Classroom Teachers' Perceptions on the Role of Non-verbal Communication when Teaching Mathematics to Pasifika Children

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DEDICATION

For the two most closest -

Boy Te Manu Rererangi Mauheni – my soul, my heart, my husband
(1953 – 2014)

and

Te Aroha Anderson Lemke – passionate, sincere, larger than life – my sister
(1959 – 2014)

Your undying love given and shown in so many ways

encouraged and supported my need to complete this journey

Ki toku hoa rangatira me taku teina.

Me noho tonu korua i te puahurutanga

o nga ringa atawhai

o to tatou ariki mo ake tonu atu.

Moe mai ra korua, moe mai ra …

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ATTESTATION OF AUTHORSHIP

I hereby declare that this submission is my own work and that, to the best of my knowledge and belief, it contains no material previously published or written by another person (except where explicitly defined in the acknowledgements), nor any material which, to a substantial extent, has been submitted for the award of any other degree or diploma of a university or other institution of higher learning.

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ABSTRACT

This study critically examines classroom teachers' perceptions of the use of non-verbal communication (NVC) by their Pasifika students during the teaching and learning of mathematics. Seven Year 5/6 classroom teachers from the primary school sector participated in this study. They were asked to discuss and reflect on what NVC meant to them when teaching mathematics to Pasifika children, while considering a raft of questions.

How classroom teachers incorporated NVC into their teaching and the benefits for Pasifika children will be discussed. The shared insights of the participants will form the substance of this research and the data obtained through: one-on-one interviews; observations and discussions by the participants of video clips after observing a teacher and his students during the teaching and learning of mathematics; and their reflective diaries.

This research contributes to increasing the effectiveness of teaching and learning experiences and outcomes for Pasifika children in the learning of mathematics in New Zealand primary schools. By working with teachers in a New Zealand context who teach in a school with a high percentage of Pasifika children in mainstream education settings, this research provides, through this collective research effort, some key benefits for Pasifika children and teachers engaged in the teaching and learning of mathematics.

PREFACE

Nō hea au? Where am I from?
Hē uri tēnei nō Te Popoto, kō Mokonui-ā-rangi te marae
Hē uri anō au nō Te Orewai, Ngāti Hine. Kō Tau Henare te marae
Kō ēnei hapu nō Ngāpuhi nui tonu.

I am a descendant of Te Popoto and Mokonui-ā-rangi is the marae I affiliate to. I am also a descendant of Te Orewai, Ngāti Hine, and Tau Henare is another marae I affiliate to; these are subtribes of Ngāpuhi.

To take ownership and responsibility for this research in context of the research topic, I consider it appropriate to share my tātai (genealogy), as every step of the way I was ever mindful of upholding ngā tikanga (cultural protocols) with my chosen participants. It was important that I adhered to the values of my cultural upbringing to ensure the processes were conducted sensitively and appropriately.

My initial interest in the body language of Pasifika children engaged in the teaching and learning in mathematics began in my first year as a beginning classroom teacher in the primary school sector. I recall, as an eager graduate, I had set myself goals and expectations that I wanted to achieve during that first year alongside the 34 children in my class. Even my very first teaching philosophy indicated that I intended to provide a learning environment where the world was their oyster and the skies were the limit. So, by nurturing the children's curiosity, I was going to extend their knowledge of the world around them. On reflection, my goals, expectations and philosophy changed quite drastically after that first year and became more succinct and realistic.

Although well planned language programmes and assessments across the learning areas were achieved quite successfully, while catering for the learning needs of the individuals in my class, the same could not be said for mathematics. I had become quite frustrated with the children's lack of understanding of mathematical concepts and would keep groups with me longer than usual to motivate them to identify and try strategies to solve the problems they were given. It was a three-term school year of 15 weeks in those days and, by the end of the second term, I was feeling quite burnt out. I remember saying to my tutor teacher (mentor) that I wanted to quit teaching as I no

longer felt I was effective because my children were not grasping the mathematical concepts I was teaching and I could not work out why. My tutor teacher had observed what was happening but did not intervene, allowing all this to occur. But once I sought her advice and guidance, she proceeded to demonstrate how best to meet the learning needs of the children. She explained later that she had identified the various forms of body language the children showed and, based on these observations, she modelled relevant pedagogical strategies and questioning techniques that kept the children motivated and engaged as they learnt new mathematical concepts. This was the turning point for me and the beginning of 'really' looking at how our children expressed their anxieties through their varying body poses, body positions, stances and facial expressions.

This research project will provide the opportunity for me to gauge whether other primary school teachers consider the body language of children important, particularly for Pasifika, when planning and teaching mathematics. Specifically, I wanted to interview teachers within the greater metropolitan of Auckland, New Zealand, where there was a high percentage of Pasifika children. They would need to be culturally aware of Pasifika children's learning styles, therefore, what culturally responsive pedagogies will they need to consider?

The term Aotearoa/New Zealand is used within this thesis and its use gives recognition to the promise of partnership between Māori and Pākehā created when Te Tiriti o Waitangi (The Treaty of Waitangi) was signed in 1840.

Throughout this thesis the term 'Māori' is used to describe the indigenous people of Aotearoa/New Zealand.

Maori words have not been italicized. A glossary of Maori words used in this thesis is included after the References. Macrons are used to denote the lengthened vowel. The quotes often do not have macrons and have, therefore, been left as in the original.

CHAPTER ONE

INTRODUCTION

This research will explore the implications for teachers of non-verbal communication (NVC) strategies used by Pasifika children during the learning and teaching of mathematics in primary schools in New Zealand. It is the objective of this research to:

- Identify teachers' awareness of this form of learning.
- Document teachers' responses to this strategy engaged by Pasifika children.
- Determine whether an understanding and knowledge of NVC used by Pasifika children informed the teachers towards more culturally effective teaching and learning strategies.

This research emerged from a growing frustration of the researcher at the low engagement of children in the curriculum area of mathematics during her first three years as a primary school teacher. During this period a significant event occurred that highlighted the centrality of NVC in the teaching and learning of mathematics. The researcher's tutor teacher/syndicate leader within the school, an experienced classroom teacher of 32 years, modelled a range of strategies informed by the recognition and understanding of NVC used by the children. This resulted in their high engagement with learning. Previously, the researcher had never considered the value of NVC in the context of teaching and learning.

The researcher speculated that, like her, teachers of Pasifika students consistently missed vital non-verbal cues in their interactions with their students. This was the motivation which led to this research that will investigate primary school teachers' perceptions of the NVC of Year 5/Year 6 Pasifika students. The methods used and the findings will be discussed in detail in Chapter 3.

This chapter will discuss:

- Mathematics and numeracy with a brief overview of the mathematical performance of Pasifika students in New Zealand classrooms.
- The importance of NVC and the teachers' self-reflection.

- Educational theory, including:
    - Culturally responsive pedagogy: This refers to teachers developing the knowledge, skills and redispositions when teaching children from diverse racial, ethnic, language, and social backgrounds. The researcher's personal educational philosophy will be woven into this commentary, including her philosophical and professional practices in regard to the importance of NVC.
    - Constructivist theory: This theory is based on observations and scientific studies about how people learn, and construct their own understanding and knowledge of the world. In this light, students learn through experience and reflection on those experiences, with the teacher guiding their students through this process.
- Indigenous methodologies:
    - Tivaevae framework model: The tivaevae framework model by Te Ava (2011) was chosen by the researcher as it underpins the relevance of this research, the research participants, and the researcher's own philosophical framework.
    - Tātai Āwhinatia (growing up on the marae) conceptual model: The researcher's life experience growing up in a New Zealand Māori culture had a profound impact on the development of her educational philosophical framework, and this will inform this research.

1.1 Mathematics and numeracy

According to the New Zealand Curriculum Framework (Ministry of Education, 2007) the New Zealand Curriculum Framework is deemed important as it is the starting point for young people in becoming confident lifelong learners, providing a framework for what students need to learn while attending school, enabling them to achieve their potential, which will, in turn, support them later in life. "A well-functioning society is one where everyone has the basic building blocks to participate in and contribute to their communities" (Whatman, Potter, & Boyd, 2011, p.1). The Tertiary Education Commission (2008) describes numeracy as a foundation of learning skills used in everyday life from working with numbers, to critical thinking and problem solving, to using information technology. They further highlight numeracy as being the bridge between mathematics and real life, and that includes the knowledge and skills needed to apply mathematics to everyday family and financial matters, work and community

tasks. The Department of Education and Training (2010) describes numeracy as being essential to ensure children succeed in their schooling and everyday life,

> Numeracy enables children to develop logical thinking and reasoning strategies in their daily lives through solving problems and make sense of time, numbers, patterns and shapes for activities like cooking, reading a map or bill, reading instructions and even playing sport (p. 2).

The Department of Education and Skills (2011) highlights numeracy as being among the most important life skills that their schools teach. They believe that no child should leave school without mastering numeracy skills to the best of his/her ability in order to develop fully as an individual, to live a satisfying and rewarding life and to participate fully in our society. "Ensuring that all young people acquire these skills is one of the greatest contributions that we can make to achieving social justice and equity in our country" (p.8).

The importance of numeracy is a worldwide educational concept, and the value in its development is reiterated across the global community. Numeracy is not only about adding, subtracting, multiplying and dividing. It also encompasses the ability to think and understand mathematically and use these skills to solve problems and meet the daily demands of day-to-day living in today's social settings. It is important a young person is able to think and communicate quantitatively, make sense of data, have a spatial awareness, understand patterns and sequences and apply mathematical reasoning to solve problems.

Understanding all the facets of how children become numerate is crucial. Yet, research in New Zealand continues to show that primary and secondary students do not do well in mathematics, specifically, Māori and Pasifika. According to Young-Loveridge (2010) even with the number of numeracy initiatives implemented within primary and secondary schools, there still seems to be an ongoing concern at the level of underachievement for Māori and Pasifika. Although the National Standards for Primary schools were implemented in 2010, a directive by the Minister of Education of the day, Anne Tolley, (Young-Loveridge, 2010, as cited in Whyte & Anthony, 2012) explained that there was a lack of policy direction concerning the effective and social outcomes of learning mathematics, especially for those students who were most vulnerable – most notably, Pasifika and Māori. According to (Hunter and Hunter, 2016) previous research

has shown Māori and Pasifika students have not succeeded at school due to a number of factors, including how the culture in the classroom does not reflect the culture known to Māori and Pasifika students attending low-decile schools, which often have less experienced teachers and streaming that puts these children into lower groups when, often, they are simply shy about speaking out. The New Zealand Ministry of Education (2006) acknowledges that achievement is still not high for all students, particularly those from Pasifika communities where English is not the first language spoken at home.

> Despite recent large-scale implementations of professional development opportunities in mathematics education, we continue to record significant levels of underachievement for students who are from marginalized backgrounds. This underachievement includes a large percentage of Pasifika students in New Zealand schools (Hunter and Anthony, 2011, p.100).

1.2 The importance of non-verbal communication and the self-reflection of teachers

Drawing from her experience as an advisory facilitator for a number of years in a Pacific Island nation, and from observations during 18 years of teaching in New Zealand primary schools in the largest metropolitan city in the country, the researcher became keenly aware of the direct link between NVC strategies displayed by Pasifika children to levels of engagement and non-engagement during the teaching and learning of mathematics.

A major skill demonstrated by the researcher's tutor teacher/syndicate leader, Mrs (Bobbie) Hunter, was her ability to recognize and understand the NVC actions, both positive and negative, of the children in the researcher's classroom, giving the opportunity for Mrs Hunter to redirect her teaching and questioning strategies. According to Phipps (2012) it is essential to recognize the variations in body language demonstrated as they provide indicators about how a positive or negative NVC by the teacher will invoke a similar response from the children. One needs to be aware of the NVC of voice tone, volume level, hand gestures, facial gestures, body position and body language of the learner. Positive NVC can re-engage and maintain learners in the learning process. This understanding can indicate to the teacher what learning strategy is used by the child and how to adapt his/her teaching strategies to best foster that child's learning style. Therefore, the range of questions posed by Bobbie Hunter varied

according to the NVC she observed by the children. According to her, this strategy of recognising and responding to NVC, can make teaching an opportunity to mentor children to become active listeners, active thinkers and to actively engage in dialogue with their peers. She believed that understanding NVC enables teachers to mentor active learners, who then feel valued and safe. The premise for understanding the NVC strategies used by children is the recognition of *'how'* they learn, and when they are 'turning off' to the teacher. The focus is not on the content at hand, but the learning strategies in action. The researcher made strong connections between the teacher's recognition and the relevant responses to the NVC of the children in relation to their increased level of engagement and confidence in learning.

For the researcher, this period in her early teaching career was to have a life-long influence on her teaching pedagogy and practice. She received on-going mentorship with this strategy for over a decade during which time she actively engaged in recognising and responding to the NVC of the children in her classroom as an effective teaching and learning strategy. She also encouraged children to write reflections and/or give oral feedback of their learning experiences that, in turn, helped to inform her teaching delivery. Often these sessions indicated that key NVC cues of some of the learners had been missed. This was a process of 'trial and error' for the researcher who, when distracted by the 'behaviour' of the child, often reverted back to traditional methods to 'manage' that behaviour. In these instances, she did concede that by not focusing on NVC cues to alter the NVC actions as the teacher, a more effective way to mentor the child towards more appropriate and productive learning and social behaviour had been missed. After 18 years as a classroom teacher the researcher considered the recognition of the NVC employed by children as a valuable indicator for teaching practice.

As a lecturer in a three-year pre-service teacher training (Primary) degree programme, the researcher promoted a range of teaching strategies based on the techniques modelled by Bobbie Hunter with the Year Two cohort. Discussions led by the researcher gave the cohort opportunities to discuss the NVC observed while on Teaching Experience placements, the strategies used to enhance the children's mathematical knowledge, and to reflect on their own teaching practices.

The Year Three cohort consolidated these strategies while they were on Teaching Experience placements within primary schools. A finding relevant to this topic is the overwhelming positive oral feedback from the Year Three cohort about the benefits of teaching and learning strategies that respond to the NVC of children. In hindsight, the students shared that if their teachers had knowledge of this praxis and implemented it in their teaching of mathematics, their childhood memories of mathematics would have been more positive and the maths anxiety levels they now experience as adults could have been significantly lower.

The multi-faceted nature of NVC is reflected in the literature across a range of disciplines, such as linguistics, education, sociology, cross cultural studies, the nursing profession and communications. "Any article on nonverbal communication for educators must begin with ethnicity and the existence of different communication patterns for each ethnic group" (Hall & Hall, 2009, p.364). According to Duncan (as cited in Goldin-Meadow, 2003) various descriptors have been used to describe the phenomenon of NVC, such as gestures, voice qualities, hesitations, laughing, utterances, yawning and spatial factors, open posture, eye contact, body movement, and facial expressions, to name a few. Gullberg, De Bot, and Volterra (2009) explain that hand gestures are a spatial - visual phenomenon that is influenced by socio-psychological and contextual factors that are closely tied to the sophisticated speaker's internal, linguistic processes, meaning that speech and gesture are two interconnected systems. Gestures during interactions mediate the acquisition of spoken language. For the researcher, teacher pedagogy and practice when teaching mathematics to Pasifika children, who use NVC as a prime form of communication, became more evident.

> Non-verbal behaviour is an integral part of the communication process that is used extensively in combination with verbal signals and features of the physical context. In intercultural interaction not only may the relative importance of non-verbal behaviour be different the conversations associated with non-verbal behaviours may also be different (Spencer-Oatey & Franklin, 2009, p. 34).

Kirch (1979) explains that language and culture are inseparable in real life but there must be a need to add a third dimension to this phenomenon of human communication, that of NVC. As such, indigenous children in classrooms of non-indigenous teachers, often experience various levels of anxiety in terms of communication - both verbal and non-verbal. This dilemma can result in the marginalization of the indigenous learner in education, both culturally and with the acquisition of knowledge. This is addressed by

Harker (as cited in Bishop & Glynn, 1999, p.39) who states that "cultural differences and different values systems between the culture of those who developed the educational institution and those cultural minorities, will impact on the educational achievements of minority children." Thomas (1994) describes some important differences between Aborigines (indigenous people of Australia) and Anglo-Australians. Students are expected to give eye contact to teachers when they are speaking or when spoken to, to show they are fully focused. However, few teachers realize this direct looking may breach sexual taboos; hence, making the situation difficult for some students. "Disinterest and apathy may be demonstrated as a defence to hide their anxiety but may be viewed as inability to do the work by the teacher" (Webber, 1978, pp.63-64). Von Sturmer (as cited in Thomas, 1994) discusses culturally appropriate ways of how Aborigines approach each other and says that people should not 'sneak-up' on others, as approaches should be made publicly and formally, especially to strangers.

Metge and Kinloch (as cited Thomas, 1994) give detailed descriptions of the differences between Pākehā and Polynesian in New Zealand. The following examples illustrate some of these differences:

> … Māori and Samoans emphasize 'body language' more and verbalization less than Pakeha. Pakeha …typically find Māori and Samoan unresponsive and "hard to talk to…To Māori and Samoan, Pakeha often seem deaf to what others are trying to tell them while at the same time they are forever talking" (p.10).
>
> A Pakeha infant teacher related how she found she was continually repeating herself to her predominantly Polynesian class. She established that she was doing it in response to the raised eyebrows gesture which she had interpreted as "Please say it again", and realized that they were in fact signalling "Yes, we understand" (p.11).
>
> Māori and Samoan…consider it impolite to look directly at others when talking to them…they rest their gaze elsewhere, slightly to one side, on the floor, ceiling, or distant horizon…behaviour intended to avoid offence is often 'read' by Pakeha with other ideas as rudeness or shiftiness (p.13).

Coxon, Samu and Counselling (1997) in their discussion on teacher education, highlight the importance of the mentor/student relationship as being crucial but, like Metge and Kinloch (1984), the misunderstanding of ethnic and cultural differences can occur when the mentor, associate teacher or university lecturer is predominantly Pākehā and the students comprise Pasifika, Māori, Chinese, Indian, Indo-Fijian, Pākehā and so on. They give an example of a young Samoan woman with a Masters Degree and previous

teaching experience, "From her perspective, her palagi mentor was a teaching expert, an experienced authority to be respected. That respect translated into passive, submissive obedience. She waited for instructions – her mentor waited for questions" (Coxon et al., 1997, p.31).

Making a 'mind-shift' away from one's comfort zone, and the maths anxiety the researcher experienced as a child, presented the challenge in critically reflecting on teaching in order to appreciate and accept the value of recognizing NVC as a valid teaching strategy. This aspect of teaching and learning did not feature in the researcher's formal teacher training experience or the professional development in schools she taught in. In hindsight, the mentorship the researcher received from Bobbie Hunter afforded her the opportunity to reflect on, and recognize, NVC as an important teaching tool. In the view of the researcher, pre-service teacher trainees need training in: 1) recognising the importance of NVC in meeting the needs of all students; and 2) engaging in critical reflection of their practice in integrating the response to NVC in their teaching.

This research also highlights the centrality of teacher critical self-reflection. Roffey-Barentsen and Malthouse (2009) describe professional reflective practice as a cycle of four distinct parts:

1. Experience – what actually occurred?
2. Reflection – thinking about the experience.
3. Professional practice – how does this relate to my professional practice?
4. Action plan – the identification of SMART objectives and an action plan (p.11).

In the context of teaching leading New Zealand education researcher, Professor Nick Zepke (2003) describes critical self-reflection as a "critically reflective action for change." He makes a strong differentiation between reflection and critical reflection by positing four meanings for critical thinking:

1. Identify faulty facts or logic in the thinking and reflection of others.
2. Recognize and challenge ideas that ensure the dominance of certain ideologies.
3. Examine your own reflections and assumptions about the world in light of how others explain theirs.
4. Actively work to improve yourself so that you reach your potential (p.26).

Reflection is a practice in the profession of teaching that informs teaching praxis and practice, teaching pedagogy, planning and teaching, and learning strategies, that result in meaningful relationships and meaningful teaching and learning for children. The parameters of this research required the participating teachers to apply critical reflection as outlined by Zepke (2003). Zepke notes that what underpins the action of reflection and critical reflection is rationality and suggests that humans do not rely on reason alone to learn. He takes, from indigenous and feminist perspectives, the view that people are also physical, emotional and spiritual beings and, as such, should be viewed in a holistic way. Zepke's main point is that critical reflection draws not only from the analytical realm, but also from one's physical, social, emotional, spiritual and mental faculties. "Calling on all of these elements of our being moves reflection beyond reason and toward possibilities of change" (Zepke, 2003, p.28).

The researcher refers to the insightful writing of Hawaiian academic, Aluli-Meyer (2006), who approaches the human psyche in a holistic way:

> The metaphor of triangulating our way to meaning with the use of three points. The three points? Body, mind, and spirit. Using body, mind, and spirit as a template in which to organize meaningful research asks us to extend through our objective/empirical knowing (body) into wider spaces of reflection (p.268).

Myer's approach of body, mind, and spirit aligns to the researcher's cultural upbringing in accordance to Durie's (2003) model of Te Whare Tapa Wha (four walls of a meeting house); taha wairua (spiritual side), taha tinana (physical side), taha hinengaro (emotional side) and taha whanau (family).

1.3 Educational theory

1.3.1 Culturally responsive pedagogy

The researcher makes links between culturally appropriate pedagogy and the need for teachers to consider NVC as a teaching tool. Fasi (1999) comments that cultural awareness is one of the most vital elements in teaching mathematics to Pasifika students. This awareness is demonstrated by the use of teaching strategies that are supportive and relevant in helping Pasifika students understand complex problems in mathematics. This includes recognizing 'how' 'when' and 'why' Pasifika children are

engaging, or not engaging, during the teaching and learning of mathematics (Fasi, 1999).

Bishop and Glyn (1999) analysed patterns of dominance and subordination in the New Zealand education system at a structural, functional, political, societal and indigenous level. With regard to the subordination of minority cultures within these systems they observed the following, "[F]further notions of cultural superiority continue to be promoted in that the majority culture continues to be the major reference point for educational practices and policies" (Bishop & Glynn, 1999, p.52). Nakhid (2003) acknowledges two areas of contention that have not been investigated adequately enough of Pasifika students: 1) Pasifika students own construction of themselves are not recognized or valued by schools; and 2) schools' perceptions of Pasifika students result in institutional structures and processes that operate to maintain Pasifika underachievement. Yet, Bakalevu, Tekaira, Finau, and Kupferman (2007) strongly denounced the requirement of children in schools to abandon their cultural upbringing and language for the more dominant Western culture and language; a process they identify as assimilation, "We support the notion of teaching children to affirm themselves as Pacific Islanders who are proud of their culture and can speak their mother tongue with mastery" (Bakalevu et al., 2008, p. 74).

From the researcher's personal perspective as an experienced teacher, mother, grand-mother, indigenous person and human being, this inequity is unacceptable. Teaching is a profession of honour and 'humanity' and, as such, regardless of the culture, ethnicity, ability or back-ground of children, they deserve teachers who are positive role models and who value who they are as a 'whole' person'. Education researcher and educator, Te Aroha Lemke (2008), refers to positive teacher role models as "pou manaaki or the centre post of inspiration, hope and vision" (Lemke, 2008, p.45).

Adapting and adjusting to the learning style of children is a positive response to children who possess what Pere (1991) describes as *mauri*, a Māori concept, which is defined simply as the ability to relate to, and care for, others easily and unconditionally. She describes this as a form of 'psyche' that can be ignited or suppressed by those around them, "[I]if a child feels he or she is respected and accepted, then her or his mauri waxes" (Pere, 1991, p.12). Children are a community of learners, described by Hill and Hawk (2000), as a classroom culture where, "forming the right kind of

relationship with the teacher and other children is a pre-requisite for learning to take place" (p.44). McNaughton (2002) highlights the need for teachers to know their children and their backgrounds but also states, "It is that teachers need to be aware of what children's resources or repertoires of practices might be and how that intersects with the practices of the classroom" (McNaughton, 2002, p.13). A positive outcome that occurred from the professional mentoring the researcher received was her innate ability to respond to students' cultural needs.

The teaching praxis of the researcher is grounded in a socio-cultural and co-constructivist approach to teaching and learning. Being a child of a marae upbringing, an embodiment of tribal beliefs, values and social customs, while immersed in her indigenous language, has shaped the researcher's identity and reality. The socio-cultural approach is described by Hooks (2003) as follows: "The main goal of socio cultural view of learning, thinking and the mind is to create an account of human mental processes that recognizes the essential relationships between mental processes and their social, cultural and institutional settings" (p.49). The researcher strongly believes it is how we communicate, understand and relate to others, and Hooks statement is partially based on this approach. Our spiritual, mental, physical, emotional and physiological well-beings are all influenced by socio-cultural perspectives. According to Vygotsky (1980) the importance of learning by the child occurs through social interactions with either the parent or teacher, by modelling behaviours or by providing verbal instructions for the child. Vygotsky refers to this as cooperative or collaborative dialogue, where the child seeks to understand the actions or instructions provided, and then internalizes the information, using it to guide his/her own learning. For classroom teachers, in order to advance the understanding of children's learning, contributions by those who are knowledgeable become the norm when working in groups where peer interactions are evident. This peer interaction requires teachers to develop and support learning for students. Alton-Lee (2003) states, "Caring and support is integrated into pedagogy and evident in the practices of teachers and students" (p.89) to "making student learning processes and understandings transparent" (p.90).

1.3.2 Constructivist theory

The theory of constructivism is about how people learn; how they construct their own understanding and knowledge of the world through experiencing things and reflecting

on these experiences. Co-construction in teaching and learning places values and incorporates the prior knowledge and life experiences of children to scaffold new learning on. This approach places a strong emphasis on social interactions and collaborative learning environments (Barker, 2012, as cited in McGee & Fraser, 2012 p.36). The role of a teacher requires rigorous self-critical reflection (Ministry of Education, 2007). This, to the researcher, highlights the question of *who counts* rather than *what counts*. How children express themselves in learning and the strategies they use to process and implement new learning is more important than their regurgitation of the content. Taking this position requires a strong set of observational skills, listening skills and critical reflection skills in order for one to be able to make a 'mind-shift' about one's teaching pedagogy and practice.

> Where power is shared between self-determining individuals within non dominating relations of interdependence; where culture counts; where learning is inter-active, dialogic and spirals; where participants are connected to one another through the establishment of a common vision for what constitute excellence in educational outcome. We termed this pedagogy a 'Culturally Responsive Pedagogy of Relations' (Bishop, Berryman, Cavanagh & Teddy, 2007, p.78).

The discussion in this introduction places a strong commitment on the role and responsibility of a teacher as a pou-manaaki; the placement of the child at the centre of one's practice and critical self-reflection as a mechanism towards making a 'mind shift'. The epistemological and ontological underpinnings of the researcher's core personal values and that of her teaching praxis are based upon the Māori values by which she was raised.

1.4 Indigenous methodologies

Indigenous people all over the world are looking within their own cultures for culturally specific models from which to frame their own research. Of particular relevance to this research is the Tivaevae Model by Aue Te Ava (2011).

1.4.1 The Tivaevae Model

The Tivaevae Model, conceptualized by Te Ava (2011) is based on Lynnsay Rongokea's book *The Art of Tivaevae: Traditional Cook Islands Quilting (2001).*

Using the tivaevae as a metaphor, Te Ava (2011) developed a model that conveyed the idea of a culturally responsive pedagogy, "The tivaevae model is chosen because of the strength of the metaphor embedded in the way it is organized in various components of flowers with different designs and patterns" (Te Ava, 2011, p.129). The model depicts five key ideas: taokotai (collaboration), tu akangateitei (respect), uriuri kite (reciprocity), tu inangaro (relationships), and akairi kite (shared vision).

Figure 1: Tivaevae conceptualized theoretical framework - Te Ava (2011)

1.4.2 Tātai Āwhinatia (Growing up on the marae)

As an alternative, the researcher developed her own model in which to anchor this research, based on the researcher's life experience of growing up in New Zealand Māori culture, which had a profound impact on the development of her educational philosophy. It is called Tātai Āwhinatia, as shown in Figure 2.

The parallels between Tātai Āwhinatia and the Tivaevae Model have guided her throughout this research. Tātai Āwhinatia provides the overarching concept of the researcher's philosophical framework for this study, that is, the key values, practices,

and learning aligned to the researcher's own childhood upbringing and informed by the work of the indigenous scholar, Taina Pohatu (2005).

