP and the improvement of learning of culturally diverse students. Establish the project team of students with parental permission. The third goal was to establish the items that are going to be taught using CRP and establish the methodology that would be used to process information, draw conclusions and insights and suggestions for the future, (Creswell, 2015).

A secondary aim of the project was to produce flow charts that would help teachers make the content of their lessons more culturally responsive in the PBL learning environment – and the development of a website that would share the findings of this project, including research on culturally responsive

teaching strategies and the impact of the PBL learning environment on the learning of students.

The project accommodated ten Year 5 participants of culturally diverse gender and ethnicities in a Year 1-5, special character primary school. The project encompassed the use of culturally responsive pedagogy within a case study research design. Project implementation consisted of three iterations. During the first iteration, the students learnt to play a Maori game accompanied by a Maori list of words associated with the game. During the second iteration, the project team learnt another list of Maori words through a waiata (song) – with a snap game added to the process.

The third iteration was a game with students' input – or their own game. A fourth iteration was added – online- during the COVID-19 lockdown. Through the school media information management system, the students were posted a game to learn, with a list of words associated with the game.

Following case study methodology (Harrison, et al., 2017) Data was collected through a project diary, photos, videos, pre/post testing, teacher and student interviews, feedback during iteration 4 and student surveys. The project diary was updated every day and photos and videos were recorded every day. This allowed for real-time collection of data and the triangulation allowed for greater contextual accuracy and flexibility in the capture of relevant evidence.

The project diary was coded according to contemporary practice, (Wieviorka, 1992). Themes and keywords derived from coding were summarised, compared and analysed according to a rubric that was constructed for the project, based on the definition of PBL (Gray, 2017) . Student and teacher interviews and surveys were compared and contrasted against the pre- and post-test data in order to gain insight into and greater understanding of the research questions.

The findings of this case study suggest that culturally responsive pedagogy improves learning of culturally diverse students and is supported by a play-based learning environment to a significant degree . The students' motivation and engagement was also affected positively, (Vos et al., 2011). This is an important finding that will help support the planning of

culturally responsive pedagogy for culturally diverse students. The findings also support the significant contribution that PBL makes to CRP. Finally, there was some evidence of improved learning for all students. (Gray, 2017).

PBL appears to give students the opportunity to be authentic and engaged – whether or not they participated in the research project. Students who chose to stay with the project from beginning to end showed motivation, perseverance and self-efficacy. Student/teacher relationships were stronger with the students who stayed to the end than those who dropped off during the project. When relationships were strengthened with some of the students who had dropped out, they came back into the project.

The use of effective culturally responsive pedagogy in the play-based learning environment suggests a number of implications for teaching culturally diverse students – and for students in general. First, the achievement of culturally diverse students through CRP improved significantly when the conditions for effective CRP were met. Second, the PBL environment appears to have a significant effect not only on the achievement of pre-/post-test data (Newton, 1999) but also in other areas such as self-efficacy, resilience and creativity (Gray, 2013). The next step for the project is the explicit modelling of these conditions. Two areas of further research from this project are suggested: one, the effect of CRP on the teaching of higher order thinking skills, (Bandura, 1982); and two, the impact of a school's special character on CRP.

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[22]

Using Project Based Learning to Increase the Self-Management and Responsibility Skills For Those Students With Special Needs

Louise Dickson

The purpose of this research was for students to develop self-management and responsibility skills that would support their survival at school and post school.

At the beginning of 2019, I observed a disturbing trend within the classroom. While students were making academic progress, their ability to manage themselves, their resources and time appeared to be minimal. It was apparent that something needed to be done – and soon – as several of these students were nearing school – leaving age. To confirm the problem, I implemented an individual mini-inquiry unit that was carried out by each individual student. From the outset it was obvious that the students lacked the skills of self-management and responsibility.

Research began on pinpointing a teaching approach that would support the students to develop these skills.My search took me into the realm of project-based learning(PBL).

Despite there being research into PBL, there appeared to be a lack of examination of the use of this approach for those with special needs. Research that was discovered concentrated

on those at early childhood/early primary level. For me, the research was relevant since, while the students were chronologically in their mid- to late teens, their abilities were more aligned to primary level skills. Not all research discovered was completely positive. Filippatou and Kaldi (2010) discuss both the positive aspects of using PBL in the classroom but qualified this endorsement with the observation that it was not the approach for those with poor or low literacy levels. Furthermore, for successful implementation of this approach, students needed to possess strong self-management – the very skill I was wishing to develop. It seemed as if a PBL approach was worth implementing (Guven & Duman, 2007).

I began by having students create individual inquiries. This gave me the opportunity to observe students' implementation of said project, most importantly, highlighting the gaps in some students' abilities. This confirmed that some students were definitely struggling to manage themselves. The decision to adopt a case study research methodology allowed information to be gathered around those who struggled most with managing themselves. Firstly, the students were required to discuss what the terms 'self-management' and 'responsibility meant' to them. The next step was to break down the school day and decide which activities were also relevant to employment. Once this was decided, we discussed and recorded what self-management and responsibility would look and sound like for each stage. Rubrics were then created. Students highlighted where they thought they were placed on the rubric at the start and end of the project. Discussions clarified the term 'real-world problem' and ideas were sought concerning problems they saw in their environment. Most students quickly hit upon the situation with the 'cage' area outside the Hub on the school grounds. Students decided that they would turn the designated area into a more user-friendly area for their peers with Autism.

Throughout these stages of the project, I completed observations of four students selected as case study subjects. Participants in this study were 4 students (2 females and 2 males) from the Gore High School Learning Hub, Southland. All but one of the students, a male, attend optional classes three times a week in the mainstream with the support of atTeacher aide.

All core learning occurs in the Learning Hub. All students are classified as having additional needs by the New Zealand Ministry of Education, with one female and one male receiving funding through the Ministry's Ongoing Resourcing Scheme. All participants are working at Level One/Two of the New Zealand Curriculum – six or more years below their chronological age. One female has had an application for funding declined but a second application is being made in 2020.

To implement the project named 'Sensory Garden,' the students completed a series of phases and activities, including:-

- creating a dream board;
- analysing objects from the dream board and deciding on what activities would be possible to adapt or recreate;
- creating a design through several iterations;
- highlighting barriers and solutions to managing-self throughout the project;
- leading conversations and interviews with members of both the school and wider community;
- participating in the actual creation of the garden; and
- introducing whanau to the garden and explaining the iterations for the process.

The findings of this study support the notion that students with special needs can develop the identified skills of self-management and responsibility through the implementation of PBL. For this to be an effective approach, teachers must know and understand their students, their capabilities and their passions.

Prior to completing this research I had attempted to adapt the New Zealand Curriculum to meet the needs of my classroom. What has become apparent through the implementation of this project is that I shouldn't be working with an existing curriculum and attempting to make it fit students it was not designed for – rather, I need to create a purposeful curriculum

that will see students engage and develop those skills they need necessary to thrive in a real-world context.

