Change Implementation in Teaching

Deborah Marie Hay

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Abstract

In this thesis the process of change is documented, by relating my change experience and other educator’s experiences with change in classroom practice to Fullan’s (2016) work on change implementation. As I go through the three stages of implementation - initiation, implementation and continuation, I highlight some of the challenges and experiences I and other educators faced with changing practice. I teach Science and Chemistry at a year 1 to year 13, single-sexed private school in Auckland. In my school students often hide their failures rather than embrace them, making it hard for teachers to help students progress their understanding. So, I decided that something needed to change. I started with implementing personalised learner profiles with each student in one class, to see if I could help my students overcome their fears of failure and be successful in my subject. As a result, I found that there are many challenges to educators changing their pedagogy starting with themselves as they have to confront their own beliefs and equally the students’ beliefs about what makes a “good teacher”. I compared my journey with that of three other educators who have altered their teaching practice and found that there are many parallels and that the hardest part is to continue with a change, given our lack of time in this modern age.
Chapter One: Introduction

Why Change Education?

"The twenty-first century is the era when the pace of change has finally overtaken our ability to control it. And we are finding this unbelievably difficult to come to terms with." (Gerver, 2013, p. 32)

Change is a constant in today’s society, in education change is desperately needed in order to meet the needs of our learners, who are increasingly being faced with a very different world than what we know and can understand (Reigeluth & Garfinkle, 1994). We live in a time when technology is increasingly becoming better (Gleeson, 2018), devices can be personalised so that no two iPhones are alike, we carry around wearable technology like smart watches that track our every movement. There are some predictions (Beckett, 2018) that in the future we won’t even work. Yet we have an education system that is set in the past (Beckett, 2018; Rose, 2016), one where we are training students to work in jobs that probably will cease to exist by the time they finish their schooling. Despite educational change being on the agenda for many governments since the 1950s, not much traction has been gained in educational reform (Fullan, 2016). Many conflicting ideas are presented to educators without concrete examples of how that change made a difference or even if it made a difference. To add to this Fullan (2016) highlights that there is very little evidence so far to show that educational reform that has taken place has made any difference at all to those students who are disadvantaged, even when the change was attempted to directly impact on these groups. Increasingly as an educator I have watched more and more students become disengaged with the curriculum as it sets them arbitrary goals for example passing a subject that they can see no relevance to or memorising something for the sake of it.

I wanted to make a change to my teaching practice so that I could see if there was a way to personalise the learning, so that each student could see how chemistry related to their everyday lives in order to help them to be successful and to ensure they found what they were learning had real meaning. In this thesis a change in one educator’s classroom is tracked and compared with others’ experiences of change to see how these relate to that of
the seminal work on educational change by Michael Fullan (2016). There are three main stages of change as outlined by Fullan (2016) initiation, implementation and continuation. These will be constantly referred too, to help illuminate the potential barriers and steps educators face when trying to implement change in their pedagogy. Along the way there will be teacher narrative to help illustrate these changes.

Change Education in New Zealand

New Zealand has undertaken change too, with major changes such as - the introduction of standards-based assessment (National Certificate of Educational Achievement or NCEA) in 2001, a new curriculum which came out in 2007 with a greater focus on making great citizens of New Zealand. Equality in education has also become a large focus, with approaches specifically for our tangata te whenua such as the Te Kotahitanga project developed by Russell Bishop in 2001, in response to the inequities he saw in his teaching practice. However, as a whole how our classrooms and schools are structured has not varied much from the 1900s (Rose, 2016), we often still teach to assessments and to jobs that our young people will not have as they are no longer required (Beckett, 2018). In the last few years many schools have adopted one-to-one devices in classrooms, some schools have even been built without traditional classroom teaching spaces. As a country we need to continue to embrace change, to ensure we are meeting the needs of our learners in the twenty-first century and that we are no longer allowing students to fail (Hipkins, 2018).

Research Setting

I teach Science and Chemistry at a year 1 to year 13, single-sexed private school in Auckland, with BYOD (Bring your own device) across year 6 to year 13. It is a dual pathway school offering both National Certificate of Educational Achievement (NCEA) and International Baccalaureate (IB) for senior students to be accredited in. Since I began teaching more than 10 years ago I have found students who don’t succeed early on in the year tend to give up on my senior specialist subject of Chemistry. I have taught in four schools over my teaching career, which gives me the unique position to see education across these various settings and contexts. When I began my research, I was
brand new to my current school, which made my research challenging but equally quite engaging as it helped me get to know my context better in a shorter amount of time. Initially I needed to find out more about what is was like to teach at a private school, having worked previously at public schools.

**Private School Life**

Whilst private school kids would seem to have every advantage that life could offer them, there has been research (Elkin, 1997; Adams, 2006; Luther, 2013) to show that these students have some issues. The first issue is deprivation (Elkin, 1997) - obviously not of wealth but instead of their parents’ time. Their parents are too busy to spend time with their children as they spend so much of their day working. In these homes where money is not an issue the parents put more value into having things by buying their children lots of material possessions but not giving their children the time to discuss their lives or their education. Or their parents are there but don’t spend time with their kids at the dinner table instead the interactions the students get are all about how successful the kid is going to be, making the children feel like they have to perform (Adams, 2006). In a recent study (Luther, 2013) it has been shown that upper middle-class kids are more likely to suffer from depression, anxiety disorders and substance abuse. These students feel too pressured by the demands of the school and their parents and as a consequence become anxious and feel misunderstood (Luther, 2013). In class this is often seen with the students refusing to ask for help in front of others as they don’t want to be singled out by their peers as “dumb” (Luther, 2013). These kids don’t get much opportunity to lead (Luther, 2013) as their parents are constantly telling them what to do and when. Ironically these same parents are not disciplining their kids because they feel so guilty about how little time they spend with them, they don’t want the only time they spend to be negative (Luther, 2013). This inhibits the growth of a sense of self for these kids, which in turn does not help them manage themselves in the classroom or make responsible decisions in their lives (Luther, 2013). Davidow (2003) notes that not only are these kids pressured to perform well in school they usually carry out too many extra-curricular activities, allowing them no down time, let alone time to complete homework tasks. Davidow (2003) also highlighted that getting into universities is no easy feat for any student these days, even with good grades and many extra-curricular activities the competition is fierce to get into medical school or to become a lawyer. So the advantages of a good high school education that offers lots of extra outside classroom activities is not as pronounced as it once was (Davidow, 2003).
The School's Future

The hope moving forward into the future for the school as presented by the principal at the end of last year is to alter the curriculum. Moving away from set curricula such as NCEA and International Baccalaureate (IB) which is also offered and instead get students to set their own goals around what to learn and in what context (Hipkins, 2018). Thus, altering the frequency of assessments within the school, which provides much anxiety amongst students and excessive marking workload for teachers. So, over the next five to ten years it will be interesting to see this transformation as this will be a radical shift not only for the school but for education in this country (Hipkins, 2018). As we are on the cusp of such large-scale change to, a thesis partially set in my context about change couldn’t be better timed.

The Phases of Change

Fullan (2016) notes that there are three phases of change, 1) initiation, 2) implementation and 3) continuation. As this thesis was based around this process it is important that it is discussed here. The key challenges identified by the research will be discussed below.

Initiation

The first phase of change is the initiation when a person or group of people come up with an idea for change that they would like to implement in an educational setting. They must also have the right confidence level and attitude to change, as to try something new takes courage and a positive attitude towards change (Lamie, 2004). Often the reasons for initiation begin with external pressure being applied to teachers from governmental or school management levels first, before teachers feel the need to change (Cameron, Mercier & Doolittle, 2016). However, if the teachers themselves don’t wish to change or aren’t convinced of the need for change or there is no research to support the change then the change will not occur to any depth and will certainly not be sustained. Top-down innovations seldom are successful as they rely heavily on teachers to initiate and carry out the change, but as it is not their own idea they find this more challenging (Cameron, Mercier & Doolittle, 2016). Initiation is more likely to occur in schools that are well funded as teachers have more time available to plan new initiatives rather than dealing with the constant stream of issues faced at a less funded school. In order for teachers to take on a change, they must confront their own beliefs, about what good teaching and learning looks like (Sockman & Sharma, 2008).
Implementation
Implementation involves the first experiences of attempting to put an idea or reform into practice (Elmore, 2004). It is affected by the following factors (Kirk & Macdonald, 2001): educator understanding of their context and their students, their skills and abilities and the physical context (class size, time and money available). Teacher-initiated change can be affected further as teachers have to address their belief systems over what makes a “good” teacher and where the innovation has come from as it may not fit the context that they are in exactly (Kirk, 1988).

In order to implement a new teaching practice, a teacher must be aware of their culture, their students and parents’ cultures and the school culture, lasting change needs to have this culture disrupted somewhat (Lamie, 2004). In this study they found teachers were often reluctant to change because they didn’t want to go against the traditions expected of them from their principal and the parents. In another study of teacher change, it was shown that evaluation was another key factor during the innovation period as this provided the feedback needed to identify next steps in the process (Cameron, Mercier & Doolittle, 2016).

Continuation
The last stage in Fullan’s (2016) framework is continuation. Continuation refers to whether a change gets adopted long term or it gets disregarded. The sustainability of change is often questionable in most innovations, as most are not continued (Cameron, Mercier & Doolittle, 2016). Ultimately though teachers teach to cover the content that is required for assessments so often change in practice is only ever superficial (Gonzalez, Montano, & Hassall, 2014).

Worth and Relevance of Conducting the Research
The point therefore of this research is to gain a perspective from a teacher undergoing change, reviewing the barriers to change they experience. This narrative can then be used by other teachers to be better informed beforehand about what they might face when attempting change in their contexts. To broaden the scope of this thesis, I have also interviewed other educators who have changed their pedagogy so that this thesis may be applicable to all educators and not just educators from a private school or those who teach chemistry. In the process I learned a lot about the change process, what was required and
how I could better implement change as a teacher or leader of change within a school. As a result, a lot of my fears about change were alleviated, which is an experience I now want to share with others.

Research Aims, Questions and Setting

The aim of this research was to 1) narrate my experiences with change, noting my barriers to successful change implementation and to see what could be done about these as outlined by Michael Fullan in his book “The new meaning of educational change” (2016), 2) interview other educators about their experiences with change, to share alternative narratives regarding change from other contexts. The idea being that at the end of it, I would help other educators deal with the complex nature of change and fear it less. It was crucial to my thinking that teacher voice be added to the body of research on change, so we could add our voices on our perceptions of change. Teachers as a rule prefer to take on change that their peers have led (Fullan, 2016), so providing a narrative that other teachers can relate to as I am in their position of managing a difficult teacher workload and carrying out change in practice.

Thesis Organisation

This thesis has been organised into five chapters:

- Chapter One - the introduction and defining the inquiry
- Chapter Two – the study
- Chapter Three - a literature review of change
- Chapter Four - the methodology carried out
- Chapter Five - an analysis of the results
- Chapter Six - discussions and recommendations from this thesis.
Chapter Two: The Study

There are two aspects to my study: 1) My change innovation project, an innovation that I carried out in my place of work in order to alter my practice to better respond to the needs of my learners and 2) Three other educators change innovation projects, that I found out through semi-structured interviews in order to broaden the scope of my research to issues all educators may face when implementing change. I am going to briefly describe each of these below in order to make sense of the data that has been collected in this thesis.

My Change Innovation Project

In 2014 - 2016, I was teaching Chemistry in a public school in Auckland, New Zealand. Whilst there, I found that I had issues with student engagement, particularly with those students who were finding the subject difficult. That year, in July, I began a Master’s of Applied Practice at Unitec, having just finished a postgraduate diploma at the Mindlab offshoot of Unitec (a 60-credit postgraduate certificate in Digital & Collaborative Learning). I had decided initially to do further study as I wanted to see if more research into my practice could help me with the issue of low engagement. I selected this specific master’s program as it has a kaupapa Maori approach, with the aim of aiding the community not just one person (the researcher) (Pitama et al. 2011). As part of this approach, the idea is that building relationships with the community is of central importance (Pitama et al, 2011). With the relationships being based on mutual respect and trust, which is crucial in any school environment as we are all working together for the same end goal of furthering the education of our young people (Pitama et al, 2011).

After much research I found a blog called “Making failure harder than passing in the Chemistry classroom” (Campbell, 2015). In this blog Campbell used learning maps to help students to identify their next steps. This made me wonder if this idea could help solve my issue with engagement. Not much research has been done on learning maps, but there has been some useful research on learning profiles. A learning profile is a summary of learner interests, previously acquired knowledge and learning strategies that the student has found useful in the past (Shen & Chen, 2007). Incorporated in many learner profiles are next steps that the student should take in order to improve, which means they can achieve a similar purpose as a learning map. There have been previous studies on personalisation with high school students where a learner profile was used to help these students identify goals in
their learning and then their next steps for achieving those goals (Kraivixien, Wongwanicha & Sujiva, 2013; Lapan, Gysbers & Sun, 1997) and their results seemed promising.

In 2017 I began the year in a new school and was unsure whether the same problem was prevalent there. My research started therefore with a stakeholder engagement process, in order to identify the specific issues my new school faced and what potential solutions they had explored. Initially I spoke with the teacher in charge of chemistry within my school and the teacher who led the Science faculty. I started with these two colleagues as one taught chemistry at the school and so would know more about the chemistry classroom in this particular institution and the other knew more about the science classrooms in general and how they were functioning. After this I wanted to know more about how the school as a whole functioned with implementing new pedagogy and whether I would face any barriers here so this then led me to speak to the deputy principal in charge of Science and professional learning. She in turn recommended I talk to the coordinator of the Centre for Enhancement of Learning at my school. The Centre for Enhancement of Learning provides learning support and gifted and talented programs within the school. Finally, as the ideas were starting to be focused into a research question and I knew I would need principal approval for my research, I spoke with the school principal.

Fullan (2016) states that there are three phases to an implementation: 1) initiation, 2) implementation and 3) continuation. During the initiation phase the innovator should start by talking with key stakeholders about what sorts of problems are faced in the context and what kinds of solutions have been tried to address these issues. I will discuss here what I found out during this phase and the other two stages will be discussed at length in the results chapter. The initiation phase is the stage of a project when a problem or opportunity is identified in a particular context, and where a potential way for change to occur is clarified (Fullan, 2016). Figure 1 below shows the steps I took in my teaching practice during this initiation phase:
Outcomes from the Stakeholder Engagement

Initially I wanted to see if learner profiles or some form of personalisation had been used by the wider community of New Zealand Chemistry teachers. So, I began by posting on our shared Facebook group, asking if anyone had tried some form of personalisation and what their thoughts were on it. This post resulted in no responses but I was referred on to one particular teacher, who had trialled a version of personalisation. In her version she allowed students to take as long or as short as they wished on completing curriculum units of work. Together, she and the students would create a timeline of when would work for each of them, to complete each unit and undertake assessment. Whilst she had found this method to be successful, there was opposition from colleagues as they were not running a similar model. Being new to my school, I knew I could not use this method, as I could not alienate my colleagues so soon after my arrival. We also had strict deadlines for when assessments could be completed as a school. It was good to see a working method of personalisation though and as an outcome I had a clearer picture of what my project could and could not look like.