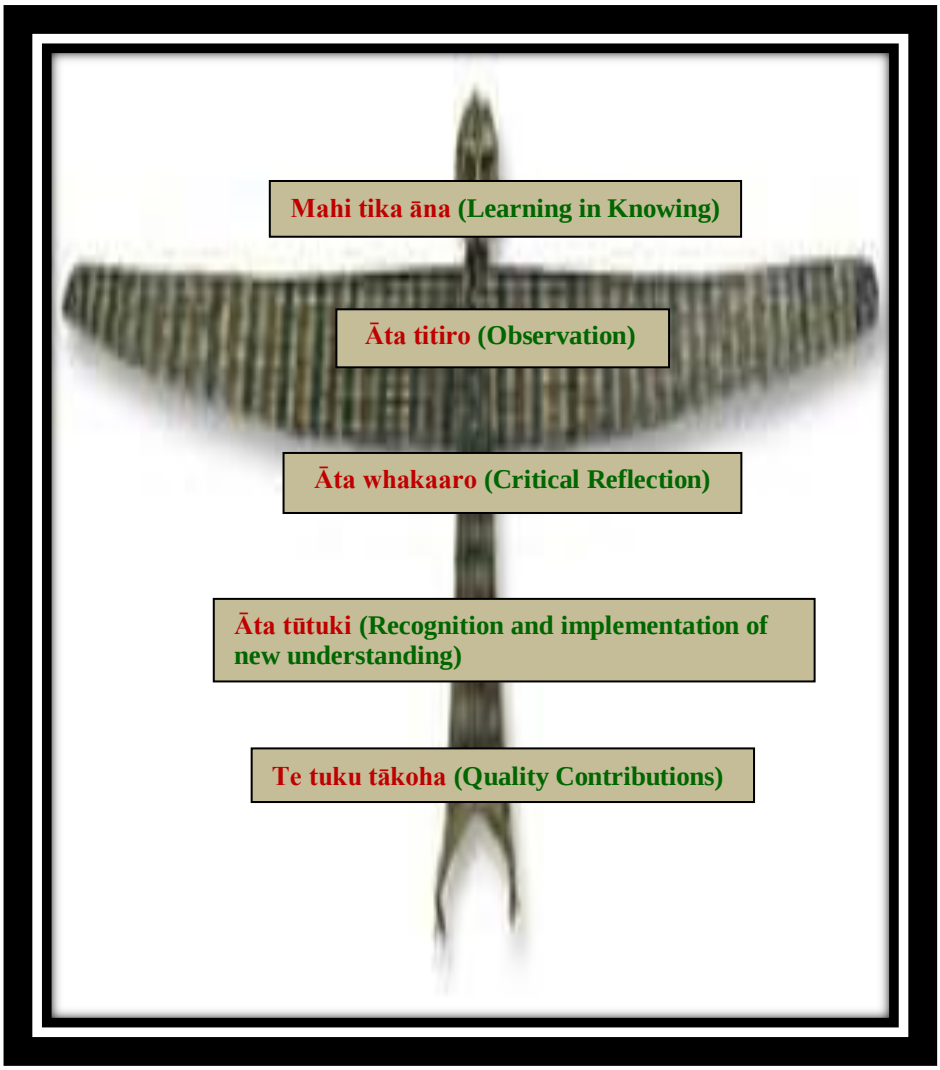

Figure 2: Conceptual framework: Tātai Āwhinatia. Mauheni (2013)

This Tātai Āwhinatia Model and its relationship to the research is described as:

- Tātai āwhinatia (Quality service): The blue print of quality service begins in the home and extends into the wider community, specifically the marae, which is an embodiment of tribal tikanga (protocol) and kawa (tribal specific rituals). As a central communal space, a Ngāpuhi child begins tātai āwhinatia at the marae and this continues along the continuum of life.
- Mahi tika āna (Learning in knowing): A term of approval that acknowledges one who has demonstrated a new understanding of a specific situation or task after many learning experiences in and around the marae. Once the learning is mastered, the

affirmation statement of ‘mahi tika āna’ confirms that a new ‘knowing’ of ‘self’ in relation to the learning moment has been achieved.

- Āta titiro (Observation): The intrinsic ‘knowing’ of one’s place in the multi-faceted world of marae life was modelled across the inter-generational spectrum. By observing, listening and following others from childhood to adulthood, one undergoes a form of apprenticeship in the various roles, responsibilities and functions of the marae. Pono mārika consolidates one’s place of ‘knowing’ through the reciprocity of role modelling these learnt practices and responsibilities of the marae.
- Āta whakaaro (Critical reflection): This is a skill of critical reflection informed by a myriad of life experiences. This was an everyday personal practice modelled and articulated in various forums during the researcher’s growing up years. It also came in the form of being berated or disciplined for major or minor infringements. More often than not, āta whakaaro was evident in the way others around the researcher conducted themselves and how they treated others.
- Āta tutuki (Recognition and implementation of new understanding): Is the coming into being of one’s ‘self’ - self-knowing, self being, self-doing. A type of leadership referred to by the tribe and hapu of the researcher as the stage of *ea*. Ea is the attainment and incorporation of the values and practices of tātai awhinatia, āta titiro and āta whakaaro into one’s worldview and actions.
- Te tuku tākoha (Making a contribution of consequence): The term ‘te tuku’ means to lay something down, to present, and to offer up. ‘Takoha’ is synonymous with a gift, a gesture of significance, an act of service and/or allegiance. The prefix ‘ta’ of the word tākoha is a significant indicator of ‘an oath of honour’. In total te tuku tākoha is to offer a gift with honour. In essence, te tuku tākoha formulates relationships of mutual benefit and outcomes.

Particularly relevant to this research is the notion of Āta. Māori scholar, Taina Whakaatere Pohatu, frames the notion of Āta (growing respectful relationships) in terms of his research. Pohatu developed Āta as a cultural tool intrinsic to his own iwi (tribal background) in the process of rangahau (research). “This vital cultural tool was created to shape and guide understandings of relationships and well-being" (Pohatu, 2005, p.5). The Āta approach to growing respectful relationships in research is based upon meaningful integrity. Critical reflection for (Pohatu, 2005, p.6-7) consists of:

- A focus on relationships, negotiating boundaries, creating safe spaces.
- How to behave when engaging in relationships with others
- Respectfulness
- Reciprocity
- Critical reflection
- Discipline
- Transformation

Tātai Āwhinatia, therefore, serves as a blueprint of quality service that begins in the home and then extends into the wider community and, specifically, the marae. The marae is an embodiment of tribal tikanga (protocol) and kawa (tribal specific rituals). As a central communal space, a Ngapuhi child begins tātai āwhinatia at the marae, but practises its concepts throughout life.

For the researcher, having grown up within the Māori culture, tātai āwhinatia and the concepts of culturally responsive pedagogies and praxis are mutually complementary and form the foundation, not only for the philosophical underpinnings of this study, but also guide the form of the research itself.

1.5 Conclusions and thesis outline

As a classroom practitioner, the researcher acknowledged the importance of students' cultural backgrounds, the significance of culturally appropriate pedagogies, and the need for her to consider NVC as a teaching tool. Hawk, Cowley, Hill, and Sutherland (2002) emphasize the importance of positive relationships existing for students to be more motivated to learn and actively participate in their learning for the learning to be more effective. Marshall, Baldwin, and Peach (2008) identify three key elements of culturally appropriate pedagogy:

1. Provide a whānau/'aiga' (family) environment that promotes a culturally safe learning environment.
2. Create a sense of belonging that establishes a foundation for learning to occur.
3. Be inclusive of all cultures to give a sense of identity and familiarity.

These elements were promoted and implemented by the researcher throughout her teaching career. Clearly, as part of a child's human development of communication skills, NVC skills are an integral part of this development and they are also an integral part of the social environment in which the child constructs new knowledge. But when the NVC learned in the home is different from the homes of the teachers, the NVC of children can often not be 'read' by classroom teachers. Urie Bronfenbrenner (1986) claims that a child learns behaviours in the home and easily makes the transition to school if the doctrine and culture of the school reflects the home of the child. However, if they do not match the child struggles to make that transition and his/her learning is often impeded. Herein lies the fundamental focus of this research - that Pasifika students express a specific NVC that is often not picked up and acted upon by their classroom teachers of mathematics; thus, impacting on success and achievement rates of Pasifika students in mathematics.

This study will explore the impact of teachers' recognition of NVC when interacting with Pasifika students in the teaching of mathematics in primary school classrooms in South Auckland, New Zealand. Chapter Two will give a literature review related to the foundational concepts of NVC, the importance of culturally responsive pedagogy and the theory of constructivism, specifically in context of Pasifika students' learning. Chapter Three will describe in detail that the methodology and methods incorporated during this study are justified. The findings will be presented in Chapter Four and will be analysed and discussed in Chapter Five. Chapter Six provides a concluding discussion of the major themes identified in the findings, and draws some conclusions and implications for further research.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This literature review contextualizes three discussion points specific to this research that were outlined in Chapter One, namely: 1) an overview of NVC in the context of the classroom and the teaching and learning of mathematics; 2) the importance of culturally responsive pedagogy in the context of learning in a classroom environment for Pasifika children; and 3) constructivism in the context of how Pasifika children construct their understanding and knowledge of their world through experiencing and reflecting on those experiences.

2.2 Non-verbal communication style

NVC is a method of communication generated by sending and receiving messages in a number of ways without using any verbal dialogue. La France and Mayo (1978) states, "It serves to express emotional state, to give information about personality, to communicate interpersonal attitudes, and to regulate the flow of social interaction" (p.75). According to Shick (2000) 7% of communicated meaning is actually from spoken words, the rest is communicated through NVC. Therefore, communicating becomes not actually what you say but, in fact, how you say it. Gabbott and Hogg (2000) explain that NVC takes place every time one person interacts with another it may be intentional or unintentional and is part of the rapid stream of communication that passes between two interacting individuals. The combined NVC positions of posture, eye contact, nods, smiles and facial expressions can convey happiness, sadness, surprise, fear and, even, disgust and, according to Alton-Lee (2003) children normally learn these expressions by watching and imitating others as they learn the skills of communication. Crooks and Flockton (2005b) acknowledge that these important signals, when communicated by someone, can be very effective and closer attention is paid to unspoken behaviours by improving the ability to communicate in a non-verbal manner. Goldin-Meadow (2003) explains that NVC can stand alone, substituting for

speech and used solely as a communicative function, but when speech is included, the gestures assume a different form.

2.3 Cross Cultural World View of NVC

Culture, as stated by Matsumoto (2006) is a "shared system of socially transmitted behaviour that describes, defines, and guides people's ways of life, communicated from one generation to the next" (p.220). Therefore, a singular world view of NVC is impossible as people from different cultures can have their own predominant style of communication. Jain and Choudhary (2011) believe for inter-cultural interaction to be effective, NVC is heavily relied upon because, for any given sign, each culture assigns its own meaning. According to Singh, McKay and Singh (1988) people from Western cultures rely heavily on verbally communicating their conversations/messages as opposed to people from Asia, Native America and Pacific Islands, who tend to communicate a substantial part of their conversations through NVC - "The Japanese are capable of communicating large quantities of information with simply a glance, a movement, or even silence" (Balsmeier & Heck, 1994, p.15). Singh et al., (1988) identifies two types of communication. That of high-context where messages are predominantly verbal, such as non-Hispanic white North Americans although they use NVC, a substantial amount of their messaging is conveyed verbally. The other type of communication is low-context, where substantial parts of the message are conveyed using NVC and this is predominant among the cultures of Asia, the Pacific Islands and Native Americans.

An obvious form of NVC is gesture. However, a single gesture may have a different meaning depending on the culture. Leba (2010) explains that it is usual for men in the United States of America to greet each other with a handshake yet, in other parts of the world, they might greet each other with a kiss. Shick (2000) indicates that in Canadian culture, a firm handshake is expected yet a light handshake is more the norm in England. Shick (2000) explains that in France too firm a handshake may be considered impolite whereas, in Brazil, one would most likely be the recipient of a lengthy and exuberant handshake or even a 'social kiss' on each cheek. Leba (2010) explains how Islamic cultures do not generally approve of touching between genders, although Islamic men who do business internationally have adopted the Western custom of shaking hands with women.

Another example of cross cultural NVC is the expression of two of the most common ideas - the 'yes' and 'no' variation from one culture to another. In Western culture, the nodding of the head back and forth is an indication of affirmation and the rotating of the head from side to side has normally been accepted as being a negative. Kirch (1979) points out that the upward nod of the head by Greeks indicates disagreement by nodding upwards and the downward nod for agreement. "Greeks have for at least three thousand years used the upward nod for disagreement and the downward nod for agreement" (p. 419). Jain and Choudhary (2011) provide these examples of the 'yes' and 'no' variation:

- Japanese do not use the nod of the head. Instead, they use hand gestures to convey affirmation or negation. For example, movement of their right hand indicates a no but with both hands together in a specific movement is an indication of yes.
- A particular tribe in Malaysia, when casting their eyes downward, is an indication of no, but the same gesture by Indian girls gives an indication of acceptance.
- Nodding the head side to side means 'no' in the Western world whereas in Northern India the tilting of the head in an up and down motion indicates 'no'.

There are also varying comfort zones when it comes to defining an appropriate space between individuals when conversing. Cultural interpretations of distance vary and when involved in cross cultural communication, understanding these variations is essential to maintaining effective communication. Matsumoto (2006) indicates that the interpersonal physical space differs across cultures. For example, Arab men tend to sit closer to each other than American men and Indonesians tend to sit closer than Australians. According to Webber (1978) it is common to see groups of Aboriginals sitting closely together when interacting and, so too, according to Shuter's study (as cited in Matsumoto, 2006) Latin Americans interact more closely than those of European backgrounds and Italians interact more closely than Germans or Americans, while Columbians interact at closer distances than Costa Ricans. Shick (2000) explains the following as conversational distances:

- Office furniture in Germany is purposefully arranged so that it respects their conversational distances and, as such, is not meant to be moved.

- Many individuals in North America would not think twice about moving furniture that is too far from the speaker to create a more comfort conversational environment.
- Venezuelans, Chileans and Argentines converse at very close proximity compared to North Americans, who may feel the urge to back away in order to maintain their conversational comfort zones.

Facial expressions are an important source of NVC in all cultures and play an important part in cultural differences, and include basic expression of happiness, sadness, anger, disgust, surprise and fear. People are more accurate at recognizing emotions expressed by members of their own culture than those expressed by members of another cultural group. According to Elfenbein and Ambady (2003) this reflects people's knowledge of cultural variations and nuances in expressing and communicating emotions. In addition, people acquire culturally specific expressive features through social learning, an advantage in recognizing each other's expressions. It is rare for strong emotions to be shown in everyday life and, when they are, their expressions tend to be modulated according to social display rules (Matsumoto, 2006). According to Ishii, Miyamoto, Mayama, and Niedenthal (2011) East Asians are more aware of the subtle social signals of positive and negative emotions and show greater efficacy in processing such signals than Westerners because, to them, interdependency, value, and harmony on interpersonal relatedness is important, in contrast to the Western notion of independency. Heine (2007) highlights that it is more important in an East Asian culture to avoid social conflict and fail social expectations than it is to promote and assert who they are or what they have achieved. According to Rothbaum, Pott, Azuma, Miyake, and Weisz (2000) in an Asian context, expressing strong emotions is discouraged, and suppressing individual emotions by adapting one's expression to the atmosphere of the group is regarded as mature and appropriate. Therefore, where Americans have no problem inferring people's inner feelings from their facial expressions, Japanese are more likely to look for contextual cues to have a better understanding of the emotions of their companions (Matsumoto, 2006).

From the range of literature discussed, it is evident that NVC is a very real phenomena in all sectors of society and equally so in the cultural context. It is the unspoken channel of discussion and involves all those gestures that people interact with beyond

the words themselves. “Though we master one another’s language, there is more to how we communicate than just the words we speak” (Leba, 2010, p.4).

2.4 Pasifika and New Zealand expressions of NVC

In the findings of a study by Metge and Kinloch in 1978, where they looked at the NVC between Pākehā, Māori and Samoan in New Zealand, they were convinced that a good deal of miscommunication occurred. They gave specific examples in which Māori and Samoan differed from Pākeha in the extent to which they responded to NVC, not only by gestures and facial expressions, but also in greeting behaviours, signs of hospitality and ways of showing embarrassment.

The nod and upward movement of the head and raised eyebrows by Māori and Samoans implied ‘yes’ but to the Pākehā this was interpreted as ‘please say it again’; hence, they would be seen to be continuously repeating themselves. The downcast body stance or unresponsive stare down at the feet by Māori and Samoans were indicators of “I’m not sure” or “I don’t know,” yet this was interpreted as arrogance or insolence by Pākehā. (Metge & Kinloch, 1978).

Within Māori and Samoan cultures everyone is part of the group or feels inclusive at formal or informal gatherings of welcome. Yet, according to Metge and Kinloch (1978) when attending school functions or school public meetings, Samoans and Māori commented that although they were eager to be involved, nobody spoke to them, so they did not speak in return. In contrast, when Pākehā attended large gatherings or meetings, it was left to the individual to make the introductions. When a welcome is extended it is done briefly by the chairperson or spokesperson at the beginning of formal business. At social gatherings, newcomers would be introduced to those already there or only to one or two people who were already present.

Within Māori and Samoan cultures, food is always provided for guests at formal or informal gatherings. In contrast, when Pākehā ask Māori or Samoan visitors if they would like tea or coffee, they often felt the hospitality was not welcoming and would politely refuse (Metge & Kinloch, 1978).

Further work by Metge (2005) bought about the realisation that while working alongside Māori who spoke English as well as te reo Māori (the Māori language), there

was a third form of communication, that of Māori body language, which she admitted was much harder to learn and so easily missed. The following excerpt highlights how a simple form of NVC can easily be missed;

> Walking down the street, a Maori friend and I passed three Maori entering a laundromat. My companion told me, 'Those are cousins on my mother's side.' 'Oh,' I said, 'why didn't you say hello?' He looked at me in surprise and said, 'But I did!' I had missed the rapid raising and lowering of both eyebrows with which Maori convey recognition. (p. 85)

This form of communication was used "both to reinforce and to negate what they said in words. This was in many ways distinctively their own" (p. 83). Metge (2005) noted that Māori considered looking someone steadily in the eyes as confrontational. During conversations, brief eye contact was made from time to time with their eyes roaming in between. Silence, according to Metge (2005) was another form of NVC and the one she found most difficult to master because it conveyed very different messages. As she indicated, context gave clue to the type of silence expected. For Pākehā, silence was considered a form of acceptance or agreement. For Māori, it expressed admiration at formal gatherings when a renowned Māori speaker would captivate the listening audience, yet, within another context, it was a sign of disagreement or conflict. Silence was seen as a powerful instrument of rebuke - "I once saw an obstreperous speaker collapse defeated when those present in the meeting house fell completely silent and sat with bowed heads, looking at their toes" (Metge, 2005, p. 86).

The Māori word whakamā can also be perceived as NVC. Whakamā, according to Ngata, H. M., and Ngata, W. (1993) is to be ashamed, shy, bashful or embarrassed. Sachdev (1990) states that, "whakama is a psychosocial and behavioural construct in the New Zealand Māori which does not have any exact equivalent in Western societies" (p.433). Thus, the downcast eyes, hunched shoulders, hanging of one's head, feeling small and, even, a sense of shrinking into oneself are physical forms of whakamā. It is about shyness, shame, embarrassment or feeling inferior.

Anaru (2014) and Tipene (2014) orally shared memories of whakamā while attending primary school. Along with their siblings, whenever they spoke Māori, they were singled out and punished and made to feel ashamed. Their brothers were beaten with a leather belt and the girls were made to scrub both the boys and girls toilets. What was worse, they would stand in front of their parents with their heads hung low and

downcast eyes because they knew it bought shame to the family. Lemke (2012) orally shared her experience of whakamā when attending secondary school. While discussing her school leaving options the careers counsellor said she was not going to amount to much and should not consider continuing on with her education or a career in her chosen field. She felt ashamed because at the time she believed what she was told, and when she shared what was said by the counsellor to her parents, she stood in shame. During her senior years at boarding school, the researcher also experienced whakamā. Considered an able student while at primary school, she felt ashamed when separated from her close peers and 'streamed' to the lower third form class and remained in the lower stream throughout her time at boarding school. When attending school dances, she would quietly sit to one side as her roommates readied themselves with finery of dress, jewellery and make-up. While envious of her peers and knowing her parents could not afford it, the researcher was still embarrassed with her lack of 'finery' and had to attend in her formal school uniform. Reid (1992) noted that whakamā triggered a sense of shame if one could not speak Māori well or at all, yet for Tipene and Anaru (2014) it was the reverse. Reid (1992) states, "In the school context whakamā can be feelings of injustice or guilt" (p.17). Feeling that sense of guilt of underachieving supports Lemke (2012) and the researcher's personal experiences of whakamā.

According to Walker (as cited in Reid, 1992) Māori are acutely aware of the differences in material wealth between Māori and Pākehā. Pākehā are perceived to be higher or superior and hold positions of power; hence, the minority group status felt by Māori places them in a position of social inferiority. This, in turn, causes a sense of loss of pride, low self-esteem and poor self-image – all expressions of whakamā.

In research undertaken by Tuafuti (2010) that looks at unlocking the culture of silence from a Samoan perspective, Tuafuti explains silence is not being passive but an active behaviour that conveys culturally appropriate and meaningful messages that cannot be expressed through verbal communication. Tuafuti defines *culture of silence* as "knowing when to speak and when not to within the context of Pasifika cultures" (p.1) and *silencing* as "Pasifika people's behaviour of being silent, caused by either the culture of silence or social, political, educational or other environmental factor" (p.1).

The following excerpts are from Tuafuti's research when participating parents were asked, "What is the culture of silence? How did it come about?"

- We were taught to be good listeners. The rights to speak belong to church and community leaders.
- We respect people with high status so they speak first.
- We were born with this culture! It is within our families and communities and we cannot get away from it. Our people have too much respect for the chiefs and *palagi* (white people) who come with big ideas and with that respect we cannot challenge those ideas.
- Silence does not mean I am stupid. If we keep our silence we are not progressing but we want to be polite.
- We are not quiet when we talk in our own language, but there is a culture of silence and people respect the elders (Tuafuti, 2010, p. 9).

For the Pasifika child, Tuafuti (2010) explains that, traditionally, they are seen not heard and bought up to listen and to obey without question, "Pasifika children are often introduced to societal norms in a religious context where they learn biblical verses and rules to honour their parents" (p.5). Children's behaviour is a consequence of their responsiveness to the parents or elders of the family within cultural relationships, meaning that "a child's behaviour does not reflect him as an individual, but reflect the whole 'aiga' (extended family)" (p.5). To challenge their parents or authority was a sign of disrespect and impoliteness and considered unacceptable. Hence, when they attended school, they were often reminded to honour their teachers and to do as they were told. Tuafuti gives the following examples of silence:

- To show respect Pasifika children would lower themselves and walk silently in front of their elders or seniors.
- When reprimanded the bowing of their heads in silence was an act of respect.
- When the child is considered to be in the wrong by someone of authority, for example, the teacher or principal, the bowed head was a request for forgiveness or reconciliation.

Although Tuafuti's research is not discussed here in its complete entirety, it is important to the researcher to acknowledge the complete work of this author because as Tuafuti states, "to understand the Pasifika culture of silence of *e tasi ae lasi:* we are one nation but made of many peoples of diverse cultures. Within these diverse cultures sits an essential mechanism of silence" (p.3). Hence, from the researcher's perspective, it is necessary for one to understand this research of Tuafuti in its "complete whole cultural package".

2.5 View of NVC within the environment of classroom teaching and learning

The relationship between teacher and student is affected to a great extent by NVC and personal space, physical distance, facial expressions and eye contact, apart from gestures and the movements of the body. Knapp (1971) points out that facial expressions, touch, gesture, posture and spatial positioning used in conjunction with verbal cues have been highly influential. Hence, there is a need to understand their meaning in different situations to avoid conflicts in cross-cultural communication. According to Cazden (2001) verbal communication is happening both in and out of the classroom between the student and the teacher, but little attention is ever devoted to NVC. With the various signs and signals of NVC by teachers, students are actually reading the meaning in these NVC expressions along with the conduct of the teacher, whether the teachers like it or not. Sometimes eye glances or facial expressions will reveal their true meaning and that becomes very informative for students. Every teacher interacts with students using NVC without knowingly portraying them negatively or otherwise (McNaughton, 2007). Wei (2013) who studied the functions of Western cultural NVC where English is taught in a classroom in China, pointed out that body language and facial expression gestures do convey different meanings in different cultures.

According to Subapriya (2009) NVC signals and cues are very fast and separate. When teachers establish NVC cues, they actually consider the rules that are being paired with non-verbal cues. For example, the directive “no talking” during group activities and “be packed by the time the bell rings” are usually partnered with two different NVC cues; an upright body stance of authority, a stern facial expression, and a harsh voice tone as opposed to casual body stance of relaxation with an amiable facial expression. As Allen (1999) points out, NVC are used as effective teaching strategies in classroom management by varying the class pace, controlling student participation, signalling transitions, indicating who is to respond, to signal the beginning and end of lessons, and gives students ideas of what to expect. Therefore, teachers develop set standards of hand or arm gestures. These include swinging the arm upward to cue the students to form a question while swinging the arm downward could request a response. Other signals Allen mentions could indicate when students should listen, repeat answers, or to speak louder. Reeve and Reynolds (2002) explain that gesture can achieve, maintain and refocus joint-attention when solving problems that reinforce and extend the

meaning conveyed by verbal talk. In support, Cook, Mitchell and Goldin-Meadow (2008) indicate that using NVC to represent ideas was especially helpful in constructing and retaining new knowledge when solving mathematical problems while expressed through speech. "Expressing information in speech and gesture has been shown to place less demand on working memory than expressing the same information in speech alone" (Cook et al., 2008, p.1048). According to Butt and Shafiq (2013) although teachers use NVC in the classrooms, there is a need to intentionally use them as a teaching technique to create interest among their students to achieve a more positive result in the form of students' learning outcomes. For example, a smile as a facial expression can be a powerful tool in the hands of a teacher as it can develop the understanding of the students by attracting their attention in the classroom and creating interest in the learning. With body gestures, the pitch of the teacher's voice can also play a significant role in the teaching and learning process. Haneef, Faisal, Alvi, and Zulfiqar (2014) also draw attention to the fact that teachers' emphases on NVC are important in the process of teaching as students focus more on gestures than words to motivate students in the class during learning. From Butt and Shafiq's (2013) research results, three findings were evident:

- Teachers and students felt eye contact was an important technique supporting the teaching and learning process as well as making learning conducive to the classroom environment.
- From the responses of teachers and students the importance of body movement in classroom teaching was clear and easily understood during the teaching and learning process.
- Teachers and students felt an appropriate distance was necessary for the learning to occur as they found it very conducive to the learning environment.

Butt and Shafiq (2013) state that the, "Rise and fall in pitch of voice using varying body stances can change the meaning of a sentence; Teachers can utilize this technique in the understanding of the meanings of different words, phrases, and sentences" (p.27). As Haneef et al., (2014) indicate students learn more easily and more actively participate in the class when teachers use body gestures, body movements, facial expressions and eye contact. Hansen (2010) points out when people interact with others but do not talk, they are still communicating non-verbally. Up to 90% of what people say and feel is communicated through their actions, not their words. Therefore, Hansen explains that

although most teachers choose their words carefully, they need to monitor the NVC that they send to their students through proximity, eye contact, gestures and touching. Hansen (2010) suggests by facing students, maintaining eye contact, sitting or standing at the same plane level and conducting informal friendly conversations within arm's length increases a positive rapport with students. Furthermore, Hansen (2010) states, "In today's increasingly diverse classrooms, finding every possible way to communicate with every student is more important than ever. Teachers must become kid-watchers to familiarize themselves with their student's non-verbal patterns" (p.40). According to Johnson (1999) effective communication requires teachers and students to send and receive messages accurately. NVC is by no means the most effective way to achieve this goal but is one of the many ways that is acceptable in the classroom. "Body movements cannot be masked. They send a true message. How one walks, stands, and even how he sits sends a message - it is visual and can be seen quicker than the spoken word can be heard" (Johnson, 1999, p.7). Reeve and Reynolds (2002) suggest that gestures by students have an integral and multifaceted role in achieving collaborative understanding. These collaborative gestures provide a rich source of useful information for teachers of achieving, maintaining and refocusing on the problems to be solved, thus reinforcing and extending the meaning conveyed by what students say and, in some cases, gestures may also cause a state of cognitive uncertainty that may bring the onset of changes in students' understanding.

To conclude this segment of NVC within the environment of classroom learning, Rasmussen, Stephan, and Allen (2004) take NVC even further. They view mathematics learning as both a collective and individual process aligned to classroom discourse, but inseparable from the 'gesturing' of teachers and learners. In the context of their research, the focus was on gesturing as opposed to gestures since they viewed meaning of mathematics not in gestures, but as part of human activity that involves communicating and reorganizing one's thinking. By including the social construct of meaning that involves reasoning and symbolism, they included students' and teachers' gesturing as part of the collective learning in a classroom community. Rasmussen et al., (2004) state, "Many contemporary researchers' analyse gestures from an individual perspective. In contrast, we use a social lens to analyse gesturing as they emerge in the interactions among classroom participants and contribute to the constitution of mathematical meaning" (p.319).

2.6 Culturally responsive pedagogy in the context of classroom teaching and learning

The following is a Māori whakataukī (proverb): *Nāku te rourou, Nāu te rourou, ka ora te iwi*, that means, with your basket and my basket the people will live. This refers to cooperation and the combination of resources to get ahead. In the context of mathematics, the researcher contends, the combination of cultural perspectives, such as the use of the indigenous language, cultural pedagogies, context beliefs, protocols and values promoted by both teachers and students will bring more positive learning and will promote children's mathematical understanding and achievements.

Rychly and Graves (2012) suggest that culturally responsive pedagogy can be a teaching practice that caters for the specific cultural characteristics that make students different from one another and from the teacher. This allows students to feel validated and capable of learning when their learning environment and the teachers' pedagogy are culturally responsive to them. Students then learn best when they are engaged in an environment that allows them to feel validated as a member of the learning community and, even more so, when the information provided is accessible to them. To implement a culturally responsive pedagogy effectively Rychly and Graves (2012) emphasize four practices: teachers to be empathetic and caring, be reflective practitioners of their own beliefs about people of other cultures, be reflective of their own cultural frames of reference, and be well informed about other cultures.

Richards, Brown, and Forde (2007) point out that by providing a culturally supported learner-centred context, students strengths are identified, nurtured, and used to promote student achievement. Bonner (2014) makes it clear that regardless of the cultural setting, the importance of relationships and trust is central to culturally responsive mathematics teaching. The priority by the teachers in Bonner's study was first and foremost to make connections with their students in an effort to build relationships that involved gaining knowledge about them and their community, and to communicate with them in culturally connected ways.

Hawk, Cowley, Hill, and Sutherland (2002) state, "When positive relationships exist, students are more motivated to learn, more actively participating in their learning and the learning is likely to be more effective" (p.5). According to Richards et al., (2007) an

important aspect for teachers to consider is exploring their own personal experiences and histories as well as those experiences and histories of their students and families, "From these comes understanding of self and others and greater appreciation of differences" (p.65). Gay (2000) also considers cultural pedagogy as a requirement for classroom instruction. When teachers value the cultural diversity of every student who comes into their classroom, effective classroom practices are implemented. Hence, from Gay's perspective, there is a need for teachers to recognize the cultural value of the students when considering what is being taught in the classroom.