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[23]

Full STEAM ahead: The development of resilience through guided play within a STEAM environment

Maxine Gill

In dealing with difficult events that change our lives – or very challenging situations – we react with a flood of emotions and a sense of uncertainty. Yet, despite these challenges, we are capable of working through the difficulties and adapting. Resilience enables us to do so and it is not something that we have or do not have. The degree to which we cope is the measure of our resilience. The purpose of this project was to develop resilience in Year 2/3 students through Guided Play within a Science, Technology, Engineering, Art, and Maths, (STEAM) environment. For the purposes of this project, resilience is defined as a person's ability to try new experiences, persevere and successfully overcome challenges, setbacks or failure (Govender & Cowden, 2017; Pearce, 2011). Guided Play refers to a pedagogical approach which lies between free play and direct instruction. In Guided Play, students are offered a variety of activities to engage with. A significant aspect of Guided Play is that, attached to each activity, is a provocation. Although the activities are sourced by the educator, the students still maintain a large degree of control over their learning. This

is supported by Weisberg, Hirsh-Pasek and Golinkoff (2013), who state that Guided Play takes advantage of children's natural abilities to learn through play. This happens in a prepared environment and with adult scaffolding, by allowing them to engage in challenges, act independently and be responsible for their learning. The Guided Play activities were based on (STEAM). The resources for the STEAM activities were sourced from shops in the local area.

Over a six-week period, a cohort of 23, Year 2 and 3 children engaged in Guided Play, within a STEAM environment, four days a week, from 9:30am until 12:00pm. The research methodology adopted was a case study research approach. The first case study was carried out in Term 4, 2019 and the second case study was carried out in Term 1, 2020. Data were collected from three different sources: (1) observations of two students engaged in Guided Play; (2) recorded student interviews; and (3) informal conversations with parents. Data collection took the form of field notes, which allowed for real-time observations and flexibility in capturing relevant evidence. The field notes were then coded against a resilience rubric that had been developed using current research on student involvement and pupil resilience.

The data was analysed and findings suggest a number of insights for practice. Firstly, children can develop resilience when they engage in Guided Play on a regular basis. Children need many opportunities to make mistakes, to persevere and experience success. For this to be a sustainable exercise, a budget, allocated to Guided Play, needs to be set up. Secondly, the project illustrated the intricacies of inherent motivation. While the STEAM activities did appear to motivate children to engage in them, other factors may have influenced this motivation. Factors such as the challenge of the activity, children's choices, children's previous experience with an activity – and a child's self-efficacy, or belief in their own ability, all played a role. Thirdly, Guided Play gives children an opportunity to develop other key competencies. The structure of Guided Play and the inclusion of STEAM activities ensured that learning was an enjoyable experience. Students should be provided with many opportunities, within a safe environment,

to make mistakes and to understand that it is through making mistakes that they learn. It is in the trying of a new experience, the persevering, the encountering of an obstacle or failing, the trying again and the not giving up that students develop resilience.

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[24]

Preparing for digital fluency

Melissa Gare

As an experienced teacher I had developed a love of using digital technologies in the class. This interest area was the catalyst for my project. I had experienced technology changing at a rapid rate. I also experienced education not keeping up with this exponential change. I had a group of Year 4 to 6 learners working below curriculum level expectations in reading, writing and mathematics. I wondered how I could get learners in my class to use digital technology while fostering more independent learning and the application of knowledge to real-life problems. My belief was that developing digital fluency amongst students would present me with a way of addressing independent learning and the application of knowledge in real-world situations. I focused on a cohort of 72 children who were in the middle years of primary school. Of these 72 students, 26 had been below expected competency levels for reading, writing or mathematics and had received at least one previous intervention that had not resulted in sustained progress.

Initially the project goals revolved around the development of teaching and learning practices and associated resources designed to support teachers in developing student digital fluency skills of the students in their classes. What I found, shortly after project initiation, was that a good deal of preparatory work had to be done in terms of creating an environment in which digital fluency skills could be learned.

The successful completion of this preparatory work constituted the bulk of the implemented project – such that initially envisaged points of departure became the goals for the redefined project. The revised project goals were the following:

- deliberately creating a learning environment that will let project based learning thrive;
- changing the teacher's role from imparter of knowledge to activator;
- integrating the use of digital technology daily – through the lens of using it because you have achieved something that you couldn't have done without the technology; and
- creating resources to support other teachers in implementing my model

To execute my change project, I used an action research approach. As Cohen, Manion and Morrison (2013) state, engaging in action research entails elements of planning, acting, observing and reflecting – and delving deeper than you would normally do. This type of research is described as an interactive model of research that sees its strengths in the impact of interventions (Kemmis & McTaggart, 1992). As my project progressed and I collected both qualitative and quantitative data, I was enabled to keep refining my project so that I could develop a classroom model that allowed digital fluency to grow.

Data analysis led to the formulation of three key aspects that had to be addressed in an integrated fashion in order to develop digital fluency effectively, namely classroom design, the identification of specific digital skills to be acquired and project-based learning.

Through my action research project, I created a set of guiding concepts for integrating these three aspects into an intervention for developing digital fluency:

- both surface and deep learning;
- planning;
- sharing learning;

- using digital technology;
- implementing classwork in a personalised manner; and
- making learning fun.

In addition to the incorporation of these guiding concepts into such a programme, my project found that there needs to be a baseline of digital skills and these need to be taught in the junior primary classes. It also found that having graduate profiles for students at primary school are essential to laying the foundation for achieving baseline digital skills. The findings of this project indicate that all of these elements need to be addressed in order to enable the possibility of digital skills being acquired in a project such as the one initially envisaged.

Although the initial purpose of the project was the development of a model that would allow the acquisition and application of digital skills, the implemented project developed the conditions critical to the enablement of the initial goal. My hope is that the findings of this project will inform others who wish to implement a project similar to the one I had initially intended to implement.

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[25]

Student engagement for Second language learners

Paula Anderson

This project used an action research approach in order to implement personalised learning – aimed at enhancing student engagement in English amongst Year 7-9 students. The context was teaching English to Y7-9 second language learners in Kura Kaupapa Maori. The project focused on the concept of improving students' literacy skills through digital, gamified storytelling whilst addressing strategies for engaging students and improving teaching practice. Digital storytelling is an instructional tool for 21st-century learners and educators. It is important for students to collate and showcase narratives through their own lenses.

One of my goals was to upskill myself, using research, evidence and literature to create a personalised and learner-centred environment to motivate and engage my learners through gamification (Redecker et al., 2009). The use of active digital technology enables student ownership and collaboration where students are able to become the teacher and the learner (Redecker et al., 2009). The acquisition of digital skills enabled my students to develop computational skills and collaborative skills, geared towards the needs of individual students (Scott, 2015). Furthermore, personalised learning combined with

digital technology, has the potential to improve learning by fostering collaboration and deeper learning (Scott, 2015).

Personalised learning encourages teachers to innovate their delivery of learning content and resources for students (Leadbeater, 2005). This project was designed in four stages. A unit plan was developed to incorporate a methodical step-by-step process to delve into literacy skills that can enhance second language learners' ability to use digital technology effectively. Following baseline assessment of student literacy, personalised literacy programmes were developed for all students (Parr & Brown, 2015). Collaborative tasks were also added into the unit plan to teach students how to collaborate effectively in groups (Khori & Ahmad, 2019). These are important skills that are pertinent to the educational environment but also to the work environment.

When students are able to participate in multiple design processes, they become the producers of their own work. Several gems were discovered in my teaching practice during project implementation. A teacher can have the best-laid plans but the students decide which learning pathway to take during the lesson. Teachers can't anticipate every learning step but a heutagogical approach allows for flexible and apt teacher planning (Blaschke, 2012). Specific themes occurred during the project: collaboration, students' voices, leadership and digital fluency. All of these are cloaked in culturally responsive practices that have improved my teaching practice and my students' learning (Hase & Kenyon, 2001).

In summary, the overarching theme throughout the project has been an equal balance of personalised learning and culturally responsive practice that is wrapped around the project. The project has provided much food for thought, particularly for second language educators and learners. The most important finding of the project has been that a combination of digital, gamified storytelling, personalisation and culturally responsive practice has resulted in enhanced student engagement and an improvement in literacy skills. When students understand how they learn, they become acutely aware of their learning patterns and make adjustments

to accommodate their new insights and the processes that are needed to implement such insights (Dewey, 1997).