From the stakeholder discussions within my school, I found that the school had implemented a number of change innovations prior to my arrival. In 2016 the Science department set goals based on the ‘Growth Mindset’ approach, as widely disseminated by Carol Dweck (2006)- the idea that a student should think differently about their success in learning as not being dependent on an inherent trait, but instead as resulting from their effort and hard work. This was in response to the observation that students responded to low grades by giving up on a subject. As the core idea of the Campbell blog (2015) that I had read was “to make failure harder than passing”, I felt this gave me a strong link to the use of learner profiles being a potential solution within the science department. But I needed to know more about
what the school wide goals were and so when I spoke with the deputy principal, I found out more about these.

In that same year, students participated in a survey about their learning and their teachers. This showed that many students felt that they did not receive any feedback from their teachers, or that if they did, it was not useful to them. As a consequence of this, the school-wide goals in 2016 focused on giving clear feedback. Teachers made a point of discussing feedback with their classes and tried many of the principles outlined in ‘inside the black box’ (William & Black, 1998). William and Black (1998) make the point that assessment feedback should be informative but putting a grade next to this feedback often means the students fail to read it as they only focus on grades. Some teachers therefore did away with grading some papers and instead just gave feedback, which had varying degrees of success, as students struggled with not knowing their specific grade. As a consequence of this I realised that the learner profiles I created would need to have feedback at their core. They needed to highlight to my students what their next steps were and why.

From the discussions with the members of my school community I found that teachers fear change due to the strong influence of parents in this private school and what these parents may believe about what ‘good’ education entails. As I knew I was applying for ethics approval, this was at the time the main concern and so I spent a long time discussing how I might minimise this with my supervisors and colleagues.

Finally, educators in my community are worried about those students who struggle with a subject, as they don’t want to be identified by their peers or their teachers as being different or ‘failures’. This message came across strongly from all my stakeholders. Students may not be failing in a subject, but they may not achieve to their full potential as they are afraid to ask for help. So, the problem I wanted to focus on became clearer to me by the end of the first term in 2017. Through the use of the information gathered I could now see what had been trialled before and what was showing some positive outcomes. I decided that my change innovation would be to implement learner profiles into one of my classes and see what effect that might have. Knowing that measuring effect for my research would be a challenge to measure, I knew I needed to find a different aspect to use for my research. Sinatra, Heddy and Lombardi (2015) posit that measuring engagement can be challenging, but equally it can be tough to grasp its meaning, given there are many different types of engagement. Measuring an increase in student outcomes is also dependent on factors outside my control, for example my sample size of one class would be hard to get statistical significance from and the reasons for a change to student outcomes might be due to external factors other than my change in practice. Equally my thesis project had to be finished in a certain amount
of time and generally a much longer time period is required for measuring a change in student outcome, let alone carrying out a full implementation of a new teaching practice. Finally, I became interested in the process rather than only the product (the outcome), as I may in future not implement the exact same change but I certainly will continue to change my practice.

Therefore, I decided, after having read a fair amount of research at this point, that actually what I really wanted to read was the voice of a teacher as a researcher. What did they think and feel and see through their eyes when they undertook research and change in practice. All of us at some point look to increase our student outcomes by altering our practice, but what I wanted to see was what sorts of challenges might I face and how might I overcome these. This thesis therefore is an example of participatory practitioner research (Cardno, 2003; Middlewood, Coleman & Lumby, 1999; Robinson & Lai, 2006). Teachers change their execution of a curriculum in many different ways (Campbell, McNamara & Gilroy, 2017), but common to all of us is that we change. So, the two main research aspects are based then around the narrative of myself as researcher and teacher and three other educators through interview on what we found collectively when we changed our practice. At this point I was about to change my practice and I wanted to find out what other educators had found to see if their advice and information might help me with mine. For this reason, I felt it was necessary to carry out some semi-structured interviews with other educators to see what barriers they had come up against, and also to add to my narrative broadening the scope of my thesis research. I decided to only interview three others, in order to keep the data size manageable knowing how challenging it would be to find three other researchers as teachers who were or had implemented learner profiles, the idea became more about change in general. I now had my plan for my proposal in mind, with the key research elements. At this stage then I undertook the process of applying for permission for my proposal for research from my school principal and through the Unitec Master’s program. Finishing with the ethics approval process through the ethics committee, both of these tasks were undertaken in Term Two of 2017.

**Conclusion of Initiation Phase**

As a result of this stakeholder engagement, I realised I wanted to know more about the potential barriers I might face in implementing change and so I started my research with
semi-structured interviews of my three other educators. I also came up with a plan for my classroom implementation, as shown in figure 2 below:

**Classroom Research Plan**

- **August 2017** - Engagement survey completed by students to measure initial engagement
- **August 2017** - students complete a pre-test on the topic we were to be studying to identify gaps in their knowledge
- **August 2017** - students rank their learning preferences from a survey
- **August 2017** - I begin to write my journal of my journey through implementation
- **August 2017** - after all information gathered learner profiles will be created, and adapted throughout the topic which lasted until **October**

*Figure 2: Classroom Research Plan*

**My Research Project Initiation**

From the stakeholder engagement that I had undertaken as part of my proposal formation, I had discovered a potential problem and had come up with a potential solution. The research though would not be focused on the effect of my change, which is notoriously difficult to measure, but instead on the ‘narrative of teacher change implementation’ (Campbell, McNamara, & Gilroy, 2004). As noted above, I wanted to find out more about what other teachers experienced when they implemented change, to help guide me on my own journey for change. So, early in the third term in 2017, having had my research proposal and ethics approved, I asked for volunteers for an interview on change implementation in the Facebook group of my cohort of the Masters of Applied Practice programme. Having met again with my own cohort and new cohorts in a Wānanga on the 11th and 12th of July, we had set up this group to encourage discussions between us. I then found three volunteers who were happy to be interviewed about their change in pedagogy.

**Other Educators Change Innovation Projects**

The three other educators, were deliberately chosen to not be from the same context as me, to ensure that they could share their ideas without the fear of being identified and also to broaden the scope of this thesis by providing alternative experiences to my own. It is worth noting that the interviews were carried out during the initial phases of my implementation to help inform my practice. The contexts that the educators came from are: One had taught in a
small community-based high school at the time of the intervention, pseudonym Chloe. Chloe had undertaken a change innovation whereby her senior horticulture students taught pre-school aged students about how to grow plants. Another had taught in a primary school based in the North of Auckland at the time of their intervention and was an associate principal implementing the change throughout the school, pseudonym Cynthia. Cynthia, in this role had implemented individualised learning plans to all students at the school, where students took on inquiries of topics that interested them. The third had taught in Auckland based high schools, primary schools and tertiary institutions and referred to several schools when discussing their implementations of change, pseudonym Coral. Coral largely refers to one particular implementation where she got year 10 English students to write letters to members of the community, who then replied, giving an authentic context to writing.
Chapter Three: Literature Review

In this chapter I will share some of the main findings that have researched on: change, the need for change, the challenges of change, personalised learning and reflection. These sections have been chosen to reflect the main themes that are presented in this thesis around change implementation, my specific change innovation and the reflection process.

Change

In this study teacher-initiated change will be analysed based on Fullan’s (2016) seminal work on change implementation. Highlighting the steps that led to meaningful change and the pitfalls that were found along the way. Fullan (2016) created a framework based on the lessons learned from many case studies on education reform (as discussed in chapter one). It is important to note though that Fullan (2016) does not see change as a linear process, there will always be times during the change where individuals go back a step or skip a step. Classroom practices are rarely altered as they were originally intended to, but by being aware of the change process and where things could go wrong sustainable change can be achieved (Fullan, 2016).

“Change is not confined to the educational environment. We are all involved, every day, in some form of change. It may be planned or unplanned, imposed or self-motivated, embraced or resisted. One thing is certain, it is an enormously intricate process but in having a clearer understanding of the process itself we may find it, at least, a little less painful.” (Lamie, 2004, p. 135).

The Need for Change

Educational Innovation

To begin with, we need to understand the process of change in its varying contexts, so starting with educational innovation. Marris (1975) outlines that change is a process of taking novel experiences and relating them to what we already know about the world and what we think our reality is constructed of. Fullan (2016) suggests change may come about from an external person or factor imposing it or through our own initiation. Marris (1975) highlights either way change can only be taken on by a person if they are willing and they have a common understanding of what that change means with whomever the source of the change
was. Schon (1971) states that this is critically important for change to be successful in an educational context, as schools are such social constructs and so common understanding of the change must occur first. In education change needs to result in a change in belief and revised materials and teaching strategies in order to be effective and deeply alter the status quo (Fullan, 2016).

The historical context of educational change began like a lot of change did globally in the 1950s and 1960s (Fullan, 2016). This was brought about by key figures who in the decades preceding had set the stage for change. One of these key figures was John Dewey who highlighted in 1899 in a series of lectures titled ‘The school and society’ the need for equality in education and that to achieve this whole scale change was needed. At the same time civil rights movements were taking place, and education was seen as the way to equalise the differences amongst members of society. Governments also started to create change by providing money and initiating ideas for change (Fullan, 2016) such as in the late 1950s to early 1960s the US government tried to implement curriculum reform. By the 1970s though, these implementations were starting to show that they had failed (Fullan, 2016) and that change required more than money and ideas. Implementation now became a common word used in educational reform as researchers grappled with how much the reform had failed so far (Fullan, 2016). In 1977, the first major review of reform research was released by Fullan and Pomfret, where it was highlighted that clearly there was something missing in our understanding of creating sustainable change. Whilst many schools took on these early initiatives and did their best to succeed with these changes by altering their language around teaching and learning, very little change made it into the classroom (Fullan, 2016). Elmore (1995) explains that this was because there was a lot of institutionalised practice surrounding classroom teaching such as using textbooks and very little incentives for teachers to change. In 2007, (Fullan, 2016) documented research appears showing effective change, that has made an impact on multiple occasions. Whilst this evidence is still limited, it looks as though change is finally coming to education. Fullan (2016) highlights that this change is coming about by groups of people collaborating together and arising with a shared meaning of what that change looks like and what solutions there are to problems that educators face, rather than governmental directive. Teachers are crucial to the success or failure of an innovation (Fullan, 2016), as they are the ones who actually have to implement the changes.
The Challenges of Change

Teacher-led Innovation

Now that we have an understanding of educational innovation as whole the next topic to consider is what teacher-led change has been shown in the research. In order for a teacher-led innovation to begin a teacher must question their beliefs and habits in the classroom (Fullan, 2016). At this point then they will make a change in their practice based on this new belief. Teachers prefer as a general rule to get ideas from other teachers, especially other teachers from their specific context. In a teacher-led change initiative in a physical education department at one school (Cameron, Mercier, & Doolittle, 2016), it was found that innovation was possible through the use of teacher leadership within the department and time, as the project took place over 5 years. Collaboration unfortunately though, is limited in most schools, as there is very little time for teachers to collaborate regularly, far too often teachers spend their time in their classrooms with their doors shut, spending more time with their students than with other adults (Fullan, 2016). This means they too often do not extend their practice (Fullan, 2016). However, when teachers do collaborate on an innovation usually this will be far more successful, than when a school leader or governmental body tries to implement a change (Fullan, 2016).

Above it was discussed why teacher-led change is often not successful, but what does the research show that does lead to successful change. One of the most successful ways that teachers have shown to collaborate to great effect is through professional learning communities (Fullan, 2016). In order for these groups to be successful though there needs to be a cultural shift within the school to one of sharing ideas, without fear of recrimination and with accountability based on showing growth rather than an increase in grades (Kruse, Louis & Bryk, 1995). In Fullan’s (2016) view, teacher-led change does not often lead to success as it is based on such a small scale and that teachers often rush into making a change without thinking about the deeper implications. Reflection is another key aspect to successful change (Fullan, 2016). However, generally teachers get very little time to reflect on their teaching practices or think about better ways to practice due to the nature of their roles in schools, where their time is mostly taken up in the classroom and so is more often reactive (Fullan, 2016).

Finally, a teacher cannot maintain change if they are working in a negative culture and often schools or leaders in schools' fear change and so hold teachers back from change (Fullan,
collaboration, reflection and culture are key for teachers to lead successful change.

Educational Innovation in New Zealand

After looking at a global context we now need to establish what research has been done in the New Zealand context. The New Zealand government has over the years tried to implement change. In 2001 the New Zealand government made a change to the nature of the assessment given in high schools. This change led to the development of NCEA (National Certificate of Educational Achievement), a standards-based assessment system. This was to allow more students to achieve and in time allowed for more options in terms of subjects that students could qualify in. Then in 2007, the current New Zealand curriculum document (Ministry of Education, 2007) was released, with a focus less on content the students should come away with and more on the skills that developing citizens of New Zealand should have. These skills called key competencies were about developing the whole person and for all students to become lifelong learners (Ministry of Education, 2007). However, as a result of these innovations our system became more focused on the outcomes or achievements in assessments than it did in learning (Ing, 2017).

Often change has taken place from educational institutions and researchers rather than from the government. In 2001 and 2002 as an outcome of studies undertaken by Russell Bishop and others (Bishop & Berryman, 2006) into cultural discrepancies in the New Zealand education system the Te Kotahitanga project began. The project which is still being developed aims to encourage more culturally responsive practices to help encourage Māori learners to learn as Māori, as the system of education has for so long failed for the tangata whenua of New Zealand (Timperley & Parr, 2005). Researchers in 2005 (Timperley & Parr) undertook research on the national literacy initiative based in New Zealand. They found that change needs three key elements: beliefs and values, knowledge and skills and outcomes (Timperley & Parr, 2005). In their study the governmental views on these elements varied from the schools’ and this led to an overall failure for the innovation (Timperley & Parr, 2005).