Culture is a variable that is often overlooked as a function of student success. According to Ukpokodu (2011) the dominant teaching practices in mathematics and other subjects, have followed a traditional approach, as being solely objective and culturally neutral. Hence, these concepts and practices in mathematics have not met the learning styles of most indigenous students and, therefore, contributed to low motivation and lack of interest in the success of mathematical achievements. Ukpokodu (2011) states, "Failing to provide indigenous students with curriculum instruction and assessment that are centred on their experiences, culture and traditions is a major obstacle to providing them with an empowering mathematical experience" (p.48). According to Ware (2002) the culture of schools often mirrors white middle-class norms and values, "This mismatch between school culture and the culture of the students creates the potential for misunderstanding of actions and misinterpretation of communication between teacher and student" (p. 429). Ware (2002) makes clear that teaching and learning of mathematics should view the inclusion of the students' culture as essential to improving students' academic success. Hence, teaching pedagogy that gives attention to incorporating planned teaching styles will support students' multiple learning styles.

Richards et al., (2007) suggests using textbooks, resources and classroom activities that are culturally supportive of students' learning. By also using images students become familiar with these practices of instruction and are allowed to think differently, bringing a greater sense of inclusion and a higher probability of success.

In their research, Avrill, Anderson, Easton, Te Maro, Smith and Hynds (2009) used cultural images to promote mathematical thinking and learning through problem solving, algebra, number and measurement. For example, the tukutuku (woven panels) "... advocated drawing mathematical perspectives from an aspect of Maori culture ..."

and then adding "a cultural perspective in order that the mana (integrity, prestige) be given to Maori rather than mathematics" (p.168).

From a school management perspective, Richards et al., (2007) highlight the importance of school policies and procedures as impacting on the delivery of curriculum to students from diverse backgrounds within a cultural context. These validate student cultural identity and promote equity and mutual respect among students. Community involvement is also advocated where families and communities are expected to find ways to become involved in school-wide activities and/or initiatives (Richards et al., 2007). These relationships should be socially accountable, responsive to family units and should exhibit continuous respect for parents and their children (Hawk et al., 2002). Therefore, a culturally responsive pedagogy for Pasifika children entails promoting home and school relationships since this has a significant effect on student success.

2.7 Constructivism in the context of classroom teaching and learning

Constructivism is a theory about knowledge and learning that describes both what 'knowing' is and how one 'comes to know'. Therefore, constructivism can be perceived as a paradigm of teaching and learning. According to Hesser (2009) a constructivist classroom is where knowledge is not transmitted from teacher to student but constructed through the collaborative efforts of both the teacher and students. Carpenter (2003) indicates that a constructivist approach in the classroom can provide meaningful and valued learning experiences for both students and teachers and contends that children are not empty vessels waiting to be filled with the knowledge from the teacher. They come into the classroom learning environment with their own experiences, ideas and understanding. Therefore, the role of the teacher in a constructivist driven class is to provide opportunities for students to talk about their learning and for them to interpret what they see, hear, or do in relation to what they already know (Carpenter, 2003). The constructivist classroom is seen as a "mini society, a community of learners engaged in activity, discourse, interpretation, justification and reflection" (Fosnot, 2013, p.1). According to Ray (2002) having a wide range of teaching and assessment strategies and with the ability to adjust those strategies, teachers can scaffold onto students' contributions, giving the opportunity for choices in their learning and for teachers to continually reflect on their teaching practice. In the study carried out by Zain, Rasidi and Abidin (2012) the student-centred learning

approach in mathematics stems from a constructivist theory of knowing and learning, which heightened students' interaction and cooperation both in and outside the classroom. They point out that students are "not passive recipients of information but are active agents engaging in constructing their own knowledge" (p.320). Mvududu (2005) claims when teaching mathematics, a constructivist oriented teacher must have the skills to structure the social climate of the classroom that allows students to discuss, reflect on and make sense of the tasks. They should take into account what students know, what they can do, and how they can negotiate meaning through interacting with one another to form a consensus. This, in turn, should enable students to put their knowledge to the test and receive feedback on its adequacy.

Constructivism can be seen as a spiral as it is about how people construct their understanding and knowledge of the world. Continuous reflections allow students to scaffold on their lived experiences to develop increased abilities to integrate new information on what they already know. It taps into, and triggers, the student's innate curiosity about the world and how things work. "They become engaged by applying their existing knowledge and real-world experience, learning to hypothesize, testing their theories, and ultimately drawing conclusions from their findings" (Education Broadcasting Corporation, 2004, p.6).

2.8 Conclusions

This literature review focused on what is NVC, a cross cultural world view of NVC, its relevance to Pasifika and New Zealand then concluded with NVC in the context of a classroom learning environment in the teaching and learning of mathematics.

Culturally responsive pedagogy was discussed in the context of learning in a classroom environment, providing insight into the importance of including cultural traditions and language heritage to enable teachers to be culturally responsive to their students and to consider culturally preferred teaching pedagogies that best meet their learning needs.

The concluding section of this review looked at the relevance of constructivism within a classroom environment, gauging how students learnt, how they constructed their understanding and knowledge of the world through experiencing and reflecting on those experiences

To give substance to this review the researcher showed the commonalities between NVC, culturally responsive pedagogy, and constructivism within this relationship model that is shown below in Figure 3. Through observations and understanding of the Pasifika child's non-verbal communication, culturally responsive pedagogies should be the teacher's priority for children to construct their own understanding and knowledge of the world through their own lived experiences.

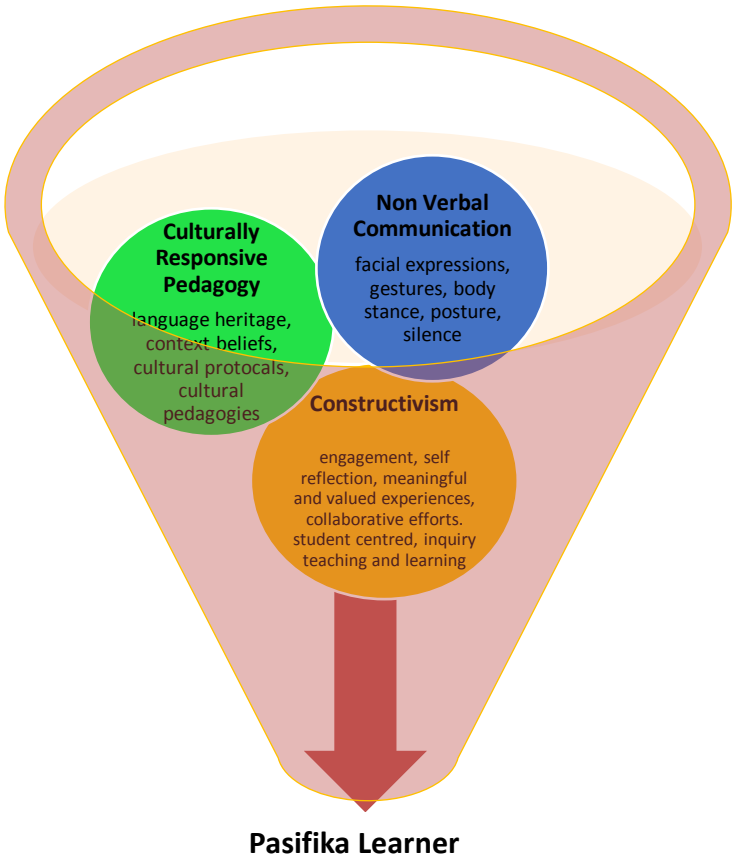

Figure 3: Venn diagram showing the collaborative connections supporting the Pasifika learner - Mauheni (2013)

CHAPTER THREE

METHODOLOGY / METHODS

3.1 Introduction

The methodological framework for this project is Kaupapa Māori as it is appropriate to the researcher's personal core values and that of her teaching praxis, based upon the Māori values she was raised with while growing up in a New Zealand Māori cultural context.

Kaupapa Māori is summarized by Graham Smith (1997) as being related to being Māori and having a connection to Māori philosophy and principles. Kaupapa Māori has been described by Linda Smith (1999) as a methodology to encourage Māori and indigenous peoples to reconstruct conventional Western research, thereby carving out their own research space; deconstructing what is research and re-constructing what is Māori research. Furthermore, Smith (1999) explains Kaupapa Māori repositions Māori world views, values and customs in the research process so that the research is then expressed in these terms.

For the researcher, Kaupapa Māori as a methodological approach offers the researcher opportunities to affirm Māori desires and Māori cultural traditions and practices. Kaupapa Māori research seeks positive outcomes as it is recognized as having originated from Māori concepts, views and values.

> Traditional Maori concepts, values and practice – such as mana, tapu, he kanohi i kitea, whakawhanaungatanga, manaakitanga, koha, and aroha ki te tangata – can safeguard the research process, the knowledge that it produced, as well as the researchers, participants and communities (Jones, Crengle, & McCreanor, 2006, p.60).

3.2 Māori research paradigms

The following Kaupapa Māori approaches provide a foundation from which to frame and view this research.

3.2.1 Whakawhanaungatanga

Whakawhanaungatanga in the context of Kaupapa Māori research includes and practises tikanga Māori (Māori customary lore) to establish relationships with the participants through culturally appropriate means (Bishop, 1996). The concept of whakawhanaungatanga occurs within the context of hui (gathering) that is initially conducted in te reo Māori to greet and welcome the participants at each session. The benefits of the whakawhanaungatanga process in research are described by Bishop (1996, p.216) as:

> Establishing whanau relationships. Establishing and maintaining relationships among all the participants is fundamental.
>
> Participant driven approaches to power and control. Establishing relationships facilitates the sharing of power and control over the research process, this is referred to as 'participant driven research'.
>
> Researcher involvement as lived experience. This infers that the researcher operates at the various levels of the physical, ethical, moral and spiritual. Researcher involvement is not only concerned with methodology.

For this research, the first formal gathering of introductions with all the participants was conducted in hui that set tikanga Māori, such as karakia (prayer circle), mihimihi (formal welcome), followed by kaitahi (sharing of food, light refreshments) at the conclusion. Each subsequent session with individuals in the interview process and small focus groups of each session was followed by whānau discussion of what had taken place or a kaitahi in appreciation of their contributions to the discussion.

3.2.2 Kaupapa Māori

Graham Smith (1997) who has written extensively about Kaupapa Māori initiatives, describes Kaupapa Māori as being "critical insights into what counts as meaningful educational transformation for Māori" (p.1). A Kaupapa Māori practice consists of key Māori principles of social engagement within a cultural premise that Linda Smith in her seminal work *Decolonizing Methodologies* identifies that "these are not prescribed codes of conduct for researchers, but tend to be prescribed for Māori researchers in cultural terms" (Smith, 1999, p.120) which are outlined here:

- Aroha ki te tangata (a respect for people).

- Kanohi kitea (the ‘seen’ face that presents yourself to people face-to-face).
- Titiro, whakarongo, kōrero (look, listen, speak).
- Manaaki ki te tangata (share and host people, be generous).
- Kia tūpato (be cautious).
- Kaua e takahia te mana o te tangata (do not trample over the mana of people).
- Kaua e mahaki (do not flaunt your knowledge).

These actions are considered by the researcher as the essence of her beliefs and values about how to conduct oneself in research. These concepts and the practices of whanaungatanga resonated with the researcher who had been raised under similar tikanga.

3.2.3 Āta: growing respectful relationships in research

Pohatu (2005) developed a Kaupapa Māori approach that is closely aligned to the personal principles of the researcher in terms of a holistic approach to relationships that make the ‘wellbeing’ of the participants of paramount consideration. Pohatu (2005) describes the researcher-participant collaboration as a form of Āta: growing respectful relationships. The principle of Āta was developed primarily as a practice approach within the area of social services.

The Āta principles act as guides about how the researcher may approach the relationships and wellbeing of the participants. This model consists of what Pohatu terms as ‘take pū’, a behavioural and theoretical strategy employed by Māori in relationships. There are seven take pū the researcher has incorporated to guide the research practice of this work. The take pū are:

> Āta-haere: To be intentional and approach reflectively. Be deliberate and move with respect and integrity. This signals the act of moving with an awareness of relationships, people’s environments and requirements.
>
> Āta-whakarongo: To listen with reflective deliberation. This requires patience and tolerance. It gives space to listen and communicate to the heart, mind and soul of the speaker.
>
> Āta-kōrero: To communicate and speak with clarity. This requires quality preparation and a deliberate gathering of what is to be communicated. The

purpose is to ensure a quality of presentation, to speak with conviction, to be focused.

Āta-tuhi: To communicate and write with deliberation. The need to be constantly reflective; to know for what reason, writing is being undertaken. The significance of consistently monitoring and measuring quality is implicit.

Āta-mahi: To work diligently and with conviction that what is being done is correct and appropriate to the issue and relationship involved so that the validity of the task is understood and accepted.

Āta-whakaako: To deliberately instill knowledge and understanding. There are clear reasons why knowledge is shared; it is given in the required manner to appropriate participants at the appropriate time and place.

Āta-titiro: To look and study kaupapa and their many relationships, with reflective deliberation (Pohatu, 2005, p. 5-6).

The principles outlined in the researcher's conceptual framework model, Tātai Āwhinatia of mahi tika āna, āta titiro, āta whakaaro, āta tūtuki and te tuku tākoha, correlate with the cultural aspects of this Kaupapa Māori approach.

3.2.4 Mātauranga Māori

Shane Edwards of Ngāti Maniapoto views mātauranga Māori (Māori knowledge) as a (k)new idea. He explains mātauranga Māori as "an ancient concept in a new time, mātauranga Māori offers opportunities to re-member, re-position and re-think elements of Māori knowledge" (Edwards, 2009, p.78). The k(new) idea operates on the same premise as Kaupapa Māori that positions one's Māori worldview as an epistemological truth. Edwards claims that mātauranga Māori is a (k)new space that builds upon kaupapa Māori and creates what he terms as the 'third' space. He posits that the first space is about the dominant group, the second space attempts to bring Māori into that space, and the third space is Māori, our 'knowing' and 'being' "this space forges new frontiers that do not require us to expend vast amounts of energy on the validation of others, of translating our meanings, of explaining ourselves or justifying our ways of knowing and being" (Edwards, 2009, p.4).

The place of mātauranga Māori as a k(new) space in this exploratory investigation validates and legitimates the conceptual framework of the research informed by the indigenous Māori values of the researcher. The concepts of tātai āwhintia (quality service), mahi tika āna (learning in knowing), āta titiro (observation), āta whakaaro (critical reflection), āta tutuki (recognition and implementation of new learning) and te

tuku tākoha (making contributions of consequence) provide an indigenous lens through which this work is viewed. The k(new) concept aptly describes the theoretical parameters of the framework that serve to demonstrate the epistemological position of the researcher.

3.2.5 Narrative inquiry

Narrative inquiry such as Kaupapa Māori research provides a 'voice' for the participants in a holistic, culturally appropriate manner because storytelling allows the research participants to select, recollect and reflect on stories within their own cultural context and language rather than that of the researcher. According to Bishop (1996) narrative inquiry places the safety of the participant at the centre of the process and describes this 'safety' zone as:

- Being a participant with an agreed agenda.
- Being a participant within the project being considered in the narratives.
- Talking with other research participants in the form of interviews as chat.
- Constructing joint narratives about events with other research participants (p.24).

For this research, the narrative approach appealed to the participants who were happy to participate in two individual interviews, one focus group session, and to keep a reflective diary in the last four weeks of the project to capture any new learning; new teaching strategies being implemented, and the outcomes of those strategies. The prospect of doing individual and group work held a lot of interest for the group because they had opportunities to talk with each other and co-construct narratives and critically discuss their own perspectives.

3.2.6 Tātai Āwhinatia

From a Kaupapa Māori perspective, and of particular personal relevance to the researcher, is the visual symbol of Tūhoronuku – Te Manu Aute a Rāhiri on which the researcher has based her philosophical framework.

Figure 4: Tūhoronuku-Te Manu Aute a Rāhiri (Land speeder-the kite of Rāhiri) **http://nz.images.search.yahoo.com/images/viewtuhoronuku.url=http/news.tangatawhenua.com retrieved10/10/2012**

The researcher's conceptual framework of Tātai Āwhinatia is visually presented by the symbol, 'Tūhoronuku', a manu aute (kite) of ancient significance for the researcher's people of Ngāpuhi. Tūhoronuku, the land speeder kite of Rāhiri, was a traditional Māori kite made by Kaharau, the son of Rāhiri (Sissons, Wihongi & Hohepa, 2001). Rāhiri is the founding ancestor of Ngāpuhi and the grandson of Puhi Moana Ariki, the eponymous ancestor of Ngāpuhi. Tūhoronuku who was put to flight by Kaharau under an incantation to journey over his tribal lands (Sissons et al., 2001). The kite landed among the Ngāti Awa people outside Kaikohe in the North and it was here that Kaharau met Kohine Mataroa with whom he had a son, Te Taura (kite string). A grandson, Taurapoho, soon followed. Taurapoho is the tātai (line) that is a direct ancestral line to the researcher.

Hence, the researcher chose to use Tūhoronuku as a visual image for her conceptual framework as it gives a worldview of the researcher's ancestors, the researcher herself, and this research topic.

Mahi tika āna

This research created a space for the research participants to dialogue, reflect and self-critique their personal understanding and awareness of NVC and to understand how this phenomenon of NVC is evident in Pasifika children whom they teach; specifically, in the area of mathematics.

This process of mahi tika āna allowed each participant to internally self-reflect and to then articulate their responses and thoughts to the questions asked in the initial interview, the group interview and the concluding interview in regard to NVC. As experienced teachers, the participants possessed a succession of professional knowledge, content knowledge and classroom knowledge. This knowledge base related to teaching the curriculum, to the children in its delivery, and the implementation of a series of pastoral care strategies. This was enhanced by their individual unique personal qualities, talents and abilities. Therefore, at various stages of the research, the questions required that the participants undergo rigorous and critical self-reflection as the questions challenged the participants with what they perceived NVC to be and how it may, or may not, impact on their teaching strategies. The topic and the research questions were intended to critically engage each participant in identifying, recognising and considering if more learning was required to inform and progress their current 'knowing' of the research topic.

The research project challenged the participants to reflect, identify and acknowledge if their 'knowing' of teaching mathematics benefitted Pasifika children. When in service to Pasifika children who displayed significant non-verbal communication, mahi tika āna required that the participants realised that 'more learning' is required beyond what one already knows. In teaching and disseminating knowledge to others, what 'one knows' is not as important as what 'others', (those we teach) know to be meaningful learning and teaching. In essence, the teaching of mathematics is not of prime importance. What is important is how Pasifika children prefer to interact and communicate from their 'place of knowing' through the use of NVC that takes precedence. The participants were required to critically analyse the 'knowing' of children, if they wished to effect a higher engagement with Pasifika children in mathematics. Edwards claims that "the relationship between knowing, knowledge building and wise practice, and dissemination, are exciting" (Edwards, 2012, p.34).

Āta Titiro

An effective classroom teacher is one who closely observes the learning styles and strategies children use and, in turn, reciprocates with the appropriate teaching strategies. Āta titiro, from a Māori position, associates observation as a form of learning to inform and enhance practice that is transformative. "What counts as school knowledge, the way school knowledge is organized, resourced, taught and evaluated, the underlying codes that structure such knowledge, access to and legitimation of school knowledge is determined by the dominant culture" (Milne, 2009, p.22).

The researcher approached the participant interview process using the premise of āta titiro and pono mārika. A focus on āta titiro provided the research participants with a dialogic forum to discuss their own observations and interpret what NVC looked like to them. Pono mārika challenged the research participants, who are predominantly non-Maori and who do not share a 'knowing' or a 'lived' experience of these paradigms. Āta titiro and pono mārika are located in Māori practices of the marae (building complex) and in Māori communities entrenched in the Māori language, practices and rituals. The dilemma of a juxtaposition of indigenous and Western worldviews is described by Michel Foucault (1977) as:

> What we know and how we know [are] grounded in shifting and diverse historical human practices, politics, and power. There are in the production of knowledge multiple centres of power in constant struggle; [through] conflict, compromise, and negotiation . . . whichever group is strongest establishes its own rules on what can be known and how it can be known. A non-power related truth game is not possible, thus humanity installs each of its violence in a system of rules and thus proceeds from domination to domination (p.151).

When posed with the question of identifying what NVC of Pasifika children looked like in the context of the classroom, the participant's responses affirmed the principle of āta titiro. Consequently, these questions challenged the participants to critically unpack the incumbent interpretations they had of what they observed. The range of responses highlighted the very different paradigms of observation displayed by the participants to the paradigm of āta titiro as practised by the researcher. In anticipation of this application, the researcher framed a range of critical reflection questions to enable each participant to navigate their individual landscapes of āta titiro and pono mārika through further self-critical reflection subsequent to viewing a video of classroom teaching of Pasifika children employing NVC. How the classroom teachers responded to, and interpreted, these NVC expressions generated robust discussions within the group.

.Āta Whakaaro

One of the key tenets of the teaching profession is the process of self-reflection to inform and develop one's practice. Zepke (2003) states "reflective teachers, most fundamentally, are ones who are consistently bringing a renewed awareness and understanding to their practice of teaching" (p.15).

Āta whakaaro, as a process of critical reflection, underpins the topic of this research and the design of the questions. Each exploratory and investigative question engaged the participants in critical self-reflection about the following:

- Their awareness and understanding of NVC: They were asked to observe, identify and reflect on the NVC cues used by the Pasifika children they taught during mathematics.
- The group also conducted a critique of a video of Pasifika children employing a range of NVC during a mathematics session. How the teacher responded to the NVC initiated insightful discussions by the participants.

The analysis of the seven participants' responses will be discussed further in Chapter Four.

Te Tuku Tākoha

Making a contribution of consequence by the research participants to the teaching and learning experience of their Pasifika children was strongly highlighted in the third and final session with each participant. A significant shift in mind-set had occurred.

3.3 Ethical considerations

This research was aligned with the Application for Ethics Approval for Low Ethical Risk Research Project required by Auckland University of Technology. Pursuant to this application the following processes were adhered to: informed and voluntary consent by the research participants, respect for the rights of privacy and confidentiality for the participants and the data provided by the participants, minimising harm, truthfulness, including limitation of deception through consistent consultation, full and open

transparency regarding the purpose, use and forms of data provided by the participants, and social and cultural sensitivity will be demonstrated at all times towards each participant and their knowledge and life experiences.

Storage of all audio taped interviews and notes recorded will be stored in locked storage locations with the supervisor within the Faculty of Applied Humanities. Six years after the completion of this thesis research, all audio tapes and recorded notes will be destroyed by being shredded.

3.4 Method of gathering data

This section takes an interpretative approach to highlight 'the making sense' of social interactions in the context of teachers who teach mathematics to Pasifika children. This approach seeks to understand and then describe meaningful social interactions of the teachers with Pasifika children who employ NVC strategies. The interpretive approach allows for the analysis of the "powerful everyday theories used by ordinary people as they create fluid definitions of their interactions with the children" (Davidson & Tolich, 1999, p. 27).

This research used the 'top-down' theory characterized by Gibson and Brown (2009) as the effort of a researcher to create theory through their research by (but not limited to) generating and clarifying concepts through the analysis of the data. "Researchers use some pre-formulated theoretical and conceptual schema and commitments to classify, characterize and make sense of the social world – we call this 'top-down' theory" (Gibson & Brown, 2009, p. 15). This theory is situated in the conceptual framework of this work.

3.5 The research participants

The researcher was interested in the individual perspectives and the 'group thinking' dynamics of all the potential participants. Collaborative team planning, peer reflection and shared professional dialogue are common practices in the teaching community, particularly at the primary school level. With this in mind, the researcher considered group discussion as adding a rich discourse to the research. Davidson and Tolich (1999) describe the focus group method as a technique that produces considerable and, often,

complex information in a comparatively short time, "Focus groups have at their basis a promotion of the value of investigating through subjective knowledge and life experience of the respondents" (p. 64). Greener (2011) refers to the focus group method as an ideal catalyst for the construction of meaning in a small group, that "... addresses power imbalances between the researcher and the researched as well as giving the maximum space for shared meaning to emerge" (p.78).

Initial approaches were made to principals of two South Auckland schools. Each school comprised a junior area, middle area and senior area that catered for children aged from 5 - 13 years-old. Both schools had a school roll with a majority of Pasifika children. The long term professional association of the researcher with the staff and senior management at the schools provided her easy access. Having formalized access to one of the schools, the researcher made the initial approach to staff.

Participation in this research was on a voluntary basis. The specific research requirements for potential interested teachers were:

- The participant is over 20 years-old.
- The participant has a teaching service of five years or more.
- The participant is currently teaching Year 5/6 children (9-10 years old)
- The participants represent a range of ethnicities.

The rationale of these terms took into consideration that teachers with a teaching service of five years or more would be fully registered teachers, have developed a sound working knowledge of the professional components of teaching and working with children and, most likely, would have held a variety of key roles and responsibilities within the school culture. As staff in this school, the networks with the local community would be in place and the first-hand experience with Pasifika children and their communities would provide the context for the premise of the research. The school has a student roll of 90% of Pasifika children.

The specific request for teachers of Year 5/6 levels of 9 and 10 year-old children came from the teaching experience of the researcher who was cognizant with how this age group was much more conscious of their learning abilities and who possessed strong social skills and a range of communication skills that were often displayed

unconsciously through NVC, "[S]students learn in diverse and wondrous ways, including ways that bypass the teacher in the classroom and in ways that require neither the classroom or the teacher" (Palmer, 2007, p. 7, as cited in McGee & Fraser, 2012). In turn, this age group was also sensitive to the NVC of others. Add to this dynamic the socialisation and communication practices embedded in the Pasifika cultural background of the children, which places a strong emphasis on non-verbal cues as a code of communication in specific contexts.

3.6 The teachers

Initially, ten staff members expressed an interest in the research and in attending a presentation of the research parameters by the researcher. Following the presentation, seven of them volunteered to participate in the research. This was an interesting point for the researcher, as this provided an early indication of the level of interest these teachers had in the topic.

Each of the seven teachers had been teaching for more than five years at the time this research was conducted. Four of the seven participants teach Year 5 and Year 6 mainstream classes. Two participants teach Year 5 and Year 6 in the Samoan unit and one teaches Year 5 and Year 6 in the Māori bilingual unit. The ethnic representation across the group participants comprised two Samoan, one Cook Islander, two Māori and two Pākeha. Pseudonyms have been given to the participants: *Hae, Kei, Moe, Nai, Pua, Ria* and *Teo.*

3.7 Data collection method

The data collection method employed in this work was grounded in qualitative research. Qualitative research encourages engagement between the participants and the researcher, the participants with each other, and the facilitation of self-reflection, dialogic discussion and group interaction and discussion, "[Q]qualitative research only works really well with small numbers. Because researchers collect all the data themselves, qualitative research also requires proximity to the respondents" (Davidson & Tolich, 1999, p. 117). Overall, this work follows the interpretive approach. This is defined by Neuman (1997, as cited in Cohen, Manion & Morrison, 2000, p.63, 68) as "a systematic analysis of social meaningful action through the direct detailed observation of people in natural settings in order to arrive at understandings and interpretations of how people create and maintain their social worlds." Glaser and Strauss (1967) caution that interpretive researchers should be grounded on the data that are generated and that theory should not precede the research, but follow it. The use of an inductive approach also features strongly. This is described by Greener (2011) as "an inductive approach to research that encourages researchers to move iteratively between their data and their emergent ideas to build theory that is literally grounded in the research setting" (p.95).

Triangulation is the use of two or more methods of data collection. Gibson and Brown (2009) state that "triangulation can be useful for checking the trust-worthiness of different sources of data; for example, how accurate a data source is or for examining the same phenomenon from different points of view" (p.59). This research also follows the combined levels of the triangulation method. This allows for the triangulation of three methods to verify the reliability and validity of the research. The three data collection methods employed, comprised individual interviews, focus groups and reflective diaries. Lin (1970, as cited in Cohen, et al., 2000) states that "exclusive reliance on one method may bias or distort the various interpretations made by the researcher of that which is being studied" (p. 112-113). Smith (1975, as cited in Cohen, et al., 2000) also states that;

> Under such conditions if data divergence is minimal then one may feel more confident in the data's validity. On the other hand, if the data is significantly different, then one has an idea to possible sources of biased measurement which should be further investigated" (p.116-117).

Confidence in one's research occurs when the findings correlate closely with the range of data collection methods used. Triangulation in interpretive research investigates the different viewpoints of the participants and will gather a range of experience. The typology of triangulation includes: time triangulation, space triangulation, combined levels of triangulation, theoretical triangulation, investigator triangulation and methodological triangulation (Denzin, 1970, as cited in Cohen, et al., 2000).

3.7.1 Individual interviews

Gubrium and Holstein (2001) describe interviews as face-to-face conversations with a purpose between two individuals, the interviewer, whose responsibility it is to bring the interviewee's full attention to the task and encourage him or her to answer honestly, but otherwise not shape or influence their responses. Cohen, et al., (2000) explain interviews as being a flexible tool for gathering information. The process of interviewing allows participants to share how they see the world they live in. This is also seen as a social encounter where information is shared. According to DiCicco-Bloom and Crabtree (2006) the purpose of knowing the interviewee better varies according to the research question and the disciplinary perspective of the researcher. In this research, an initial one-on-one interview with each of the seven participants was employed. This involved the participants being asked a set of predetermined questions in the same order to set the premise for the topic. For the concluding interview, it was collaboratively decided that the participants be given a copy of the questions before the meeting with the researcher to allow for a more in-depth discussion and flexibility as the questions followed the video viewing and individual reflective diaries. In hindsight, after asking the questions, the follow-up questions varied according to the answers each participant gave. The researcher used a hand-held tape recorder with built-in microphone to record each of the sessions. In each interview spare batteries were on hand and the equipment was pretested by the researcher stating each participant's name.