Another project-inspired insight was that collaboration needed to be taught in the first term of the year rather than teaching it at the end of the year. Furthermore, collaboration needs to be role-modelled so students can understand one another's point of view (Leadbeater, 2005). Students need to be taught how to make positive suggestions without any negative comments. In addition, students need to be able to initiate conversations when working in collaborative group tasks. Finally, both heutagogy and personalised learning provide effective vehicles for culturally responsive practice (Mcfarlane, 2004; Mills, 2018).

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[26]

Student engagement in a multilevel technology learning environment

Purotu Solomon-Rehu

Is student engagement and learner agency affected when students are placed in a learning environment with a group of multi-aged students, learning at different curriculum levels and being taught by one teacher, at the same time (Mulryan-Kyne, 2007)?

The purpose of this project was to consider this scenario and to investigate the issue of students' lack of motivation, self-management and learner focus within the multilevel classroom. The school in which the project was implemented is made up of 1000 students from a range of suburbs and backgrounds, including International students. As an independent, co-educational secondary school of Catholic special character (with its vision 'Faith as our Compass'), students bring a rich diversity of culture, differing social skills and academic capabilities.

Studies (Veenman, 1995; McEwan, 2008) reveal that there is very little to no effect on student learning in the multi-age or multilevel classroom, with others suggesting that there are negative effects on the cognitive skills in standardised tests (Lindstrom & Lindahl, 2011). In this regard, project findings reveal that there was very little evidence of this from multilevel teachers surveyed, who believed there was also very little difference (51% vs 49%) in learning outcomes. New Zealand

schools have popularised the multi-age, composite, split level or multilevel class groupings, and many parents have questioned this as being inferior (Veenman, 1995) or not desirable for students or teachers (Lindstrom & Lindahl, 2011). There is some evidence to suggest that such classroom arrangements are actually more beneficial to learners than not (Anderson & Parvan 1993), and reasons for this include: drawing attention to individual learner needs and development, and therefore facilitating personalised learning; social development being enhanced; and older or higher level students benefiting from helping younger or lower level students in the class group. Literature suggests that teaching in the multilevel classroom, teachers must be well supported, have resources available, time for planning and professional development opportunities (Saqlain, 2015).

Educational research design methodology was implemented in this project to develop knowledge of the multilevel classroom and solutions with regard to self-efficacy and learner agency within the context of student engagement. I also needed to design an approach to better understand how students felt about their own learning and engagement. To meet the project purpose and planned goals the implementation of two iterative cycles was undertaken and qualitative and quantitative data was collected during both cycles. Questionnaires and surveys were used. The findings from this research enabled strategies to be planned and implemented to foster engagement, agency and self-efficacy. The outcomes have been positive, bringing new meaning to my learners of ways to enhance their learning and engage in successful outcomes.

To make personalised learning a reality, the teacher has to be at the forefront of all efforts. However, without the support of school leaders and collaboration within school, education will remain the same. Whanau and the principle of Whanaungatanga (Smith 2017) (working together within schools and across communities) enables relationships to be nurtured (Veenman, 1995). In the classroom, it is the commitment of the teacher to connect with whanau, other teachers and especially with students, that ensures learning is relevant, meaningful and effective.

A range of teaching and student resources have been developed to maximise key competency skills and use of intervention strategies to support not only online and distance learning, but also learning in the classroom. The shared teacher presentation resources are to be used to initiate discussion or to further develop strategies linked to student engagement and learner agency. The resources created support learning in the multilevel class. A Board of Trustee presentation has been developed to explain the multilevel class in Technology, and how the use of personalised learning has been implemented to support student engagement and learner agency, and, ultimately, improve students' self-efficacy.

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[27]

Co-construction of digital learning materials from digital and other sources by Year 9 and 10 students in a personalised Mathematics programme

Rosemary Adams

The purpose of this project was to develop a teaching methodology for students to co-construct digital learning materials from digital and other sources in order to personalise their own learning in mathematics. The goals of the project were that students should personalise their own learning by using pre-test results to identify learning gaps and then remediate these by learning from a website which they had co-constructed. The limitations were that this should occur in a setting where there was a fixed scheme of work and timetable and a conventional classroom space.

In this project the definition of personalisation used was that of Bray and McClaskey (Bray & McClaskey, 2013): "instruction that is paced to learning needs, tailored to learning preferences, and tailored to the specific interests of different learners." It also drew upon the work of Leadbeater (OECD, 2006), and Kallick and Zmuda (2017). In relation to co-construction the project methodology was built on the ideas of collaboration

expressed by Vygotsky (1978) and his 'zone of proximal development', which is the distance between what the child can perform independently and what can be achieved by collaborating with a more capable student. Other goals were that students should make meaningful use of their devices in Mathematics so that the requirement of a BYOD policy by the school should be seen as worthwhile by parents and students in relation to this learning area. Students should also practice good digital citizenship personally and when collaborating with others. In this process, students should experience a greater ownership of how they learned and focus on sections of the topic they were studying that were gaps in their own mathematical knowledge. By the end of the unit of work, students should have progressed in their knowledge of the topic being studied.

Initially, the class collaborated to produce an agreed set of guidelines for digital collaboration. Next, students were pre-tested and provided with an analysis of their results showing their knowledge and knowledge gaps for the forthcoming topic. The topic being studied was broken down into learning objectives and the information regarding the gaps in their knowledge was used by them to populate a Kanban board with learning objectives matching their gaps. This became the 'to do' list for their personal learning in the topic. The group also co-constructed a learning website for the whole group to use, with individuals or pairs self-selecting the learning objectives they would research. Students posted an explanation, a video and mastery exercises from the class textbook about their chosen aspect on the shared website, which allowed them a number of approaches to learning. Students could revisit the learning materials as many times as they wanted to during the period the topic was studied, and peer tutoring was encouraged. They were able to practice skills and check their mastery of objectives by using the online 'Mathletics' program. Two iterations of the methodology were carried out, the first with a Year 10 group and the second with a Year 9 group.

Students made use of their devices in Mathematics in ways which promoted collaboration and personalisation. They experienced new ways of using their devices in this subject.

In doing this, student agency was developed by making them responsible for identifying their own learning needs and planning to address these. The majority of students showed improved learning outcomes at the end of the unit of work.

This project showed that it is possible for laptops to be used collaboratively in Mathematics to create learning materials and that students can be responsible for identifying their own learning needs once they had been given the tools to do so. It demonstrated that, given the right support and guidance, students are very capable of organising their own learning and selecting their own approach to mastering learning objectives. It provided a way for personalisation of learning without the requirement for each individual to pursue their own project, making it possible for a personalised approach to happen where there is a fixed curriculum and timetable.

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Designing and implementing a responsive curriculum: STREAM

Samantha Tino

The aim of this project was to use a Project-Based Learning (PBL) approach to support the integration of STREAM (Science, Technology, Religious Education, Arts and Maths) into the curriculum, using culturally responsive pedagogy and practices to cater to the diversity in my learning hub. This project served as a pilot to inform future decisions around school-wide implementation.

Project goals were the following:

- with the whole staff, create a shared understanding of what STREAM is and how this can be implemented in our context;
- work collaboratively with my colleagues to design a module (that includes timetabling) using PBL and culturally responsive pedagogy and practices to support the integration of STREAM learning;
- implement the module over two terms; and
- evaluate the module, using relevant evidence.