Ings (2017) in his book on surviving and creating change in education in New Zealand notes, “It is difficult to grow environments for creativity, questioning and brave individual agency when, as teachers, we feel forced to role model the opposite” (p. 218). He advocates that we should all practice a little disobedience or at least question why we have certain limitations in our educational institutions, rather than blindly accept the norm (Ings, 2017).
Implementing Change in Teaching Practice

There are many issues with implementing new pedagogy for teachers (Webel & Platt, 2015). One that is frequently mentioned is teacher workload; teachers feel they do not have time as it is (Webel & Platt, 2015), let alone for carrying out change, which they expect to mean more work for them (Wanner & Palmer, 2015). Linked with this is the fact that teachers frequently feel that a number of initiatives are introduced to them without enough time to implement changes before the next initiative comes in (Keamy, 2009).

Keamy (2009) also discusses the need to ensure all parties are clear on the change and being sure to consult the community before changes are made. Many different stakeholders need to take interest and then adapt the model of change to fit their particular context (Treleaven, Sykes & Ormiston, 2012). More practitioner research needs to occur so that the theory that is presented by researchers can be informed by the actual practice of teachers (Campbell, McNamara & Gilroy, 2017). Campbell, McNamara and Gilroy (2017) highlight that teachers change their practice all the time but very little of it is spread back to the research and therefore the theory of teaching. Wilson highlights (2012) that teacher voice is a powerful way of giving educators examples of how change can be implemented. Similarly, Wickman (2012) notes that often with teaching theory the reality of the practice is quite different, because practice varies so widely depending on the discipline that is being taught and the teacher. Teachers and contexts are very different and trying to make a change often involves a one-size-fits-all process does not work for teachers (Wickman, 2012). Wickman (2012) adds that too often in research there is no feedback to researchers about how a change was carried out in practice and whether it worked. Ultimately, they highlight the need for a reflective pedagogy approach as that is the best way to ensure the change is implemented in a way that suits that particular practitioner in that particular education institute (Wickman, 2012). Successful implementation, according to Kirk and MacDonald (2001), requires a teacher to know their students, the community and the resources they have available, including time and class size. Kirk and MacDonald (2001) also note that how the innovation is presented to a teacher and how much say a teacher gets in the implementation process makes a difference to the success as well.

To summarise, teaching is a cultural practice and any change to the environment or culture takes time and effort (Timperley & Parr, 2005). A change is only really seen as effective though if systemic change occurs where multiple educators take on board the ‘new’ model and this can only take place when educators take ownership of the process for themselves in their own contexts (Fullan, 2016). They can be aided in doing this if there are incentives
for change and/or if there is an example of how another educator has made a change in their classroom (Fullan, 2016). As many teachers feel the need to carry out change in practice a documented study of one may be of use to New Zealand educators as a whole.

## Personalised Learning

As highlighted above I had thought that personalised learning in some form could be a potential solution to my issue. *What I then needed to establish was what is personalised learning? And how could it be achieved?*

### Defining Personalisation

Rickabaugh Sprader, and Murray, (2017, p. 23), define personalisation as learners being able to comprehend “what, why, and how they should learn – and they are actively invested in making that happen.” In their school they want students to be confident leaders not just well-behaved students, they want their students to take charge of their learning and for the learning to be based on competency (Rickabaugh et al, 2017).

Personalised learning is not a new concept in fact it probably originated with Howard Gardner’s’ theory on multiple intelligences (Nandigam, Tirumala, & Baghaei, 2014). Some authors suggest that personalised learning has always existed in teaching, whenever a teacher said or did something different from the teaching plan or even answered a student’s question (Renaissance, 2017). It is a hot topic now though in education due to the use of technology in the classroom, which has allowed for more individualisation of learning (Nandigam, Tirumala, & Baghaei, 2014). The problem is in defining it in a meaningful way. According to research reported in an article in Edweek (Cavagnah, 2014), the key to personalisation is in creating a good “learner profile” (more on this below) this will include information on the student’s weaknesses and strengths and individualised academic goals. The school also needs to have a flexible environment to allow for student voice so the students are free to pursue these goals and there should be a series of competency-based tasks so students will be able to show where they are at with their learning (Cavagnah, 2014). So, my definition of a personalised classroom is one in which the teacher responds to a learner’s profile to meet their educational needs and interests for that subject. It is based around the idea that no student is “average” so why are teachers trying to teach to the average, when they should be teaching to the individual (Rose, 2016).
The issue with personalised learning is there are very few models of how this method can be carried out in a classroom (Pane, 2016). The other issue faced when educators choose this path is that they need to take into account both their cultural background (Averill, et al., 2014) and also what level of expectations they set a student’s learning profile at (MacDonald, 2003). A potential issue I will face is that the learners I will be working with have already established coping mechanisms for dealing with a traditional classroom model as they are older and hence will be less receptive to a change made to their classroom (Rickabaugh, 2015). Wanner and Palmer (2015) highlight that along with this some students feel they can work less or take less responsibility for their achievements.

**Student Learning Profiles**

In this study student learning profiles have been used to aid in the personalisation process. A learning profile is a summary of learner interests, previously acquired knowledge and learning strategies that the student has found useful in the past (Shen & Chen, 2007). There have been previous studies on personalisation with high school students where a learner profile was used to help these students identify goals in their learning and then their next steps for achieving those goals (Kraivixien, Wongwanicha & Sujiva, 2013; Lapan, Gysbers & Sun, 1997).

The research on learner profiles has been significant in many different contexts but how could this link with this research. An argument for learner profiles is that no student has the same prior learning experiences and so even if they are the same age and gender they will have different learning needs (Vanthournout, et al, 2013). Therefore, the more data collated about their learning needs the better a teacher can help a student learn. Some key data is how learners deal with information to process it into something that gives them meaning (Bray & McClaskey, 2013). Learning profiles will need to be developed with the students as they may not be aware of their specific learning needs. Vanthournout, et al, (2013) uncovered in their research that learning profiles are characterised by how deep a learner is learning and they found that the learner profiles provided good information about where the learner was at on this scale. The students’ interests may also not be reflected in the content covered in simplistic ways either so time should be spent developing units that meet these interests (Vanthournout et al, 2013). By getting learner profiles I can then find out if the student prefers lectures or to work independently through the work. This will make the work person-centred which to me is a core idea behind a personalised classroom. There has been
shown to be some benefit for different styles of teaching so it is important to know the learner before you try a method for everybody (Baeten, Dochy, & Struyven, 2012). In this study lectures were compared with a class using case-based learning (similar to project-based learning but with more information about what to do) (Baeten, Dochy, & Struyven, 2012). Case based learning can increase deep learning but doesn't give the breadth of knowledge that a lecture does this can lead to poor assessment results as found in this study (Baeten, Dochy, & Struyven, 2012).

Reflection

Reflection in education demands teachers’ systematic thinking and logical, rational, and gradual analysing of the teaching environment (Korthagen, 1993). Dieker and Monda-Amaya (1995) highlighted the advantages of the reflective process such as teachers’ ability to make changes in methodology, evaluation of effectiveness and objective of their instruction, learning to relate class experiences and its content to make changes in instruction, and helping teachers systematically assess challenges in the teaching context to initiate helpful solutions. In a study of preservice teacher’s reflection, Noormohammadi (2014, p. 1388) found “Reflection increases job satisfaction and would help teachers to foster their autonomy and independence also have confidence to participate in determining the school and/or institutes’ policy.” Reflecting on teaching can help educators become more effective in their practice as they are required to think more deeply about their practice (Sharp, 2003). Lester (1998) says that educators are far more likely to introduce new pedagogy effectively in their classroom if they are reflective as they will make more of an effort to understand both the students and the classroom environment. I think that reflective practice is crucial to becoming an effective teacher so it will help my learning but can also be a sound model for other teachers to grow their practice from it is also a requirement in order for renewal of a teacher’s practicing certificate.
Chapter Four: Methodology and Methods

Introduction

In this qualitative study the aim is to show the challenges educators experience in undertaking teacher-led pedagogical change. Whilst some research exists, very little has been undertaken by teachers or has included teachers’ voices. As such more and more teachers are undertaking research in order to broaden the available material of practitioner research. This thesis therefore also demonstrates an example of practitioner research. During the change process, educators face many novel and challenging situations not only requiring one to deal with numerous practical issues, but also deal with emotions, and - often - change one’s beliefs. Therefore, some examples of lived experiences of teachers’ feelings and thoughts during a period of change will provide a new and valuable perspective to the research on change in education.

Theoretical Framework

In this qualitative study I intended to find out what educators’ experience when they carry out new interventions in their classrooms. Qualitative data is defined as “how to collect descriptive data, people’s own words, and records of people’s behaviour” (Taylor, Bogdan & DeVault, 2015, p. 15). The data was collected qualitatively as it allows a representation of human experiences (Given, 2008) and answers how and why questions on this subject matter. The data was also chosen to be qualitative to allow a different representation from what is currently present in change implementation literature. Qualitative analysis also allows the researcher to be more flexible with research design and not fully formulated research questions (Marshall & Rossman, 2011). The purpose of the research is to talk about the process of the current innovation with a view to strengthening change implementation; therefore, this project employed a participatory practitioner research model (Cardno, 2003; Middlewood, Coleman & Lumby, 1999; Robinson & Lai, 2006). Practitioner research is defined as “a form of research, with teachers researching their own practice so as to come to a better understanding of the values they are relying on to inform and improve practice”
Epistemologically, this research is embedded in the interpretive paradigm, and its methodology is qualitative which “sees knowledge as personal, subjective and unique” (Cohen, Manion, & Morrison, 2007 p. 7). The world of the qualitative researcher is “socially constructed and given meaning by people” (Easterby-Smith, Thorpe, & Lowe, 2001 p. 29). Rather than producing new knowledge as its main concern, this research is developmental (Cardno, 2003) and seeks to improve practice (Elliott, 1991). This multiple-source qualitative study explored change in the classroom and assumed an interpretive epistemology.

Specifically, narrative analysis was utilised which meant the researcher could trial something new and talk to others or collaborate with others about how they experienced change, in order to improve their change practice (Taylor, Bogdan & DeVault, 2015). “Narrative analysts work with stories, especially those told in interviews and everyday life (Taylor, Bogdan & DeVault, 2015, p. 30). Narrative analysis usually only has a few participants, in order to maximise the amount of time spent focused on what the person is trying to share with you about their experiences (Taylor, Bogdan & DeVault, 2015). Therefore, the data included my journal of experiences and semi-structured interviews with other educators about their experiences with change, which will be presented more richly due to this narrative ontology. By ‘experience’ I mean ‘the elements/factors that hinder or facilitate the implementation of a change in classroom practice. As the journal data comes from the researcher or me, it fits in with the practice of practitioner research and has been created in order to solve a problem I have faced in my classroom. Many teachers do this process as a part of their practice, (Campbell, McNamara & Gilroy, 2017), but as the results have been systematically recorded and interpreted this makes the basis for this thesis.

In this thesis I have investigated four examples of pedagogical change: my own introduction of learner profiles and individualised learning plans in my Level 2 NCEA Chemistry course, as well as three change projects carried out by educators in three other institutions. These included: One educator (pseudonym Chloe) in a horticulture classroom engaged her students with the task of teaching preschool aged students how to plant certain plants, another educator (pseudonym Coral) in an English classroom who got students to write letters to members of the community, and a third educator (pseudonym Cynthia) who was an associate principal and implemented inquiry-based learning in a primary school.

My research question then is: **What are the challenges educators experience when they implement new teaching pedagogy?**
Participants

There are four participants in this study, three educators who undertook semi-structured interviews in order to share their experiences with change implementation and myself (the researcher) through the sharing of my narrative in a journal.

Sources of Data

Journal data was selected as a method for this study as it captures events 'in the moment' and thus includes details about the experiences and changes made to thinking during the process of change (Bolger, Davis & Rafaeli, 2003). It also fits with the narrative analysis that is the theoretical framework for this thesis study. Journals allow us to record social, psychological and physiological processes that occur in a particular situation (Bolger, Davis & Rafaeli, 2003). They record ideas quickly after the event so that events are likely to be remembered well (Bolger, Davis & Rafaeli, 2003).

In my case, I recorded in my journal fortnightly using a number of questions (shown below) to guide me in my journal writing to ensure consistency across my notes.

**Figure 1: Journal Questions Used:**

1. Which current practices can I abandon to make room for new patterns in my work?
2. What can I do to help students learn more in the limited amount of time we have together?
3. Who are my students? What do they want?
4. Who am I? What do I have to offer? What historical and cultural lenses frame my teaching?
5. How can I force myself out of my comfort zones and preferred cognitive style?
6. How do I seek new opportunities for learning?

These questions were developed from the Nova Scotia Teachers Union (2003) site as they related to reflection and I felt best represented the sort of questions I would ask myself during my reflections. The union which started in 1895-1896, began with the ideal to elevate the teaching profession and practices for the Nova Scotia region of Canada. On their website are many professional readings and publications that they have produced to help promote teacher development. The Nova Scotia Teachers Union is a force to be reckoned with compared to other teaching unions in the world, as they even have developed laws in their region to help protect and ensure best practices for teachers (McLellan, 2017).
Teaching unions are often at the forefront for new teaching innovations and often publish books about teaching change (Fullan, 2016). Therefore, the source of these questions is from a reputable source of teachers, who wish to improve education within their region, but also understand the kind of reflection teachers need to carry out in order to meet their needs as practitioners. They were also open-ended questions to allow me to elaborate freely, my narrative during the implementation of learner profiles. As there is also only one set of journal data it is challenging to state the reliability as there is no other data of these specific questions being used in a similar study. As there is very little reflection data of a researcher carrying out change implementation as a whole, it will be hard to ensure the validity of the results. On the whole though narrative analysis, requires the story of a researcher or their research subjects to be presented (Taylor, Bogdan & DeVault, 2015), so as this is my journal it is a valid form of presentation for this type of analysis. Also, as the researcher undertook both the journal and the thematic analysis, there is a large source of bias that could be identified from this data. I included any challenges I faced and how I overcame these obstacles, what potentially needed to be revised in my study or where other researchers could go next with personalisation or implementing any new teaching pedagogy in the classroom. At the end of each reflection session I made sure I included a list of next steps in my research. Initially I had planned to reflect once per week but in the end, I reflected once a fortnight as I found I then had more to write about and also the time required to reflect. Reflection sessions usually lasted between 15 – 30 minutes.