3.7.2 Group video viewing and critique

Video data provide opportunity to explore teaching strategies through detailed observations. Star and Strickland (2008) draw attention to the fact that video has assumed an increasingly prominent role in teacher education, particularly by viewing the videotaped class lessons as their research explores this form of videoing and reports on its impact as a means to improve teachers' ability to be observers of classroom practice.

Two video observation sessions were held with four participants in Session One and three participants in Session Two. This method required the two groups to view three minute video clips of Pasifika children using a range of NVC strategies in a classroom setting, and to view how the teacher responded to these strategies and the implications for teaching and learning in each clip. The participants were asked to list the NVC strategies they recognized being displayed by the Pasifika children and the teacher in the video. Discussion and feedback from the group took place after each clip about what they had observed about the children and the teacher. The seven participants were placed into two separate groups according to their availability and to facilitate a more productive use of time. One hour was set aside for these sessions to fit the busy and, often, tight schedules of the staff. Both sessions were audio recorded for data analysis purposes:

Group 1: Four participants: This group viewed six video clips and engaged in insightful discussions and feedback.

Group 2: Three participants: This group viewed four video clips, and as in Group 1, in-depth discussions ensued.

One implication the researcher did not consider that hindered her ability to transcribe the tape recordings for the first session was the use of one tape recorder instead of two or more. Due to the participants, at times, contributing to the discussion by speaking over each other, having to cope with the surrounding sounds in and around the classroom (students were coming in and out of the classroom), and school notices announced over the classroom loudspeaker, meant that the researcher had difficulty hearing an individual voice. Therefore, an expert transcriber was bought in to support the researcher with the validity and reliability of what was being transcribed.

3.7.3 Reflective diaries

The researcher is of the view that reflective diaries play a significant role in the development of the inquiry skills of the participants as well as providing an awareness of their ongoing learning. McGuiness (2009) indicated that diaries proved immensely valuable as they became personal and meaningful in the way they made sense to the individuals themselves.

Each of the seven participants agreed to keep a reflective diary over a two-week period where they made notes of the various NVC actions of the children in their class during the teaching of mathematics. This diary was to also include reflections. Due to work-load concerns and various roles and responsibilities, only three of the seven participants completed and submitted a reflection diary for data analysis.

3.7.4 The Research questions

Initial teacher interview questions were:

- What is your definition of NVC? Give examples for each if possible.
- Identify NVC that has happened while teaching mathematics and explain why.
- Do you think teachers are consciously aware of Pasifika children's NVC in mathematics?
- When planning your mathematics sessions do you consciously consider Pasifika children's NVC?
- Do you think teachers need to be culturally aware of the children in their class?

Group observation and discussion of video clips showing teacher/children interaction during mathematics included the following:

- As you view each video clip make a list of the NVC used by the children.
- After each video clip discuss your observations with you peers.
- Critique possible reasons for the NVC used by the children in relation to the teacher, the other children and the maths session, in general.

- At the end of the session consider a reflective summary of what you observed and discussed from a teaching practitioner perspective.

Concluding teacher interview questions were:

- Has this study increased your understanding of NVC?
- Did this study help you to improve your teaching of mathematics?
- Do you think teachers need to think about the NVC of Pasifika children during mathematics?
- Is NVC important to children's learning?
- Do teachers need to be more culturally aware or responsive to the NVC of Pasifika children?

3.8 Conclusions

This chapter has highlighted the various approaches that occur when classroom teachers interacted with Pasifika children while teaching mathematics. The researcher drew on the principles of whakawhanaungatanga, Kaupapa Māori, Āta, matauranga Māori and narrative inquiry from a Māori research paradigm, which also included her conceptual framework of Tātai Āwhinatia. Data collected were from the classroom teachers' perspectives of NVC of the Pasifika children in their classrooms, which were achieved through initial face-to-face interviews with each of the participants, followed by group observations and discussion of video clips showing a teacher interacting with children during mathematics, concluding with a final face-to-face interview with each of the participants. Cohen and Manion (1992) suggested that accurate data may be obtained if the researcher established a rapport with the interviewee and asked relevant questions in the interview. As a first time researcher, networking with the school community had already been well established through whanaungatanga (wider family ties).

CHAPTER FOUR

FINDINGS

4.1 Introduction

This chapter presents the findings that explored Year 5 and 6 classroom teachers' perceptions of NVC when teaching mathematics to Pasifika children within a New Zealand context. A qualitative research methodology was used, based on a two pronged approach: 1) Kaupapa Māori, that gave the researcher opportunities to affirm Māori cultural traditions through her promotion and practices of whanaungatanga, āta, mātauranga Māori and Tātai Āwhinatia with the participants, as discussed in Chapter Three; and, 2) an interpretative approach of social interactions in the context of teachers who teach mathematics to Pasifika children and the use of NVC strategies. Seven classroom teachers contributed their views of NVC, combining their current professional and social knowledge of the Year 5 and 6 children in their classrooms. After being shown video clips the teachers described in detail the way the Pasifika children in their classroom used NVC as well as those of the teacher and children in the video clips. They also openly discussed the values of recognising NVC and its importance when they were teaching mathematics.

The data for this research were collected and analysed in the previous chapter and will now be presented independently as they were generated from the interview questions, the participants' responses to these questions, and the participants' responses to the video clips of teachers and children interacting during mathematics. The findings will be discussed in themes set out below:

- Teachers' beliefs about their understanding of NVC when teaching mathematics to Pasifika children;
- Teachers' beliefs of NVC as a tool to support teaching and learning of mathematics;
- Teachers' reflective observations and awareness of NVC from viewing video clips during the teaching of Mathematics;
- Teachers' reflective summaries of their own pedagogical practices when teaching mathematics;

- Teachers' belief about cultural awareness and responsiveness in the context of Pasifika children's learning.
- Key factors that give impetus to the NVC of children when teaching and learning of mathematics.

For each of the sections, the findings revealed the participant's perspectives about the NVC of the children in their class while teaching mathematics, the NVC they employed themselves when teaching, their reflections of their own pedagogical practices, and the value of cultural awareness in the context of Pasifika children's learning.

4.2 Teachers' beliefs of NVC when teaching mathematics to Pasifika children

Each participant was asked a series of initial questions about why they should be aware of NVC during the teaching of mathematics to Pasifika children and would there be advantages for teachers in developing and extending their teaching skills and strategies to include NVC.

Each of the participants gave similar reflective definitions of NVC and, from these responses, the researcher chose to collate and classify them using Durie's (1997) model of Te Whare Tapa Wha as it supported the researcher's view that a child's mauri ora (wellbeing) was integral to these dimensions. This model depicts the four corners of a wharenui (meeting house) that symbolizes the following dimensions of wellbeing; taha hinengaro (mental health), taha whānau (family health), taha wairua (spiritual health) and taha tinana (physical health). As Durie explained, each corner of the house must be strong for it to be structurally balanced, so too, each dimension of wellbeing must be balanced for one to exist.

From the participants' responses, the researcher chose to align their responses to the dimensions promoted by Durie (1997), as shown below:

- Taha Hinengaro (mental health) – The capacity to communicate, to think and to feel that mind and body are inseparable. Thoughts, feelings, and emotions are integral components of the body and soul.
- Taha Whanau (family health) – The capacity to belong, to care and to share where individuals are part of wider social systems.

- Taha Wairua (spiritual health) – The capacity for faith and the wider community. The spiritual essence of a person is his/her life force.
- Taha Tinana (physical health) - The capacity for physical growth and development. Good physical health is required for optimal development.

The participants provided a range of examples to describe the four features of Durie's Tapa Wha model, which illustrated that they recognized the value of NVC as an important pedagogical tool in the teaching of mathematics to Pasifika children.

Taha Hinegaro: Communicating through emotions is important and more meaningful than the exchange of words. In the context of this research, a child who is anxious, worried and withdrawn may visibly become disruptive, unsettled, or distressed.
• Looking vacant, blank, just staring. • No eye contact so they won't get asked. • Won't look up when questions are asked. • Distant look in their eyes or averting eye contact. • With worried looks their eyes are wide. • Hanging of the head, shoulders hunched over • Covertly looking sideways or at another's shoulder • Rolling of eyes with downward grimaces giving impression of "do I have to?" • Slight frown with an astounded look of "are you really talking to me?" • Looking uncomfortable because they don't know how to explain. • Nodding yes, yet facial expression shows they don't really know or understand. • Hiding in a corner or behind someone because they are too shy, they don't want to share their work, they don't want to be asked a question, or to see who is watching. • Heads downward with eyes looking sideways but not at the teacher. • Hands are moving nervously all the time. • They sit withdrawn from what is happening with a look of disengagement. • Lack of confidence to share because they're scared it may be the wrong answer. • Feeling unsafe and won't take a risk to share their strategy. • Nodding of head indicating they understand but they really don't. • Downcast eyes, heads bent, and beginning to sweat.
Taha Whānau: Provides one with the strength to be who he is, given the link to his ancestors, ties to his past, present and future, and gives an understanding of the importance of whānau. In the context of this research cultural traditions and beliefs do have a major impact on children's behaviour even in a learning environment.
• One of my Samoan boys is a *matai* and during maths the groups of Samoan boys tend to work by talking through their 'matai'. He speaks on their behalf. It is a Samoan thing. • Heads bowed and looking down is a sign of respect from my Samoan children. • They tend not to look at you directly but past you as, for some, it is their way of cultural upbringing. • By looking directly at the teacher is a no-no as they are brought up to know that this is culturally disrespectful.
Taha Wairua: The positive spiritual essence of a person that determines who and what he/she is. In the context of this research spiritual awareness is the key to children making effective contributions to discussions and that promotes self-confidence and self-esteem.
• Tweak of eyebrow to show 'yes they agree', eager to learn. • Sitting with body relaxed showing confidence. • They sit confidently and look at me, ready to go. • Sitting up attentively and arms folded on desk ready to go.

Taha Tinana: This physical dimension is just one aspect of health and wellbeing and cannot be separated from the aspect of mind, spirit, and family. In the context of this research the child's physical appearance demonstrates the emotional stress both positive and negative that influence the child's mind and spirit.	
Facial expressions of: smile happiness laughter confusion anxiety anger frowns sadness tiredness disinterest blank look	Body is tense because they are feeling angry or uptight. Body is fidgeting - are they becoming anxious or worried. Body is relaxed, more open. Body is lethargic. Body rocking and forth wanting to go to the toilet or a drink of water Arms folded in anger. Hands playing with something. Uplift of head. Stomping of feet. Shoulder shrugs. Sitting cross legged feeling relaxed.

Figure 5: Collated responses aligned to Durie's (1997) model of Te Whare Tapa Whā

The participants' contributions to the discussion were very similar, yet the following NVC as explained by these individuals, were not identified by the other participants.

Hae identified body stance as being of significant importance from a teacher's point of view, explaining that it is how they (as teachers) stand when giving instructions and how they present themselves when modelling to children while using different resource materials, as well as how they hold themselves when interacting around the classroom with the children. Both *Teo* and *Pua* considered the position of the body and hands as being of importance. Sitting up attentively with arms folded, whether at their desks or on the mat, demonstrated that the children are ready to go. With the body feeling relaxed and the use of various hand movements demonstrates the students' eagerness to participate in maths lessons. Responding to questions by the show of an upraised hand or giving explanations while using hand movements, was also an indication of children having clear expectations and goals. *Moe* found it interesting how children could subtly hide behind each other, at times, without teachers even noticing this. For *Moe*, this was a clear sign they lacked the confidence to participate or to contribute to discussions. Knees tucked into the chest, upper body leaning over knees, head bent down and hands picking up imaginary fluff, was an indication of how the children hid their bodies, when not wanting to be seen. *Nai* noted the NVC of children who wanted to go to the toilet or to have a drink of water during mathematics. This included consistent rocking back and forth of the body demonstrating the urgency to go to the toilet and the worried facial

expressions or the raised hand seeking permission, yet covertly looking anywhere else but at the teacher.

Kei gives an in-depth description on how students hold their shoulders in certain ways to depict an emotion. The shoulders can be hunched forward, the head tucked in between the shoulder blades with facial expressions of sheer anger or frustration, or, how the shoulder is used as a 'battering ram', swinging abruptly with force to hit their peers giving the impression of "I don't care." *Kei* also describes that when the shoulders are set back, the body held straight, there is a facial expression of a smile with wide open eyes that can indicate a readiness to engage in mathematics. The importance of noting the simultaneous shoulder positions and facial expressions of the children when asking questions was also highlighted by *Kei* because when she asked questions, she observed the immediate downward slump of the shoulders, head lowered with facial beginnings of uncertainty, frustration, confusion or of not being sure.

For the researcher, each of the NVC discussed by the participants, whether in a positive or negative light, aligned to the four dimensions of Durie's (1997) model of Te Whare Tapa Wha. For the overall wellbeing of the child to be maintained and nurtured, their mental, physical and spiritual health, together with the knowledge of belonging to wider social systems, should be a priority for classroom teachers. This nuanced understanding would promote a positive teaching environment and should encourage children to participate and contribute to discussions during the learning of mathematics with much more confidence.

4.3 Teachers' beliefs of NVC as a tool to support teaching and learning of mathematics

The seven participants were positive about the need for them to be consciously aware of their children's NVC as they believed it supported how they planned and implemented the teaching of mathematics. The following unique statements from each of them outline why they considered NVC as a tool to support their teaching of mathematics.

Hae: Speaking for myself I need to consider using a lot more of those thinking strategies like Gardner's multiple intelligence and Blooms Taxonomy; looking at children who are visual mathematically. I want to really know my children enough to know the ways that they learn more consistently and more effectively rather than with

how I teach because I would like to see myself as a teacher who would give and take rather than just take.

Kei: It means a lot to children when they see you encouraging them or approving of what they are doing. Giving a smile goes a long way. It encourages them a lot and you can see it in their facial expressions. Even their arms folded could also mean 'I'm waiting' or it could be their way of questioning why that happened. We have to consider why they are calmly sitting and not getting emotional, or, when they are fidgeting and their facial expressions are indicating a lack of interest.

Moe: It's about knowing them both in and out of the classroom. When they come into the class you know what kind of a day you are going to have with them because of their NVC.

Nai: If you can read the body language of the children and have a look at what you're saying, or, what they're saying, then you know what the body language is saying.

Pua: Yes, I'm a firm believer that if you can read your children's body language and you know they're going to have issues then you need to be prepared to alter your maths – one day it could be more formal, some days they may just need worksheets. I don't do worksheets as a rule, I hate them, but there are days you need them and other days it's about creating fun maths.

Ria: It's all those NVC cues to watch out for because we need to be consciously aware of their body language. Like when we've completed a maths session, the simple sign of 'thumbs up' tells me whether they have grasped the concept or not. I do this quite regularly throughout my maths sessions and this is their way of giving me feedback which tells me whether or not I need to work with them a bit further.

Teo: I think teachers are more aware of NVC if the class isn't so big. For me this is the first year I've had a small class so it's been fabulous. I've become really aware of their body language that is either saying I need help or I can help.

The participants did not specifically consider the NVC of the children when planning for mathematics because it was usually done a week in advance and in accordance with the syndicate's conceptual themes, group levels and resources that were ready and available. They all agreed that their planning was more as a result of assessments completed, knowing the abilities and learning styles of their children, and having the flexibility to change what they have planned when the situation required it.

4.4 Teachers' awareness and reflective observations of the value of recognizing NVC when teaching mathematics

The participants were required to view and critique 10 video clips of children engaged in mathematics with their classroom teacher, and a researcher of mathematics who was working alongside the classroom teacher. Because of the participants' after school

responsibilities and commitments, the researcher formed two group sessions to allow the participants to choose what one to attend, according to their availability. The video clips were short 1-2 minute vignettes of Year 6/7 children, predominantly Pasifika children, engaged in the learning of mathematics. The participants were asked to observe the NVC of the children and the teacher then, after viewing the video clips, critique possible reasons for the NVC observed in relation to the teacher, the children, and the mathematics session, in general. The context of the 10 video clips varied. There were clips of the classroom teacher leading whole class mathematics sessions and working with different groups of children. There were video clips showing groups of children working independently together. There were clips of the researcher, who was working alongside the classroom teacher, working with groups of children during mathematics.

For this section of the research, where there is a name for the researcher who worked alongside this group of children and the class teacher, the pseudonym of *Ms Tiare* will be used.

The researcher made it known to the participants that the clips being observed were part of another mathematics research project by *Ms Tiare* who came in regularly to work alongside the classroom teacher and children during mathematics lessons over a period of 10 weeks. This was a natural teaching environment, where the children felt very comfortable with the cameras, as these were not considered an issue for them. The classroom teacher had been teaching for five years at this year level and had volunteered to participate to enhance his own pedagogical practices.

Participants identified a wide range of NVC displayed by the children and attempted to explain the NVC that were occurring. Attention was given to the teacher as part of the explanation. At various times the participants related to some of the interactions and related it to their own teaching experience. These peripheral conversations were collated as reflections; these will be discussed later in the chapter.

Focusing on the critical observations identified from the data collected, the responses gauged from the participants for each of the video clips they critiqued, have been collated and summarized as follows:

Video clip 1

The participants immediately identified the NVC they observed from the children; the facial expressions of frustration/anxiety, heads down looking at the floor and with no eye contact with their teacher. They also noted the children fiddling with pens, pieces of paper and, even, rubbing hands together which, to them, indicated a lack of focus on the maths task given, to the point where they were not even bothering with the task.

Although they did not identify any NVC of the teacher, *Hae* actually felt sorry for him as he was asking lots of questions without trying to give the answers himself. Yet, *Kei* observed how the teacher was standing over the group and, although he was talking to all of them, he singled out one child to answer his questions – *"like he was focusing on only one person and expecting her to know the answer," Kei* wondered if this was a form of NVC being demonstrated by the teacher.

Video clip 2

The participants all agreed that this session began well as the teacher focused on the whole group and the children's enthusiasm was evident when he introduced a new mathematical concept. Children immediately showed positive engagement, through their eyes and body contact, as they focused on giving the teacher their full attention. Participants highlighted how the children felt safe when they shared with each other what they were doing. It was when the teacher began asking questions specifically to individuals, that the participants noted the change in the children's body language. They were surprised at the quick change of the children's NVC from showing excitement at learning a new concept to when the teacher began to ask questions identifying them by name. The following NVC were recorded by the participants:

- The constant fiddling with pieces of paper caused distraction to others.
- The nervous look of a bowed head with eyes covertly looking side to side that says, *Oh my gosh, you're going to ask me just because I'm recording?*
- The child with hands on knees, supporting his head, while eyes cast down to the floor – total disengagement.
- The nervous sounds of giggling.

Video clip 3

After explaining the maths problem and his expectations of the group, the teacher then left the children to work independently in pairs. The participants agreed the children began with enthusiasm and were engaging, facing each other in a circle talking about the problem and who was going to do what, as they were all responsible for completing the task. The participants began to notice the gradual change in the children's NVC. The looks of frustration, confusion, bafflement, and of being unsure, were seen on the children's faces as was the constant twirling and clicking of pens, and the fidgeting movements of their bodies and hands. The participants collectively agreed that the changes occurred because the children lacked a real understanding of the task at hand. Hence, they were unsure of what or how they were to solve the maths problem. As *Nai* shared, *They had that look of real confusion because they're struggling to identify strategies to solve the task. They don't really understand what they supposed to do because they're all looking at each other with that, 'did you get that bro?* The participants all agreed that the teacher was away too long because the children needed more teacher support.

Video clip 4

The participants agreed that while this group of children were working together independently of the teacher, it was more about who was going to lead and how they were going to solve the task at hand.

Although the children were sitting in a circle, the NVC observed by the participants were facial expressions of impatience, frustration, indecision and aggressiveness that was supported by the varying body and hand positions. The participants agreed these NVC could be due to the following:

- The recorder, who was writing the ideas down for the group, showed facial expressions of uncertainty as if she herself were not sure if the ideas were correct.
- The recorder became flustered because her peers were getting annoyed and impatient with her slow recording of ideas.
- Because they were waiting for someone to make a decision a sense of frustration and disinterest from the children was observed so they became off-task, as

indicated by the flicking and twirling of pens, playing around with pieces of paper, and lying around on the floor.

- The children may not yet have known how to work collaboratively as a group.

Video clip 5

The participants immediately recognized the NVC displayed by the small group of children and agreed they were totally disengaged and off-task with the mathematical problem at hand – one rolling around on the floor humming to himself, some yawning, another tapping a pen on the floor, facial expressions of boredom and general NVC of being disinterested. Participants felt there was no interaction happening and none of the children were making any attempt to use their combined mathematical knowledge to solve the problem at hand.

Video clip 6

This video clip was a continuance from Video clip 5 where the participants saw the immediate change of the children's NVC when *Ms Tiare* (who had been working alongside the classroom teacher for 10 weeks) interacted with the children. There was a complete change of NVC observed by the participants in this clip that showed how the children were sitting up focused on *Ms Tiare*. They looked more comfortable and attentive looking at each other for support with lots of talking happening. Facial expressions of eagerness were apparent as the children interacted more positively while recording their ideas on paper once they realized what their task was, and more positive body language from the children was seen by the participants.

The participants agreed that the strategies used by *Ms Tiare* bought about the changes in the NVC of the children. Their observations of *Ms Tiare* included:

- She had a clear grasp of the mathematical language;
- She gave very clear instructions;
- She consistently motivated children to scaffold on each other's ideas;
- She kept making them physically turn and talk to each other;
- She made sure the children explained their strategy to their buddy;
- She made sure both buddies understood the strategy to solve the maths problem before sharing with the rest of the group.

Video clip 7

From the NVC of the children observed by the participants, they agreed that this was a group of independent learners who knew how to manipulate the prepared resources to record in the group workbook. The children's NVC also indicated to the participants that this group of children were familiar with each other and knew how to work collaboratively together to solve the task at hand. The participants expressed that for them this was manifested through the children's facial expressions of being alert, attentive and responsive to each other. For example, *Pua* said, *The eyes showing real eagerness to get involved was neat to see.* The tapping and clicking of pens by two of the children was also observed but, in this context, the participants did not consider this behaviour as being negative NVC; rather, they attributed this to the children quietly thinking of strategies to share and they wondered if this was also a form of NVC. The participants agreed that although the children worked on their own, they collaboratively shared strategies and questioned each other, drawing on each other's mathematical knowledge. They acknowledged that although the children had difficulty making choices, they did not observe any NVC of frustration or annoyance. *Ria* concluded with the comment, *They worked well without a teacher, they must be one of the top math groups!*

Video clip 8

In this video clip, the teacher was sitting alongside a group of children working on the task at hand. The participants noted that the teacher looked relaxed and made eye contact with the children and generally related well to the children. While the participants agreed the children were, indeed, working, the NVC of the children they observed included:

- Lying on their stomach while slightly moving their legs;
- Fiddling with paper;
- Twisting pens as they chewed the tips; and
- Clicking their pens.

They agreed that these were not negative expressions of NVC but felt they were unnecessary and distracting to the teaching and learning that was happening. In hindsight, they noted the teacher allowed these behaviours as they were probably the

'norm' within his classroom. There were two boys and two girls working with the teacher but the participants noticed one of the two girls kept looking away, displayed an awkward body posture and was not at all relaxed. The participants surmised that perhaps the girl was displaying this NVC because she was finding the task difficult and they felt that this should have been something the teacher should have been aware of.

Video clip 9

Participants noted straight away the personal dynamics of the two boys and two girls working without the teacher. One boy chose to take the 'leader' role so, with pen in hand, he began writing on a sheet of paper provided by the other boy and one of the girls contributed to the discussion. It was the other girl's NVC that the participants noticed; the slight leaning forward and then back with her head down, covertly watching the others and nodding her head in agreement, yet looking uncomfortable. As a consequence of her contributions not being recorded the girl became withdrawn, tucking her legs back under her body, folding her arms, with head bent down and eyes cast down indicating that she was either feeling left out or she did not want to contribute in case she was wrong. *Teo* said in reference to the girl's NVC, *It's not a happy face!*

Video clip 10

This group of children was the same group from video clip 9 - two boys and two girls. When *Ms Tiare* began to interact with the group, once again, the participants saw an immediate change in the children's NVC. Their attention was drawn specifically to the girl who had withdrawn from the whole learning process. They saw the change in her body stance and facial expressions as she became more engaged from observing what was happening in front of her to the point of contributing to the group discussion. The other children were also very focused and had moved in closer toward *Ms Tiare* as they were eager to share ideas. They agreed the children looked more relaxed and showed no fear of having someone there with them. *Teo* made the comment, *Smiles – wow!*

The participants agreed that the following strategies were used by *Ms Tiare* that bought about the changes in the NVC of the children:

- She had asked the boy, who was writing ideas on the sheet of paper, for the vivid-marker. She held it in her hand, and then asked if anyone else wanted

to write or share their ideas. At the same time, she physically turned to the girl yet kept everyone else in her peripheral vision.

- She deliberately made the children work in pairs and gave instructions that the shared strategy agreed upon to solve the task at hand must be understood by both peers.
- She deliberately kept the vivid marker and recorded the shared strategies when both buddies knew the strategy.
- She asked questions to trigger what the children already knew and kept scaffolding on the children's ideas by asking others what they thought and why.
- She made sure children queried each other's ideas if they did not understand.
- She made sure to give lots of positive acknowledgements where relevant.

4.5 Teachers' reflective summary of their own pedagogical practices when teaching mathematics

Key reflective discussions by the participants about the strategies of teaching mathematics took place at the conclusion of watching the video clip, whereby the majority of the participants had significantly repositioned themselves. In doing so, they were beginning to articulate the place of NVC within a teaching and learning context. The researcher acknowledged these participants contributions and has recorded their unique reflective responses as follows:

Hae: It makes you think about being more intuitive and being instinctively aware of how to read kids and the messages they are sending you. They don't say it verbally but their reactions say a lot. Is this NVC knowledge something you learn or is it to do with the language? Or is it to do with the intonation or smoothness or jerkiness of the responses, or, the questioning, or, the way they verbally respond, or, is it in fact the way we as teachers move, stand or express ourselves?

Kei: I think if you reach out to the children and understand them, they will become engaged. Non-verbal cues can either make or break children's enthusiasm to learn maths, so these clips have given me food for thought and like what I saw in the clips, scaffolding children in their learning works because this helps them to see what they are doing right or wrong. A strategy that has worked but now I may rethink, is memorisation, which helps children learn basic facts – this has been a Samoan thing, rote learning!

Nai: Even if we're a good teacher, we need to be learning too. It's a massive thing and yet so simple, the impact of reaction and interaction. It has enormous impact for each child. It's the simple little things that we do. I want to be a bridge not a barrier. I can't

always do it, it's a challenge. So, if reading the non-verbal cues of my tamariki and making sense of them improves their learning, then I'm all for it.

Pua: Collectively, as a group of teachers, we can reflect on what we have seen of children's body language making connections of where these fit within our teaching practice. What is causing our children to have these anxieties when we are doing maths? What cues do we need to identify? What causes these cues to occur? What can we do to turn negative cues into positive ones?

Ria: I am always looking for ways to improve on how to support my children's understanding of mathematics. It is about constantly reflecting on strategies that helps our children and the video clips really showed me where I can improve on my own teaching methods.

Teo: You just need to bring in new knowledge and new strategies, so the inquiry process must always be on-going.

The inclusion of *Ms Tiare* in the video clips gave participants opportunities to discuss the responsive strategies applied by her; thus, bringing about the change in the children's overall NVC; having them respond positively and showing an eagerness to participate in the discussion. Once again, articulation of the place of NVC became more evident as the following reflective statements by the participants highlights:

Hae: She made them (the children) talk to each other. It wasn't about them sharing their strategies to her, but with each other, then back to the whole group. They weren't allowed to share though until both of them understood the strategy first. Great strategies to support the questions she was giving. I never thought of this.

Kei: After watching Ms Tiare, I intend to give some of those strategies a go. While she was asking questions, she didn't reply to their responses, instead would say, "share with your buddy and see what they think", or, "turn to each other and see what you think" – this is one I'm going to try.

Nai: I saw the body language of those kids change as soon as she got involved. Her use of the language was better because it didn't take long for the kids to respond. She had to be able to read their body language because the questions she provided were understood and I reckon it's because she provided strategies to help them work it out.

Ria: I thought I did well when I asked my children questions but watching Ms Tiare, (pause), she motivated the children to take ownership of their ideas and at the same time, take responsibility when explaining the strategies and, being able to respond if they were challenged.

Teo: I saw off- task behaviours that were happening before, but when she got involved, the children immediately paid attention and became quite focused on what they were supposed to be doing. The praise given to the children by Ms Tiare boosted their self-esteem and that motivated them to engage with each other and the teacher. This is something I need to consider.

4.6 Teachers' beliefs of cultural awareness and responsiveness in context of Pasifika children's learning

For six of the participants, being culturally aware of the children was important. They agreed that by being involved in school community initiatives gave them opportunities to know the families intimately on a more interactive social level. They acknowledged that although South Auckland was supposed to be a disadvantaged community, the children were steeped in their culture, their church practices and their family upbringing; hence, they were well connected and well bedded in their communities because they belonged to families who have formed a tight network of extended families. This allowed the participants to form very close relationships with the school community enabling parents to feel at ease and comfortable to talk about their child; thus, giving the participants insight into the children's home lives. As a school in South Auckland, the participants felt very fortunate to see the diverse cultures of the children in their classrooms; each unique in their language, their customs and their traditions. Being of Samoan descent, one of these participants felt quite humbled as she had already established cultural relationships with the children in her Samoan Unit; implementing her perspectives of relevant cultural pedagogies, as well as ensuring the Samoan language was used frequently as part of the teaching and learning environment.

The remaining participant acknowledged the need to be culturally aware of all ethnic groups but said that there was a time and place for it. With children coming from unfortunate backgrounds this particular participant placed more importance on establishing effective teaching and learning strategies to build the children's confidence and providing opportunities of engagement. These were reflected in the following statement:

Moe: I'm going to go against the grain and say yes and no. There is a time and place for culture and yes you have to be culturally aware of the many ethnic groups with different language needs. And as for body language, I think it's the students. If they're late I can tell by the body language that something has happened. Some of my kids come from unfortunate backgrounds but it's about me reminding them why they come to school. So by giving them good learning strategies they will act differently, more confident, more engaged.