The New Zealand Curriculum is focused on helping schools to create future-focused, confident, connected, lifelong learners. Using a PBL approach to integrate STREAM learning into the

curriculum, this project has enabled students to solve real-world problems through hands-on learning and creative design (Margot & Kettler, 2019). Collaborative consultation with a range of stakeholders took place to design and implement this project as a pilot programme in an innovative learning environment (ILE). This project aimed to equip students with future-focused skills and knowledge necessary to develop innovative mindsets that would enable students to become not only consumers but also creators of technology (Bell, 2010). The purpose of this project was to provide equitable opportunity and access to future-focused learning.

Currently digital technology and STEAM education research and literature is dominated by a Western lens. To ensure educational success for all learners, this project focused on creating a responsive curriculum. Resources like Tātaiako and Tapasā Cultural Competencies Framework were used to support design and implementation (Ministry of Education, 2011, 2018). These documents highlight how we can provide educational engagement and success for our Māori and Pasifika learners through PBL and STREAM. This project values the knowledge and cultural capital students bring into hubs. This pilot aimed to empower students to use traditional and future-focused knowledge and skills to solve authentic real-world problems (Berryman, Lawrence, & Lamont, 2018). Using what they know and what they have learned through STREAM, students had the ability to create change within their communities.

This project was driven by student voice. Students felt proud and empowered through their learning. Students were highly engaged and enjoyed the collaborative nature of solving real-world problems. Students were able to make interdisciplinary connections and could confidently talk through the learning process. This project was successful in redefining what success looks like for our learners.

While a responsive curriculum was achieved, teachers need to continue to find ways of connecting and including whānau in the learning programme. Building cultural relationships and continuing to find ways of being intentional and responsive to all learners is ongoing and changes from cohort to cohort.

This project has afforded us the ability to create a STREAM

inquiry that has been personalised to our school's context. It has been responsive to our learners and their interests. It may be expected that other educators may use findings in this project to inform their own design and implementation of STREAM and/or STEAM-based learning.

This project has been used as a pilot to inform future decisions relating to STREAM within our school. While these were the findings of the two iterations that took place in our hub, ongoing agile approaches are necessary to personalise this for school-wide integration. STREAM is still being implemented and consultations with various stakeholders are still occurring.

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[29]

A personalised, self-determined, culturally responsive, connectivist curriculum for increased cognitive engagement

Scott Aitken

In an increasingly unpredictable world, characterised by emerging technologies, natural disasters, pandemics, and social uprisings, there has never been a more expedient time to equip students for 21st Century learning. Sir Ken Robinson (2010) once said that education does not need to be reformed, it needs to be transformed – and it needs to be personalised.

The purpose of the research project – using the ADDIE instructional design model with an Agile mindset – was to develop, implement and evaluate a personalised, self-determined, culturally responsive, Connectivist close-viewing film unit. The primary goal was to see whether the project elements would work in a New Zealand context, to further engage Year 10 and 11 learners, especially Māori ākonga. A secondary goal was to create a more cohesive flow of self-determined learning from Years 7 & 8 through to Years 9 and 10. Significantly, the project endeavoured to shift the locus of control from the teacher to the learner.

Personalised learning (PL), as defined by Leadbetter (2005), allows students to follow their passions, abilities, interests, and

strengths in learning by empowering each learner to have personalised instruction in the best possible way, through customising the curriculum and thus turning the old education model of 'one size fits all' on its head. This is not only better for the individual, but it is better for society and better for the economy, too, as there will be fewer failures. Nevertheless, Leadbetter (2005) warns about deep versus shallow learning. At the heart of self-determined learning (SDL) is the learner who has agency with respect to how, what, and when they learn. Like personalised learning, the long-term benefits of SDL are for the learner, society, and the economy as learners will be in a better position to thrive in the workforce (Blaschke, Hase & Kenyon, 2014).

Siemens (2004) maintains that learning, knowledge and understanding through the extension of a personal network is the epitome of Connectivism, where personal knowledge is contained in a network, which feeds networked organisations and institutions, which in turn feed back into the digital network, and then continue to provide learning to individuals. A Connectivist model is ideal for enabling SDL collaboration. Key aspects of this synergy include: the harnessing of technology affordances; interactional innovation; and the creation of content.

An adapted version of The Effective Teaching Profile (Ministry of Education, n.d.) derived from the Te Kotahitanga framework was used to inform culturally responsive practice in the project. It works extremely well because of the greater focus on relational and collaborative practice, the power shifting from the teacher towards the students in – where the teacher becomes more of a facilitator of learning, the guide on the side, as opposed to the sage on the stage.

For the project, students were able to personalise their filmic texts both for the purposes of practising skills and for submission as final assessment. Everything was in Google Slides, embedded in a Google Site. Artefacts included: learning outcomes; success criteria; instructions; YouTube clips; examples; exemplars; videos for rewindable learning; and an SDL matrix where students could choose the tasks they wanted to do. The COVID-19 lockdown also necessitated the inclusion

of a work completion grid. They were to research aspects on film, collaborate with their peers, and post their learning on blogs and make blog comments. They also had the option to show their learning through podcasts, Screencastify recordings, online video animation tools (like Powtoon) as well as various forms of writing. This was the antithesis of the teacher telling students what to study, how to study it, and how to show their learning.

A CARR licence system was used to help students with their SDL. It had four levels: restricted, learners, full, and expert- with respective incentives for students' learning responsibilities, behaviours, and effort. For instance, expert licence holders could work outside the learning space, make themselves a hot drink, and could listen to music at appropriate times.

A Case Study methodology was used owing to the complexity of all the elements and rich data available. Data gathering approaches included observations, formal and informal interviews and surveys. The majority of students were more cognitively engaged through the research project compared to the more traditional teacher-directed model of learning and greatly favoured the project elements.

However, some students preferred being told what to do and reported finding it 'stressful' to have to choose their own texts. This finding is corroborated in the literature which posits that SDL can create inner conflict for learners as they are not used to taking responsibility for their learning. Therefore, alongside the personalised and self-directed learning, there will be a suggested framework of texts and learning options for students to help scaffold them into the new ways of learning. However, my experience was that,once the less motivated students gained some SDL confidence, they were more engaged with their learning and needed less teacher direction. This way, students get the best of both worlds, but ultimately, they have the power of choice.

Some of the other findings were:

- overall, students at and above the curriculum levels found PL, SDL far more engaging;
- some students at or below their curriculum levels

wanted more scaffolding but liked the extra power of choice;

- relationships with students became deeper and richer as they revealed more about their interests and passions;
- students brought their prior knowledge to texts and were likely to analyse them more critically – which they felt led to higher achievement;
- having more choices led to task remixing and innovative creation of content; and
- personalisation led to greater differentiation, which freed up teacher time for students needing more help

The next iterations include giving students a pre- and post-test on SDL skills, refining the application of the CARR licences and blog reflections, and better embedding mastery goals and the work completion grid into student learning.

Personalised, self-determined learning and Connectivism that is culturally responsive are catalysts for greater engagement and educational transformation for learning and life in our ever-changing world.

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[30]

Technovation Tairāwhiti: Raising the digital confidence and capabilities of kōhine Māori

Shanon O'Connor

The world is changing rapidly and in unprecedented ways. Dintersmith (2018) asserted that education should be about finding what you're good at and preparing for lives of purpose – lives of contribution. The education system is not evolving with the rest of the world and young people are leaving the institutionalised education system disillusioned and unprepared for the world and workforce opportunities. We need flexible, personalised, innovative schooling to create an education system that helps our young people to develop soft skills like resilience, problem-solving, creativity, adaptability and critical thinking (Owen, 2015).