The school where my research was undertaken is a single-sexed year 1 to 13 private school in Auckland, New Zealand. The class where the intervention occurred was a year 12 Chemistry class, which was one of the classes given to me as part of my normal teaching timetable. Students in the class where the implementation was undertaken, were selected as they were part of this particular class. This did not alter any other part of their regular teacher-student relationship, as their data was not analysed as part of the thesis. The specified class was chosen by the researcher as a class where engagement can be low, due to the nature of the course undertaken. I the researcher who taught the year 12 Chemistry class, implemented the new teaching pedagogy and journaled my experiences. For more information regarding this part of the study refer to chapter two. The Journal data began during the implementation phase of Fullan’s (2016) framework and took on the following timeline:
Fullan (2016) notes that sound reflection is a crucial aspect to any good change implementation, as it allows the implementer time and space to develop their thinking on the initiative. Self-reflection is a key tool during implementation as it allows educators to stop and think about the change process (Dewey, 1991). One way to self-reflect is journal writing, which can be successful, as during this process we are thinking about what we are doing from a different angle and so break the habitual modes of thinking that we often get stuck into (Lukinsky, 1990). The self-reflection aspect to my research was also incorporated as educators often bring their own previously-held beliefs to each classroom and the purpose of altering their practice is to alter their belief systems to make a change for the better in their classrooms (Lukinsky, 1990). Reflection provides the time and space for an educator to ensure they are challenging their beliefs (Ertmer & Newby, 1993). It is our natural inclination to find evidence that supports our own world views and not to challenge ourselves, often whilst educators mean to make change they often only create partial change (Browne & Freeman, 2000), so it is important to consistently challenge these beliefs to ensure full change occurs. It is also important to note that my reflections contain information about the many trials and errors that were made throughout the implementation process as there is never one direct pathway to success when trying something for the first time (Fullan, 2016).

It is equally important that the researcher has someone else who challenges their thinking, by asking them different questions during the process of their transformation, otherwise educators tend to stick with what they know (Sockman & Sharma, 2008). Discomfort is said to be needed for the facilitation of this change (Brockbank & McGill, 1998), which is why I also got other educators from my school to view and make comments on my new emerging practice. My journal was then shared with others in a school professional practice blog to
allow them to comment on how I went in the implementation. As it was my teaching inquiry goal it was also subject to discussion in my appraisal meetings with both my appraiser (the teacher in charge of chemistry) and in our regular professional learning community meetings. Teachers all have to carry out teaching as inquiry as part of their regular practice, however what made my inquiry unique and a thesis study was that I was focused more of the narrative of change implementation, as well as the change in practice in my classroom. The professional learning community was introduced into the school early in 2017, and in randomly assigned groups, groups met several times a term to discuss their inquiries and how they could be developed further.

**Data from other teachers’ change projects**

The data collected from the other educators’ change projects was derived from semi-structured interviews. “In qualitative interviewing, researchers model their interviews after a normal conversation rather than a formal question-and-answer exchange.” (Taylor, Bogdan & DeVault, 2015, p. 19). The purpose of this data was two-fold - (1) to get a narrative perspective to compare with my own and (2) to help inform me during the implementation process. Teachers constantly collaborate with others when implementing new pedagogy, to talk about their ideas and help clarify their thinking. What made these interviews different was that the conversations were recorded in note form, so that it could also be analysed for this thesis.

The interviews contained questions (see appendix C) that the researcher developed but were adapted by the researcher during the interview process to allow for a more conversational style to the interview process. Originally these questions were developed as part of the postgraduate course at Unitec and so were critiqued in class by the lecturers and other members of the class. Mostly open questions were used to “allow the respondents opportunities to develop their responses in ways which the interviewer might not have foreseen” (Campbell et al., 2004, p. 99). The researcher knew two of three interviewees personally and so did not want to be limited by more traditional research questions as this would have affected the nature of the relationship. As these interviews took place in the initial stages of the researcher’s implementation it allowed the researcher the ability to collaborate with others about the change process, so defined questions would have equally limited the ability of the researcher to carry out this normal process (Zorn, 2010). The purpose of these questions was to get information about how the others experienced change and this was advantageous to the researcher as they received tips and common challenges that the interviewees had faced, helping the researcher further with their implementation. They had not previously been used in another study or been tested before. This allowed for
more descriptive and narrative information to be transmitted from the interviewees to the interviewer. During the interviews I took notes, these notes were then shared with the interviewees afterwards to ensure that they were comfortable with what had been interpreted from the interview. All interviews were carried out remotely via Skype or over the phone for practical reasons.

The contexts that the educators came from are: One had taught in a small community-based high school at the time of the intervention, pseudonym Chloe. Another had taught in a primary school based in the North of Auckland at the time of their intervention and was an associate principal implementing the change throughout the school, pseudonym Cynthia. The third had taught in Auckland based high schools, primary schools and tertiary institutions and referred to several schools when discussing their implementations of change, pseudonym Coral. For more information on these other educators, their contexts and their change projects refer to chapter two.

Participants were self-selected from the Facebook group we had set up as part of the Unitec’s Masters of Applied Practice. This will cause some bias as they were individuals who had self-selected and so won’t be representative of the total population of teachers who carry out change innovation. The participants may be different as at the time of interview they were all on study leave for master’s programs and so had undergone extra education into teaching pedagogy and theory. They were also all from very different institutions and carried out very different kinds of implementations. This will therefore lower the reliability of the themes identified, as they may be biased by the interviewee’s point of view or key themes identified by the researcher from their point of view of the world. This means that whilst they will have similarities between them as participants as they were all eager to share their ideas, this is not representative of all teachers who might undertake change. The range of settings though should hopefully broaden the usefulness of the research to educators from a greater variety of settings.

Analysis

The qualitative data collected from the journal entries and the semi-structured interviews was thematically analysed. According to Braun and Clarke (2006), thematic analysis is a method used for identifying, analysing and reporting repeated patterns or themes within data. In so doing, researchers can easily communicate what they have observed, discovered and interpreted to others in rich detail (Boyatzis, 1998). Flexibility of this method is regarded as
one of the potential benefits of analysing qualitative data (Braun & Clarke, 2006). The coding framework was developed after familiarisation with the data and open coding by the researcher. The overall themes were adopted from the thematic framework provided by Fullan (2016). As mentioned above, this framework consisted of the three stages (1) initiation, (2) implementation and (3) continuation and then further divided into sub themes, from the sub stages Fullan (2016) identified that occur during these three phases.

The factors that might affect the data is that each educator being interviewed and the researcher are in different contexts and implemented different changes in pedagogy. There will be some bias from both the researcher interpreting the semi-structured interviews and journal data that may be an issue. However, the fact that this data is compared to Fullan’s (2016) work should help increase the reliability of the results.

In January 2017 I began at my new school and my study with the initiation phase, in this phase I talked with key stakeholders about issues they were facing in the school and ways to potentially solve these issues faced. The research or implementation stage began in July of 2017, where I implemented a new teaching pedagogy into my classroom, began journaling my findings and interviewed three other educators about their experiences with change implementation. This phase carried on into mid September of 2017, after which results were analysed and written up as part of the thesis.

The coding framework was developed after familiarisation with the data and open coding by the researcher. It was coded using the web-based version of Dedoose (Sociocultural Research Consultants, 2018) a free qualitative data application that helps make coding easier. The overall themes were adopted from the thematic framework provided by Fullan (2016), this framework consisted of the three stages (1) initiation, (2) implementation and (3) continuation and then further divided into sub themes, from the sub stages or themes Fullan identified that occur during these three phases. This was then be compared with the data from Fullan’s (2016) work, to identify themes that Fullan’s meta-analysis of change implementation has shown. The coding was based around key themes identified from the interviews, whereby each interview and journal was looked at and themed. Examples of codes include - role of educator, teacher beliefs, student beliefs and current context. From this common themes emerged between all data sets, which were analysed in the results and discussions sections of this thesis.
Ethical Issues

Overview of Major Ethical Principles

This research was undertaken in one school by the researcher, in terms of their change in practice. The major ethical concerns surround the researcher sharing their views on practice, based within the school and other educators in greater positions of power disagreeing with their viewpoint. There is a risk of reputational harm to both researcher and to their school so before any publishing occurs the principal of the school where the researcher undertook the research can remove any information that they deem to harm their reputation or the school's reputation. The researcher may get negative feedback on carrying out research in their class by the parents, students, head of faculty or any other stakeholder. The researcher may find that the research shows a negative answer or a null result. Other educators may not be comfortable with the researcher’s findings due to their own beliefs or constraints. As such ethical approval was applied for and granted as part of the research process. All participants were granted the right to withdrawal and gave informed consent.

It is possible one of the three educators who volunteered for the semi-structured interviews identified as Māori. As their culture was not a part of the study this was not asked. Respect for Māori culture and protocols was followed during study as standard practice. All participants’ opinions and perspectives were respected and everyone was given equal opportunity to share. I acknowledge all educational research impacts Māori given the inequities in the current system and that all research in schools that includes students and teachers will have an impact. I consulted our te reo Māori teacher at my school and discussed the research and their perceptions of the impact on Māori within my community of my study. I also consulted with an advisor and lecturer in kaupapa Māori research and have completed a workshop in this area.

The other educators may be uncomfortable sharing their viewpoints on implementing a new pedagogy as it reflects either themselves or others in a negative way. The researcher made it clear that all data was non-identifiable and they may refuse to answer any question or opt out of the research at any time. The interviews were carried out, after school so it did not interfere with the educators’ work. Each interview was about an hour in length and took place via Skype or phone, as this allowed the interviewee to carry out the interview at a time and place that suited all parties.
The other educators have not been identified in this thesis and so are anonymous through the use of a pseudonym but may be identifiable to those who worked within their places of employment at the time of their interventions. All analysed data does not identify participants by name or school and has been stored by the researcher in a password protected digital folder. Only the researcher has this password. After a period of ten years all the data will be deleted.

Conclusion

In conclusion the data presented in the following chapter is qualitative practitioner research and based on narrative and thematic analysis, from journal and semi-structured interview data. Many ethical considerations were made when undertaking this study, to ensure that participants were honest with their narrative and were not hiding their experiences.
Chapter Five: Analysis of the Results

Introduction

In this chapter I present the qualitative analysis of the journal and semi-structured interview data (see chapter two for a full description of where these data are based contextually). The data was coded in an open way in Dedoose (2018), based on Fullan’s framework of change (2016; see chapter three for a full description). This includes three phases of change: (1) initiation (which was described earlier in chapter two), (2) implementation and (3) continuation, and all data is presented with reference to these phases.

Implementation

The implementation phase is the part of the change process where the plan that was created in the initiation phase is carried out in a specific context (Fullan, 2016). Figure 3 is a timeline of this phase of the project. The main sources of data for this thesis were gathered during this phase, including the journal and the semi-structured interviews, so these were analysed in this section:

**Implementation Phase**

**March - August 2017** - planning and seeking research approval for the implementation of learner profiles

**August - October 2017** - implementation of learner profiles in the classroom

**August - September 2017** - semi-structured interviews take place

**August - October 2017** - journal begins

*Figure 3: Implementation Phase*
Data Gathered on Implementation

The coding of the journal data and semi-structured interviews have been aligned with the characteristics of change implementation outlined in Fullan’s framework (2016). These are: (1) need, (2) clarity, (3) complexity, and (4) quality of the program. Need is the reason for the change, that was a priority for the implementer. Clarity is a problem most innovators have ensuring they understand the need fully and the implementation they are about to undertake. Complexity is the level of difficulty and how much an implementer needs to change. The last factor the quality of the program is how practical and to what standard is the innovation implementation. In each section I highlight the main challenges I faced during these phases and compare these to Fullan’s (2016) findings on change implementation. The journal data is centred on my ‘narrative of teacher change implementation’. During this process of implementation, I continued to read research on the subjects of learner profiles and personalised learning, consulting my supervisor constantly about how the research was going and what my next steps were. The learner profiles were implemented with my year 12 chemistry class during the third term in 2017.

There are three sets of interview data from three different educators in unique contexts. The interviews took place while I was implementing my project and so it did in part inform my practice. The three educators’ contexts are described in more detail in chapter two.

1 Need

From the data I gathered two main impetus for need emerged from the educators studied. These were to meet the needs of students and after attending professional development of some kind.

Starting with Chloe, the idea for innovation developed from the need she saw in her students: “I understood the students that I taught – that they learnt in different ways and can appear to be naughty unless they have a hands-on approach. I identified with the students and developed the model of teaching based on my experiences of being at school.” So, for Chloe the focus for change was on the students and their need to be successful in education despite their not being traditionally successful students. This is the kind of need many change agents focus on as it is an obvious need where students are failing (Tarling & Ng’ambí, 2016).
For Coral it was important to develop implementations of change from the bottom up rather than be told what to do from above. She talked about change as something all educators should be doing constantly: “This is a part of teaching that you do constantly as education is lifelong learning. It can often be imposed on people from above, so if in a management position I think that the manager should encourage teacher ideas first before imposing their views on them.” For her in one particular instance her need was: “One that I specifically remembered as being successful was where I got students to write letters to adults (in a high school situation of Pasifika boys) or to other younger students in a primary (year 6) to secondary (year 9) situation. These were initiated as there was clear issues with students writing, so it was a deliberate effort to promote student writing. In this task students were each given an exercise book where they would write a letter to someone outside of school and then the adult/student was told to respond. This took place for a whole term. The purpose was for students to have an authentic reason to write.” Coral’s need reflects many educators’ views on change implementation in that they would prefer to have a hand in developing it than be told, as it allows them to feel more in control and know they can address their most pressing need (Fullan, 2016).

For Cynthia it began with professional development at Mindlab for her and a colleague: “In 2009, I started up the implementation of a new pedagogy, leading the change as an associate principal. This pedagogy was based on the ideas of Lane Clark, Carol Dweck, Mindlab (which the interviewee and one other teacher undertook together) and Ken Robinson, whereby an inquiry model was used to teach a connected curriculum that was authentic and based on the principle of learning to learn. It also included the key competencies from the New Zealand curriculum. I felt that there were few good models of this style of teaching so it was a constant case of reflecting on the process in order to improve it. It was a holistic teaching strategy, based around providing choice for both teacher and student, and the staff involved made their own model from it to suit their specific environment. As time went on it continued to evolve as staff involved felt it was still too teacher driven.” As Cynthia’s experience was similar to my own as I had undertaken the same course, it represents that professional development can be a change agent if undertaken in the meaningful way. Staff development has been shown to be successful in studies of improvement in physical education pedagogy (McCaughtry et al., 2006). My need originated after attending Mindlab too, however, I found that my students did not necessarily share my belief that was necessary. Getting students to engage with the learner profiles and the work set in class was a challenge. As mentioned previously, this was probably related to the period during which I undertook this innovation, however this was the very reason I was drawn to using learner profiles - the hope that this issue would be
resolved. From my journal entry on the 21st of August: “I need to find a way to encourage them to attempt the work given as they currently are not completing the set work” and: “Some students are avoiding to complete anything.” From the entry on 31st August: “Put the pressure on that they are getting behind” and: “they still want traditional instruction where they don’t have to take ownership.” On the 11th of September: “The same students are struggling – tried an incentive scheme for the revision these same students stayed relatively disengaged.” Finally, on the 25th of September: “The same students are struggling – tried an incentive scheme for the revision these same students stayed relatively disengaged.” What I was seeing here, clearly does not show a new-found engagement of my students, it shows that whilst I had altered my practice, the students had not altered their classroom behaviour. If the top down model does not work for teachers, perhaps it also does not work for teachers and this was something that potentially needs to be further studied. Fullan (2016) actually says that this is related to the way our school systems, such as the curriculum, are set up, they are no longer relevant to the modern student. Regan (2008) notes that students are able to get information on everything these days, at the tip of their fingers and yet we rarely use this capability in schools, instead teachers still teach like they hold all the knowledge.