4.7 Key facts that give impetus to the NVC of children when learning mathematics

The research participants completed a second and final individual interview six months after the research project began. During this time, the group had been inducted into the aim and parameters of the research, they had been interviewed as individuals, they had viewed and critiqued video clips of a mathematics session with the children and their teacher, and they were asked to keep a personal diary of the NVC observed in their class during mathematics for the following upcoming two weeks before the final individual interviews. The group was encouraged to draw from their diaries during the concluding interview if they wished to do so.

In the following section the findings reveal the participants' attitudes to NVC having a more in-depth reflective perspective of its importance when teaching mathematics to Pasifika children.

4.7.1 Increased understanding of NVC to improve the teaching of mathematics

From the initial interviews of identifying and discussing the NVC displayed by the children in the participants' classrooms, it was argued that from observing the video clips the participants now realized that gaining knowledge of the children's NVC in more depth had been really empowering. They were more conscious and aware of the different body cues. This, in turn, helped them to fine-tune teaching strategies they identified from the clips or by asking the right questions, scaffolding on children's contributions more effectively, focusing more of 'children with children' rather than 'children with teacher', constantly using clear instructions, seeking clarity and ensuring effective communication is happening.

When the participants saw their children struggling with a mathematical task, they admitted it was because of the body language of the children that they had become attuned to. Examples of NVC included downcast eyes or looking everywhere else, the fidgeting, shrugging of shoulders, the attempted hiding, tapping and/or clicking of pens, the varying facial expressions of disengagement had become indicators for the participants to change strategies, to bring the children back to focus on the task at hand. They agreed it was about how to get the children interacting with each other; about how

to challenge the children's ideas without taking away their self-confidence, and how to get them to work effectively to solve mathematical problems.

Of the participants, *Moe* indicated, that for those children with learning disabilities and behavioural problems, the priority was to understand them first. If they were unsure then open-ended questions were needed to draw the answers from them. For *Moe*, it was about asking the right question in order to get the right response.

The researcher believed it was necessary to include each of the other participants' statements that highlighted their repositioned stance regarding NVC:

Hae: When the children have their hands up, I thought they knew the answers. Now since watching the clips where they either copied their peers or they didn't want to look dumb, I now consistently tell my children to think about their answer and be prepared to share with a buddy before raising their hands or, I say, "Looking for great mathematicians who are great thinkers" – like I saw on the clip. These are great strategies.

Kei: Keeping a diary has been really good for me. It's helped me to grow as a teacher because I have valued this opportunity. The video clips showed me that I tended to do some of those same things the teacher was doing which ended up alienating students for doing the task.

Nai: Their whole body language just speaks volumes to me. Just by observing, I straight away know to change my strategies to bring them back on-task just so the communication is positively happening.

Pua: I have become more aware of my children's body language as I recognized some of the things the teacher was doing in the video that I was doing which didn't give room for my kids to interact or reply. I needed to consider my own teaching of mathematics.

Ria: After observing the different body cues of disengagement, I'm already changing my teaching strategies to bring them back to the task. This has really helped me to fine-tune how I ask questions more specifically – something I thought I was doing before the study!

Teo: Since watching the video clips I'm now quickly thinking of other approaches to get them (the children) totally involved in discussions, to work in pairs, to work in groups. I'm even thinking about how best to alter my questions. Also, I don't allow my children to lie down or tap / click their pens because they're real distractions – this is what I saw on the video!

The participants agreed that this research did improve their teaching of mathematics to Pasifika children because of their increased understanding of NVC. From watching the

video clips the following strategies were discussed that now provided the participants with the means to improve on their delivery of mathematics to Pasifika children:

- Really understanding the children's body language.
- Knowing to change teaching strategies after observing the negative NVC of the children.
- Taking the time to listen to their contributions as this had not really been done before.
- Providing clear expectations and instructions and seeking children's understanding of what is required before going off in groups to work.
- Ensuring there is more consistency with scaffolding on children's ideas.
- Providing more explicit or re-phrased questions that prompted dialogue between the children.
- Being more reflective practitioners of mathematics.
- Constantly monitoring their understanding by providing key questions and watching their body language.
- Encouraging children to turn to each other and share ideas until they all agree on a strategy especially when working in pairs or groups.
- Being aware of their own body language. Understanding that the use of 'stand over' tactics like, hands on hips or folded arms with a facial expression of anger, are definitely not conducive to the learning of mathematics.

4.7.2 The importance of the teacher's perspective of NVC in supporting children's learning

Other than one participant, they all agreed that teachers should think seriously about NVC as a strategy to improve the teaching of mathematics to Pasifika children. Since keeping a diary and observing the video clips, participants conceded they were more observant now of their children's NVC and this has helped to improve their teaching styles of mathematics in a positive way.

Before this study, *Pua* did not consider NVC as something to be aware of when teaching mathematics. This viewpoint has now changed as *Pua* was more aware of the gestures the postures and the expressions demonstrated by the children in her class. For *Hae,* it was about changing how teachers found out what children really knew and

understood, rather than expecting them to know and leaving them to solve the problem. Hence, teachers have to be acutely aware of children's NVC when they signal confusion, frustration, disengagement and, even, lack of participation. *Nai* highlighted how children can be good actors and often hide behind that veneer of knowing what to do when they really don't know, as their body language told a different story. By being aware of the children's NVC, *Ria's* teaching strategies have changed, which allowed the children to have the confidence to solve problems and not feel anxious when struggling with a concept. *Kei* emphasized the importance of recognising children's NVC. Keeping a reflective diary about her own teaching of mathematics has made her become more instinctive to what the children's body language was saying. *Teo* was influenced by *Ms Tiare's* ability to ask explicit questions that changed the children's NVC from being bored, showing a lack of concentration to becoming engaged and being eager to answer her questions more positively. *Moe* felt it was more important to know the students as individuals because knowing what made the children tick was what made it really important.

Five of the participants agreed that NVC was important to children's learning. When the body language of the children were exhibiting positive postures, gestures, positions, and facial expressions, the children oozed confidence, self-assurance, eagerness and had a keenness to help their peers. What was just as important for them is the end result of big smiles, the look of 'walking tall', and having that sense of accomplishment; a sense of pride. *Kei* explained that lots of laughter, enthusiasm, joviality and, even, having a bit of competition, made the children really want to get into doing more mathematics. *Teo* believed that it was vitally important to be really aware of children's NVC in order for them to get the very best start in their learning. For *Pua*, it was not so much the importance of children's learning but more about her own learning. She said, *By keeping a watch of their (children's) NVC will help me to make concerted efforts and relevant changes to my teaching strategies, such as how I'm going to ask questions, and even how I'm going to get them to interact more effectively. Moe* was still of the opinion that knowing the children on an academic and social level was just as important as NVC. *Moe* explained, *I don't want to knock their confidence because if you do they tend to shut up, to clam up. It's real hard to get them to respond.*

4.8 Conclusions

The purpose of this chapter was to present the detailed findings of the research and to highlight primary school teachers' (participants) perspectives of NVC linked to the literature. Key findings emerged from the three types of data collected and they were discussed accordingly. The next chapter will present an in-depth discussion of the empirical findings in relation to the literature review and the methods section of this thesis.

CHAPTER FIVE

DISCUSSION OF THE FINDINGS

5.1 Introduction

This qualitative research, framed in the phenomenological interpretative approach, answered a crucial set of questions that looked at whether NVC was considered important by seven classroom teachers, *Hae, Kei, Moe, Nai, Pua, Ria* and *Teo* (pseudonyms), when teaching mathematics to Pasifika children in a classroom teaching and learning environment. Also included, were their responses to a video they observed noting the NVC of both the classroom teacher and Y6/7 Māori and Pasifika students interacting during the teaching and learning of mathematics.

The seven participants were fully registered and experienced teachers at the same primary school in South Auckland, New Zealand. They each had teaching service of more than five years and a sound professional knowledge of teaching and working alongside children. Five of the participants held various key roles and responsibilities within the school. School-wide community networks were well established with these participants, and that gave them first-hand experience with their Pasifika students and their communities, and provided the context for this research.

The key themes that emerged from the data analysed in Chapter Four and were generated by the participants were:

- Why the participants' beliefs and understanding of NVC were important when teaching mathematics to Pasifika children;
- The participants having the belief that NVC can be a tool to support the teaching and learning of mathematics;
- The participants having the opportunity to observe and discuss the NVC of teacher and children while watching video clips during the teaching of mathematics as a means of self-reflection;
- The participants having the opportunity to interact with each other as part of their self-reflection on their own pedagogical practices when teaching mathematics;

- The participants understanding that cultural awareness was important and, therefore, coming to the conclusion that cultural responsiveness in the context of Pasifika children's learning was also important;
- The participants identifying key factors that gave insight into recognising the NVC of children when teaching mathematics to Pasifika children.

Each of these themes clearly supported that having knowledge of NVC was critical to ensuring quality and culturally responsive pedagogical practices for teachers when delivering mathematics to Pasifika children.

In this chapter, these six themes will be discussed in further detail, supported by the relevant literature that underpinned the teachers' beliefs and understanding of NVC, their own critical reflections of their pedagogical practices, and their acknowledgment of cultural awareness and cultural responsiveness as being important to children's learning.

With the growing number of Pasifika children attending schools in metropolitan Auckland, New Zealand, a culturally responsive pedagogy is relevant to improving learning outcomes for Pasifika children; therefore, in this chapter the researcher has chosen to include shared Pasifika narratives that complement and advocate for the significance of a culturally responsive pedagogy. The researcher has also chosen to include constructivism in the discussion because it also aligned to the six themes and complemented the importance of culturally responsiveness discussed in Chapter One.

5.2 Six Themes

5.2.1 Having a belief and an understanding of the importance of NVC when teaching mathematics to Pasifika children

An initial identification of children's NVC and their own NVC, raised the participants' awareness and consciousness of what they believed was NVC during the teaching and learning of mathematics. The belief that these participants have of NVC as a method of communication is supported by Johnson (1999) who explains that NVC is by no means the most effective way to send and receive messages accurately; however, Johnson is careful to remind us that it is one of the many ways that is acceptable in the classroom.

Allen (1999) highlights that NVC can be used as an effective teaching strategy to manipulate student participation, to establish eye-contact, to pair students for group work and, even, to smile and nod to support students. Allen's evidence of teacher behaviour is often an unconscious reflection of the classroom teachers' beliefs. Butt and Shafiq (2013) also acknowledges that NVC plays a very significant role during the teaching and learning process of mathematics as it can impact on children's comprehension of new concepts. Reeve and Reynolds (2002) expressed similar views by explaining that NVC made collaboratively by students provides a rich source of useful assessment information for teachers and, having an awareness of each other's NVC, allows the teacher to recognize differences in learning, from cognitive understanding to uncertainty. Goldin-Meadow and Wagner (2005) argue that students focus more on gestures than words, the use of which has been found to motivate them in class. From the participants' observations of the children in the video clips, they too discussed how the children unconsciously used NVC, including body movements, gestures, facial expressions and eye contact, to not only portray signs of confidence, enthusiasm and eagerness, but also, frustration and boredom, which reflected their beliefs about how important NVC was during the teaching and learning of mathematics.

5.2.2 Having a belief that NVC should be a tool to support the teaching and learning of mathematics

The findings in Chapter Four indicated that the participants all agreed that NVC can also be a tool to support them with the teaching of mathematics. For example, the vacant look, the lack of eye contact, or the hanging of the head with shoulders hunched, were tools that indicated to the participants that a child was either anxious, worried, disruptive or, even, unsettled. They were positive about being consciously aware of their children's NVC. According to Shick (2000) 83% of communication is through NVC; hence, it is not what is said but, more importantly, how it is communicated. Therefore, an awareness of what was expressed non-verbally was imperative since spoken words may be easily misunderstood. According to Cazden (2001) students often 'read' into the varied NVC expressed by teachers, even if the teachers are not always aware of the NVC they are actually portraying. *Hae* also identified body stance, body position and the facial expressions of teachers as being an important tool for students because how these were presented influenced how the children responded. *Hae's* comment is complemented by Haneef et al., (2014) who also indicated that NVC is the best tool for enhancing student performance and their engagement in the process of

learning, because they actively participate in class when teachers use body language, facial expressions and eye contact. Hansen (2010) highlights that as well as teachers choosing their words carefully, they also need to monitor the NVC they use with students as these cues can impact on the students' learning.

Body cues can also be missed as some of the participants discussed specific NVC that had not been identified by the others. Both *Teo* and *Pua* considered the specific position of the body and hands as important, which can be seen as a tool of readiness; sitting up attentively with arms folded demonstrated that the children were ready to learn. For *Moe* it was the children's subtle movements of trying to hide behind each other, which was missed, at times, by teachers. According to Crooks and Flockton (2005a) these signals are important and, therefore, close attention must be paid to these unspoken behaviours to improve communication in an NVC manner. Goldin-Meadow (2003) highlights how NVC can stand alone, substituting for speech, hence, in the context of these NVC identified by the three participants, they can be seen as tools that could have positive and/or negative outcomes.

5.2.3 Having an in-depth awareness of other teachers' practices for self-reflective purposes when teaching mathematics

Gabott and Hogg (2000) highlight how the NVC that takes place, intentionally or unintentionally, between interacting individuals can display combined body postures/positions, eye contact and facial expressions. These were observed by the participants while watching the video clips and became the turning point for them as they began to really recognize how children talked by displaying varying body poses, body positions, stance and facial expressions. Johnson (1999) stated, "Body movements cannot be masked – it is visual and can be seen quicker than the spoken word can be heard" (p.7). For the participants observing the video clips, this statement rang true as they commented on the NVC displayed in a negative light that impacted on children's mathematical learning. For example, relevant NVC includes, no eye contact with their teacher, fidgeting and fiddling with pens or paper indicating a lack of focus, covertly looking side to side covertly, and the facial looks of frustration, confusion, bafflement. "Teachers must become kid-watchers to familiarize themselves with their student's non-verbal patterns" (Hansen, 2010, p.40).

The participants' questioned and revisited their own teaching practices after observing *Ms Tiare* in video clips 6 and 10, who modelled explicit strategies to develop and maintain students' participation. For example, sharing strategies with peers rather than with the teacher was one strategy that *Hae* did not consider or, that all the children had to make sense of, and agree upon, their chosen strategy to solve a problem. Getting the children to turn to each other to share strategies was one that *Kei* was definitely going to consider in her teaching practice. From observing *Ms Tiare*'s strategies of not only getting the children to own their ideas, but also having them take responsibility to ensure their peers understood those ideas, consolidated the children's mathematical thinking and agreed upon response. *Ria* felt this was a definite strategy to consider implementing during mathematics sessions. Hunter (2010) argues that children from minority groups need to be encouraged by their teachers to participate in mathematics discussions and must be taught how to do this. Hunter's (2010) research shows that Pasifika students can be taught to act more autonomously within the school context and that this should serve them well in their future working lives. The challenge she explains is for teachers to know how to implement effective pedagogies to promote and develop an inquiry based environment where children are given opportunities to engage in the reasoning discourse of proficient mathematical practices.

5.2.4 Having an in-depth reflective understanding of one's own pedagogical practices when teaching mathematics

At the conclusion of watching the video clips, the participants reflected about the strategies of teaching mathematics shown, noting that the majority of them had significantly repositioned themselves and were beginning to articulate the place of NVC within a teaching and learning context. They acknowledged that reflective practices were an everyday occurrence that required them to adjust, improve, or continue with what worked, and/or how best to meet the learning needs of their children. Yet, observing the video clips had made them more fully aware of the impact NVC had on themselves, not just on the children alone. *Pua's* explanation was very fitting, where she explained that, collectively as a group, they were able to reflect on what they saw of the children's body language and make connections of where these fitted within their teaching practices. From Navaneedhan's (2011) point of view, when reflecting on one's teaching, this means looking at what you do in the classroom, thinking about why you do it whether it works – a process of self-observation and self-evaluation. Larrivee

(2000) explains that when teachers become reflective practitioners, they move beyond a knowledge base of discrete skills to a stage where they integrate and modify skills to fit specific contexts and, eventually, to a point where the skills are internalized, enabling them to invent new strategies. Zepke (2003) is of the opinion that critical self-reflection does not rely on reason alone to learn but also from one's physical, social, emotional, spiritual and mental faculties.

By observing the video clips of the class teacher and *Ms Tiare* interacting with the children, the participants were able to openly discuss, and critically reflect, on their own pedagogical practices and those NVC observed in the video. The research participants and their teaching methods underwent a pivotal change during this process of critical self-reflection. The battery of teaching and personal skills they possessed was put under a personal microscope. Each individual analysed the 'mismatch' as they saw it, between their 'knowing' as a teacher and the 'knowing' of the Pasifika children they taught during the teaching and learning of mathematics. The use of NVC strategies used by Pasifika children became the central point from which to critique these apparent mismatches. The data of the dialogues in Chapter Four addressed the mind-shift of each participant.

5.2.5 Knowing the importance of cultural awareness and responsiveness in context of Pasifika children's learning is important

From the data analysed in Chapter Four, the majority of the participants agreed that being culturally aware of the children was important. Although the school is situated in a lower socio-economic suburb of Auckland, New Zealand, the Pasifika community ensures their children are immersed in their culture, church practices, and family upbringing, which includes the wider community. Hence, by being actively involved in community activities enabled the participants to form close relationships with the school community. Tuafuti's (2010) statement, "a child's behaviour does not reflect him as an individual, but, reflects the whole aiga (extended family)" (p.5), is what classroom teachers need to be fully aware of. Therefore, having knowledge of the children's cultural background, the participant's viewed NVC as a cultural response within the context of the classroom environment. This is supported by Singh, et al., (1988) as they indicate that although people from Western cultures do use NVC, they rely more heavily on verbal communication, as opposed to, in the context of this research, the people of the Pacific Islands, who communicate substantially through

NVC. Jain and Choudhary (2011) are also of the view that effective inter-cultural interaction relies heavily on NVC because, for any given sign, each culture provides its own meaning. Knapp (1971) draws attention to the fact that NVC used in conjunction with verbal cues is highly influential; hence, there is a need to understand these meanings according to the relevant context to avoid conflicts in cross-cultural communication.

Hae gave an example of one significant cultural practice that influenced and impacted on her ability to teach mathematics with one of her groups. With heads slightly bowed, a group of Samoan boys would quietly direct their responses via the leader of the group, without giving her eye contact. She explained that within the Samoan culture, the boy had been given matai (leadership) status because of his father's own matai position within the community. Sharma, Young-Loveridge, Taylor, and Hawera (2011) view this as a result of cultural factors whereby in church and home, Pasifika students receive directives from their elders. Hence, the students accorded a high status to the son of a leading member of the Samoan community who was seen as someone they respected and, who was expected to be their *voice*. Having an understanding of this cultural practice, *Hae* allowed it but monitored who contributed to the group discussion looking for a collective understanding of the strategy shared. She, in turn, would provide questions through the leader as a way of her giving support to all of them.

5.2.6 Key factors that recognize and acknowledges the NVC of children that supports them when teaching mathematics

Key facts emerged from the data findings as a response to NVC when teaching mathematics. The NVC strategies that caused the children to feel frustrated, confused, unsettled and unsure made the participants more aware, and conscious, of the different body cues and this became the central point for them to critically reposition themselves with regard to how best to teach mathematics to suit the learning needs of the children. As Alton-Lee (2003) explains, children normally learn NVC cues by observing and imitating others as they learn the skills of communication. Therefore, a key factor, which was observed and discussed among the participants within the context of the classroom, was that the children's combined NVC body postures and facial expressions with the varying facial expression definitely affected their fellow peers. Rasmussen et al., (2004) supports this view making it clear that the learning of mathematics and the

gesturing from students and teachers are inseparable as it is part of the collective learning in any classroom community.

The cultural practice of silence for Pasifika communities was embedded from birth, not as a sign of passiveness, but as a sign of showing respect for the elders and those of high status. Tuafuti (2010) who looks at unlocking the culture of silence, explains it as knowing when to speak and when not to, in the context of Pasifika culture. Being silent was not seen as passive, but rather an active conveyance of culturally appropriate and meaningful messages that cannot be expressed through verbal communication; a sign of showing the utmost respect. This was a key factor in the context of the classroom. The participants shared their observations of a child's bowed head of silence when reprimanded in one of the video clips when he was just waiting for permission to speak. Again, this was a sign of deep respect.

The cultural concept of whakamā (shame) was another key factor of NVC. According to Ritchie (as cited in Sachdev, 1990) "whakamā is a sense of feeling inferior, inadequate, diffident, and with self-doubt in uneasy social situations outside the range of ordinary events" (p.434). Some of the children's NVC observed by the participants highlighted situations of whakamā; the drop of the shoulder, slightly bent head, eyes cast downward when unable to reply to questions or contribute to group discussions while solving mathematical problems, highlighted low self-esteem and self-confidence. Metge and Kinloch's (1984) research of NVC between Māori, Pākeha, and Samoan are also unintentionally not being recognized in the classroom by the participants; the downcast eyes with head and shoulders slightly bent being indicators of "I'm not sure" or "I don't know," the upward movement of the head with raised eyebrows implied "all is well" or "yes," and the indirect gaze slightly to one side or to the floor when interacting.

These key factors provided the realisation to the participants of the importance of recognising children's NVC to inform them of appropriate responsive teaching practices in a cultural manner to support the children's on-going mathematical learning.

5.3 Culturally responsive pedagogy

The researcher has chosen the following Māori whakataukī (proverb) to complement this segment of the discussion; *Ka mate kainga tahi, ka ora kainga rua:* There is more

than one way to achieve an objective. In context of this research, having mathematical content knowledge was not enough as this research has uncovered that the teachers' beliefs of the importance of NVC as a tool for the teaching of mathematics goes hand-in-hand with having an in-depth cultural awareness of the children under their tutelage. For the researcher, these two key values of teachers' beliefs and cultural awareness formed the foundation for culturally responsive pedagogies relevant to Pasifika learners for the learning of mathematics.

Herein lies the evidence that NVC as a tool must be embedded within an *indigenous* paradigm. Despite the researcher's conceptual model of Tātai Āwhinatia being Māori-centric, many of the cultural aspects contained within the model were transferable across cultures, particularly Polynesian cultures.

The following personal narratives shared by anau of a Cook Islands community make links to the researcher's conceptual model, which, strongly recognized culturally responsive approaches as necessary to ensure quality teaching and responsiveness are provided to support the Pasifika learner.

One of the concepts of *tātai āwhinatia*, as explained by the researcher (2013) began in the home and extended into the wider community that upheld the essence of one's cultural traditions and practices. Hosea and Hosea (2016) give an appropriate similarity of *tu angaanga meitaki* or *tu angaanga tikai*. They explained that this was how a person was shown or taught at home the many responsibilities within the anau (family). These were instilled from early childhood through to when they began school, attending church, involved in community initiatives; these were an integral part of a Cook Islands anau (family). Narrative shared by Marona (2016) who comes from the island of Mitiaro, in the Southern group of the Cook Islands, says that quality service or *aka ngateitei* permeates from the marae. The marae was a place of sacredness, of worship, of taking and sharing of gifts; it was a place of making peace and, in today's context, she explained that our schools can be seen as a marae for educational purposes, our churches as marae of worship, and our community as a marae of family togetherness. Papatua (2016) like Marona (2016) bases his narrative on the protocols of the marae because the concepts of the researcher's Tātai Āwhinatia, is very similar to his, in being from the island of Mangaia, which is also in the Southern group of the Cook Islands. He explains quality service as *taunga tiaki* whereby designated roles on the marae elected

by his ancestors in accordance to the protocols and traditions of their marae, were the responsibility of identified families, such as the upkeep and maintenance of the marae, preparation for special ceremonies, the beating of the drums, and the teaching of kōrero on the marae. It is important, he explains, that our tamariki and our grandchildren know of these roles and how they are to be conducted because these responsibilities lie with the families – it is like the title of a chief that must be carried on; a succession plan so to speak.

Mahi-tika-āna, according to the researcher (2013) is a term of approval, of acknowledging one who has demonstrated a new understanding of a specific situation or task, after many learning experiences. For Hosea and Hosea (2016) *nakirokiro* would explain this same term as one having an understanding and how this acquired understanding helped you become aware of onself; who you are, how you relate to others, what your purpose is of being here, and your contributions within your family, your church and your community. Marona (2016) highlights the marae as a place of learning where the branches of knowledge of respect, of honour, and the embracing of cultural traditions go out to the matakeinanga (tribes). A person who shows integrity and humility will be acknowledged when he has learnt these teachings from the marae. Papatua (2016) also highlights the marae, the house of learning, called the a're korero where the young people are taught the art of war, the making of medicine, knowing when and how to plant and fish. The a're korero is also a traditional classroom where the learning is provided by the ta'unga; the teachers, the masters in their different areas of expertise.

The researcher (2013) explains *āta titiro* as observing, listening, and following others, from childhood through to adulthood, as a form of apprenticeship in various roles. A similar definition by Te Ava (2011) of *taokotai*, is that observing and listening to other people's views, working together to form different interpretive realities that enhances incremental collaboration and generates personal growth. Hosea and Hosea (2016) define āta titiro as *akara tamou*, explaining that by focusing, observing, listening and taking in all of what is happening around them, helps one to become a better person and able to contribute back to their ngutuare tangata (community). In essence, *akara tamou* was likened to an internship that helps one to become a much better person. *Kakaro tika* in Mangaian Papatua (2016) explains, refers to āta titiro. It is to observe, take time to learn, and then put into practice. It also means to be alert all the time, to observe the

signs around you or within your environment because, within these observations, you can learn the secrets of nature, that is, the secrets of your culture. It is about upholding the tapu and the mana of the marae. If you do not observe carefully, then it will not come to you. He explains that Mangaians are very quiet, very observant, and he believes this came from their tipuna (ancestors). So, *kakaro tika* was a powerful skill in Mangaia traditions.

For the researcher (2013) the practice of *āta whakaaro* was an everyday personal practice articulated in various forms during one's growing up years. Hosea and Hosea (2016) feels *akaratamau meitaki* explains this concept as it is about thinking through different experiences, situations and contexts one has lived through, as it helps me see where I have come from, how well I have done, and how I might change whatever areas of life I transition into in the most appropriate ways. Hosea and Hosea (2016) further explains how it also helps other people to understand the importance of their culture – it is about how to help others to become better people and, in the process, I, too, become a better person. This was a very important aspect of critical reflection. Papatua (2016) gives the concept of *karikao paongata.* For the people of Mangaia, they were not known to hastily accept ideas or opinions. For them, it was about sitting down to consider, deliberate and give thought to whatever was put before them. Papatua shares an example where Mangaia was the last island in the Cook Islands to accept Christianity. When the missionaries arrived they were initially turned away but even when they returned the second time, some mataiapo and rangatira still did not accept them. Te Ava (2011) explains *akiri kite* as a shared vision; hence, in the context of this discussion, this concept refers to teachers and students being able to look critically at what they contribute to the outcome of any knowledge gained because it is a validation of cultural knowledge that is respected in the Cook Islands. For Marona (2016) *manakonakoanga* explains the practice of critical reflection because one is always reflecting on what has taken place from early childhood to adulthood. For example, one might ask oneself: Is this good for me? How will I do it? If I follow this, will I get it? Where is it leading me in my life? Will I get there?

The concept of ā*ta tūtuki* according to the researcher (2013) was the fulfilment of one's achievements, tasks, or ambitions. This was a type of leadership referred to by elders as a stage of *ea*. This stage was the culmination of attaining those values within the researcher's conceptual framework into one's worldview and actions. Hosea and Hosea

(2016) explains this as similar to knowing and then by knowing to bring to fruition that understanding through your actions which, in turn, demonstrates one's understanding of – *te kiteanga e te akatupuanga*. Marona (2016) believes *tu rangatira* best describes this concept. It was having that confidence of knowing who I am, where I am from, and standing proudly because of this knowledge. I am a rangatira in my own right and able to say, "I am from Mitiaro (as an example), my marae is ……, my tribe is ….., my ariki is ….. Therefore, I know my papaanga (genealogy)." Papatua (2016) also uses the description of *tu rangatira*. He explains that when one is recognized for implementing new understanding, acknowledgement and celebrations is rewarded by having the recipient taken around the whole island on two spears crossed and carried by four warriors at each corner. At each of the four main marae on the island, a ceremony was performed followed by a celebration of shared kaikai (feast) with each of the villagers. This concept of *tu rangatira*, Papatua believes, is very fitting.

Making contributions of consequence or t*e tuku tākoha* according to the researcher (2013) was to offer a gift with honour as it formulated relationships of mutual benefit and outcomes. Marona (2016) says that this follows the concept of *orangaanga ngakua aroa* (oranga is to give and ngakau aroa is giving of your love). She explains it is the act (however it may be) of giving back to your church, your community, your tribe, your people; that you are not hiding anything from your *matakeinanga* (community with direct guidance under the paramount chief), instead you are giving back to the new generations of the marae. Hosea and Hosea (2016) identify *orunga anga* as a similar concept. It was about giving your best and to give with honour because it was given with lots of respect and lots of love. It was an act of self-sacrifice. For example, as parents that was what you did. You sacrificed so much for your children in order to help them to become everything that you can see in them. It was about loving them, nurturing them; as an act of love. For a Mangaian, according to Papatua (2016) it is traditional to give from the heart whether it is a million dollars or one dollar and the concept that best explains this is *taonga rima*. He shares this oral narrative of his ancestors where a turtle or tuna is caught, the head is always given to the ariki (paramount chief) or oro metua (paramount priest). Today, at family gatherings or island celebrations, the best morsel of food is given first to the elders in the village or church, and then shared amongst the people.

These shared concepts and narratives are integral to implementing a culturally responsive pedagogy in the teaching and learning of mathematics. Children of a Pasifika cultural upbringing will perform best within a learning environment when their traditions, histories, songs, and mother tongue are fully embraced by classroom teachers who can implement a culturally responsive pedagogy as it will inform their planning and implementation of programmes for mathematics.