Globally, technological development has been led predominantly by men. According to NZ Tech Women, a New Zealand Tech Alliance Member, in New Zealand, women occupy 23% of technology roles and we do not have official statistical data for the representation of wahine Māori in technology roles in New Zealand but, reportedly, you can count the wahine Māori in technology on one hand (One News, 2019). Recent data in the sector showed that Māori representation in the technology sector is diminishing. According to recent

reports, Māori make up only 1.9 percent of the technology workforce in New Zealand (Ministry of Business Innovation and Employment, 2019). If this is the data for total Māori participation, what are the opportunities for wahine Māori in the New Zealand technology sector? Technology development needs to be more inclusive. This project created space for those most marginalised in technology – wahine Māori – to explore, create and thrive in technology.

In 2018, Technovation Tairāwhiti was conceived – the concept was to adopt and adapt the Technovation Global Challenge to make it culturally sustaining in New Zealand. The goal was to raise the digital confidence and capabilities of kōhine Māori through collaborative, real-world problem-solving, using an app development lens. Kōhine were invited to experiment with technology – to experience the diversity of technology innovation and entrepreneurship – and to consider whether they might be able to fulfill lives of purpose through technological contributions.

Over twelve weeks, we planned to hold weekly wānanga with these kōhine at Tōnui Collaboration. Their kaiako had released them from school for an afternoon a week and each wānanga was a blended session of facilitated and self-directed learning, where kōhine worked in groups to identify a community problem, research the problem, ideate solutions and build an app that addressed the community concern. In the process, market research was undertaken and business plans developed. Guest speakers and mentors were invited to join us each week to share their experiences and to share their expertise with the kōhine. Each wānanga was punctuated by opportunities to establish whakawhānaungatanga through sharing kai and making connections.

The global pandemic, Covid 19, dramatically impacted Technovation Tairāwhiti 2020 and resulted in the series of wānanga being cut short. Ultimately, Covid 19, diminished the ability for nga kōhine to complete the Global Challenge, however, observations and reflections from the team, the participants, and the whānau and educators of the participants celebrate the learning that took place through the Technovation

Tairāwhiti 2020 project. The growth in confidence and capabilities of the kōhineare still in evidence.

The key finding of this project was that the digital confidence and capabilities of kōhine Māori can be 'raised' through meaningful project-based learning initiatives such as the adapted Technovation Tairāwhiti. Reflections on the implementation of this project identified that greater success could have been achieved through more collaborative and dedicated mentoring. The authenticity of the culturally sustaining pedagogies and cultural adaptations of the Global Technovation challenge were also critically considered and recommendations made for future iterations.

In future, if communities in Aotearoa are attempting the Technovation Global Challenge, greater community engagement needs to take place to ensure adequate mentorship is available. Fundamentally though, I do not believe the Technovation Global Challenge is 'fit for purpose'; the timing of the Global Challenge does not align with the New Zealand term dates – making it a challenge to get school support. Furthermore, on reflection, the ability to adapt an existing initiative to be culturally sustaining was limited; if attempting to be authentically culturally sustaining, the overall recommendation would be to develop a new programme. This new programme would have different timeframes that align with the school terms in Aotearoa. It would be focused on improving digital confidence and capabilities for rangatahi Māori (kōhine Māori and tane Māori). It would continue to use problem-based learning as a methodology for addressing real world problems and app development as the solution. The programme would encourage stronger distributed leadership with a strategic intention to partner with iwi Māori and it would have stronger and considered design and embedding of te ao Māori principles and practices.

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Professional learning for Teachers: designing learning with digital outcomes for inquiry learning

Stephanie Mills

The purpose of this project was to develop teachers' digital fluency and digital capacity. More specifically, the project sought to support teachers to design and develop digital learning outcomes for teaching and learning for inquiry.

This project is necessary because educators need support in finding digital technology tools that engage students in a meaningful way that allows for real-world problem solving and the development of 21st Century skills. "Life and work in the 21st Century clearly demand new learning outcomes for students" (Magana, 2017).

In the Four-year Education Plan 2016- 2020, which outlines championing 21st Century practice in teaching and learning (MOE, 2016), the Educational Review Office (ERO) reported on school readiness to implement the revised Technology Curriculum. They found that only 35% of schools were ready to implement the revised Curriculum (ERO, 2020). The findings of this report support the need for this change project.

Project goals were the following:

- to create resources: website, unit plans, lesson plans and digital resources for teachers to use;

- to create sustainability in the integration of new Technology Curriculum curriculum in the school;
- to develop the early adopters' team leadership skills in digital technologies and to enable them to facilitate their new digital technologies learning at faculty meetings; and
- to develop staff digital Fluency and capacity to use tools for inquiry learning so they can facilitate this tool at their schools.

The project was completed over several hours a week in two case study schools. Personalised learning plans were developed for participant teachers, based on teacher needs and wants relating to the integration of technology into the curriculum. I worked with the Digital Technologies Lead and teams of early adopters to build their digital fluency. I began by enabling them to use tools from the Google Apps for Education suite, (GAFE). I identified tools that the teachers are already familiar with and extended their understanding by teaching them how to build a Google Site or use Google Tour Builder, or how to use Google Maps for inquiry learning. Once teachers and students had experienced and used these tools, they were given the opportunity to work with third-party tools such as Flip Grids, Co-spaces, Canva and TinkerCad. Once this had happened, we began to devise lessons where there are opportunities for students to produce digital outcomes – including their own choice of inquiry. This skill relates to Progression Outcome 2 of the Technology Curriculum.

In conclusion, the case study schools viewed implementation of the new Technology Curriculum (MoE, 2017) through Rogers' (2002) Adoption of Innovation life cycle – in order to upskill their staff, using early adopters as the drivers of change. Their digital fluency and capacity grew (as did teacher confidence) as they began to master digital tools and learn where and how they could be used for teaching and learning in the classroom.

This findings of this project will be of value to other digital facilitators, senior leaders, and lead digital technology teachers who want to grow sustainability of technology integration,

digital fluency, capacity and confidence in their staff. The project has given me strength and confidence in my own leadership. It has reinforced my belief that relationships are crucial in the implementation of any professional learning. Teachers are truly grateful to be given the time to be listened to, and the opportunity to take risks in their classrooms. 'Good teaching is the melody, and good technology integration adds harmony, resulting in greater impact' (Magana, 2017, p.9).

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Gifted is as gifted does: a digital platform to enhance the programme for the extension of gifted learners

Tanya McPeake

One of the worst things you can do for a gifted learner is to treat them like every other learner in the class. The next worst thing you can do to a gifted learner is to treat them as if they are very different than every other learner in the class. According to Rosemary Cathcart "underachievement is one of the greatest risks for a gifted learner" (2020). She also states that gifted learners often feel different, which can cause them to "experience strong feelings of isolation" (2020). These are the reasons why gifted programmes were created. However, what if a school is too small to warrant a stand-alone gifted programme?

The aim of this project was to create a way to enhance the extension of the gifted learners at Rangitikei College, a context that was considered, by some to be too small for such a programme. This was achieved by using a digital platform, in conjunction with a robust and consistent set of resources for the identification, extension and recording of gifted learners' work at a small, rural, low decile New Zealand High School.

The goals of this project were:

- to define what gifted means at Rangitikei College so that identification is consistent;
- to create a digital online platform that could grow as our gifted programme did; and
- to create a resource available to whanau to enable them to support their learner.