Perhaps the reason the students did not change their behaviour, was that they did not see the need to. Whilst I saw a need to change my practice, perhaps my students did not feel the same “need” to change, they were happy with the system that they were used to (the teaching process that had gone on before). I mentioned this in my final journal entry on the 25th of September: “After watching a webinar I realised I had potentially chucked them into the deep end and needed to work on their learner profile more first. I have found it immensely hard to engage some who are largely working on their own and so not challenging their ideas with others, so maybe some compulsory collaboration tasks would have been good for this. I also think after watching the webinar that I needed to spend more time talking with the students one on one about their learning and how they learn and then also had a whole class discussion of what a good learner looks like so that we were all on the same page.” MacDonald (2003) highlights that the student voice is often overlooked in change implementation.

So, all our “needs” were created from two main starting points, for our students or as a consequence of professional development. Change in belief or desire for change in belief due to issues faced in the classroom, are highlighted by Fullan (2016) as causes for change. Determining the most important need to a person highlights that educators like students are individuals and have quite different views from one another about how the need should be
addressed. The key barrier I discovered here was that my students and myself all should share the same need or else we would not all see the purpose of the change.

2 Clarity

The key themes that were identified in the clarity phase of the implementation from my data are: know your context and situation (as outlined by Chloe), ask lots of questions (Cynthia felt this was most important), collaborate (which was what both Coral and myself wanted to do in order to better grasp the implementations we were undertaking), and finally I felt I needed to challenge my beliefs about what good practice looks like.

Chloe described the need to know the following before beginning an implementation: “Centre around my students – their interests and who they are. Resources – what can you get from the community, budget from the school etc. Brainstorm first look at what you have. Need to model trialling things with the students – it is good for students to see their teachers fail. Teacher as learner with the kids. Have a plan B etc. for when it does fail. Teachers are under immense pressures so don’t overburden yourself.” She is under the impression that innovations often fail but that this is part of it, so one should be constantly developing thinking and planning to allow for failure.

Cynthia felt that all good innovations start with asking lots of questions to seek clarity: “Why are you doing it? What is your goal for education? What long-term picture do you want to see? So, if you start with a 5-year-old what would you like to see them learning like by the time they finish school. What is education and what is it for? By asking big questions you will get to the core of your beliefs of what you think your role as a teacher is, rather than starting with thinking about how you will get your students through their assessments.”

Coral emphasised several times during the interview that for her any innovation begins with collaboration or discussions with colleagues: “I often carry out new initiatives after talking with colleagues and teaching friends, this process often gives me the ideas needed. Then I need the freedom to have a go. Often ideas are progressed as I think it will make a difference. Good teachers carry out this process all of the time and it should not be time consuming. If a teacher spends more time planning than they would teaching then this is only worthwhile if the resource will be reused over and over again.” This links back to Fullan’s (2016) view that teacher-led innovation needs collaboration so that teachers can share ideas about how to solve problems within their institution or education as a whole, as discussed earlier in this chapter.
During the process of implementation, I found I wanted to seek out someone else to collaborate with and bounce ideas off constantly. I got support from others, such as my interviewees when I talked to them about their implementations, but I did not feel I found another person who was keen to trial and share ideas about my project or come with me on my whole journey for change. In my reflection on the 31st of August in my to do list I state: “Find a critical friend” and: “(I should) potentially should get back on Twitter.” Getting back on Twitter was also mentioned in the journal entry from the 21st of August. I have used Twitter in the past, to inform my practice, as I can read and share ideas with other educators undertaking similar pedagogical changes. Fullan (2016) highlights multiple times in his examples of successful change the need for collaboration during the process of change to ensure your ideas and beliefs get challenged. There has been shown to be change in education occurring in other studies (Naidoo & Muthukrishna 2014; Ngassam, Ntawanga, & Eloff, 2013; Spaull, 2013; Vandeyar, 2014), but this change is only with a few individual change agents and often does not spread further. This would have helped provide me with clarity as I would have been constantly put in check to ensure that what I am doing is the best representation of the change I wanted to see and also motivated me to try harder.

The next core issue that I faced was challenging my beliefs of my practice and this theme started from my very first journal entry on the 21st of August 2017: “My own experiences and also my teaching years of experience means I am finding it hard to alter my teaching as I want to continue to practise in the safe way that I have always done. Very concerned about parents’ and students’ perceptions of me.” This was then repeated in my next entry on the 31st of August 2017: “Stop trying to take control of my students learning, it is and should be up to them.” I also noted in this entry that I was struggling with the idea of: “Being the person with all the knowledge. Sticking to a traditional model of teaching, not making it personalised to each student.” Kirk (1988) highlights that challenging a teacher’s belief and making a full change in their practice, makes teacher-led innovation difficult. Essentially as with all change in life, it is hard and often confronting and more often than not most people revert back to modes of thinking they were more comfortable with. Even though I knew I needed to change my practice, to at least try and improve student outcomes, I still found it personally difficult. Tarling and Ng’ambi (2016) highlight than many change innovators are relied upon by their colleagues to lead change and as a consequence many lose their enthusiasm for change. Challenging beliefs and changing them is a painful and difficult process, but crucial to the success or failure of a project (Fullan, 2016). Without a change in belief there can be no change in practice. The reason why it is so hard to change beliefs is it takes so long to gain clarity on what the change actually is, how is best to undertake the process and what sort of
new beliefs you should take on. This is why Fullan (2016) makes the point that change is a cyclical process whereby an innovation is initiated, implemented and then institutionalised over years, and that this process is not linear.

There were several more themes in this section which reflects that finding clarity is a more complex process than identifying need. Some of the barriers noted in this section include finding collaborators, challenging beliefs that have been long held, knowing your context and what resources you have available to you. Asking lots of questions before you begin and being thoroughly aware of how your institution can help these, as outlined by Chloe and Cynthia.

3 Complexity

The complexity aspects to all of our innovations highlighted common barriers that educators face when implementing change. These barriers make the implementation far more complex and range from understanding what our innovation actually entails, community feedback, hard to find others to take on your change and lack of middle management support.

For me, I mentioned a lot, a need to find the “perfect” way of undertaking personalisation by reading research. This is because personalisation in any form will always be complex. Finding an appropriate method of personalisation and learner profiles took a large part of the research time prior to the implementation, but it is not until I had to use these tools with a class that I comprehended what it is that it should become in my context. In the post from August 21st there were three references to this: “Continued reading of other journals around personalised learning and learner profiles”. This was in response to the question about what I need to do to challenge my thinking: “keep researching and Googling to see what is new” and finally: “read a few more articles say 3 this week” from my to-do list for that fortnight. Similar statements were made in the post on the August 31. Tarling and Ng’ambi (2016) note that change, whether internally or externally imposed, often is not sustainable as teachers revert back to old practices or beliefs despite their best intentions, as it is so difficult to conceptualise the change that is to be made prior to implementation. Fullan (2016) notes that the change process is never linear; often we start with one idea of what the implementation looks like, but then end up with a very different product. This can be due to how context-specific educational innovations are and also due to the fact that it takes time and trial and error to take on another’s innovation and make it work for you.

Chloe described very few barriers to her implementation: “A couple of kids who have low confidence or were autistic found this model difficult. HOD in the past who wanted to take
ownership of the project.” For her the issues centred on being supported by her manager and the nature of the sort of students she was to teach.

Cynthia found the following complex barriers occurred for her in the past when changing her pedagogy, but it is worthwhile to note she was leading the change as an associate principal: “Lack of community understanding – hard to reach the entire community and many lack understanding that the world has changed. Very hard to ‘prove it’. It doesn’t necessarily suit all kids. You don’t know what you don’t know. National standards and NCEA promote a teaching-to-the-test model and regurgitating knowledge. National standards also narrow the curriculum to the three Rs. Local high schools do not teach in a similar way so students struggle with the transition. Leadership team needs to support it – it must be top down. A new leadership team came in, who no longer support it. This was identified as the biggest barrier as they really need to believe in it, in order to give you time and space for it. Staff were lost in the transition as they couldn’t adapt to it. Hard to find time and space for it. Teacher pressures are huge and so are often too stressed already. Some things fall by the wayside as you can’t maintain everything. ERO (Education Review Office) and schools current strategic plan and charter only care about results. Beginning teachers are not prepared for this new style of teaching and so really struggle. Many teachers and students comply rather than actually change so different classrooms have quite different outcomes.”

The complexity of any project is managing all the many varied barriers and limitations that any teacher or manager in education will face (Fullan, 2016). It would be much easier if there were no barriers at all, however of course this will always be the case in education.

Coral experienced a lot of barriers too, but had also worked in educational management positions, which may have coloured her view (similar to Cynthia): “Other teachers weren’t necessarily as sold on the idea as I was. In order to get buy in I recommend fronting up with research to state your argument. Time was a barrier, especially in creating the timetable for adults, as was finding volunteers. Getting people to show up to meetings and then filling in for those people who didn’t show up. My HOD (head of department) was told but wasn’t interested in the results, the beauty of that was that there was no pressure to actually prove the results. As a consequence, it was never written up as originally intended.”

So, the part that makes implementation complex is the constraints we are under as researchers from others.
Finally, the quality of the program of innovation implementation, which is limited by the constraints placed on the teacher or implementer. For me the main issue I faced was lack of time, for the others they all still reflected that they had achieved some quality in their implementations and have explained how their innovations were successful below.

Starting with lack of time, I noted multiple times that I wished I had more time to read research and plan more details surrounding what information should be in the learner profiles of my students. My final journal entry on the 25th of October makes this clear quite poignantly: “I absolutely feel I rushed into this without doing enough research prior to this and am hoping I can salvage something for my masters.” Later on, in that same entry: “A student had a complete meltdown last week as they felt they hadn’t got enough support with the topic and didn’t know their next steps. After watching a webinar, I realised I had potentially chucked them into the deep end and needed to work on their learner profile more first.” In one study of teacher-led change in a physical education classroom (Cameron, Mercier & Doolittle, 2016), two teachers noted in interviews that they spent a lot more time on planning than they usually would have done, despite their experience in teaching. Kirk and McDonald (2001) found in their study that teacher time was a factor in successful implementation of a change. Equally I felt that the time of year where learner profiles were being implemented was not ideal as it was two terms into the year and by this point the students had already established routines and beliefs around their chemistry class. In the past when I had developed new teaching practices with a class it had been earlier in the year, usually Term One and then throughout the entire year I had developed it further.

One of the key questions that reflected whether the programme was of a high quality or not for my interviewees was: “Was (your change innovation) successful in your view or not successful?”. Followed by: “What made it successful or not successful?”

Chloe answered: “Yes as it built relationships with the community, non-academic students could show that they could do it without a writing requirement; it built confidence in non-academic students. Generally speaking nobody visits her classroom as it is isolated so few people knew what was going on in her classroom.” As she was undertaking her change implementations like me on her own, I felt that this was quite interesting as she appeared to successfully undertake a change in a teacher-led situation.
For Cynthia she reflected: “Yes although there were many barriers to overcome and there are some issues with these students then going on to high school as the teaching models don’t follow on in these institutions. Most of the students really engaged with the new style of pedagogy and they learned a lot about both themselves and their learning. In general, behaviour issues with students dropped. The students asked the questions, took more initiative, learnt how to learn and think for themselves.” As I teach high school, I could see her frustration that many of her changes would not be followed on from her primary school into high schools and could relate with how frustrating this must be for her. Many teachers I spoke with in my stakeholder engagement surveys were concerned that if we changed the model of teaching at high school level that this could have an impact on the students’ ability to go into university studies and be successful. I wonder if this is a perceived or real issue, certainly Cynthia felt so as she had spoken with former students about their transition experience. The University of Victoria shared a recent survey they took of their first-year students, last year at a conference for chemistry teachers. They found that the current curriculum of NCEA seems to be a barrier for their students, as students want university to look more like NCEA where assessments can be retaken through reassessments for example.

For Coral: “I wonder how you can measure success as it depends who is looking. One that I specifically remembered as being successful was where I got students to write letters to adults (in a high school situation of Pasifika boys) or to other younger students in a primary (year 6) to secondary (year 9) situation. These were initiated as there was clear issues with students writing, so it was a deliberate effort to promote student writing. In this task students were each given an exercise book where they would write a letter to someone outside of school and then the adult/student was told to respond. This took place for a whole term. The purpose was for students to have an authentic reason to write. Adult/student responders were encouraged to ask questions around detail and not correct spelling or grammar but instead use and spell correctly (where possible) in their replies.” She felt it was successful because: “It was real and it was routine – students wrote letters every week. The 15-year-olds were actually excited about their writing (despite their issues with writing), as responses were personal. Students had never written letters before. Letters varied in length from half a page to two pages and included drawings. The task promoted writing for a sustained period of time – which was good as the more you do something the better you get at it. They learnt how to write legibly and learnt about what other people may be interested in. In the year 9 – year 6 example there was an element of competition and excellent sharing of ideas from the classroom.”
Coral’s note about what it means to be successful is an excellent one as measuring success even quantitatively will always be difficult in educational reform. It is important to realise that even when a change might feel that it did not go to plan, the innovator will still have learned something about changing their practice (Fullan, 2016).

**Impact on my Change Innovation Project**

As a result of speaking to these other educators, I felt a lot more strongly about making a change being something that was worth doing. I realised in some ways that the nature of the change might be different from their specific needs as I was in a different institution but that was ok, there was no one right way to change. I felt less on my own with the change too, as I knew other educators had been in my position of wanting to make change and they still achieved something in the process so there was no reason why I could not to. It also provided me with some other avenues of research, as Cynthia listed off huge amounts of researchers she admired, so I went to many of them to see if any of their research correlated with my project.