5.4 Constructivism

Constructivism, as discussed in this research, can be perceived as a paradigm of teaching and learning. Constructivism, according to Fox (2001), requires learners to interact, to have dialogues, to solve problems and to make sense of new ideas. Zain et al., (2012) acknowledges that students learn best when they are able to relate to what they have learnt through talking and discussing with others. The participant's observations of *Ms Tiare* in video clips 6 and 10 discussed in Chapter Four supports this, as they noted how she instructed students to discuss ideas with each other (rather than student to teacher) then instructed them to make sure their peers understood and agreed on the idea before presenting it back to them. They admitted the need for them to consider *Ms Tiare's* specific strategies and questioning skills, simply because they observed the children's negative NVC change immediately. The dialogue between peers, the scaffolding of ideas and the decision making about which ideas best supported the solving of problems at hand, enabled the participants to observe the children shift from looking bored and lacking understanding, to having the motivation and enthusiasm, to eagerly share their groups' ideas. For the participants, this was a real eye-opener. Fox (2001) acknowledges that it requires the expertise of teachers to lead the way because students need instruction, demonstration and practice, as well as challenging problems and investigations to make progress. Hesser (2009) goes further and highlights that a constructivist teacher is more of a facilitator who guides students to appropriate information with which they may develop answers to their questions themselves.

> A structure should be provided that encourages students to assume three roles: 1) the active learner, by engaging students in the design of their learning criteria, assessment, and learning process; 2) the creative learner, by allowing for multiple solutions to open-ended problems and viewing errors as learning opportunities; and 3) the social learner, by providing multiple opportunities for

> dialog, discussion investigation, and collaboration with and among students (Hesser, 2009, p.43).

An observation the participants shared about *Ms Tiare,* in video clips 6 and 10, was the strategy of "turn to your buddy and share your idea, making sure both of you understand the strategy before sharing with the others." This is relevant to Mvududu (2005) who indicates that students build on each other's thinking because no matter how ineffective or inefficient students' ideas and methods might seem, they must be the starting points for instruction. Mvududu (2005) goes on to reveal that although students may have valid reasons for their solutions, the goal should be to build on those solutions in a way that makes sense when socially constructed by their peers or the whole class. "Everybody's effort can be reflected without abandoning the notion that some solutions are better than others and that some just don't make sense" (Clements, as cited in Mvududu, 2005, p.51). So too with Carpenter (2003) who explains that it is not about simply accepting new information, but about how students interpret what they see, hear, or do in relation to what they already know. Hence, thinking was the focus rather than the correct answer, which enabled teachers to encourage thinking processes that might otherwise be overlooked. The strategies modelled by *Ms Tiare,* in video clips 6 and 10, align with Carpenter's (2003) idea that students should actively participate in their learning of mathematics and discuss their thoughts and understandings with others. The research participants immediately observed the children sitting up and focused. Looking more comfortable and attentive, the children sought each other's ideas that were supported by lots of positive dialogue. Constructivist learners, according to Zain et al., (2012) are "not passive recipients of information but are active agents engaging in constructing their own knowledge and as they encounter the knowledge, they construct meaning and the system of meaning" (p.319). Research by Koebley and Soled (as cited in Mvududu, 2005) looked at whether constructivist changes in the classroom had an effect on student goals and motivation for learning mathematics. They concluded that there was a positive impact whereby the students' beliefs and motivation were positively modified by the social construction process of the student's active engagement and teacher instructions. This was also evident in video clips 6 and 10 by the way *Ms Tiare* modelled the following strategies:

- provided clear expectations and instructions
- provided key questions
- consistently got the children to scaffold on each other's ideas

- motivated children to ask each other questions or to seek clarification

The participants agreed on the importance of cultural awareness as they have all actively been involved in Pasifika initiatives in their school communities; hence, by knowing the children both intimately and informally at social gatherings, the participants now viewed NVC as a critical cultural response within the context of the classroom. Therefore, the majority of negative NVC the participants identified demonstrated by their students would understandably become non-existent in a constructivist classroom. The researcher considered constructivism as a culturally responsive pedagogy because, as Hesser (2009) indicates, facilitating constructivist learning requires sensitivity and flexibility. According to Mvududu (2005) it is alerting teachers to children's prior learning and what they bring to the classroom. Any educational experience based on constructivist pedagogy can positively influence the cultural competence levels of the children, whether in a traditional classroom, an on-line medium or in context of the children's cultural environment.

5.5 Conclusions

In this chapter the researcher made links to the relevant literature central to each of the six themes discussed in Chapter Four and the importance of each with regard to NVC, and the teachers' critical reflections on their teaching practices within the classroom. The theories of culturally responsive pedagogy and constructivism empowered both the teachers and Pasifika children in the teaching and learning of mathematics. This was because it created a level-playing field in the classroom where children felt the freedom to search for their own solutions to tasks, where they can use their own resources, including language and NVC, to engage with their teacher and their peers without fear of retribution; that their Pasifika identities were valued in the classroom; where a hierarchy was not common and this made for a happy learning environment and high achievement.

CHAPTER SIX

CONCLUSIONS

6.1 Key findings

This research study involved seven fully registered experienced teachers from a South Auckland primary school in New Zealand, who answered a crucial set of questions that looked at the NVC of their Pasifika students and the role NVC played when teaching them mathematics. It created a space for these teachers to dialogue, reflect and self-critique their own personal understanding and awareness of NVC and how this phenomenon was evident in their classrooms with Pasifika students, specifically, in the area of teaching mathematics. This process allowed each of them to internally self-reflect and to then articulate their responses and thoughts about the questions asked. The various stages of the research questions required them to undergo rigorous critical self-reflection which, at times, challenged them to identify, recognize and consider if more learning was required to inform and progress their current 'knowing' of the research topic.

From the initial responses of identifying their students' NVC as an observation that occurs in their classrooms, the participants strongly believed NVC can be seen as a tool to support them when teaching mathematics. It was also seen as a cultural response that supported their students as they brought with them their cultural differences and values of learning. With these, then, being acknowledged and promoted in the classrooms by the teachers, NVC should be seen as one of the culturally-responsive tools that would definitely support students' learning of mathematics and make it a positive experience. With that in mind, the NVC displayed by the students, especially when they were negative connotations, gave opportunities for the participants to rephrase their mathematical questions and adjust strategies to promote a more innovative and positive learning environment.

Although the participants acknowledged the children's cultural diversity as an important component of teaching and learning, one participant placed more importance on prioritising students' body language when they first entered the classroom. As the participant explained, "[F]from the time the student walked in the door first thing in the

morning, you can gauge just by the body posture, stance, position and facial expressions, what the day was going to be like for that student." This response highlighted the importance of why NVC should be a culturally responsive tool for teachers to support students' learning and, in the context of this research, during the teaching and learning of mathematics.

This same participant indicated, however, that there was a time and place for cultural awareness of students, explaining that a strong Pasifika involvement and, by ensuring students were grounded in their cultural traditions, the importance of students learning was the priority. While this participant emphasized that it was about gauging their body language when they first walked into the classroom, the other six participants placed cultural awareness as a priority. However, all participants agreed it was about forming close relationships with the school community that allowed them to see the diverse cultures of the children, their unique language, their customs and their traditions. According to the Ministry of Education (2006) teachers need to be proactive in knowing and valuing a student's background and prior knowledge. Therefore, it is important for teachers to develop partnerships with whānau and to share information about the knowledge, expertise, and activities involved in the community. In a case study by Hunter and Anthony (2011) the classroom teacher "took great care to socially negotiate the obligations in a manner that was responsive to students' cultural histories and valued practices" (p.113).

The participants agreed that having opportunities to discuss the various NVC displayed by their students, as well as those on the video clips, made them more aware of the importance of NVC and the impact on their own NVC, including how they would teach mathematics in the future. This became quite empowering for them as they admitted opportunities of this nature did not often happen. As Zepke (2003) explains, critical reflection is identifying and questioning the validity of the thinking and reflection of others, examining one's own reflections in light of how others explained theirs, and to actively work to improve oneself to reach one's potential. Therefore, the professional dialogue that would occur if more of the participants' colleagues, or even the entire school staff, had these same opportunities to engage in staff professional development could have a positive influence across all curriculum areas and not just be confined to the teaching of mathematics. Thus, teachers would have the time to work

collaboratively to understand the value and importance of NVC and how it impacted on children's learning and teachers' pedagogical practices.

From watching the video clips, the participants acknowledged that the NVC of the teacher and the strategies he used were similar to what they tended to do in their own classes which, for the most part, alienated their students from actually learning. Therefore, being aware of their own NVC was of importance as they realized the impact on children's learning.

Of interest, were some of the participant's reflective summaries about the strategies used by *Ms Tiare* when watching the video clips. Although the participants were all experienced teachers, with each having had more than five years of teaching behind them, they were surprised and equally impressed with the strategies they had observed and were eager to implement these strategies into their own teaching of mathematics. They saw the dramatic change of those students they observed, from looking bored, frustrated, lacking motivation, to showing eagerness and enthusiasm, and wanting to participate in their learning. Hunter (2006) highlights the importance for teachers to engage in a number of pedagogical strategies in order to develop and maintain student participation. This included the teacher as a participant, a facilitator and a commentator who engaged students to discuss mathematical content through mathematical dialogues that enabled increased student participation in risk taking and argumentation.

Not only did this research project give the participants insight into the value of NVC, but also, as experienced teachers with an in-depth knowledge of the children's cultural backgrounds, they were willing to promote these alternative strategies to bolster children's confidence and enthusiasm to participate in mathematics more positively.

With this study providing an opportunity for a small group of participants to share their views, perspectives and beliefs about NVC, it was evident from the data that NVC was an important tool for teachers to improve learning outcomes for Pasifika students in mathematics. The data also showed how the participants were influenced by the pedagogical actions implemented by *Ms Tiare*. Being of Pasifika origin herself, *Ms Tiare* clearly understood the role of NVC and she showed she was comfortable with this by reclaiming and reframing culturally responsive pedagogies in the teaching of mathematics to Pasifika children. What also became evident was that not only has this

thesis argued its relevance to the teaching and learning of mathematics but also to the reality that the evidence suggested that NVC was a potential tool to help teachers improve their teaching and classroom learning across all curriculum areas to achieve positive outcomes for Pasifika children.

6.2 Limitations

Data for this research were collected over the course of three school terms - approximately six months. There were two interview sessions with the classroom teachers and another where they sat to observe video clips of teachers and students interacting during mathematics. This research sought to investigate teachers' perspectives of the NVC demonstrated by their Pasifika students and what these meant to them when teaching mathematics. As such, it would have been beneficial to obtain more data over a longer period to give teachers time to identify and understand the varied NVC shown by their students in context of teaching mathematics with opportunities to put into place the strategies used by *Ms Tiare* into their own classroom practices, that would have given a more in-depth final interview discussion with each of the participants.

The researcher conceded that a specific set of questions about the NVC of teachers should also have been provided for participants to discuss. From watching the NVC of the teacher in the video clips the participants became aware of their own NVC and the impact these had on their students. A more in-depth discussion could have occurred from these sets of questions that would have identified specific NVC cues to be aware of, both negative and positive. This, in turn, may have supported their implementation of those strategies observed of *Ms Tiare* in the video clips.

Comments made by two of the participants about missed opportunities to video themselves and their children during maths lessons where they implemented the strategies they had observed being used by *Ms Tiare*, could be considered for further investigation. Although they were the only ones recorded as making reference to the idea of having themselves videoed, the researcher suggested that similar comments may also have been voiced by the other participants had more time been available. Opportunities for the participants to observe video clips of themselves while teaching mathematics would also provide opportunities for reflective discussions on their

teaching practices and whether the changes in their strategies and methods of questions according to the NVC of their students were taken into account and whether these supported the children's learning of mathematics.

Although the researcher targeted teachers of Years 5/6, the inclusion of teachers of Years 7/8 at the same school would have been just as beneficial. The outcomes from the data indicated that involvement of more teachers from the same school would have provided more collaborative and robust discussions as they reflected on the NVC of both their students and themselves. This, in turn, would have positive outcomes not only for themselves as to how they would teach mathematics differently, but the impact it would have with the inclusion of more students and their learning of mathematics.

Understanding these limitations discussed has signalled areas where further research could be useful.

6.3 Implications

For this study, the researcher adopted an 'insider (-outsider) research' approach as she is a New Zealand Māori but also affiliates to the Cook Islands community because of her years working in education in the Cook Islands. Indigenous community research, where the researcher is a member of the community has both advantages and disadvantages. According to Kertstetter (2012) insider researchers are often able to engage with research participants more easily and use their shared experiences to gather a richer set of data. They are also uniquely positioned to understand the experiences of the groups of which they are members of. However, as stated by Kanuha (as cited Kertstetter, 2012) "[T]they may find it difficult to separate their personal experiences from those of research participants" (p. 100). Kertstetter (2012) further explains that outsider researchers are valued for their objectivity and emotional distance from situations being researched as they are not from the communities that they are studying; but they may also find it difficult to gain access to research participants. Kanuha (2000) highlights the emergence of native, indigenous, or insider research where researchers are able to conduct studies with communities or groups of which they are a member. Kanuha states:

> "[T]the native researcher chooses not only a project in which she is deeply situated, whether by geography, tradition, or simply 'inside'experience, but also one in which she is invested in those factors and others as they inform the 'act' of research" (p. 441).

Sherif (2001) identifies a Western researcher as one who holds the privileged status of 'researcher,' whereas an indigenous researcher is considered 'one of the people." From her experience while conducting field work, Sherif had to balance an insider/outsider perspective on a daily basis, ultimately becoming more sensitive to her informants' voices and experience, and being increasingly careful in her writing to avoid superimposing theories and generalising on their lives. Sherif (2001) states, "[T]the partial insider is constantly forced to move between worlds and identities because of access to, and enhanced rapport with individuals in the society under study" (p.446). A possible challenge in terms of the insider (-outsider) research identified by the researcher was her genealogical links to all members of the community and, therefore, to all the research participants. This potential 'conflict of interest' was recognized and debated vigorously among insider- researchers who argued that this approach has the potential to engage the community and develop a rich repository of depth and meaning.

Marona (2016) provides this proverb; *"[K]kai i te korero a te ui tupuna, kia kore a takataka'ia e te vaevae tangata"* - "swallow the saliva of your ancestors and cling on to your culture so that no one will step on you." Arguably, the positives outweigh the negatives.

The following narrative by the researcher describes her own experience as an insider (-outsider) Māori researcher in New Zealand:

> I was an insider as a fellow advocate of best education for children and had been a primary school teacher for several years. Like the participants, I experienced the amassed responsibilities of being a teacher that included a wide range of duties outside of the classroom. In my role as practicum coordinator for a three year Bachelor of Education (Primary) programme, I had formed a rapport with a network of school stakeholders within the greater Auckland area hence working alongside this group of teachers was already well established prior to the beginning of this research through the sharing of similar teaching experiences. Being of Māori heritage, I shared whakapapa (genealogy) links with the participants as well as the Cook Islanders who disclosed their narratives discussed in Chapter 5. However, I became aware of what made me an outsider once I began the discussions and negotiations of my research. I was no longer a classroom teacher, but a university lecturer, conducting a research project that my identity as a researcher at times outweighed the relationships I established with each of the participants.

The influence of the researcher's individual cultural values were inherent in indigenous methodologies such as Pohatu's (2005) Kaupapa Māori approach of Āta, growing

respectful relationships in research. The researcher's conceptual model of Tātai Āwhinatia, encapsulated growing up on the marae and collectively influenced and informed the researcher's teaching style and culturally responsive pedagogy which also recognized the importance of NVC. With these cultural values and the culmination of this research study, it could be perceived as biased. However, from the insider (-outsider) researcher's perspective, the model of Tātai Āwhinatia and the fact that the researcher was a member of the teaching community enabled her to bring her world views, her cultural capital and, as already highlighted, her own cultural background, that includes NVC, to this study.

6.4 Concluding comments

This research will contribute to schools with high Pasifika demographics who are contemplating becoming Communities of Learning (CoL) and seeking opportunities to improve learning outcomes for Pasifika children. According to the Ministry of Education (2013a), a Community of Learning is about opportunities for those contributing schools to make informed decisions about where their funding will go, what their policies will be, and what their curriculum will be in terms of improving outcomes for their learners.

Communities of Learning is similarly aligned to an initiative by the Ministry of Education (2013b), *Ka Hikitia Accelerating Success*, where partnerships were formed between government agencies, Maori organisations, iwi,whānau and hapu which played a greater role in influencing better educational outcomes for Maori students. Therefore, this is an opportune time for those schools considering coming together as Communities of Learning, to decide what their investment is going to be, and that includes improving the learning outcomes of Pasifika students, especially for the regions that register high demographics of Pasifika students.

When considering the planning and delivery of the curriculum, this research provides a basis for school leaders/policy makers to think about the role of NVC in the education of Pasifika children, not just as a tool to improve students' learning outcomes in mathematics but also as a tool to implement across all curriculum areas. What has been made very clear in this research was that if teachers did it right in mathematics by observing the NVC of students and varying the questions and teaching strategies

accordingly, children become attentive, engaged and enthusiastic about their learning of mathematics, showing that this eagerness can lead to Pasifika children developing a love for mathematics and a love of learning.

The initiative of promoting Communities of Learning by (Ministry of Education, 2015) was a new wave for schools who wanted to work together by having a purpose and common goals to construct effective ways of working together to improve educational outcomes for students. The recognition of NVC as a critical factor in the delivery of curriculum should be seriously considered as a beneficial outcome for Pasifika learners and, indeed, for Maori learners, and perhaps for all learners.

The researcher concludes this research with a Māori whakataukī that embodies the importance of NVC as a culturally responsive tool that reflects in-depth cultural awareness and forms the foundation for culturally responsive pedagogies.

Mā te rongo, ka mōhio;
Mā te mōhio, ka mārama;
Mā te mārama, ka mātau:
Mā te mātau, ka ōra
Through resonance comes cognisance;
Through cognisance, comes understanding;
Through understanding comes knowledge;
Through knowledge comes life and well-being.

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GLOSSARY

Many of the Māori words in the list below are taken from Professor John Moorfield's online Te Aka Māori-English, *English-Māori Dictionary* (http://maoridictionary.co.nz/). Translations of other Māori words will be from well-known Māori researchers, and from the Māori dialect of Ngāpuhi (tribal group of Northland, New Zealand).

Māori	**English**
aroha ki te tangata	*to care for the people, a respect for the people*
āta	*(particle) stands before verbs to indicate care, deliberation, thoroughness in carrying out the activity*
āta haere	*be deliberate and move with respect and integrity*
āta kōrero	*to communicate and speak with clarity*
āta mahi	*to work diligently and with conviction that what is being done is correct and appropriate to the issue and relationship involved*
āta titiro	*to look and study topics and their many relationships with reflective deliberation*
āta tūtuki	*recognition and implementation of new understanding*
āta whakaako	*to deliberately instil knowledge and understanding*
āta whakāro	*critical reflection*
āta whakarongo	*to listen with reflective deliberation*
āhi kaa	*keeping the home fires burning*
Āotearoa	*New Zealand*
ea	*culmination of attaining the values and practice of āwhinatia, āta titiro, āta whakaaro*
hākari	*to have a feast*
hanga	*to make, build fashion, create*
hapū	*kinship, group, clan, tribe, subtribe*
haukāinga	*home, true home local people of a marae, home people*
he kanohi i kitea	*The 'seen' face that is present, yourself to people, face, to face*
hui	*gathering, congregate, assemble, meet*
hui-ā-tau	*to gather once a year*
hura kōhatu	*unveiling – a ceremony at the graveside to unveil the headstone*
ika	*fish, marine animal*
ira tangata	*human genes, human element, mortals*
iwi	*extended kinship group, tribe, nation, nationality, race*
Kaharau	*son of Rahiri*
kai	*(prefix) added to verbs which express some kind of action to form nouns by the person doing the action*
kaikaranga	*to use eloquent language and metaphor to encapsulate important information about the group and the purpose of the visit*
kaimanaaki	*show respect, generosity and care for others*
Kaikohe	*name of a town in the north of Auckland*
kaitahi	*sharing of a feast, food, refreshments*
kaitiaki	*guardian, trustee*

kanohi	*eyes*
karakia	*to recite ritual chants say grace, pray, recite a prayer, chant*
karanga	*to call, call out, summon*
kaua	*do not, don't, had better not – for negative commands*
kaua e tahakia te mana o te tangata	*do not trample over the status of a people*
kaumātua	*elderly person*
kaupapa	*topic, policy matter of discussion, plan, purpose*
kaupapa Māori	*Maori approach, Maori topic, Maori principles, Maori ideology*
kāuta	*cooking shed, cookhouse, shack, lean-to*
kauwae raro	*lower jaw*
kauwhau	*to preach, lecture*
kawa	*tribal specific customs*
kia tūpato	*be cautious, careful, wary, suspicious*
kitea	*to have physical presence, be seen, represent*
koha	*gift, present, offering, donation, contribution*
Kohine Mataroa	*wife of Kaharau*
kuia	*elderly woman, grandmother, female elder*
mahi	*to work, do, perform, make, accomplish*
mahi tika āna	*learning and knowing*
mana	*prestige, authority, control, power, influence, status, spiritual power, charisma*
mana motuhake	*separate identity, autonomy, self-government, self-determination*
manaaki	*to care, to give support, to show kindness*
manaaki ki te tangata	*share and host people, be generous*
manaakitanga	*hospitality, kindness, generosity, support*
manu aute	*Māori kite especially one made in the shape of a bird using paper mulberry cloth*
Māori	*indigenous person of Aotearoa/New Zealand*
marae	*traditional meeting house*
marae-ātea	*the open area courtyard in front of a wharenui, where formal greetings take place*
māramatanga	*enlightenment, insight understanding significance*
mātauranga Māori	*Māori knowledge*
mātua	*parents*
mauri	*life principle, vital essence*
mihi	*to greet, pay tribute, acknowledge, to thank*
mihimihi	*speech of greetings, tributes*
mōhiotanga	*knowledge, knowing, understanding comprehension intelligence, awareness, insight, perception*
Ngāti Awa	*tribal group of the Whakatāne and Te Teko areas*
Ngāpuhi	*tribal group of much of the Northland*
Pākeha	*New Zealanders of European descent*
pōhiri	*to welcome, invite*
pono mārika	*so true, quite right, believe strongly*
pou manaaki	*appointed to support, take care of, give hospitality to, protect, look out for*
Puhi Moana Āriki	*Grandfather of Rahiri*

puna tangata	*men, menfolk*
Rāhiri	*founder ancestor of Ngapuhi*
rangahau	*research*
manuhiri	*visitor, guest*
taha hinengaro	*emotional wellbeing*
taha tinana	*physical wellbeing*
taha wairua	*spiritual wellbeing*
taha whānau	*social wellbeing*
takepū	*applied principles*
tākoha	*to gift, donate, pledge*
tangata	*person, man, human being, individual*
tangi	*to cry, mourn weep, weep over*
tangihanga	*funeral with strong cultural imperative and protocols*
tapu	*be sacred, prohibited, restricted*
tātai	*recite one's genealogy*
tauira	*student, pupil, apprentice, example, model*
taumata	*level, grade*
Taurapoho	*son of Te Taura*
te ao Māori	*the world of the indigenous*
te ao Pākeha	*the world of the European*
te kauae runga	*upper jaw*
te manu aute a Rāhiri	*the Māori kite of Rahiri*
tēina	*younger brothers (of a male), younger sisters (of a female)*
Te Orewai	*sub-tribe*
te reo Māori	*the Māori language*
Te Taura	*son of Kaharau and Kohine (kite string)*
te tuku tākoha	*conceptual framework: making a contribution of consequence*
tikanga	*correct procedure, custom, habit, lore, practice, protocol*
titiro, whakarongo, kōrero	*look, listen, speak*
tohunga	*skilled person, chosen expert, priest, healer*
tomo	*to arrange a marriage*
tuakana	*elder brothers (of a male), elder sisters (of a female)*
tuki	*to attack, knock down, tackle, gore*
tukutuku	*ornamental lattice-work – used particularly between carvings around the walls of meeting houses*
tupato	*caution*
tūtuki	*to stumble, knock, collide, strike*
Tūhoronuku	*Māori land kite of ancient significance to the people of Ngāpuhi*
waiata	*song, chant*
wairua	*spirit, soul – spirit of a person which exists beyond death*
waka	*canoe*
whaikōrero	*oratory, oration, formal speech-making usually made by men during a Māori formal gathering*
whakaaro	*thought, opinion, plan, understanding, idea*
whakamā	*ashamed, shy, bashful, embarrassed*
whakapapa	*genealogy, lineage*
whakarongo	*listen*
whakataukī	*proverb, significant saying*

whakawhanaungatanga	*process of establishing relationships, relationship with people, with the world and with life, relating well to others,*
whānau	*extended family, family group, a familiar term of address to a number of people*
whānautanga	*wider family ties*
whare tapa wha	*four-sided house*

APPENDICES
Appendix A
Transcript of Initial Interviews

What is your definition of NVC and give an explanation for each if possible?	
Hae	• It's hand signals (action: pointing to a direction, from here to point in the classroom). • Body language (action: secretly looking over another child's should to see what they have written as their answer. • Acting it out. • Pointing with the head not just with hands, fingers showing the way to go to another person in the group or, "I will meet your there." • The eyebrows talk a lot – showing anger, frustration. • Facial expressions of sadness, happy angry. • Facial expressions (action: giving a smile encourages them a lot. It means a lot to children when they see you approving of what they are doing. Encouraging. • Arms folded: In anger, waiting for attention, or thinking "Why did that happen". • Showing a movement. Showing how you stand when giving an instruction, modelling to children when using different materials, incidental times when you use things around the classroom. • Eyebrow positions: Showing anger, frustrations, and even 'when the light switches on' you can see the child's thinking. • Certain types of clapping: Getting attention. Show appreciation. • Just staring: The quiet ones – they're just staring, staring almost like it's up to you to go over there later when the others have gone. • Looking down: Hoping they won't be asked the question. For my Samoan children it is a sign of respect.
Kei	• How the kids hold their shoulders. • How they hold their body. • How they hold their heads. • What they are doing with their eyes. • Their facial expressions – smile, sad, angry. • Tweak of their eyebrows (action: quick lift of eyebrow with a smile) to show "yes" they agree with what is happening. • Sitting relaxed, arms/elbows loosely resting on legs that are folded with a soft smile: They are showing confidence. They were confident that they would achieve. Having confidence in their knowledge. What they're learning is worthwhile and valued. They are children being valued. • Heads tucked in folded arms on table: they are shamed by others - usually a peer thing. Something I accidently said that shamed the child. • Feeling angry (action: body stiff, rigid and facial expression very alert). If the kids shame him, he'll throw chairs and becomes very rigid, very stiff and very alert. His face looks as if he wants to beat up someone. • Feeling relaxed: Body and facial features are relaxed, more open and no longer looking like a mask. You can see the mask on his face – withdrawn because he felt threatened that he couldn't do the task at hand. The face is

	blank. You can't tell what's happening under the mask that's saying – I don't care.
Moe	• Shoulder shrugging: Unsure of the question. Teacher talking too fast. Lack of understanding. Behaviour issues. • The eyes: They tend to not look at you but at the floor which for some is a cultural upbringing. Looking at their peers because 1) they weren't listening in the first place; 2) not sure of the answer and they don't want to make a fool of themselves in front of their peers; and 3) new to the class and don't know the routines. Or pressure of not giving correct answers. Looking at peers is reinforcement that their answer is the same. Looking blank because they're tired, lethargic, hungry, angry, low self-esteem. • Hiding behind their peers: Lacks confidence to share back. Too shy. Scared they may give the wrong answer.
Nai	• The downcast eyes: Peer pressure. Doesn't get what you are asking so looks down to avoid being asked. • When they don't look at you/.They sort of look at the ground/Looks down and around them: They are trying not to make eye contact. Acting invisible. They are not sure of an answer or don't want to reply. They're feeling unsafe. Don't feel safe to take risks. • They're fidgeting: Anxious. Worried. Possibly okay in small groups but not in front of the whole class. • Head down: Trying to look busy. Disengaging. Body shows them shrinking away (action: bending in a foetal position). If they don't make eye contact with head down maybe they won't get asked. Refusing to look up when questions are asked. Culturally disrespectful. They would be punished in their culture if they were to look directly into teacher's eyes. • Nodding of head: To say they understand but you can tell by their facial expression they really don't. • Shrug their shoulders: Feeling peer pressure because they don't want to look dumb if they get answers wrong in front of everyone. But can communicate verbally in front of small group. • Shrug their shoulders: Afraid to make a mistake and not wanting to make a mistake and get put down by their peers. Trying to act cool. • They do the (action: roll of the eyes) with the big facials and the lips (action: downward grimace): Giving impression of "Do I have to?" Yet not really wanting to. • They look at you as if to say (action: slight frown with an astounded look), "Are you really talking to me?" and try and look away not wanting to do it. • Playing with something else: Tired, bored, and not focusing. • Rolling of eyes: bored, annoyed at me or somebody in the group. • Confused facial look.
Pua	• Their posture: Tells me what type of day they are going to have – should I leave them alone? The way they come in happy as Larry. Slouching. Sitting up attentively and arms folded on desk ready to go. Sprawled on the floor. The way they sit on the mat/desk: Whether they sit confidently and looking at me ready to go. Whether they sit withdrawn from what is happening, not ready for school yet. Hiding in the corner or behind someone. • Not looking directly at me: This is for my Samoan kids. They're bought up not to look you in the eye as it's considered a no-no!