The project was initiated after consultation with both the Senior Leadership Team and the teachers in the context. To begin, a definition of what a gifted learner might look like in this context, was constructed. Using this definition, the teaching staff were consulted about current practice surrounding gifted education and what could be done to improve the situation. Taking on board their feedback, the digital platform was developed. Although it would look slightly different than first envisioned, owing to the lack of time needed to fully implement everything in one year. Once the website had been developed, a teacher focus group was asked to review it and give feedback. Changes to the website were made based on the feedback received and it was rolled out to the students. Finally, a resource was created for whanau to help them support their learners. This was created as a booklet, however, it was also made available as an electronic resource.

In the process of undertaking this study, it was discovered that identifying gifted learners was a large barrier to most of the teaching staff in this context.It was apparent that many of the staff who did extend learners usually offered them "more of the same" or even "more of the same, sooner" – under the guise of enriching or extending the education of those learners. This was mostly owing due to not knowing any other way to enrich or extend those learners. At the time, there was no safe and consistent place to record the identification of gifted learners what teachers had done for them. This meant that a learner could be extended one year and not the next. Using a website to collect all of the extracurricular events in one place made a difference for several students and staff members. It raised the awareness of staff who then recommended different activities to students, based on their knowledge of students' interests. Once students had access to the website, the increase in uptake was

dramatic (during the first week) before slowly tapering off to where it is checked often by students for updates.

The project was significant to the staff and students at Rangitikei College: the knowledge gained and the resources created will allow any teacher to correctly and consistently identify and extend gifted learners. It will allow teachers to share knowledge in an effective way so that no learner is disadvantaged through a lack of communication or availability. It could also be significant to other high schools facing the same issues that we faced around gifted learners, especially if they have similar limitations to consider, such as roll size.

Leading this change-based project has had several impacts on my practice. It has made me aware of the complex and diverse needs of gifted learners and how I need to be adaptable to ensure we can deliver a programme that can work for a multitude of learners, all needing very different things. It has increased my confidence in using relevant tools to identify gifted learners and having professional conversations about a programme to enhance and/or extend their learning. It has increased staff confidence both in their ability to lead the gifted programme and in the programme itself. Most importantly, it has given gifted learners at Rangitikei College reater agency over their educational pathway and a broader support group as more teachers become familiar with the programme.

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Problem-based approaches to authentic learning

Tineke Hill

The purpose of this project was to implement problem-based learning in the senior part of the school. Students were allowed to follow the design process, where they are responsible for driving their own learning, working collaboratively, thinking critically, communicating effectively and being creative. This approach fostered authentic, hands-on learning experiences that took place in authentic contexts. Furthermore, a problem-based learning environment provided rich opportunities for enhancing effective culturally responsive practice.

There are three key areas in which the goals for this project were set. They included goals that related to students, teachers and the environment. A key goal for students was the development of skills enabling them to persevere in working towards solving authentic problems. Concomitantly, teachers had to provide rich, authentic learning opportunities for students' that catered for cultural interests, appropriateness and diversity. Finally, both student and teacher goals had to be supported by the development of a pedagogical and physical; environment in which authentic problems could be grappled with.

Working with the Year 5/6 students in my classroom was an integral part of my research project. I have been able to

collaborate with students by developing problems, defining problems, unpacking and adapting problems. Students were given the opportunity to drive their own learning and be responsible for their own learning. In addition, I have been working with teachers who have focused on a greater cultural understanding of their students. This enabled teachers to provide meaningful problems and challenges for their students to investigate and respond to. I also worked closely with the school management team by leading and modelling cultural responsiveness and how this could be done using a problem-based learning approach. I was able to use a selection of resources (Tinker Tubs) that supported problem-based learning as well as creating artifacts that were personalised to suit our programme – such as a STEAM Google Site that the students use on a daily basis to guide them through the design process.

While personalising learning is an opportunity, it is also a challenge. The challenge is for education and teachers to think outside of the box. There is also a shift in pedagogical thinking. Teachers needed to release the control and this was difficult for some. This allowed opportunities for teachers to make decisions about each individual student and target their specific learning needs. Cultural considerations for all students were important – so that teachers got to know each of their students' interests, backgrounds, passions, strengths and needs at a much deeper level. Problem-based learning allowed students to be at the centre of their education and empowered them as learners. Reflection and evaluation were key in this process. Problem-based learning goes hand in hand with personalised learning, digital fluency and cultural responsiveness. When educators are able to personalise learning, they are able to develop and extend a diverse range of learners. They are able to tap into a students' interests and find out what drives them, making learning personal, specific and authentic. When educators are able to nurture a group of students who are digitally fluent, they are giving students the ability to communicate across a range of diverse cultures in order to be successful. "Personalising learning can also be achieved by supporting students to learn through authentic, relevant, real-world contexts, where students' interests, aptitudes and the issues and opportunities

within their own communities can form the basis for learning." (Bolstad, Gilbert, McDowall, Bull, Boyd & Hipkins, 2012, p20).

Decisions about which leadership model would be best adopted to implement change around digital technologies and problem-based learning needed to be carefully considered. Collaborative leadership supports the idea of having a shared vision and distributed leadership (Harper, 2018). Johnson (as cited in Harper, 2018) defines collaborative leadership as "the presence of opportunities for shared leadership, educator ownership, and sharing of instructional and pedagogical ideas." With a collaborative leadership approach, students are encouraged to have ownership over their learning with digital technologies to support them, which empower and engage whilst promoting student agency.

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Sustainable leadership practices as a model of promoting leadership succession in implementing the revised Technology Curriculum

Tony Lane

The purpose of the project was to set up an environment where, at the end of the project, multiple teachers would be experienced enough to teach computational thinking and digital design and disseminate their knowledge to inspire other teachers to develop in the field of digital technology. The project also needed to create an environment in which digital technology development within the school would be more resilient against leadership and staffing changes, as all leaders eventually leave. The project's ultimate purpose was to create a sustainable culture of digital technology development so that its success did not rely on one expert or certain individual. The challenge for any leader is to provide guidance that persists beyond their tenure (Hargreaves & Fink, 2006).

Project goals were the following:

- analyse how sustainable leadership practices would affect the process and outcome of the project;
- develop a method or sequence of processes or stages to set up a sustainable environment that could be used by

other teachers; and

- develop an explanation of leader-follower relationships and propose how these can be positively fostered.

Seven people participated in the project. Most teachers in the project initiative had little to no digital technology experience before participation, which is an accurate representation of our school as a whole.

The project needed multiple implementations for it to be successful. Teachers needed to be in an environment which is culturally safe and that respects them as professionals and as unique people who can provide added value to the project. Culturally responsible practices and rules needed to be constructed. Content, skills, process and knowledge implemented needed to fit the context of each participant in the professional learning group. The action research cyclical process promoted this. The manner in which these skills, processes and knowledge were acquired needed to match the individual. In this regard, situational leadership processes were practised. Participants needed the opportunity to explore outside their context to expand their perspectives. Participants had the opportunity to practice what they had learned in their classrooms. All participants in the professional learning group drove the direction of the project. Principles of effective collaboration were adhered to. Through all of the above actions, qualitative data were collected. Data collection methods included: informal observations and discussions; formal structured interviews; and structured surveys.

Analysis of the data reveals that there is genuine positivity about the belief in the participants' ability to overcome adversity – either through their own efforts or relying on the group for feedback. This has been one of the biggest lessons I have learned. I used to think that doing it all on your own was a sign of strength and competency but now I see it as a selfish act – one that not only prevents yourself from growing as a learner but also others. Too often leaders fall into old habits of isolationist thinking when faced with the pressure of responding to complex issues (Kellerman, 2004).