**Continuation**

Continuation is the process of change where the new implementation continues to be practiced within a context, spread to new contexts or is altered substantially to become a new implementation (Fullan, 2016). As my journal data ceased at the end of the implementation phase, the data that was primarily used in this section of the thesis was from the semi-structured interviews. Figure 4 is a timeline for the continuation phase of my project:

**Continuation Phase**

![Figure 4: Continuation Phase](image)

Fullan (2016) notes common factors that influence whether continuation occurs: lack of interest, funds, staff support, change in staff, the principal and professional development. Huberman and Miles (1984) outline the following steps for successful continuation - (1) the innovation gets embedded into practice and into the institution, (2) a critical mass of staff
within the institution have taken an interest in the change, (3) continued assistance is provided to those teachers who wish to be involved.

**My Change Innovation Project**

The plan is for me now to share my findings with others as a result of this thesis and discussing with other colleagues at my institution. These discussions I hope can take place after my thesis has been handed in, as at that point I had a clearer understanding of my innovation through the writing process and the time required to share my thinking. I have not given up on learner profiles either and would like to implement them with my all my students next year. Currently I have written them for all my students this year but I have not shared them with the students or got their input, largely due to time constraints. Fullan (2016) makes the point that innovations take time and I don’t feel that currently I have given enough time to the innovation in terms of trialling and refining in order to make a sound conclusion on their effectiveness. This is probably one of the major points I have learnt about change innovation in that actually one year, even two years may not be long enough to establish changes in belief and practice and that my goals around my practice should in fact be longer term in the future.

Coming back to the influences that lead to successful continuation in my context. I think that there is support for change from the top (principal etc.) and within my team, but teachers in my school seem to feel very time poor. Whether this is perceived or real is a good question, as clearly, I found the time to write this thesis and undertake change. Perhaps to,

coming back to the influences that lead to successful continuation in my context. I think that there is support for change from the top (principal etc.) and within my team, but teachers in my school seem to feel very time poor. Whether this is perceived or real is a good question, as clearly, I found the time to write this thesis and undertake change. Perhaps to, the culture required for change innovation is not present yet either. We, as a school, have only recently taken on professional practice groups and within these we have quite structured tasks and activities to undertake, rather than freedom to discuss the big issues that we face as educators in our institution. Change requires creativity of thought and some level of disobedience or desire to change the refined social system from within (Ing, 2017). As a consequence, I know that it will always be hard for me to broaden the scope of my change from my classroom until I manage to collaborate with others in such a way that their beliefs have been altered.

**Semi-Structured Interview Data**

For Cynthia a new principal took charge of the school which led to the innovation being halted in the end. Just like in Fullan’s (2016) research a principal has a large effect on the
continuation of any innovation project. For Cynthia you could tell this was somewhat heart-breaking, as she had given so much time to making her innovation work and then it wasn’t continued. Cynthia gives the following advice to any educator who wishes to undertake a new innovation: “Trust and be brave. Make sure you are clear on why you are doing the change, if you can’t articulate that then you are not ready. You don’t need to know all the answers before you begin. Start with a trial yourself, but don’t go it alone include others as it is easy to go off track and get bogged down in detail.”

Both Chloe and Coral are on study leave, so they will find out when they go back how or if their projects have survived. To some extent this did not bother either of them as they were quite happy to admit that they enjoyed constant innovation.

Coral gives the following advice to an educator on the precipice of change: “Implementing new pedagogy is much more fun if you choose who you work with. People who are also passionate about it as then it won’t feel quite so much like extra work. Make sure that it feels real and authentic as this makes it easier too.”

Chloe shared that: “You don’t have to reinvent the wheel. There are lots of people including me that are happy to help and/or share resources. Don’t worry if it doesn’t go well, the kids will laugh with you and that is a positive thing as you will all learn together.”

Summing up continuation requires that beliefs about practice have been changed and that the project that you started with may not in fact be the one you ended up with and that’s ok. For me as Ing (2017) describes his views on being a change agent, you need to get people to think that what you are saying is worthwhile in order for them to follow your leadership in change. So, the challenge for me, if I want to create broader change is to find others who might think and feel about changing pedagogy as I do and then together we may be able to establish longer term change.

**Conclusion**

In conclusion it has been shown that there are many challenges and lessons that can be learned during the process of change. Change implementation is said to be context specific and so the more narrative that is gained from varying contexts and roles within an institution the greater the data set that can be gained. Continuation of change even when the change has been shown to work to a high level, is equally challenging as it requires new members of the community to take on and champion the change, especially if the original member who
initiated the change has left. Finally, the data highlights that all change during all phases, takes time and having the space in one’s day to allow for the change to take place needs to happen in order for a change to be successful.
Chapter Six: Discussion and Recommendations

Conclusions

“The change of human beings is far more influential and profound than the change of systems, and I settle for this because it is deeper. Knowing how systems operate is important, but at the heart of reform lies something stronger and more precious. It is non-heroic, enabling and optimistic. It works like a virus. It infects with hope and it supports people’s ability to transform the world in which they operate.” (Ing, 2017, p. 2078)

Initiation

Fullan (2016) says there are seven factors that are linked to the initiation phase of a change innovation:

1. Existence and quality of innovations
2. Access to innovation
3. Advocacy from central administration
4. Teacher advocacy
5. External change agents
6. Community pressure/support/apathy
7. New policy - funds

During the initiation phase I was new to the school, new to the students and taking on a new job. I think it is very interesting to note that I really got very little feedback when I posted in an online chemistry teachers forum on Facebook. There could be many reasons for this of course, but how are teachers supposed to collaborate, in this modern age, if not in these places? Given that the bulk of the discussions occurring there that are highly commented on are curriculum- and assessment-based, why are these things more important or more discussed than changing pedagogy? It would be highly useful in the future for more research to be put into ways to encourage collaboration relating to practice. Fullan (2016) notes that it is crucially important that teachers spend time collaborating with their colleagues in an open
way, however creating time for that in a very busy school calendar year is challenging yet it is sorely needed in the future to ensure successful change implementation. If I had not done this stakeholder engagement though I would have found the process even harder as I was new to the school, I knew very little about how the school functioned. Along with consulting my stakeholders to a greater degree, it would have been beneficial to talk more to my class. I think my project would have been substantially more successful and I would have had greater student engagement with it, had I consulted the class I was focusing on more, during the initiation phase (and probably later on also). Chloe in her implementation in a horticulture classroom said that really knowing her students, giving them ownership and consulting her community were all key starting points for her for her implementation.

Fullan (2016) highlights that planning is important, but taking action is really when changes to thinking occur and also changes to beliefs and practice, so perhaps this was more my perception than the reality of the situation. In my case, writing and getting a proposal approved by Unitec and my principal, did help with this process, as I was forced to write down what it was that I was planning and why. I really had to think in depth, about what would be worth going through that process for. For Cynthia she started with a small group of people that she collaborated with and then allowed time and space for people within the school to meet, and this helped make her implementation successful.

The initiation period highlighted that many teachers I spoke with feared change, due to the potential negative feedback they perceived they would get from parents in the community. Perhaps some of this fear could have been mitigated through more teachers becoming researchers, as for Coral further education prompted her to make a change to her practice. In order for change to occur and for it to be meaningful some discomfort must be felt (Fullan, 2016), but if educators fear change, no change can occur, so finding ways that the fear can be minimised would be an excellent starting point for further research. Fullan (2016) does highlight though that the community plays a strong hand in the success or failure of an innovation. “...when some of the main combinations are examined, we can make sense of the paradox that some communities support innovation, others block it, most are apathetic, and even more are all of those things at one time or another” (Fullan, 2016, p. 64). Ings (2017) highlights the importance of being trusted by the community and by leaders in that community, that what you are doing is for the best, that you as an educator knows what you are doing.
Initiation is often the starting and end point of change for many new innovations, as schools often adopt superficial changes rather than create new beliefs and cultures around their practice (Cuban, 2013 & Elmore, 2004). Cynthia noted that in her school to change the culture they incorporated these new beliefs in practice into all aspects of the school from staff meetings to school goals. In her case though she was an associate principal so was leading from the top, at a teacher level this kind of change would be difficult to succeed. Teacher-led initiation often fails to reach senior leadership teams within a school and so often it does not progress as a consequence (Fullan, 2016). Not all of the factors played a part in my or my three interviewees initiations that Fullan (2016) identified as they were not applicable to our specific situations.

Implementation

“To put it positively, the more factors supporting implementation, the more change in practice will be accomplished.” (Fullan, 2016, p. 68)

There are four characteristics required in implementation as outlined by Fullan (2016) and I am going to split this section up based on this. The four sections are (1) need, (2) clarity, (3) complexity and (4) quality practicality of the project. Along with this there are also local characteristics such as the principal, community and teacher. The external factors of the government and other agencies also weigh in our making change successful. As my project was a teacher-led situation as was two out of the three educators, there was less discussion of these local and external factors, however both definitely apply to all situations relating to change and so are mentioned.

Need

Starting with need, this was largely identified to me by my stakeholders as being new to the school, I was also new to understanding the issues that the students faced. Whilst to them this might have been the most important problem in the school, my students who participated in the project may feel that there was something else more important. There are always many needs in a school at any one time and ultimately did I choose the most pressing need or should I have spent more time thinking through and discussing more with my stakeholders what the pressing issues were. Fullan (2016) notes the importance of ensuring that the need that is being addressed is of sufficient priority. Datnow and Castellano (2000) summarises how one school got off track with their need due to the fact that not enough critical inquiry took place prior to the implementation. In future I would like to
spend more time discussing with my classes prior to my changing my practice about what they think is their most pressing needs, rather than wholly coming up with ideas for them. That way I am certain some of my student disengagement could be reduced as they would feel that they are being listened to and that their needs are being met. Fullan (2016) points out that often need only really becomes clear during the implementation process, so it is important for advocates of change to not lose hope of change or stop an innovation before they have seen it to its full progression.

Two of the three educators came to change due to student disengagement and trying to ensure they met their needs. The third came upon the change due to further study, however both the other two mentioned the concept of further study and research. This shows the benefit of teachers being given the opportunity to grow their understanding of teaching pedagogy through higher education and how this often is the impetus of change. Having teachers take a more active part in research around education might be an important place to start innovation within a school from the ground up.

Clarity

“Even when there is agreement that some kind of change is needed, as when teachers want to improve some area of the curriculum or improve the school as a whole, the adopted change may not be all that clear about what teachers should do differently.” (Fullan, 2016, p. 70)

Once the need was identified I found my potential solution in learner profiles. As with all new solutions in teaching though, much time needs to be spent trialling, refining and reading more widely on the subject (Fullan, 2016). Eventually I found some research on learner profiles and personalised learning, but much of it is vague on the details of how it can be implemented. Equally a lot of it was related to whole-school implementation or in primary education, neither of which applied to my situation, making it more challenging. Again, potentially another solution in my context might have been the answer. Leifer and associates (1971) highlight in their research on implementation how few educators can actually verbalise the change that they are undertaking. Fullan (2016) notes, and I did as well in my journal, that when you make a change to your practice that you are often looking for the right answer, using the right method. But as with anything there is no ‘right’ answer and in every context the solution will look slightly different. Overall, had I had more time with this project, both thinking time for the planning and actioning and actual time with the class, for example
had I started from Term 1 with this project, by the end of the year I would have gone through many iterations and got to a better answer of whether or not it worked as a potential solution.

The job of a teacher has radically been redefined in recent years with far more demands on a teacher’s time than there ever was before - emails, fundraisers, planning, marking, pastoral care, teaching, technology and forward thinking (Fullan, 2016). This has been excellent in some ways and has allowed courses such as Unitec’s Mindlab to flourish as teachers desperately try to implement and understand how to better meet the needs of young people today, it has also meant though that teaching has become a very demanding job. This being said, one of the largest challenges myself or any other educator who attempts to study part-time whilst working as a full-time teacher faces is that perhaps at times something missed out on my full attention. At times this was this thesis but at other times this was my teaching classes and some of my external roles and responsibilities within the schools I worked for during this time period. Teachers often change their practice only to a superficial level, rather than taking on or challenging their beliefs (Fullan, 2016).

Another large challenge that I faced was that of making sure this was a rigorous study but also had at its core actual teacher voice about change. There is still so little research being done of teachers as researchers, so I felt this voice was a crucial aspect to my thesis. Teachers often feel particularly with change initiatives that we are being told by “non-teachers” what to do and how a change in the classroom can be made. This leaves many of us frustrated but also means many innovations fail, as we do not have the ‘shared vision’ that Fullan (2016) states is crucial to the success or failure of a project.

Finally, as I changed schools halfway through the project, there was a lot I was still learning about my new context and the key stakeholders in it, that have made my study at times feel disjointed. Every school is its own ecological system, that has its idiosyncrasies, and every context has its challenges. Equally as it was all so new, finding collaborators within the school was not easy and so I perhaps did not extend my thinking as much as I would have done, had I stayed in the one place. If it was not for my Unitec studies, supervisors and other students in the master’s program, I feel I would have been too isolated to create any change. The research really helped clarify what it is to change and how it can be done. In some ways though, having diverse experiences in schools, has allowed me to see things differently than if I had stayed in one place and so has benefitted my understanding of educational change as a whole. It has also meant that I now know a lot more about my new school, a process that usually takes a few years into being in a place to discover.

Cynthia related in her educational context, that it was hard to accomplish shared meaning with all her participants, but she achieved this through developing worked examples of how
her innovation had been implemented by colleagues. Chloe shared that she developed her clarity through a blog, so that she could collaborate her ideas with others. For Coral fronting up with research and identifying the problem she was hoping to address in her implementation helped gain clarity for colleagues who weren’t as engaged with the process. Ultimately clarity is a challenge that all advocates for change face and there were no shortcuts identified but the more collaboration and discussion occurs with colleagues the better the outcome.

**Complexity**

“...ambitious projects were less successful in absolute terms of the percent of the project goals achieved, but they typically stimulated more teacher change than projects attempting less...” (McLaughlin, 1977, pp.88)

As a general rule, the more complex the innovation the more a teacher engages with it, but obviously the harder it is to achieve. With time and many revisions, I am certain I can get learner profiles to be more successful in my context and along with this see if it is a potential solution to the need I identified. This could be part of an ongoing inquiry for me at my school, for my appraisal. However, like the other educators I interviewed, is this the right way going forward for true innovation? As being linked to appraisal, I may wish to hide my failures, through fear of reproach and without failures will I actually grow in my practice? To my thinking perhaps the teaching profession needs to re-evaluate whether appraisal and teacher inquiry should be linked or if we continue to link the two a cultural shift of failure being a learning experience so we should all share in it, might need to be implemented. This cultural shift has been attempted in my school, since the new appraisal system was introduced last year, but obviously with all beliefs and cultures it takes time to alter them. Coral also highlighted the need to unlink appraisal with innovation, as it was not a good measure of success for teachers. Cynthia highlighted that ERO (Education Review Office) and school charters and strategic plans look for improvements in results but was that a fair measure of success and will that corroborate true innovation in the classroom. Overall Implementations are meant to be confronting and difficult if it is not then perhaps you are not really changing anything (Fullan, 2016).