	• Body gestures: hands drumming a patterned beat during maths / reading. • Different facial gestures: sad, happy, tired, disinterested.
Ria	• It's basically body posture: Hiding away because they don't want to share work or they don't want to be asked a question because they are aware of their peers. Looking around at others to see who is watching. Too shy so they try to hide away. Body is tense because they are feeling angry or up-tight or their day has not gone well. Or they are worried they may be asked a question and they don't know the answer. • Shrugging: Too shy to respond or looking a little uncomfortable cause they don't have the words to explain. • Their face expressions: Heads downward with eyes down or looking sideway but not at the person asking the question. Nodding of the head as if they understand but they really don't. If they've had a happy its smiles, uplift of the head, body bounces (noisily) into class. But a bad day it's stomping of feet, look of anger on their faces body tense up. • Their hands are moving (action: rubbing one hand over the other) all the time nervously.
Teo	• Movements of the body: sitting close to each other, sitting cross legged feeling relaxed, lying on stomach resting. • Facial expressions: Smiles, frowns, shrugs – what I would generally see as non-verbal communication. *It should be noted here that a one-on-one meeting with a parent occurred before this interview. Although I suggested postponing the participant preferred to continue as it was her opportunity to share her perspectives.*

Identify NVC that has happened while teaching mathematics and explain why.	
Hae	• While giving a question on the mat I'll see someone go like this (action: covertly looking over another's shoulder) then I say "Don't forget if you're going to look at someone else's work it might be wrong, you have to do your own." They slump back into sitting position and look as if they're writing but the face shows uncertainty, not sure, slightly frustrated. • You could have them looking up at the ceiling – they could be thinking about the question or their answer. Or it could be a way for them to indicate I need some help with something or how to do it. So I have to watch that. • When someone doesn't understand they go around asking others instead of coming to me. They then get into trouble for being annoying or a pest due probably to them not understanding the answers given. Then the child becomes disruptive and doesn't want to do maths. • Then you have beautiful times when everyone's onto it. They're really engaging because they are physically looking at each other and at me with either smiles or expressions of understanding or wanting to learn more. You could see that they're really happy with what they're doing.
Kei	• He'd been sitting at his desk all afternoon and I'd say, "We're trying to be quiet (child's name). I don't want to hear you saying your tables out loud can you say them inside your head cause I can't concentrate and lots of others of us can't concentrate." He probably rolled his eyes at me. I didn't look long enough to see his eyes roll – I'm sure they did. But you know it wasn't a problem for him or for me, that didn't matter. • Working on a maths problem the other day - 2/3 of 27: ☺ and ☺ sits there

	and are struggling. So I'm saying how are you going to work that out? They were both lost. But ☺ was talking out more, he could verbalize it but ☺ just sits there. His shoulder drops. He turns away. Turns his back away. • For some of them ... the blinds came down and they just shut off, because those words (denominator, numerator etc) it flies over them. They haven't got a really confident concept about how they can manage that concept, how they can do that independently themselves. • (Child's name) looked at me and said, "I still don't understand. I'm confused". And I said, "I wish I knew what was confusing because there's nothing else to understand. It's so simple." And he says, "But I'm still confused." His body language didn't show frustration or anger just his face showed a look of total confusion. So I said I'll have to think about how we can do this some other way so it's easier. And today he was really excited when he told me how he thought it worked (it was a very complicated one). His face said to me (action: head held high, eyebrows lifted, big smile). From all the expressions gone out from his face (the other day), all animation gone out of his face to this - laughing and him explaining quickly. • There are some boys that let (child's name) do their talking. He will talk to them. They will talk to him. They don't want to talk in front of the class – they like to work through him. That's a very Samoan thing – he's the leader. Like being the matai, the talking matai. So they will work through their 'talking matai' – heads lowered when he speaks, not looking at me but glancing past me. I allowed this to happen as it was about monitoring individual responses, contributions and understanding of what's being shared.
Moe	• I think I talk too fast with my bottom maths group, by the time it goes into the ear into the brain they only got the first two words of what I've said. So I have to remind myself – slow down. They have this blank look on their faces! • The ones that don't do their homework are usually the ones struggling. When we have three-way conferences parents ask, "How come their kids don't bring homework home?" And I look at the student and say, "Ccan you explain to your mum and dad?" They don't say anything. They just look at the desk or look down at their hands, head bent down. They know they've been caught out, and they start sweating. • The concepts with the maths is what I teach them from the numeracy books and you can tell when the new Year 5's come through that they have no idea and I don't know what it is ... the look of anxiety on their faces, constant heads down, hardly any contribution to the discussion, they get fidgety, they're quiet and they're not looking at you they're looking at their mate or looking around.
Nai	• I think I get a lot of the shoulder shrugs when we do whole class mathematics. You know it's like they can't be bothered, or they don't know the answer, or they're too scared. Or those who are going (action: hands stiff to the side giving hyperventilating noises)… saying in their minds "Don't ask me" with that heart attack look you see on their faces with their big pukana (saucer shaped) eyes. • The downcast eyes and the looking away happens a lot. Like you know those students who do that would definitely just go whoa and would quickly look away in whole class but when you do it in small groups they

might give it a try. But even in little groups too they don't feel safe enough to sort of give it a go. You know they still sort of do the (action: eyes looking down, looking away). The "Don't ask me" sort of look!

- The fidgeting I see a lot. It's like (action: eyes cast downward while fingers picking at an imaginary fluff on the desk). They're like picking at my cupboards. Like there's nothing to pick but they'll find/try to find little strand, any little piece of rubbish and they will go (action: eyes focused on a central point) really concentrating on picking their little pieces of paper off the floor. I think that fidgeting is about being really anxious, worried. So they sort of like try tp concentrate on something else and maybe fade into the background, maybe they will be left alone.
- Another one is when they use the toilet and inu sign. When we start out on the basics of the topic they all know and join in. but as we start to get more into it, to really pull it apart they then start to rock, to fidget, and they're like really anxious (action: hand in the air seeking attention, body slightly rocking, with worried facial expression) as they give the toilet sign. "I'm like…Yep, right after you answer….and they're like (action: rocking of body demonstrating a real need to go to the toilet, real worried facial expression). So I'm like "Ka aroha my darling I won't bite honest" You know to try and make them feel okay. Or I go, "OK, you but when you come back you gotta come sit over here and they're like (action: whispering) OK whaea. Yet, while making the toilet sign they are still not looking at you. They do that downcast look.
- Hanging the head down, trying to look busy. While I'm working at the blackboard in front of the class I get them to share their strategies. "Throw me your strategy because it might help someone else." You always got the ones that are jumping in your face (action: huge smile, hand waving in the air, body bobbing up and down right in front of me!). Then you got the one's that just go (action: loud inhale of breath, sniffling sounds, hunch shoulders, head looking down toward imaginary maths book, and eyes open real wide) saying, "Oh yea. Umm I'm just gonna keep trying to work this out Whaea." Like they can't even make eye contact. They block you off completely, because they put their head and shoulder right down. Like …. They're thinking, "Ah you're only gonna get me if you call out to me and even then I might not hear you." And they're like (action: heavy breathing – huffing / puffing) then they do the little (action: sound of a sigh). They don't look at where you are. They go the opposite way or they get up and look as if they are asking someone because they know you are coming over to see what they're doing. It's like they are running away from you. They don't say anything they're just up and gone.
- Nodding the head. When they say they understand but they don't. It's a lot about peer pressure because at this age level, they're scared that someone is going to say, "You're dumb man, you don't even know what 10 plus 3 is." Not only that but they may tell someone outside of the class and others will mock them out in the playground. It puts them off.
- When they say they understand with a nod it's their eyes that tell you they really don't. Although they look at you they quickly avert their eyes. Or they have that distance look and their voices are quiet and they're thinking. ":What the ... I don't even know what you're talking about. You're talking Chinese to me Whaea, I don't know."
- It's been really good at the moment though. For those one's we have made

	signals like the rubbing of the nose or chin. Like when they say "Yeah sweet as, whaea" and theyquickly rub their chin, I respond, "Cool as bub and I rub my chin in return because they know I will call them in five minutes to give them the support they need. For them it's really about their mana and their pride…."
Pua	• During group interactions, or between one another. The way they look (action: head bowed, eyes glancing who is watching or listening) tells me they are withdrawing and their facial features showing either they don't want to do it or they just don't know. This tells me whether they are ready to learn, or will I need to push them, or is it going to be a day where I leave them alone. You know they are physically here but not mentally. • I love working down on the floor when teaching maths. It doesn't seem threatening to them. I have a boy who constantly drums which he is very good at and when its maths time he drums it – and that's how he learns through patterning it and applying that skill to something else mathematical. He has great recall and auditory memory. • Working with a group of boys all varying maths abilities and after our maths session they were working under the desks (action: relaxed body language, positive eye contact with each other as they chatter – it was the right chatter) So I don't really care as long as they were learning that's the main thing.
Ria	• The nodding of their head or tilting their head downwards with eyes cast down if they're not sure. The shrugging of the shoulders is another one from some student. • They have a worried look on their faces, for example, I give them a chance to work it out on their own and they can fold their arms to show me they've got the answers. I know that maybe sometimes that puts a bit of pressure on some of them and I can see that worried look in their eyes and they're bodies start to tense up. • I know it can be hard but I like them to work it out and with a buddy. Maybe it's something that I have to think about. • But by reading their body language I can send those others away and work with them independently because they weren't able to explain plus I know that they're probably feeling troubled. • Generally, most of them are quite confident to share. They're body language shows them really engaging, their facial expressions are positive. When it's time to turn to a buddy to share they get excited.
Teo	• My students are generally quite excited when it comes to maths. They can't wait to get onto the mat into our circle, asking questions, and if the work hasn't been marked from the day before, they're looking at each other's books helping each other. • My class isn't that big so the maths groups aren't very big and it's lovely because I can almost give one-on-one support. They have the clear expectant look on their faces showing an eagerness as they have their WALT ready, they know what they are going to do and how they're going to do it • Even if they have got a not sure look that's okay to me because I think you need to makes mistakes because you don't always get it right. *It should be noted here that a one-on-one meeting with a parent occurred before this interview. Although I suggested postponing, the participant preferred to continue as it was her opportunity to share her perspectives.*

Do you think teachers are consciously aware of Pasifika children's NVC in mathematics?	
Hae	• Yes. Speaking for myself I need to consider using a lot more of those thinking strategies like Gardner's multiple intelligence and Blooms Taxonomy. Looking at children who are visual mathematically. • I want to really know my children enough to know the ways that they learn. More consistently and more effectively rather than with how I teach because I would like to see myself as a teacher who would give and take rather than just take.
Kei	• I think so. It means a lot to children when they see you approving you know encouraging. Giving a smile. It sort of encourages them a lot and you can see it in their facial expressions. • Arms folded could also mean I'm waiting or it could be their way of questioning why that happened. Or calmly sitting and not getting emotional**.**
Moe	• Well for me it's about knowing them both in and out of the classroom. When they come into the class you know what kind of a day you are going to have with them.
Nai	• Definitely. If you can read the body language of the children and have a look at what you're saying or what they're saying then you know what the body language is saying.
Pua	• Yeah although I have already done my planning for the day I might flag it and do something else entirely because they may be a bit grumpy or moody. • I'm a firm believer that if you can read your kids and you know they're going to have issues then you need to be prepared to alter yours maths – one day it could be more formal, some days they may just need worksheets (I don't do worksheets as a rule, I hate them, but there are days you need them) and other days it about creating fun maths.
Ria	• Yes I do. I definitely do. • It's all those NVC cues to watch out for because we are consciously aware of their body language. Like when completed a maths session, they give me a sign with their thumb that tells me whether they grasped the concept or not. I do this quite regularly throughout my maths sessions and this is their way of giving me feedback which tells me whether or not I need to work with them a bit further.
Teo	• Yes. • I think they're more aware of it if the class isn't so big. For me this is the first year I've had a small class so it's been fabulous. I've become really aware of their body language that is either saying I need help or I can help.

When planning for mathematics do you consciously consider Pasifika children's NVC?	
Hae	No not really. I plan according to my assessments and also knowing my students and how they learn and where they are at.
Kei	**Did not answer this question**
Moe	• I don't plan because of their body language but I do know. When I'm on the floor teaching maths. We go through the learning intention, go through the knowledge, and you teach the strategies and give them an example and if they sit there and get fidgety or they go quiet and they're not looking at

	you, but looking at their mate or looking around – not giving you direct eye contact – that's when I know.
Nai	• Sometimes I do. I do reckon we're conscious that the body language is there because we see it all the time. • In terms of planning, making sure resource is there, making sure you get through everything - it's not that we're not recognising it, it's just that there is so much to get through, all the paper work, the what-nots to tick off, the assessing, being able to present in front of the class, that sometimes we don't recognize it because it gets lost along the way.
Pua	• No, it's pretty much knowing about their different learning styles when planning for maths.
Ria	• No not really because I can just change my plans on the spot just to suit them.
Teo	• No. My planning is already done for the week. It's more the fact that I know my children and when I'm teaching you know you have to back up constantly when they become unsure or uncertain. No its not part of my planning.

Do you think teachers need to be culturally aware of the children in their class?	
Hae	• Yes. As a Samoan teacher I already have a cultural relationship with my children. As you can see Samoan language is used frequently in my class as they respond with ease in Samoan. • As a Samoan teacher I bring my own perspectives of cultural pedagogies and how I am able to identify which ones that my children can relate to and how they're going to understand what is being taught. At the same time though we can't lose track of the academic side because it is about making sure they achieve the goals we set.
Kei	• Most definitely. These children are steeped in their cultural identity. Manurewa is supposed to be a disadvantaged community but these children are steeped in their church, steeped in their families, they are well connected and well bedded in their communities and they've got lots of interconnections – tight network of extended families. • The way to also get through that was actually real to the kids was by sharing a bit more of yourself than you would normally. I talk about my husband. I bought photos of my daughter getting married. Yes, they just love seeing my family and they would then share about theirs.
Moe	• I'm going to go against the grain and say yes and no. There is a time and place for culture and yes you have to be culturally aware of the many ethnic groups with different language needs. • As for body language, I think it's the students. If they're late I can tell by the body language that something has happened. Some of my kids come from unfortunate backgrounds but it's about me reminding them why they come to school. So by giving them good learning strategies they will act differently, more confident, more engaged.
Nai	• A high percentage of our children are always failing. So is it our children? Or is it the system? Is it the way they are getting taught? Is it their body language we kind of miss. I've seen teachers growl at them, giving them a real growling – they just freeze, like they are stuck there to the ground, the lights have gone out – and I'm thinking, "Can't you tell that baby doesn't know what to do. That they are still sitting there just staring out you." • So we need to consider the needs of our babies not just here in the

	classroom but out in the community, with their families. Forming relationships and getting to really know them is so important to make them feel they want to learn.
Pua	• Yes otherwise you would never get the best out of them. I go home some days and go, "Oh my goodness I could've done it from that perspective, or I could have bought in that, like when we did ... it's real token gesture." • I don't think we do enough of understanding their culture and it frustrates the living daylights out of me. Because we don't really look at how they learn. We don't look that ☺ likes formal structured learning, that ☺ drums everything that's how he learns, for ☺ it's a combination of how he learns. • In relation to National Standards, in some respects my teaching isn't really what they are looking for, but it suits the learning needs of my kids. We might not do conventional learning but we are still working. We do lots of art, hands on activities particularly for my Pasifika. ☺ was in my class for one day two years ago and he can still remember building towers using straws – and this was all to do with maths!
Ria	• Yes. I think all teachers need to. Relationships are so vital. It's about getting to know them, spending that time with them, making them feel comfortable to share things with you and just to show that you care about them. Then once they know that then it's like they kind of feel more comfortable. You are still going to get some kids that are still feeling a bit intimidated by other but you have to try and create a safe, comfortable learning environment for them – a respectful one.
Teo	• Yes, most definitely. You need to be aware of the home and to see that the children are okay. Because I am the Health Coordinator and run the Listening Post I know a lot of our parents hence I have a fair amount of communication with them that gives me an insight as to how we can best support their children and how they too can support their children. Because we are South Auckland I feel very fortunate to see the diversity in the classroom. They come from a culture unique in their language their customs their traditions.

Appendix B
Transcript of Concluding Interviews

Has this study increased your knowledge of NVC?	
Hae	Yes, but I still have a long way to go! • I have come to realize in some instances, looking around, down, or away meant that they needed time to think, to kind of work things out, to identify quickly what the task looked like. • Putting their hands up doesn't really mean they know the answer. I used to think they did but in actual fact it was them saying yes I know the answer but I haven't quite worked it out. So now, I tell them to think first before they raise their hands.
Kei	Yes. • Learning about body language is teaching me how to work smart. • If somebody said to me what's the difference between ordinary teaching and teaching for Maori/Pasifika children I can say since doing this journey, it's about reading body language because it is very empowering. • Keeping a diary has been really good for me because I've been learning to read the children's body language more clearly and more in-depth – I found that very empowering. • Its help me to grow as a teacher as I have valued this opportunity • The video showed me that I tended to do some of those same things as the teacher which ended up alienating students from doing the learning task. • When children struggled with a maths task I knew the body language they were using. Real shrug of the shoulders with down cast eyes and minimal response meant they really needed help. Quick shrug of shoulder glancing around told me they may or may not know it but didn't want to share because of being embarrassed in front of peers.
Moe	• Half my classes have learning disabilities and the other behavioural. It's about understanding the kids. They know the answers but not sure if it's right so you have to ask them open-ended questions to draw the answers out of them - then they're away. It's asking the right questions in order to get the right responses. That's how I see it.
Nai	Yes it has. • I really observed those who didn't understand but had verbally said "Yes, kei te marama" yet their whole body language just spoke volumes – ➢ I don't know what you want me to do but I'm gonna sit over here in my group and look like I'm doing something. ➢ Had pens / pencils in their hands like they were writing in their book but the pen wasn't touching the paper. ➢ Looking away or looking down, looking at the roof pretending to think. ➢ Playing with their shoes, their hair, twirling things in their hands like they are still thinking. ➢ Touching the paper that the other ones are working on ➢ Trying to move closer to look like they understood but they hadn't. • You could see straight away just by observing the groups that there was just so much communication going on, without them saying anything.
Pua	Yes it has. • I have become more aware of my children's body language. When they

	wanted to go to the toilet or go for a drink, I allowed it. But now I notice it's mostly during mathematics. • When they are hiding behind their book, tapping their pencil, or looking into space, I know it's time for me to look at why these are happening. • I recognized some of the things the teacher was doing on the video that I was doing which didn't give room for my kids to interact or reply so I needed to consider my own teaching of maths.
Ria	Yes. • I'm more conscious of why they look unsure, or hesitant, or when they start to fidget or turn away. I've become more in tune to the position of their bodies when working with my groups or the whole class – yes.
Teo	I think I have. • I have a small class and they generally are quite excited about maths. Since watching the video; ➢ I'm now quickly thinking what other way can I change my approach to get them totally involved in the discussion. ➢ I don't allow them to lie down because I want them focused. ➢ I have children that tap or click pens so I make sure that's not happening because these are distractions.
Did this help you to improve on your teaching of mathematics?	
Hae	Yes. • It's about changing teachers mentality from that of traditional methods of teaching to really listening to the learner, really getting to know them. • I've come a long way myself since this journey began because I'm now listening to my children. They are trying to say something like "I don't understand" so I'm now taking the time to listen to them because I didn't really do that before. • With me listening to them I can give the support needed and I know to give other suggestions if things don't go well. • With fractions my children now look forward to them and will come down onto the mat ready to learn. That's because I am changing how I teach as I look at their NVC. • Looking away with eyes cast down while someone has called out "You're going too fast miss" really made me aware of that child's NVC because I did slow down, whereas I would have only catered to the one that called out. • By deliberately sitting down on the floor to show them what to do, my expectation is for the groups to go away and do the same. And they do because I had taken the time. By looking around I can see they need time to identify what each fraction looks like or to get familiar with each of them, hence they quite like it and they get themselves into the circle because they are getting confident about fractions. • I'm more consistent with scaffolding on children's ideas – providing questions, suggesting strategies, prompting, giving ideas.
Kei	Yes. • I am more reflective when teaching mathematics as I'm looking at what worked and what didn't work. • I'm now reflecting on how I provide maths questions because the video showed how the teacher could not engage the students when he asked questions. • By changing my teaching style students have gone from shrugging of the

	shoulders, turning backs on me and walking away to happy smiling faces quite happy to be involved with the learning – I should have videoed these lessons since trying those strategies! • I didn't put any pressure on them because I'm always growling. This time I allowed them to tell me in their own time and own way that there was something wrong until they felt comfortable that we were all getting the message. You know I hadn't tweaked until we watched the video how you need to really listen to the kids. So my kids were feeling more confident asking more questions – we don't understand, we don't like that. So we talked more and I wasn't growling. • If a child said, "I don't want to do that". I would usually respond "Well, you will just have to do it." Now, I would say, "Well do you think your buddy can help? Let's see what the others might think." Giving them options to consider. • If I don't scaffold on children's responses with more clarity then their body language is going to tell me that I haven't done my job well. • Giving individual children undivided attention is important because they get to feel important and that you are interested in their learning • By providing progression of questions as I worked with the students, their faces lit up, they were excited about what they were doing and learning, they were really getting into it. • I'm more aware of my peripheral vision when working with groups. • When working one-on-one they like the individual attention so I have thought about the way I ask questions. • I'm now into getting children working together, whether with somebody that knows the maths task or where they are both able to work together and explain what they are doing. The whole class is buzzing now with just helping each other. If they don't understand they know to come and ask me.
Moe	Yeah. • When I ask question and they would look down with their backs to me, eyes wandering tapping their pencils, couldn't keep still, they're twitching, squinting their eyes not really focused on the whiteboard their backs to me I know I have to simplify my questions, real simple, simple, simple to cater to their needs.
Nai	It definitely has. • You already know NVC of your tamariki especially our Maori children. But for me it was a real reminder about monitoring and making sure that they know what they are doing, that they are doing it, what they should be doing, that they understand. And if they don't we need to pick up on that and bring them back. • It was a big eye opener in terms of not only looking and reading the NVC while group teaching but also monitoring and constantly checking back on whether they understand. It was good to just sit back with my math group and watch them and do a quick check on whether they understood by providing key questions and watching their body language. • This was the biggest part that I learnt, because you can see straight away the ones that *marama (know it)* cos they're 'off'. Then you still have those playing with the rule or sharpening their pencil twenty million times, or tidying their tray, rearranging their pens. Then when you look at them (modelling of: slow slide of whole body downwards, head bowing into

	shoulder, eyes cast down). It was really good to reflect back. • In terms of monitoring my other groups it was a really good reminder; it's not only to check they're all quiet and on task but actually checking what their body is saying. How they sit and whether or not they get it – it was really interesting to watch them. • In a way I should have had myself videoed to see how well I promoted these new strategies.
Pua	Yes. • I'm always looking to improve on how I teach maths and this project has really highlighted to me that our kid's body language is important for me to really keep a watch of. • With so much happening in and around school like assessments, sports, the cultural groups, trips, this means our kids are always coming and going and that has an impact on my programme. So yes, it is something I have really thought about.
Ria	Yes. • I'm reflecting a lot more now – I'm now looking back at what worked, what didn't work, why it didn't work and did this impact on the children's NVCs – never thought of this before.
Teo	Yes. • Even though I have other responsibilities which do impact on my class program. It is about looking at what I have done with my children and where we need to go to next. Being more aware of my children's NVC has now made a difference when looking at how I teach maths.
Is NVC important for their learning?	
Hae	Yes. • It is important especially as they are physical, visual learners • (For fractions) I can now tell what's happening through the body language of two of my boys. Looking down at the resources and moving them around for a period without saying anything is indicating to me that they are needing time to identify and get familiar with each fraction. • Knowing that something went well is seen in their NVC. Like after finally working out strategies to solve the fraction problem the boy's whole body language oozed confidence.
Kei	Yes. • If the body language is confident and self-assured then I know I have succeeded in giving the right support. • Because ☺ buddy explained a maths task to her and I went over it and explain it to her, she is now able to explain the task herself hence the body language was positive showing confidence with the equipment, receptive to ideas and she participated in the talking of maths making links to experiences at home. • ☺ is another one. By telling her to work with another student because she knew how to explain the task, I could see her shoulders straightening like she grew ten feet tall with pride. With a smile on her face she accepted. • ☺ likes maths now whereas she could not work out the problem before. Now she can do it and she likes to make sure she gets it right and the girl she gave support to can also do the task. So they display confidence, eagerness, and the neat thing is the keenness to help others. • Big smiles of confidence is important to their learning.

	• A bit of pressure and due diligence on checking students homework motivated this group of (remedial) boys to achieve, to focus, and to improve on what they were doing. NVC was seen here in a positive light. • ☺ was considered by his peers as slow, a bit dumb and nobody wanted to buddy up with him. But he's really a very shy boy. ☺ the loudest mouth in the classroom was working with him and said to me "You know miss. ☺ is really good at maths. He's getting this done. He's nearly finished." I replied, "Yes he's a really good thinker." ☺ body language just changed. Although his head was bowed forward he had a big smile on his face and his bright eyes were looking up at us. • With the children helping each other, one child said, "I learnt how to do decimals because ☺ was able to help me and explain the maths task to be and now I can explain it too." I see this as NVC supporting the learning. • The children's laughter, enthusiasm, joviality and just wanting to do maths (quick fire maths). The first two to three days it was quiet, then when everyone got into it that's when they showed their enjoyment.
Moe	• Yeah and knowing the kids too. I don't want to knock their confidence because if you do they tend shut up, to clam up because its real hard to get them to responds.
Nai	Yes. • There definitely is. It's like formative and summative assessment in terms of you assessing your teaching as you are formally teaching them. • It's what they don't say and what you observe that really clicks into what you need to pick up on. • If you can see one in a group that fidgets and have all these different looks or doing other things then it is a good time to pull them straight out and start going over that again instead of continuing with your next group.
Pua	• I don't know if it's important for their learning but it definitely is for mine. • As well as making sure that all is well with them before they even start their learning it is about making sure that they are ready to learn and keeping a watch of their NVCs can help with that process.
Ria	• I've always had my children's learning as a priority so if NVC is another way to support that then yes it is important but I think it needs to be in context of what is happening at the time. There could be so many reasons for their off-task behaviour that may not be related to maths.
Teo	• Most definitely because I'm always wanting to make sure our children get the best start in their learning so why not – another strategy that we need to be really aware of!
Do you think teachers need to think about Pasifika children's NVC in mathematics?	
Hae	Yes definitely – most definitely. • You know our kids our Pasifika children are so used to doing as they're told, like 'oh yes we understand', but they don't ask why. They just got to try and do it even if that means doing it wrong. It's like doing things the old way. So it about changing how we find out what they really know instead of saying, "You should know this. This is what you should be doing. You should, you should, you should ... I assume that they know when they really don't."
Kei	Absolutely. • I've become more instinctive now to what they're body language is saying. An example, ☺. He looked at me, looked at his book, looked at me

	and waited until I noticed him then he looked at his book. I didn't say anything at first, then he did it again and I knew he didn't know how to do it but he wasn't going to ask. I wouldn't have noticed previously that he didn't understand as I thought he didn't really care because he wasn't putting his hand up.
Moe	• I think it is really more important to know your students as individuals. It about knowing what makes them tick – what's happening in their homes as it gives a better view of where they are coming from – that's real important. If they muck up I don't hold it against them. I say to them "It's a new day. Start fresh". If you keep harping on at them (and they probably get all that from their mum and dad at home) they're not going to listen.
Nai	Most definitely. • Their body language and how they interact – speaks volumes more than what they actually say. Our kids are good actors. They can tell you, "Yea, yea I know what's happening; nah it's all good; mama noa iho whaea." Yet, they didn't understand a single thing. As soon as they see the teacher coming they start copying what the person beside them have written, like they helped to work it out. Is it that they don't want to be shamed out? • It's interesting and a good eye opener especially at this time with all the assessment testing. As a teacher I think we actually do forget to look at that.
Pua	Yes. • Before this I did not consider NVC as a need to be aware of when teaching maths. Now it is about being aware of the gestures, the postures, the expressions. These tell you whether they are ready to learn or whether you would need to leave them alone for a while because our children will have days like that.
Ria	Yes, I think so. • If they have a bad day feeling angry or uptight then it is about fixing that first because no learning will happen. But if they are having a great day then the body language will be positive – the smiling, big bright eyes, head held high, the enthusiasm to participate, to get involved, to answer questions.
Teo	• One thing I noticed on the video - when the other teacher came in and began to ask questions the children's body language changed from being bored, a lack of concentration and participating to physically facing her and leaning forward with enthusiasm to eagerly answering her questions. That was an eye opener because she probably saw the NVCs the children were showing so she got involved to change that. • So yes, it is important for teachers to think about children's NVC.