Given another two terms of this project throughout the whole school, I believe our professional learning group could recreate the successes we had in our project.

Leading a project has been a new experience for me. I have participated in many, but have never driven the goals, direction and professional development of my peers as a leader. It has become apparent that there are two main functions of a leader. One is to provide direction and the other is to exercise influence. Leaders mobilise and work with others to achieve shared goals (Leithwood & Riehl, 2003). Leadership encompasses a set of functions that may be performed by many different persons in different roles (Leithwood & Riehl, 2003).

I have learned that effective leadership needs to be informed by clarity, purpose, respect and passion. Leadership styles differ depending on the context, person or process. Many outside influences change the manner in which you lead. Knowing when to use each leadership style or process can be attained through leadership theories research and critical reflection – after application of theories in an authentic context. I do not have all the answers and never will. However, through the use of critical reflection on practice and keeping an open and positive mindset, I hope to keep on developing.

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Designing a capabilities Framework: one school's journey towards digital fluency

Tracy Prout

The purpose of the project was to develop a Digital Capabilities Framework, specific to the context of Papatoetoe Intermediate School. This Framework was intended to support teachers' progress towards digital fluency and to enhance the integration of the revised Technology Curriculum content.

The wider context is the government's response to demands on the education sector to produce a new breed of worker (OECD, 2016). Globalisation, digitalisation and automation have changed the world of work, creating a need for workers who can work with a diversity of people and a diversity of ideas, in a continuously changing technological environment (Education Review Office, 2016).

In response, the New Zealand government has invested over $700 million dollars into strengthening the position of digital technologies in schools (Kaye, 2017). It launched a Digital Readiness Programme (Kia Takatū ā-Matihiko) to support teachers, which included a self-review tool and resources to develop digital fluency. Despite this, the Education Review Office (2019, p20) still identified teacher capability as the most common barrier to implementing the new curriculum content,

followed closely by time. This aligns with the three key barriers identified by Papatoetoe Intermediate teachers: priority, time and the need for professional learning.

For school leaders, the completed Framework aimed to fill a gap that the Ministry of Education's self-review tool could not. At the time of this project, the Kia Takatū Self-Review tool was unable to provide them with information about their teachers' readiness and capability. Collecting this data from teachers was onerous and required teachers to share their PDF reports with school leaders to manually collate, in order to build a picture of where the school was at. Furthermore, the school identified the fact that the way in which teachers placed themselves within the Kia Takatū Self-Review tool, was not representative of their current practice. After using the new Framework for two terms, teachers who were familiar with the Kia Takatū Self-Review tool said they found the Digital Capabilities Framework to be more effective for measuring where they were at and informing their next steps. Furthermore, almost all teachers were providing data that aligned closely with their observable practice.

The development of the Digital Competency Framework was achieved through the successful achievement of four goals: two focused on collaboration (developing a working group and collaboration with the wider school community), and two were dedicated to the development and implementation of the Framework.

Collaboration with the wider community allowed all stakeholders to have a voice. Data was collected from students, parents and the wider community – which reinforced the expectation for digital technologies to feature in core curriculum teaching. As a result, the majority of teachers reported an increased sense of priority for teaching the new Technology Curriculum content. As teachers began to take ownership of their journey towards fluency, it was further reflected in their use of the Digital Capabilities Framework as a tool for setting and achieving goals.

A key component of the project was collaborating with teachers to build a shared understanding of digital fluency. This provided the foundation and overarching goal of the Framework. It also supported the development of teacher

progression from emerging, through to proficient, literate and then fluent. Teachers collaborated around appropriate skills and knowledge for each of these levels across four different domains: administration; managing learners; teaching and learning; and, assessing and evaluating. As they developed these understandings and captured them within the Framework, they were able to identify where they were going, how they were going to get there and what steps they could take next. According to Hattie (2012), significant shifts in teacher effectiveness and student achievement can be made when these three questions are answered.

Further insights gained from the project included the importance of providing a structure that supports collaborative learning among teachers. This includes allocating time for them to engage in new learning and collaborative discussion. Consideration should be given to the complexity involved in changing teacher practice. Identifying barriers ahead of applying professional learning can reduce the expense involved in ineffective attempts to build capability. More work should be done to identify how teachers perceive their use of time to determine whether this is, in fact, a barrier to implementing new learning, such as the new Technology Curriculum content.

In closing, this project is ongoing and is currently being reiterated in response to Covid-19. Priority for digital fluency has risen but capability still needs to be developed. Clear expectations and goals for digital learning need to be accompanied by appropriate scaffolding. New iterations of this Framework aim to support this.

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Computational thinking in special needs classes and Inclusive education environments

Vanessa Tupp

Digital technology for learners with special needs is an area that tends to focus on technologies and software that can bridge the gap between learners and being able to demonstrate understanding. With the introduction of the 2020 revised Technology Curriculum document, the need to facilitate the 'why' and 'how' we use different technologies for different purposes has become apparent. In the school at which I work, there is a gap between knowing how to use the technologies and why they have been chosen. Recognition that there is a difference in digital and traditional learning environments has long been a topic of discussion, but the change in the curriculum, social and political landscape – where there is a large push for all students to use technology to aid and enhance learning as well as create social bonds (Odom et al., 2014) – emphasises the need to step up understanding for the special needs learners.

The purpose of the project was/is to investigate ways of introducing different elements of the Technology Curriculum objectives. We explored and tested activities and ideologies of the Curriculum in order to create support for a non-

mainstream class environment. We wanted to enable navigation of the Curriculum while ensuring that the differing learning abilities of the learners were catered for. The project also looked to create more meaningful interactions with learners than simply substituting traditional learning environments and activities for digital ones (Hasselbring & Glaser, 2000). Owing to Covid-19 disruptions, the project timeline had to be pushed out which means that elements of the project still need to be implemented. The expectation is that project implementation will have been completed by the end of 2020.

Goals and outcomes for the project were to create activities and a module of tasks that introduce the learners in the special needs class to the objectives and outcomes of the Technology Curriculum, beginning with a specific focus on computational thinking (as an entry-point for the learners), and then leading learners towards creating an end-product that demonstrated their learning and understanding of Curriculum objectives and outcomes. The Curriculum objectives and outcomes are designed to enable learners to engage in authentic learning, using digital technologies – but, in a special needs classroom and inclusive learning environment, authentic opportunities are not always visible for the facilitator or the learner.

Using concepts that surround computational thinking and algorithms, I began to introduce the objectives and outcomes of the Curriculum. Using action research and agile tasks, the project created an initial set of data to enable further study and iterations to develop artefacts and create deliverables. Pilot data was collected at the end of 2019 and, owing to the pandemic and other extenuating circumstances, only two small (interrupted) iterations of the project were able to commence. Lessons and activities were created using the Curriculum document, beginning with the computational thinking progress outcomes.

Spending time to foster relationships with individual learners has been a large part of the project. Spending time and getting to know the learners' individual needs and abilities enabled the creation of an authentic learning environment and provided a safe space for trying new things. Building relationships with learners is not a new topic or ideology. What this project has been able to do is confirm previous understandings and

ideologies. As educators – especially in the high school sector – we teach our subjects very well, but often forget to teach the learner (Bishop and Berryman, 2006).