**Quality of the program**

The question of quality and practicality are both difficult concepts to define; what makes one innovation of a higher quality than another and what one teacher finds to be practical another may not. Fullan (2016) makes the point that quality takes time and when innovations
are rushed, the quality can suffer as the resources are often insufficient. This was highlighted when one of my colleagues said that she hoped my project would be unsuccessful as she did not think she could handle the extra workload that it would create. Equally, quality relates to many varying parts of the implementation of an innovation, the resources used, the nature of the innovation, the teacher practice and the quality of instruction from the research on it. I hope that with revisions and more time spent actioning my project, I will come up with a quality and practicable project, but I am aware that I am not there yet.

Continuation

Fullan (2016) notes that common factors that influence whether continuation occurs are: lack of interest, funds, staff support, change in staff, the principal and professional development. Huberman and Miles (1984) outline the following steps for successful continuation: (1) the innovation gets embedded into practice and into the institution, (2) a critical mass of staff within the institution have taken an interest in the change, (3) continued assistance is provided to those teachers who wish to be involved. To ensure that my thinking and actioning about this innovation progresses, I need to find some collaborators, either from within my school or from elsewhere (e.g. through social media or conferences). At the moment I feel I am a bit of a ‘lone nut’, but real change never occurs and is sustained if you do not feel challenged by anyone else. Now that I have finished my research project and am no longer under so many restrictions some frank discussions with my classes on how they feel I could improve my teaching of them would be an excellent place to start. I felt that I needed to have shared meaning and, in my case, this perhaps wasn’t the case with the students, so in order to continue this innovation to my practice, I need to communicate to a greater extent with them. Fullan (2016) notes that many innovators focus far too much on the innovation itself rather than the actual context they are in and what the specific issues surrounding that context are, so I need to have a further look into this, in order to really understand both the nature of the problem and any other potential solutions.

Marris (1975) makes the case that all real change involves loss, anxiety and struggle. I have certainly felt a little of all of these during the process and these emotions do make change hard. With practice at changing and more time spent within the school this should lessen which will help make the changing feel easier. I do want to point out here though, that contrary to the fear exhibited by my stakeholders about change, I actually received no negative feedback from the parents during my study. That fear was not distinct to my current school either, I also found it when I had talked to my stakeholders at my previous school.
In my three educators’ contexts there were some similarities between their beliefs around the continuation of their projects. Coral and Chloe both successfully led innovations in their classrooms, but as both were teacher-led, these projects were entirely dependent on their continuing of the new practices. Their projects were not widely spread beyond their contexts. I think it is important that teachers share their innovations more, perhaps to start with in their communities but beyond that wider sharing within New Zealand would help broaden the scope of their innovations.

For Cynthia unfortunately, the change in principal just strengthens Fullan’s (2016) view that a change in principal was often the downfall of many innovations. However, in saying that she still felt that the project was successful as many educators’ views around what was possible with innovations had been changed.

Limitations

One of the biggest challenges and limitations was finding my collaborators and going forwards that is probably my number one goal in order to improve my understanding further. Going to conferences and linking with other educators and getting in to debates and chats on Twitter and Facebook communities might be the best way of progressing my ideas, if I still cannot find anyone within my workplace. I will miss in some ways the influence of the master’s program on my practice, as it has really helped me refine and review my teaching pedagogy. Generally, the problem with bottom-up innovations is that the ideas often do not get through to the authority structure, so finding ways for me to share my thinking and ideas at my school will equally be important. Change does need to start at the individual level but once it happens on an organisational level then there is the support necessary and the right conditions for the change to carry onwards. This is going to be challenging for me in my school, as I have no say over what happens in the school going forwards, as I am just a teacher.

The limitation of time was a factor and ultimately that is the restriction with any research thesis, however now that I am finished with that, I will have more time to get back to it. Fullan (2016) estimates that on average, the implementation process should take two years, a time frame I did not have. As a result, from the classroom pressures, teachers have short-term perspectives, they are isolated from other adults, especially meaningful interactions with colleagues, it exhausts their energies and it limits their opportunities for sustained reflection.
(Huberman, 1983). Therefore overall, there was only limited time for me to reflect on my findings, in future studies it would be beneficial if they were undertaken over longer time frames to allow for this. I did this in Term Three of a school year and the timing of the actual implementation was also a factor based on getting approval for my thesis project, but it is not the most ideal time to start a new teaching pedagogy as the students and the teacher have already established routines and expectations by this point, making it much harder to change. This led to some pretty poor numbers of my students who completed the engagement surveys. The students’ poor engagement overall in the project makes it hard to see if it was a success or a failure. Equally, the reflection process is still on going, as it needs time to be achieved.

Finally, and this is perhaps why Fullan (2016) notes that teacher-led change is rarely successful, there is very little opportunity as a classroom practitioner to make any meaningful change with the curriculum and assessments given. It would make such a difference if more information could be feedback from the bottom of a system up to the top, as up the top there is very little understanding of what a teacher faces from day to day in the classroom. Student disengagement in the current system is a global problem (Fullan, 2016) and it is one, which needs many minds thinking about solutions, not just a few who are not teachers, who make assumptions about what classroom life is like. Currently this is a limitation with the education system and would be difficult to address. Ings (2017), however shares a different view, “If you want to alter the conditions around you, you have to learn to work with people, and you need to have people who love you” (p 135). His belief is that change is possible but we have to be disobedient, not follow the rules entirely, but ensure that someone else will back us up if needed (Ings, 2017).

Recommendations

Change is a constant, both in life and in education. Many people believe that we are on the cusp of huge change due to the growing use and function of technology in today’s society (Rose, 2016). So, one thing we can all agree on that the changes that are coming are going to be large ones and if they are not, we can be sure that both student and teacher engagement within schools will continue to decline. I have found that making a change from the teacher’s side is not a simple answer to this problem, unless that teacher then collaborates and shares with others, particularly their students. Being told to change from a
person in a higher position within a school has also been found not to work, as there is a lack of clear understanding of the purpose of the change from all angles. Therefore, Fullan (2016) recommends professional learning communities (PLCs) that work across the school as the way forward, as they encourage discussion among teachers about the issues that face that particular community. Along with this, a cultural shift needs to occur that encourages de-privatisation of ideas from teachers, so that they do not fear recrimination for any failure, perceived or otherwise. Having worked in three schools now, all with professional learning communities, from my own opinion I have found that they can be successful if the community is set up based on shared interests. Currently at my school, it is based by random assignment, which is good in the sense that you talk with people you would not otherwise perhaps, but I feel there is an overall lack of sharing and conflict within the group as we all have unique interests. In another school, it was based on departments - possibly the easiest and most comfortable fit for most secondary teachers, although often this maintains status quo within a department and puts more pressure on the head of the department to ensure change is made. Alternatively, as in one school, I worked in, allow choice, let the teachers decide whom they wish to work with, and based on common interests. This will allow the time and space to work together on the big issues as they see them as a collective rather than as an individual. The conflict that happens occurs based on trying to come up with potential solutions and the teachers feel invested in it as they have made a choice as to who they work with and the inquiry they have decided on together.

Ultimately, in my current school, this practice is still new and it will take a while for beliefs and culture within the school to shift to one where constructive collaboration occurs in these groups. Kruse et al (1995) note that there are five critical elements to successful PLCs: reflective dialogue, de-privatisation of practice, collective focus on student learning, collaboration, and shared norms and values. It matters less about who introduces an idea, what matters most is that it is of high quality and this is why having a collective come up with changes, can have a greater impact (Kruse et al, 1995).

Another point that was raised both in Fullan’s work (2016) and from my other educators that I interviewed is that of linking teacher inquiry to appraisal. My current school is certainly not alone in this practice, but really in order for true change to occur and for teachers to feel safe to make a change they need to feel confident that they can fail and that it will not affect their performance in the eyes of their managers. Whilst this is the goal of the Education Council in New Zealand that inquiries are meant to show failure, the reality is that in most schools’ teachers do not feel safe and so do not want to risk failure. This will involve a cultural shift in thinking amongst both teachers and middle managers within a school, as it will challenge
their beliefs, which requires cognitive conflict in order for it to occur. Ultimately, we as educators are all trying to say to students that it is ok to fail and being successful doesn’t involve being right, but then we ourselves fear our failures.

Overall, we often do not know what we want or the consequences of our actions until we try to get there. A common misconception is that there is a right way to do things in education based on someone else’s research. This approach is called the fidelity perspective, however in reality the context makes this quite different, it is so hard for all people involved to have a shared vision, meaning of what it should look like this is called the mutual adaptation approach, and it is the way forward to encourage growth and development (Fullan, 2016). Change ultimately comes down to motivation and then spreading that change means you need to help others to find their motivation. As we, all know from experience, finding our own motivation is challenging - let alone trying to get somebody else motivated. The key is, we need to start to acquire some new beliefs around what that change will look and feel like in our minds. Once the beliefs come that change is necessary, the motivation becomes far easier to find. Then comes a change in our behaviours and it is through the doing of change that, we start to feel that the change is both useful and worthwhile.

Effective change processes take an idea and continually evolve it to fit the context; this ensures ownership of it by the individuals undertaking the change. That being said, I now need to also share my results in order to find some collaborators so that I can move my ideas forward, make the change deeper and give it a broader scope. After all, it is important to realise that we are the system and that our actions affect the whole, each of us contribute for the betterment of the whole system. “...our powerlessness is an illusion. Change is possible and ordinary people achieve it. People like you” (Ings, 2017, p. 141).

The Wider Implications

Through sharing my results, I hope other educators can be more open to changing their practice and feel that it is okay for them to fail, and to try new things, for the benefit of their students. Timperley (2011) explains that change is promoted best through changing the mindset of a teacher away from privatisation to one of teaching as inquiry and this will take time and a huge mind shift across the profession before change as a constant can take hold. Teachers need to take the time also to talk with other teachers from varying contexts as well as their own, about what they are doing to be successful with their students. This means a
radical rethink of traditional professional development days where one person talks to a whole room full of educators about their particular teaching practice of choice. This practice may not be effective, as it allows no time for the person sitting there to be challenged in their thinking and also, they struggle later to find meaning in the talk as they get so inundated with other things as part of the busy life of a teacher and so never take in a shared meaning with the instructor. Instead, educators need collaboration time to think on, discuss the big problems within their community, think through together some possible solutions, trial them, and then meet again to see if there has been any improvement. Then perhaps some time spent outside the school talking with other educators about how they are getting along with their big issues in their contexts.

To date there is little evidence that the lives of the disadvantaged have been altered for the better through educational reform (Fullan, 2016). So is not it about time we made an effort to change for all our students.
References


Appendices

Appendix A - Stakeholder Interview Questions

Tell me about the school's PD and goals?

How relevant do you think the project is to our school?

I was going to do this with a Year 12 NCEA Chemistry class as I felt they were at the greatest risk of becoming disengaged at my previous school, is the same here? Is there a group you think would be better?

Do you think this will have an impact?

Do you think there is anyone else I should talk to?

Do you have any evidence to support or against this idea?

What risks do you think I could potentially come up against?

I also made a post on the New Zealand Chemistry teacher Facebook group. The post was “Have you tried to make the learning in your chemistry classroom more personalised? If so can you give me some examples of how you have achieved this? Any successes or failures? Any comments no matter how short would be much appreciated”. 
Appendix B - My Reflection Questions

1. Which current practices can I abandon to make room for new patterns in my work?
2. What can I do to help students learn more in the limited amount of time we have together?
3. Who are my students? What do they want?
4. Who am I? What do I have to offer? What historical and cultural lenses frame my teaching?
5. How can I force myself out of my comfort zones and preferred cognitive style?
6. How do I seek new opportunities for learning?

(Nova Scotia Teachers Union, 2003)
Appendix C - Semi-Structured Interview Questions

1. What is your position within the school?
2. Tell me about your education career to date.
3. Have you tried to implement new pedagogy in your teaching practice or have you initiated others to implement a new pedagogy?
4. Was it successful in your view or not successful?
5. What steps did you undertake in order to carry out the implementation?
6. What made it successful or not successful?
7. What barriers did you face when implementing this strategy?
8. What advice would you give another teacher when implementing new teaching pedagogy?
9. If you were to implement a new teaching pedagogy what information would you need or like to know before you began?
Appendix D - Information Sheet for Participants

Information for participants - Educator

Research Project Title  Personalised Learning in a Chemistry Classroom: A Case Study in Implementing Pedagogy Change

Synopsis of project

What we are doing  I am hoping to make a change to my teaching practice by introducing learning profiles to my year 12 (level 2 NCEA) Chemistry students and then personalise their learning from this information, so I can see if it will make an impact on my students’ ability to reach their goals. As part of this I would like to interview other educators to find out how they have found implementing a new pedagogy within their school in order to broaden my research findings to all educators.

What it will mean for you

As a participant of this study you will be interviewed about a change in pedagogy that you have undertaken.

If you agree to participate, you will be asked to sign a consent form. This does not stop you from changing your mind if you wish to withdraw from the project. However, because of our schedule, any withdrawals must be done within 2 weeks after we have interviewed you.

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

Please contact the researcher (Deborah Hay) if you need more information about the project. At any time if you have any concerns about the research project you can contact my research supervisor:
My supervisor is Dr Kaili Zhang, phone 815-4321 ext. 7289 or email kzhang@unitec.ac.nz

**UREC REGISTRATION NUMBER: 2017-1036**
This study has been approved by the UNITEC Research Ethics Committee from **19 July 2017 to 19 July 2018**. If you have any complaints or reservations about the ethical conduct of this research, you may contact the Committee through the UREC Secretary (ph: 09 815-4321 ext 8551). Any issues you raise will be treated in confidence and investigated fully, and you will be informed of the outcome.
Appendix E - Participant Consent Form Educator

**Research Project Title:** Personalised Learning in a Chemistry Classroom: A Case Study in Implementing Pedagogy Change

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

I understand that I do not have to be part of this research project should I choose not to participate and may withdraw at any time prior to the completion of the research project.

I understand that everything I say is confidential and none of the information I give will identify me and that the only persons who will know what I have said will be the researcher and their supervisor. I also understand that all the information that I give will be stored securely on a computer at Unitec for a period of 10 years.

I understand that my discussion with the researcher will be taped and transcribed.

I understand that I can see the finished research document.

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

**Participant Name:** ........................................................................................................................................

**Participant Signature:** ...................... **Date:** ......................................................

**Project Researcher:** ............................. **Date:** ......................................................
UREC REGISTRATION NUMBER: 2017-1036

This study has been approved by the UNITEC Research Ethics Committee from 19 July 2017 to 19 July 2018. If you have any complaints or reservations about the ethical conduct of this research, you may contact the Committee through the UREC Secretary (ph: 09 815-4321 ext 8551). Any issues you raise will be treated in confidence and investigated fully, and you will be informed of the outcome.

Research Project Title: Personalised Learning in a Chemistry Classroom: A Case Study in Implementing Pedagogy Change

Participant’s Name:

Phone number:

Email:

I ___________________________________________________ (full name - please print)

Agree to treat in absolute confidence, all information that I become aware of during the course of participation in the above research project. I agree to respect the privacy of those involved and will not divulge in any form, information with regard to any participating person or institution and agree to not retain or copy any information involving the above project.

I am aware that I can be held legally liable for any breach of this confidentiality agreement and for any harm incurred by individuals or organisations involved, should information be disclosed.

Signature: ........................................................ Date: .............................................

UREC REGISTRATION NUMBER: 2017-1036

This study has been approved by the UNITEC Research Ethics Committee from 19 July 2017 to 19 July 2018. If you have any complaints or reservations about the ethical conduct of this research, you may contact the Committee through the UREC Secretary (ph: 09 815-4321 ext 8551). Any issues you raise will be treated in confidence and investigated fully, and you will be informed of the outcome.

Print Name
Appendix F - Communication with Students re: my change innovation project

Hello Girls,

Miss Hay is undertaking some research in your class as part of her Masters of Applied Practice that she is undertaking at Unitec. As part of this you will create a learner profile with your teacher and use it to help your teacher to personalise your learning. You will also undergo two surveys on your engagement in class before and after the learner profile introduction and the unit of work.

If you agree to participate, you and your parent/guardian will be asked to sign a consent form (attached) by **Wednesday 9th August and either email or hand it in to Miss Hay.** This does not stop you from changing your mind if you wish to withdraw from the project. Your parent/guardian can also ask for you to be withdrawn. However, because of our schedule, any withdrawals must be done within 2 weeks after we have finished the unit of work on chemical reactivity.

Your name and any information that may identify you will be kept completely confidential. All information collected from you will be stored on a password protected file and only the researcher and their supervisors will have access to this information. This information can be made available to you as well, on request.

Please contact Miss Hay the researcher if you need more information about the project. At any time, if you have any concerns about the research project you can contact her supervisor:

Her supervisor is Dr Kaili Zhang, phone 815-4321 ext. 7289 or email kzhang@unitec.ac.nz
Appendix G - Communication with Parents re: my change innovation project

Hello Mr and Mrs.,

Miss Hay your daughter’s Chemistry teacher is hoping to undertake some research in your daughter’s class as part of her research for her Masters of Applied Practice that she is undertaking at Unitec. As a participant’s parent of this study your child will take part in a change of teaching practice in their Chemistry classroom. As part of this your child will create a learner profile and use it to help their teacher to personalise their learning. Your child will also undergo two surveys on their engagement in class before and after the learner profile introduction and the unit of work.

If you agree to participate, you and your child will be asked to sign a consent form (attached) by Wednesday 9th August and either email or hand it in to Miss Hay. This does not stop your child from changing their mind if they or you wish them to withdraw from the project. However, because of our schedule, any withdrawals must be done within 2 weeks after we have finished the unit of work on chemical reactivity.

Your name and any information that may identify your child will be kept completely confidential. All information collected from your child will be stored on a password protected file and only, myself as the researcher and my supervisors will have access to this information. You or your child may request a copy of information held.

Please contact me (Deborah Hay the researcher) if you need more information about the project. At any time, if you have any concerns about the research project you can contact my supervisor:

My supervisor is Dr Kaili Zhang, phone 815-4321 ext. 7289 or email kzhang@unitec.ac.nz
Appendix H - Student and Parent Consent Forms

Information for participants - Student

Research Project Title Personalised Learning in a Chemistry Classroom: A Case Study in Implementing Pedagogy Change

Synopsis of project

What we are doing we are hoping to make a change to teaching practice by introducing learning profiles to some year 12 (Level 2 NCEA) Chemistry students and then personalise their learning from this information, so we can see if it will make an impact on these student’s ability to reach their goals.

What it will mean for you

As a participant of this study you will take part in a change of teaching practice in your Chemistry classroom. As part of this you will create a learner profile with your teacher and use it to help your teacher to personalise your learning. You will also undergo two surveys on your engagement in class before and after the learner profile introduction and the unit of work.

If you agree to participate, you and your parent/guardian will be asked to sign a consent form. This does not stop you from changing your mind if you wish to withdraw from the project. Your parent/guardian can also ask for you to be withdrawn. However, because of our schedule, any withdrawals must be done within 2 weeks after we have finished the unit of work on chemical reactivity.

Your name and any information that may identify you will be kept completely confidential. All information collected from you will be stored on a password protected file and only the researcher and
their supervisors will have access to this information. This information can be made available to you as
well, on request.

Please contact me (Deborah Hay the researcher) if you need more information about the project. At any
time, if you have any concerns about the research project you can contact my supervisor:

My supervisor is Dr Kaili Zhang, phone 815-4321 ext. 7289 or email kzhang@unitec.ac.nz

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2018*. If you have any complaints or reservations about the ethical conduct of this research, you may
contact the Committee through the UREC Secretary (ph: 09 815-4321 ext 8551). Any issues you raise will
be treated in confidence and investigated fully, and you will be informed of the outcome.
Participant Consent Form Student

Research Project Title: Personalised Learning in a Chemistry Classroom: A Case Study in Implementing Pedagogy Change

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

I understand that I do not have to be part of this research project if I change my mind and no longer wish to participate, I may withdraw at any time prior to the completion of the research project. I understand I will not be disadvantaged in any way if I choose not to participate in the research.

I understand that everything I say is confidential and none of the information I give will identify me and that the only persons who will know what I have said will be the researcher and their supervisor. I also understand that all the information that I give will be stored securely on a computer at Unitec for a period of 10 years.

I understand that I can see the finished research document.

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

Participant Name: ........................................................................................................

Participant Signature: ...................... Date: ................................

Project Researcher: .................. Date: ................................
UREC REGISTRATION NUMBER: 2017-1036

This study has been approved by the UNITEC Research Ethics Committee from 19 July 2017 to 19 July 2018. If you have any complaints or reservations about the ethical conduct of this research, you may contact the Committee through the UREC Secretary (ph: 09 815-4321 ext 8551). Any issues you raise will be treated in confidence and investigated fully, and you will be informed of the outcome.

Student Confidentiality Agreement

Research Project Title: Personalised Learning in a Chemistry Classroom: A Case Study in Implementing Pedagogy Change

Participant’s Name:

Phone number:

Email:

I ___________________________________________________ (full name - please print)

Agree to treat in absolute confidence, all information that I become aware of during the course of participation in the above research project. I agree to respect the privacy of those involved and will not divulge in any form, information with regard to any participating person or institution and agree to not retain or copy any information involving the above project.

I am aware that I can be held legally liable for any breach of this confidentiality agreement and for any harm incurred by individuals or organisations involved, should information be disclosed.

Signature: ................................................................. Date: ...............................................................
This study has been approved by the UNITEC Research Ethics Committee from 19 July 2017 to 19 July 2018. If you have any complaints or reservations about the ethical conduct of this research, you may contact the Committee through the UREC Secretary (ph: 09 815-4321 ext 8551). Any issues you raise will be treated in confidence and investigated fully, and you will be informed of the outcome.

Print Name
Appendix I - Classroom Innovation Tools

Student Engagement Survey for Learner Profiles

A 5 point Likert scale to the following statements (1 very unlike me; 5 very like me)
Based on UTRECHT WORK ENGAGEMENT SCALE FOR STUDENTS (UWES-S)

Professional Efficacy

1. I can effectively solve the problems that arise in my Chemistry studies.
2. I believe that I make an effective contribution to the Chemistry classes that I attend.
3. In my opinion, I am a good Chemistry student.
4. I feel stimulated when I achieve my Chemistry study goals.
5. I have learned many interesting things during the course of my Chemistry studies.
6. During Chemistry class I feel confident that I am effective in getting things done.

Dedication

1. I find my Chemistry studies to be full of meaning and purpose.
2. My Chemistry studies inspire me.
3. I am enthusiastic about my Chemistry studies.
4. I am proud of my Chemistry studies.
5. I find my Chemistry studies challenging.

Absorption

1. Time flies when I’m studying Chemistry.
2. When I am studying Chemistry, I forget everything else around me.
3. I feel happy when I am studying Chemistry intensively.
4. I can be carried away by my Chemistry studies.

Agentic Engagement

1. I let my teacher know what I need and want.
2. I let my teacher know what I am interested in.
3. During this class, I express my preferences and opinions.
4. During class, I ask questions to help me learn.
5. When I need something in class, I'll ask the teacher for it.
6. I adjust whatever we are learning so I can learn as much as possible.
7. I try to make whatever we are learning as interesting as possible.

Emotional Engagement

1. When we work on something in this class, I feel interested.
2. This class is fun.
3. I enjoy learning new things in this class.
4. When I'm in this class, I feel good.
5. When we work on something in this class, I get involved.


Learning Styles Questionnaire for Learner Profiles

1. When I study for this class, I practice saying the material to myself over and over.
2. When studying for this class, I read my class notes and the course readings over and over again.
3. I memorize key words to remind me of important concepts in this class.
4. I make lists of important terms for this course and memorize the lists.
5. I make simple charts, diagrams, or tables to help me organize course material.
6. When I study for this course, I go over my class notes and make an outline of important concepts.
7. If I get confused taking notes in class, I make sure I sort it out afterwards.
8. When studying for this course, I often try to explain the material to a classmate or a friend.
9. Even if I have trouble learning the material in this class, I try to do the work on my own, without help from anyone.
10. I ask the teacher to clarify concepts I don't understand well.

Learning styles questionnaire questions have been taken from:
Example of a Learner Profile

Interests – science, art
Future career choice – engineer, astronomer

Learning styles
1. When I study for this class, I practice saying the material to myself over and over. 1
2. When studying for this class, I read my class notes and the course readings over and over again. 3
3. I memorize key words to remind me of important concepts in this class. 3
4. I make lists of important terms for this course and memorize the lists. 3
5. I make simple charts, diagrams, or tables to help me organize course material. 3
6. When I study for this course, I go over my class notes and make an outline of important concepts. 5
7. If I get confused taking notes in class, I make sure I sort it out afterwards. 5
8. When studying for this course, I often try to explain the material to a classmate or a friend. 4
9. Even if I have trouble learning the material in this class, I try to do the work on my own, without help from anyone. 3
10. I ask the teacher to clarify concepts I don’t understand well. 5

2.6 – Demonstrate understanding of chemical reactivity - specific topic learning outcomes for students

Learning Outcomes
1. Explain using collision theory how the rate of a reaction can be changed by changing the concentration
2. Explain using collision theory how the rate of a reaction can be changed by adding a catalyst
3. Explain using collision theory how the rate of a reaction can be changed by changing the temperature
4. Explain using collision theory how the rate of a reaction can be changed by the
surface area
5 Explain how activation energy (EA) may be altered
6 Explain what a dynamic equilibrium is
7 Write equilibrium constant (Kc) expressions for given equilibria
8 Explain how the position of an equilibrium can be affected and the effect on Kc with a change in concentration of either a reactant or product
9 Explain how the position of an equilibrium can be affected and the effect on Kc with a change in temperature
10 Explain how the position of an equilibrium can be affected and the effect on Kc with the addition of a catalyst
11 Explain how the position of an equilibrium can be affected and the effect on Kc with a change in pressure
12 Calculate Kc or changes to concentration of reactants or products
13 Define an acid and a base in terms of proton transfer
14 Define a strong, weak, concentrated or dilute acid
15 Explain how different strengths or concentrations of acids may vary conductivity, pH and reactivity
16 Calculate the pH of a strong acid
17 Use Kw to calculate the concentration or pH of a strong base

Demonstrate and Practice your Knowledge on Rates of Reaction
Your first task is to review rates of reaction you have the choice of completing the following tasks to ensure you understand it thoroughly and then complete the mini test and get the teacher to check that you understand this concept thoroughly before moving on to equilibria:

1. Complete Bestchoice activities – Rates of reaction, reaction profile
2. Complete the activities set out in your learning workbook or the textbook, or in Mrs X notes
3. Write notes and present your findings in any way you choose based on the unit based on the learning outcomes on the previous page using an example that interests you most, you may choose an idea below or another idea:
   • Lady Dai mystery http://www.dailymail.co.uk/news/article-3989292/The-best-mummy-2-000-year-old-preserved-body-Lady-Dai-hair-soft-skin.html
   • Relate it to your interest of swimming pools (although this would relate more to equilibrium our next concept…)
As your learning styles survey suggest you learn through working with others you could maybe complete task 3 above with someone else. I would also recommend you put together an outline of key concepts based on rates of reaction.

MINI TEST 1

When potassium permanganate solution reacts with oxalic acid solution the reaction needs to be heated to get it started. Once the reaction gets going, heating is no longer necessary as one of the reaction products, Mn$^{2+}$ ions, acts as a catalyst.

(a) Explain, using collision theory, why heating the reaction mixture helps the reaction go faster.
(b) Describe another way that the rate of the reaction could be increased and give a reason for your answer.
(c) (i) Define the term catalyst.
(ii) Discuss the role of the catalyst in this reaction. Your discussion should use collision theory and include an explanation as to why heating is only required in the early stages of the reaction.
Declaration

Name of candidate: Deborah Marie Hay

This Thesis/Dissertation/Research is submitted in partial fulfillment for the requirements for the Unitec degree of ……………………masters of applied practice

Principal Supervisor: ___ Hayo Reinders _______________

Associate Supervisor/s: ____ Lisa Maurice-Takerei ____________

CANDIDATE'S DECLARATION

I confirm that:

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

Research Ethics Committee Approval Number:

Candidate Signature: ………….. Date: ……13/07/2018……

Student number: ………….1460951………………
Full name of author: ........Deborah Marie Hay..............

ORCID number (Optional): ..............................................

Full title of thesis/dissertation/research project (‘the work’):
Change implementation in teaching
........................................................................................................
........................................................................................................

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Principal Supervisor: Hayo Reinders

Associate Supervisor: Lisa Maurice-Takerei

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