At this stage in the project, I cannot draw conclusions on the information that I am yet to gather. What I have been fortunate to learn is that the objectives and outcomes up to Year 10 are not out of reach for the Special Needs Learners at my school. When the content and ideologies are delivered in an authentic manner, the learners are able to make connections and interact well. Insights into my own practice that I have been able to gather at this stage centre around using relationships to form a bond with the learners and the information and concepts that are being explored and investigated. The learners are highly capable and with the right methods and relationship structure they are able to engage and create understanding of the content highlighted in the Technology Curriculum. Using action research and observations is a vital way of gathering information and data surrounding how they interact with the concept of computational thinking and how different tasks can pique interest in a positive way and keep learners focused. The use of games creates a link between learner interest and algorithmic thinking through instructional practice. Deconstruction and rebuilding of instructional practice when playing games allowed for authentic logic and reasoning for the learners. During game play, social politics as well as rules of the game(s) was also essential to the learning (Odom et al., 2014). This will be advanced further as the learners move through the final iterations of the project and create a game as an end-product.

The central artefacts and deliverables of the project are yet to be collected and created. The project will be completed by the end of 2020 and a follow-on project will be implemented in 2021.

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Enabling student agency in senior primary through cognitive engagement

Vicki McIntyre

The project purpose was to develop pedagogical practice to create an environment that encourages students to be agentic through cognitive engagement; enabling them to move from being passive learners to active learners.

Project goals were the following:

- to develop andragogical and heutagogical practice with teachers to transition pedagogy towards student-led learning, with teachers empowered as facilitators of learning; and
- to scaffold the capability of student agentic behaviour and beliefs within students.

The project was developed in two phases: Phase one encapsulated teacher education and empowerment, the growth of pedagogical understanding and practice. Phase two entailed the implementation of pedagogy to scaffold and enable students in student agentic behaviour and beliefs.

In order to achieve the two components of the research project, two significant areas of work were undertaken. The first piece of work consisted of gathering data from teachers and

students to establish a baseline understanding of teacher and student competencies related to the development of agency. Furthermore, the first piece of work focused on teacher agency and enabling teachers to engage with pedagogical learning. The second phase of the project consisted of the implementation of pedagogy to scaffold and enable students in student agentic behaviour and beliefs.

The project was implemented using action research methodology and was informed by the gathering of quantitative and qualitative data. The spiral of inquiry was a core tool in mapping learning and change in practice over time – and for capturing teacher voice. Teachers collaborated with the researcher in the development of the inquiry, as key stakeholders and agents of change. During the project, we engaged in two inquiries as Covid-19 changed our inquiry pathway. Teachers engaged in pedagogical learning through professional development, observations and mentoring, self-reflection and co-construction of tools to support practice. Student agentic pedagogy was aligned with current work the school had undertaken around culturally responsive practice.

Phase two involved applying learning from phase one into the classroom and trialling strategies and practices that enabled student agentic behaviours and beliefs. Teachers explicitly taught students about self-efficacy as this was a prerequisite to enabling agentic behaviour and beliefs. Teachers co-constructed with students a student agentic continuum and used student voice to enact andragogical and heutagogical practice.

Student agency places the learner at the centre; builds upon the individual's capabilities; and values and works from the basis of the student cultural toolkit which they bring with them to the classroom. Student agency is interdependent with self-efficacy, and cannot be fully enabled without a core focus on developing student self-efficacy. Student agency encompasses student well-being, cultural, social, academic and self-development. Learning is authentic, flexible and engages all parties (teacher, whanau, peers and student) in the co-construction of learning. This research has highlighted the potential alignment of student agentic pedagogy with culturally responsive and relational pedagogy, particularly within the

context of Aotearoa – and honouring the Treaty of Waitangi. Student agentic pedagogy builds upon the foundations of culturally responsive and relational pedagogy and is fundamental in enabling success for Māori as Māori, success for Pasifika as Pasifika and in the engagement and success of our marginalised learners (Annan, 2017, 2018; Bishop & Berryman, 2006).

Through the research process, teachers learnt the value of themselves as change agents, and then enabled their students, through pedagogy and knowing their learners, to become authentic partners in learning. Pedagogy enabled students to engage in agentic behaviour and beliefs, enabled equality, fostered self-efficacy and empowered students as learners. Teachers noted a shift in student learning practices reflective of their pedagogical growth.

The research project has heightened the potential for within-school facilitation. Leadership and facilitation within this research project aligned with Fullan's (2013) advice, and was focused on driving and assessing innovation in real time, through co-learning and collaboration; and laterally, within and across classrooms. Within-school facilitation enabled teachers to become authentic agents of change and mutually influence the spiral of inquiry to engage in deep pedagogical growth and change in practice. It empowered teachers as practitioners and leaders, empowered our students as partners in learning and change agents, and informed leadership of the potential of the richness and depth this process can attain.

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Using digital tools to enhance writing outcomes collaboratively

Wikarena Wihapi

The purpose of this project was to enhance the quality of students' writing. This was to be done by developing meaningful learning relationships with students, guided by key research findings. To develop students' writing, we utilised tools that they were confident and comfortable using, and so a digital focus was also necessary to move student achievement data.

By allowing students the opportunity to examine other students' creative thinking processes, modelling expectations, and allowing for agency in their learning, students were encouraged to engage in writing activities that they would otherwise have found difficult to navigate. There are three key areas in which the goals for this project were set: goals that pertained to the teacher, and how they create the space for learning to occur (Bishop, 2019); learning relationships between students and between teacher and students (McGee & Fraser, 2001); and student improvements in the area of writing.

The participants in this project were 22 students in my Year 7 and 8 class in 2019. Over the course of the year, the configuration of the class changed from an innovation learning environment (ILE) area with three teachers, to a single-cell environment with one teacher. Our class managed to maintain the philosophies and expectations of the ILE classroom that

were shared with the students at the start of the year – but with fewer students in the class. One expectation of students in the ILE classroom is that every student needed to develop their agency skills, formulations of which were displayed around the classroom on four colour-coded charts. These charts showed them how well-developed their agency skills were and what they needed to do to be able to progress to the next level of proficiency with regard to these skills. The students co-constructed the formulations of agency skills, as well as the pathway that students had to follow in order to move from one skill level to another. This was the first of many co-constructing and power-sharing conversations the students initiated. Knowing that their voice could enact change, allowed them to feel valued, and enabled them to engage in developing the writing programme in our class.

Developing productive relationships with the students had the benefit of allowing the students opportunities to see far they could test the boundaries, academically and socially. Maintaining consistency in student relationships allowed them to know what the boundaries were and we could always return to an academic conversation when needed. The strength of these relationships were often tested by a particular group of three students, testing not only the strength of the teacher, but their peers as well. It fell upon the teacher to continue to engage with challenging relationships, and if need be, repair the relationships for as long as the student continued learning in the classroom.

In the process of improving writing, students were constantly asked to reflect on a lesson, a procedure, a resource or a tool. What made this process of questioning easier was the relationship and trust that had already been established. The students already knew that their voice had weight in the classroom regarding their learning, and so were a lot more honest when asked to engage in such evaluative conversations. One suggestion that our class adopted was a digital badge system. This allowed them to become more familiar with the learning intentions and success criteria, as they had to increase the difficulty of each badge level, which meant they had to compare their first set of criteria with their final set, and

evaluate the fairness of each badge. The process meant that we were able to verbally check on what learning students had chosen as part of the class differentiated system. This gave them more autonomy over what they felt was important to learn at the time and more confidence in their student-led conferences.

From these three areas, I have come to conclude that digital tools aren't the magic wand I believed them to be. Instead, digital tools need to be combined with: a classroom environment that is safe for students to participate in; opportunities to be heard and valued; participating in engaging processes; and providing support to students for the creation of their own support materials. Under these circumstances, the tool becomes much more powerful in enabling students to become creators of digital solutions and prepares them for the modern workforce.

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