Appendix C
Group One Observations and Discussions

Group One: VIEWING The group viewed a range of short video clips of a mathematic session in a classroom. They were asked to observe and share feedback of the observations they made of the NVC displayed by the children and the teacher.		
Video clip 1		
	NVC observation of the children	**NVC observation of the teacher**
Kei	Immediate facial expression of frustration. The kids fiddling with things in their hands, they are dis-engaged	Teacher standing over them and insisting that the child answer the question Teacher doing a lot of pointing
Moe	The children are not engaged. Heads down no eye contact with teacher. Sitting silently	He is focused on only one person and expecting her to know the answer. Can this be NVC from him?
Nai	The other three are doing their own thing. One playing with his hands, that one playing with his pencil look yeah that one is mucking around with a paper. No focus	
Moe	That fellow looks anxious because he is rubbing his hands, rocking back and forth.	
Hae	Rubbing his hands, he is all over the place and not bothering to do the task	
Moe	This fellow playing with a piece of paper, the one with a broken arm keeps looking down on the floor	
Hae		The teacher is working hard. I feel sorry for him, asking lots of questions without trying to give them the answer.
Video clip 2		
	NVC observation of the children	NVC observation of the Teacher
Moe	When the focus went to whole group their enthusiasm showed. They learned from the activity, showing positive engagement. Their bodies turned to the teacher. Good eye contact	The teacher changed his tact and counted people objects on the table as one of his teaching strategies.
Nai	They engaged when the focus was not solely on one person. They were facing him full attention	Then the teacher began talking again to only one person.
Moe	Why do they keep playing with pieces paper? Look, that one is looking away at another group	

Nai	One child is looking down to the floor with his head in his hands that's resting on knees, dis-engaged.	
Kei	Some giggled (sound nervous to me). One looks really nervous mumbling, "Oh my gosh you're going to ask me because I have got the book!"	
Moe		When the teacher focused on the one person again he lost the children!
Nai	Because it was group participation work, they all felt safe to share, uncomfortable when it became individual work.	
Video clip 3		
	NVC observation of the children	**NVC observation of the teacher**
Nae	They engaged and they are talking and they are actually talking to each other and they are facing each other	When the teachers' gone the kids seem to engage well together
Kei	Cause they are responsible for what happens – who is going to do what	
Moe	Listen to them now though. Listen and look at their body language though, they're still fidgeting, legs crossed, clicking the pens. I think they're struggling with the task, they just don't understand.	
Hae	That was a quick change. That one looks real frustrated.	No sign of the teacher!
Nai	Yea, they don't really understand what they supposed to do, because they're all looking at each other with that 'did you get that bro' look. Looking confused, baffled, unsure.	
Moe	The one on the floor is concentrating hard with that deep frown trying to work it out. He looks like he is stuffed!	
Hae	The child on the floor has that look of "I have no idea but I want to write something …"	
Moe	The group is twirling paper, clicking pens, Look at the boy on the floor he is like "Ah OK, I've got it, I don't care about you fellas – nah, I know." But then you watch him tuck is head into his left arm so he's either bored, or embarrassed cos he doesn't know or he's probably going – "Rmmmm	

	where's the teacher, I'm lost, we're stuck."	
Video clip 4		
	NVC observations of the children	NVC observations of the teacher
Hae	It looks like their first time. It's a new concept for them	
Nai	It has to be, Seems like they have been given a lot of information to solve the problem, and now have to make a choice which option to use. They can't decide which one to do.	
Moe	One of the boys in the group is trying to force the girl to make a decision, but she is still not sure	
Kei	Their either quibbling or sitting very quiet and still	
Nai	That one is impatient indicating, "Oh hurry up, give me the paper, I'll do it."	
Moe	The girl just sat the whole time, the boys were encouraging her, but not in a positive way. She refused to participate.	The teacher is leading, when it should be the students doing the leading
Nai	That's why he exclaims, "Oh she doesn't know how to do it." He shows he is not happy and says, "Just give me the paper. Hurry up! I'll do it, he won't know" (meaning teacher). His body language is negative, look at his face.	
Moe	He didn't go through the process, the steps that let them practice each bit.	
Nai	They are all eyeing each other, waiting for someone to make a decision	
Hae	Oh he is not happy there, did you see that.	
Kei	Yes, he is getting frustrated, did he flick the pen?	
Moe	No he pulled the paper away. See the 'look' see the eyes. They're looking. I wonder if the teacher sees them looking at the floor?	
Video clip 5		
	NVC observations of the children	**NVC observations of the teacher**
Nai	Look at that child; she's throwing it (unidentified object) at the others. She looks hoha (annoyed) with everyone	
Moe	She's probably thinking, "Ah my pen's more exciting."	
Nai	Oh boy look at this one, totally	

	disengaged, rolling on the floor, humming to himself	
Kei	She's drumming, they were all drumming before. Obviously they all belong to a cultural group.	
Hae	It's a long time sitting for them. The task is too long, maybe the task is too hard	
Moe	Their going into la-la land, they're all off-task. Some are yawning, that one is tapping. That one is looking at others and that one is learning words but what for though?	
Kei	They are not interacting together They are not using combined knowledge of the group to solve the problem.	
Video clip 6. This follows on from video 5		
	NVC observations of the children	**NVC observations of the teacher**
Nai	They're sitting up focused on the teacher.	
Kei	The children are more comfortable, they look more attentive, lots of talking. They're looking at each other for support.	She's using scaffolding now.
Nai	Look at her she's taking the lead and she is scribing, she's keen.	I think her use of language is better. I like how she's getting them to turn and share with each other and then on the sheet of paper.
Kei	They are all interacting and sharing the pen and paper. It is positive. He's eager and writing their suggestions on paper, they know what their task is now	
Hae		She's turned these children around. Very clear instructions. She's making them talk to each other. She's getting them to justify their answers.
Nai	They're all good now, they're all learning from each other.	
Kei	Positive body language	
Moe	And they're all engaged	See how she's not letting them have anything in their hands unless they've agreed on a strategy – they're not distracted!
Kei	Look they're sharing and correcting each other's work and learning	

Appendix D
Group Two Observations and Discussion

	Group two: VIEWING The group viewed a range of short video clips of a maths session in a classroom. They were asked to observe and share feedback of the observations they made as individuals of the NVC displayed by the children and the teacher.	
	Video clip 7	
	NVC observation of the children	**NVC observation of the teacher**
Ria	This session looks setup for group work with resources available and a workbook. The children show facial signs of expectation, eagerness and sitting in positive anticipation. The group is attentive and freely sharing ideas. One girl is leading but the others jump in with ideas	
Pua	One girl is tapping her pen, hesitant to say anything	
Ria	Yeah…like I don't want to do anything. Maybe she's taking the time to think - hard to tell. I don't see any negative body language happening so that must be a good thing!	
Teo	I think the boy is working things out in his head while tapping his pen. I wonder if he is showing another form of body language other than sitting and tapping a pen.	
Ria	They look like they want to work individually yet at the same time they are working collaboratively by sharing strategies and questioning each other. They want to be empowered personally, but drawing on the knowledge of the others in the group.	They work well without a teacher. They must be the top group.
Pua	They are having difficulty making choices. They don't look frustrated though. Maybe the task is too hard? Have they done stuff like this before?	
	Video clip 8	
Pua		He points a lot
Teo	The students are distracted	
Ria	Lying on their stomachs, kicking their legs as they are working out the problem, it's probably the process they use, it could be positive. The boy is focused now, the girls are still fiddling	He talks a lot

	with paper I don't know whether it's partof their process, it could be a type of process	
Pua	They're flicking paper, chewing their pens, twisting the pen as they chew, some place their hand on the other hand at times and arms out. One boy looks uncomfortable, not relaxed, maybe the task is too hard for him.	
Ria	The girls' converse more, the boy tried to get in but was starting/stopping. Of the two girls, one seems to know what to do and is talking a lot, the other girl keeps looking away, or maybe she finds it difficult.	
Teo		The teacher is sittingwith children on the floor, pointing his finger and folding his arms when talking. He looks relaxed and relates to his class well. He makes eye contact,
Pua		He directed his attention on a few because he knew they already know the answers. Especially that one boy
Ria		Maybe he should had changed his sitting position to see the whole group.
Teo	The boy with the pen (scribing) seemed distracted. He is giving it a go. But I think it's all for show for the camera, he looks a bit of a showman.	
Video clip 9. This follows on from video clip 8		
Teo	I feel sorry for the wee girl, she wants to contribute but the boy has the pen. You can see she wants to. She became withdrawn, pulling her legs back, folding her arms. Head bent with down cast eyes is telling me that she's either feeling left out or don't want to contribute it case she's wrong. It's not a happy face!	
Pua	Yes, at times she would lean forward, but because she was not getting anywhere she moved back again. And then she would slightly move forward.	
Ria	She wasn't really moving forward, she just wanted to fade into the background. Head down yet still watching the others. And then nodded when the other girl gave an answer,	

	she looked uncomfortable, maybe she didn't understand the girls answer or is she in the wrong group for her level? The boy looks bored. When he finally did write only one of the girls engaged. The other one didn't bother.	
Teo	A lot of off-task behavior going on with the teacher not there.	
Video clip 10. This follows on from video 9		
	NVC observation of the children	**NVC observation of the teacher**
Teo	Oh look she's finally observing and she's engaging. There she goes, "Oh she is onto it. She's telling them."	
Pua		Yeah did you see why? She asked the boy for the vivid and then asked if anyone else wanted to write their ideas. At the same time she physically turned to the girl yet kept everyone in her periphery.
Teo	Look at the change of behaviour. Sitting up straight especially the boy who was lying down. Focused on the teacher. Moved in closer. Lots of talking even from the little girl – eager to share their ideas!	
Ria	They're focused on the task and learning to share what they think. I like how they're talking because they understand the strategies now. They aren't showing the fear of having someone there.	
Teo	Yes. They're all facing eager to respond. They look relaxed	
Pua		She's asking questions to trigger what they already know. Bringing out their prior knowledge. She's scaffolding on the children's responses. She's giving lots of positive put-ups.
Teo	Smiles – wow!	

Appendix E
Participant Information Sheet

Participant Information Sheet

Date Information Sheet Produced:

Project Title
Classromm teachers perception on the role of non-verbal communication when teaching mathematics to Pasifika children.

An Invitation

Tena koe

My name is Gaylene Mauheni. I have 18 years of teaching experience in the mainstream Primary School sector. Currently, I am a lecturer in the Bachelor of Teaching Degree at Te Wananga o Aotearoa Auckland Campus.

I have a keen interest in teacher strategies which engage Pasifika children with mathematics. I am specifically interested in the perspectives of colleagues on non-verbal communication and cultural responsiveness with regard to mathematics.

You are invited to voluntarily take part in this research study which has a focus on classroom teacher perceptions on the role of non-verbal communication and cultural responsiveness when teaching mathematics to Pasifika children. You may withdraw at any time during the interview and data collecting process.

What is the purpose of this research?

The purpose of this research is to provide you the opportunity to reflect and discuss the role and what it means for you in the teaching of mathematics to Pasifika learners. You will spend time with me in safe and confidential interview sessions.

How was I identified and why am I being invited to participate in this research?

Due to your school having a high population of Pasifika children you were identified by senior management as a teacher who engages with Pasifika children. You are a part of a group of selected teachers who represent a range of ethnic backgrounds.

What will happen in this research?

This research will involve three interviews between you and I of which I will be transcribing.

1. Initial interview (approx 30 minutes) to provide an overview of the research, to answer any questions, and to discuss with you your understanding of non-verbal communication in your mathematics lessons.
2. In the second session you will view video clips and develop a framework of non-verbal communications students use.
   In preparation for the final interview you are requested to keep a diary during the teaching of mathematics to record your observations and reflections of non-verbal communication actions that occur between: students with each other; student/s and yourself.
3. Final interview (approx 30 minutes). To discuss your understanding of non-verbal communication and how you have used it based on your teacher diary and your experience of non-verbal communication.

What are the discomforts and risks?

You may not be familiar with the role of non-verbal communication and cultural responsiveness that underpins this research. The scope of this topic is broad and varied in research interpretation and analysis.

Given the normal teaching load of your profession, participation in this research will make additional demands on your current roles and responsibilities.

I am aware of the high levels of anxiety among the teaching fraternity with regard to model of accountability by the Minister of Education regarding numeracy and literacy outcomes across the education sector. The intention of this research is not to critique your teaching of mathematics in this context. Rather the prime focus is teaching pedagogy in relation to non-verbal communication and cultural responsiveness.

How will these discomforts and risks be alleviated?

Every effort will be made to explain these features as presented by a broad and varied range of research findings. This will be relevant to your participation in this research. The intention is to enable you develop your own understanding of non-verbal communication in the teaching of mathematics to Pasifika children, and to explore your ideas. You are not only contributing to the research but also to your own professional development.

Interview times will be negotiated to suit your availability. You will always have the option to make any necessary changes to this arrangement that is reasonable, so that you and I will have a flexible and productive outcome that does not impact on your existing roles and responsibilities and this research.

To make transparent the intent and focus of this research I will provide for discussion with you aspects of my research proposal that highlights teaching pedagogy in relation to non-verbal communication and cultural responsiveness.

What are the benefits?

Your contributions will be of benefit to the teaching profession, to future students you may teach, and may likely develop your own ideas and practices through this research. A successful outcome of this research will also result in the completion of my Masters of Education degree.

How will my privacy be protected?

Your identity in this research will be kept confidential in that all files of written notes and audio recording will be filed under a numerical code system devoid of names. To protect your anonymity you may elect a pseudonym so that any reference to you or other person/s, group/s and organization/s referred to by you in story sharing will not be disclosed. This avoids your true identity to be disclosed in the written research during data gathering and the final draft. Only you and I will be privy to the information we share and all other persons have no authority to request any of this information. All information obtained in the interviews will be kept in locked files under the protection of Auckland University of Technology. The information gathered will not be used to hamper, hinder or harm your professional career.

What are the costs of participating in this research

The only cost to the research by you will be in terms of your personal time. Every consideration will be given to ensure these interview sessions are arranged in a timely fashion that will not impinge on your personal life and commitments you may have.

What opportunity do I have to consider this invitation?

I would appreciate a response within a week of receiving this invitation as to your participation. You have one week to consider this invitation as I am required to confirm your interest within this time. Please contact me by email gmauheni@twoa.ac.nz with any questions or concerns you may have.

How do I agree to participate in this research?

If you wish to participate in this research you will need to complete and sign the Consent Form I have provided.

Will I receive feedback on the results of this research?

Please tick the appropriate boxes on the Consent Form if you would like a summary report of your contributions to the research findings.

What do I do if I have concerns about this research?

Any concerns regarding the nature of this project should be notified in the first instance to the Project Supervisor:

Professor Tania Kaai
Email: Tania.Kaai@aut.ac.nz
Ph: 921 999 ext 6601
Auckland University of Technology

Concerns regarding the conduct of the research should be notified to:
The Executive Secretary, AUTEC,
Madeline Banda, Madelaine.Banda@aut.ac.nz
Ph: 921 9999 ext 8044.

Appendix F
Participant Consent Form

Project title: Classroom Teachers Perceptions on the Role of Non-verbal Communication When Teaching Mathematics to Pasifika Children

Project Supervisor: *Professor Tania Kaai*

Researcher: *Gaylene Mauheni*

- ○ I have read and understood the information provided about this research project in the Information Sheet dated _____.
- ○ I have had an opportunity to ask questions and to have them answered.
- ○ I understand that notes will be taken during the interviews and that they will also be audio-taped and transcribed.
- ○ I understand that I may withdraw myself or any information that I have provided for this project at any time prior to completion of data collection, without being disadvantaged in any way.
- ○ If I withdraw, I understand that all relevant information including tapes and transcripts, or parts thereof, will be destroyed.
- ○ I agree to take part in this research.

I wish to receive a copy of the report from the research (please tick one): Yes ○ No ○

Participant's signature: …….

Participant's name: …….....

Participant's Contact Details (if appropriate):

……..
……..
……..
Date:

Approved by the Auckland University of Technology Ethics Committee on_____
AUTEC Reference number_____

Note: The Participant should retain a copy of this form

Appendix G

Participant Interview Questions

Initial one-on-one interview

What is your definition of NVC?

Can you identify NVC of the children while teaching mathematics and explain why?

Do you think teachers are consciously aware of Pasifika childrens NVC in mathematics

When planning your mathematics sessions do you consciously consider Pasifika children's NVC?

Do you think teachers need to be culturally aware of the children when teaching mathematics?

Group observation and discussion of a set of video clips

Observe and discuss the NVC of the children and teacher during a mathematics session and critique possible reasons for them by giving an oral reflective summary.

Give a reflective summary.

Concluding one-on-one interview

You may also refer to your reflective diaries as discussion points for this session if you wish.

Has this study increased your understanding of NVC?

Did this help you to improve on your teaching of mathematics?

Do you think teachers need to consider the NVC of Pasifika children while teaching mathematics?

Is NVC important for the children's learning?

Appendix H

Promotion Flyer

You are invited to have your say

Wanted: Classroom teachers over the age of 20 with 5 or more years of experience who teaches Y5/Y6 students.

Why? As a classroom teacher, I would like to know your thoughts and perspectives on what you consider as non-verbal communication when engaging Pasifika students in the teaching of mathematics.

To do what? You are invited to take part in this research study which includes an initial hui (approx 40 min) for me to provide an overview of the research and answer any questions, second hui, to view a video clip to develop a framework of non-verbal communication children use, and final hui (approx 40 min) to further discuss your understanding of non-verbal communication.

Your choice: Your participation is entirely voluntary. You may withdraw at any point up until the completion of data collecting and the information collected will be turned over to you on request.

What's expected? Information you give during these interview sessions will be entirely confidential and you will not be able to be identified. Pseudonyms rather than names will be used to ensure your privacy is maintained.

When? I will arrange a time and place that suits you that will not interfere with your personal life and other commitments you may have.

Who's this? Kia Ora. My name is Gaylene Mauheni and I am completing my Master of Education. I have 18 years of teaching experience in the Primary School sector and I'm currently a lecturer in the Bachelor of Teaching Degree at Te Wananga o Aotearoa, Manukau Campus.

Contact: Please do not hesitate to contact me if you would like any more information regarding this invitation to participate in this research project.

Gaylene Mauheni
Email: gaylene.mauheni@twoa.ac.nz

Appendix I

Shared Narrative A

Hosea and June Hosea (Aitutaki, Cook Islands)

Tu Angaanga tau meitaki/tikai (quality service)
In our Cook Islands Maori language we do not have one word but a series of words to explain the word or meaning. An appropriate translation would be tu angaanga tau meitaki that gives the idea of quality service. Its things you have been shown or taught in the home. These are learnings that have been imbedded in you when growing up and is a part of you when you move out into the community, to school, to church; this is an integral part of a Cook Islands family.

So tu angaanga tau or tu anaanga tikai

Nakirokiro (learning in knowing)
The words that would best explain this would be nakirokiro because it about one's understanding and it's about how this acquired unstanding helps you to become aware of yourself, who you are, how you relate to others, and what your purpose of being here and your contributions within your family, your church, your community.

Akara tamou (observation)
For us it's like akaratamou which is really focusing on the things that are happening around you and by focusing, observing, listening and taking it all in helps you to become a better person and contribute to your ngutuare tangata (community). To contribute to whatever you become a part of or involved with so these observations helps you. Akaratamou helps you to become a better you.

Akamanako meitaki (critical reflection)
For us it's like akamanako meitaki because it's something you do internally. It's about really thinking through different situations, context, perspectives and when you think, it helps you to see where you have come from which then helps you to transition into whatever areas in life you transition into in the most appropriate ways, and it will help other people, because that's important in our culture. It's about how to help others to become better people and in the process you too become a better person. I think that's a real important aspect of critical reflection.

It is also related to our bible understanding because as Christians that's important to us. There is a verse that says "ma te akaratamou ki a iesu" - so when you do that, more time you spend in focusing on Jesus, it helps you to become a better person and then it overflows into other areas of your life.

Te kiteanga e te akatupuanga (recognition and implementation of new understanding)

It's like knowing and then by knowing you can act and bring to fruition understanding and then actioning your understanding

Orongaanga ngateitei (making a contribution of consequence)
It's about giving the best – nga teitei - that means with honour, to give with honour. There is a lot of respect, a lot of love. It's an act of self-sacrifice because as parents that's what you do. You sacrifice so much for your children in order to help them to

become everything that you can see in them. It's about loving them, nurturing them – so yes it's an act of love.

BIOGRAPHY

Hosea Hosea has been a Minister of the Gospel for the Seventh-day Adventist Church since 1983 and has held various positions of responsibility in the Church, such as Youth Director, Evangelist, Sabbath School Director, Health Director and currently Church Development Director. He has worked in various places such as Fiji, as a Lecturer in Theology and Education, and throughout the Cook Islands – Rarotonga, Aitutaki, Atiu, Mangaia, Mauke, Mitiaro, Rakahanga and Manihiki.

He gained a Diploma in Theology from Fulton College (Fiji), a Bachelor of Arts in Theology from Pacific Adventist University (PNG) and a Master of Arts in Theology from Andrews University (USA).

He has extensive experience in working with people of different walks of life, nationalities and religious backgrounds.

June Hosea has worked in education since 1984. First as a teacher-aide (Tereora College), and then after graduating from Pacific Adventist University (1986) with a Diploma in Education, as a teacher of various levels (ECE – Year 13), in a range of subjects – Bible, Computing, Cook Islands Maori, English, Horticulture, Mathematics, Physical Education, Science, Social Science and Typing, and in schools in Fiji and the Cook Islands.

She enjoyed studying and have completed a variety of courses that she thought would be useful to her in her work and also as a person, e.g. Diploma in Inclusive Education - CIMOE/Wellington College of Education, Diploma in Career Guidance – Nelson-Marlborough Institute of Technology, Certificate for MOOC on Climate Change and Pacific Islands – University of the South Pacific, and Master of Business Administration – University of the South Pacific.

She is currently studying towards a Graduate Certificate in Project Management (Auckland University of Technology) as well as the Pacific Flexible Skills Development Course.

Together they have five sons, two daughters and one daughter-in-law.

Appendix J

Shared Narrative B

Ngavaevae Papatua (Mangaia, Cook Islands)

Taunga tiaki – Quality Service
My korero will be based on the protocols on the marae because these words of yours are also related to statuses that are endorsed on our marae back home on the island of Mangaia.

Quality service is designated roles on the marae; you may be given the role of looking after the atua, or the role of cleaning the marae ready for special ceremonies. You have to do the job and you do the job according to tradition - there are no short cuts.

Hence the name of quality service is taunga tiaki - services provided on our marae back home. There are different activities that happen on the marae so then there are different sections to look after. You will be taught how to conduct these services of the marae according to the protocols and traditions of the marae.

Back home in the tribe, there are different families that are given different roles elected by our ancestors; families to clean the marae, looking after the sacrifice, hitting or beating of the drum, teaching of the korero on the marae, everything according to traditions. It is shared among the families so whenever you are given that role, you have to make sure your tamariki, your grandchildren will know the role and how it's to be conducted, because for instance, when I die the chosen role is carried on by the family. It's like the title of a chief that must be continued.

Taunga korero (a're korero /a're karioi) - Learning in knowing
On the marae, the house of learning back home is called the a're korero and in the a're korero is where all our young people are taught – the art of war, the art of making medicine, the art of planting the art of fishing, you name it! So in those days it was where our young people were molded, and as we all know in those days, you had to learn and know all the different skills and how to survive. These are what will help you as you grow up. The a're korero is our traditional classroom. The learning is provided by the ta'unga; they are the teachers, they are the masters in their different areas of expertise where they share through korero with the mapu (youth) listening to them.

As well as the a're korero there is our are karioi which is also in the marae compound. The a're karioi is our house of entertainment where, whenever we have guests, we take care for them, by preparing a feast for them and to entertain them through singing of songs and dance.

Today, many workshops are now being held on our island and are provided by our ta'unga that still practices the teachings of our ancestors. These workshops are also open to anyone who is interested.

Taunga tamou (kakaro tika) - Observations
I remember stories shared when referring to observation. It was full on when one observed especially when having to observe day in and day out of the different

protocols of cultural significance, observing the different cultural activities, traditional stories, history, papaanga - these helped a person to grow into a man (tangata).

Kakaro tika in Mangaian is to observe, learn, and then use it - put it into practice. This term also means preparing you to be alert at all times; you have to observe what's happening. Observe the signs, your environment; observe whatever is happening around you because within that, you will learn the secrets of nature, the secrets of our culture, the tapu and the mana of the marae. If you don't observe carefully, if you don't look and listen, none of these will come to you. But if you look and listen, they will make their way towards you. So that's a powerful skill to the Mangaia traditions.

You know, a lot of the Mangaians are very quiet very observant and I believe we got that from our tupuna and it's so powerful – the observing, the seeing, the listening.

Tama toa (karikao paongata) - Critical reflection

Tama toa in Mangaian means you don't just easily give in to other people's ideas/opinions because Mangaian's are not known for that. This is known as karikao paongata – it is where we don't give in to people's new ideas. We sit down and really think about it very carefully so we don't just say yes straight away.

You know, Mangaia was the last island to accept Christianity. When they came the first time, we said no, and sent them back. When they came the second time, some mataiapo and rangatira still did not accept them so they stayed inland. It was the numangatini who moved Christianity out to the coastline.

In those days we had two ariki; ariki pauta (inland high chief) and our ariki patai (coastal high chief). The coastal high chief looked after the marae of orongo which is where all the big ceremonies were held. The ariki pauta looked after the inland area – today some people say it's the other way around but that's not the case because the ariki patai only look after the marae orongo.

The ariki pauta look after the internal which is known as Keia and Keia is the capital of Mangaia. That area is where my house is, you know the lookout, that area, that's the capital. There are eight marae in that area all the akaatikaanga, all akauruuruanga, all the meetings, everything, was held in that area.

So for example, if they want to appoint a chief, the chief would be taken to the marae akaoro which is in Keia and then that role is done by the inland high chief, aue no, tukituki mata is the first marae then it is taken to akaoro nga ika which means taking the fish of Rongo. So from there the chief is brought to O - rongo so when he gets to O rongo the coastal high chief takes over the ceremony then from there taken back inland

In Mangaia there were a lot of battles between tribes and every battle in Mangaia would end with a sacrifice – someone had to be killed. I had been asking mum how they got these people to be the fish, the ika. She said there was a family that knew they were the fish. So whenever there was a battle they always prepared a member to be the fish at the end of every battle to lure and also to take away the tupapaku of the battle. So the sacrifice will be prepared inland on the marae of akaoro then bought to the marae Orongo and then the ceremony continues there. So that's a little bit of a story from my people of Mangaia

Tu rangatira (aru) - Recognition and implementation of new understanding
If that title is given to you it's a big thing, a real big thing. You are taken around the island on two spears that would be crossed and four warriors on each corner would carry you as you sit in the middle. Once lifted, you are carried all around the island. While you are going around the island you will stop at the four main marae on the island where a special ceremony will be done. For example, you would stop at Ivirua and a ceremony will be done there for you.

I don't know if this is true but I read this in one of our books – when they were going around no-one was allowed to cross the road in front of them otherwise the warriors would strike the person down – this was really tapu (sacred) to us. So when someone is recognized for implementing the new understanding they are shown so much respect - this is how it is acknowledged and how it is celebrated. That's why I like this one - tu rangatira.

Taonga rima - Making contribution of consequence
You carry it from here, from the heart. It can be anything. It can be a million dollars or just one dollar. Whatever your heart gives. That's our Mangaian tradition.

Back in the days, if you catch a turtle it must go to the chief, go to the ariki - taonga a te ariki. Also, which is common in all the other islands when the fisherman come back from fishing with their catch and if they catch a tuna the head goes to the oro metua and the rest is shared amongst the people.

BIOGRAPHY
Ngavaevae Papatua was born in Oneroa, on the island of Mangaia in 1973 and is one of eight children in his family. Following the completion of his primary and secondary schooling in Oneroa, Mangaia in 1993 he moved to Rarotonga.

He earned his Teaching Diploma at Cook Islands Teachers College in 1996 and began his teaching career in Mauke. In 2001 he returned to Rarotonga and continued teaching at Tereora College until 2014. He is now working at Ministry of Education as a secondary Maori advisor.

Mr Papatua grew up in an environment rich in Mangaian culture, history, beliefs and tradition. His grandmother Tere Evangeria and his mother, Inangaro Papatua are well-known tumu korero.

His dream is to one day walk again in the shadows of his tupuna and sing the same songs they sang, speak the same reo they spoke, dream the same dreams they dreamt and eat in same kapu akari they ate in. Mouria mai tei te rima o to ui Tupuna …. Te Akaroa

Appendix K

Shared narrative C: Henrica Marona (Mitiaro, Cook Islands)

Akangateitei - Quality service
The marae in the Cook Islands is a sacred and tapu place, it's a place of worship it's a place of taking gifts to the gods, it's a place of making peace. So I will be looking at quality service from the point of the marae because it is a place to respect and to honour its integrity.

In the Cook Islands, if you have a tribe you have a tribal marae, if you don't have a tribe you don't have a marae you don't have an ariki (a chief). So that's the linking to the Cook Islands of today. Nowadays, you can call a school a marae of education, or our church as a marae of worship, our village a marae of learning. Realistically though, when Christianity came our ancestors were already worshiping a god and it was on that sacred place of the marae where everything was being held and took place – the offering of their first fruits or food to their god. So from the teachings and learning of our ancestors have been passed down and that is what we are exercising today.

Tamuanga korero - Learning in knowing
The marae is a learning place for our people to respect. It is a place where you learn, that is where the branches of knowledge goes out to your matakeinanga (tribes) - how to be respectful, how you honor people, how you take care of people, how you embrace people.

Therefore, you are learning the teachings of the marae – that's where your tu rangatira comes in. Without that korero in your mind, in your being, you wouldn't be confident, you wouldn't be anybody. But because you have immersed yourself in the teachings and learnings from the marae, you have seen it, you have watched it, and you've actually eaten it. As our ancestors have said, "Kai i te korero a te ui tupuna, kia kore a takataka'ia e te vaevae tangata" - "Swallow the saliva of your ancestors and cling on to your culture so that no one will step on you."

Akarakara matatio - Observation
On the marae it's about observing the rituals, the protocols, the traditions that helps you to know who you are, where you come from, and where you must go on behalf of your matakeinanga. It is so important to observe the ways of our ancestors.

Critically looking, critically observing, it's taking in the way things are done. You can't take it in if you are doing it half-heartedly.

Manakonakoanga - Critical Reflection
It's about critically reflecting on what has taken place. You are always reflecting from early childhood through to adulthood, and because of your observations, you think to yourself "is this good for me? Where is it leading me in my life now? How will I do it? If I follow this, will I get this? Will I get there? So you try and manakonako all the reflections.

Tu rangatira - Recognition of implementation of new understanding
You are now able to stand up tall on your feet confident in your geneology and your island roots. For example, I can proudly stand and say where I am from, my marae, my

tribe, my ariki - this is what we do in our matakeinanga. It's having that inner confidence that allows you to be a rangitira in your own right because you know who you are because of your papaanga, where you stand in the community.

Making a contribution – Orongaanga ngakau aroa

Oronga is to give and ngakau aroa is the giving of your love. This is you contributing back to your people, to your tribe, to your community, to your church. Having the wisdom and the traditional knowledge allows you to give back with all your heart with all your love - you are not hiding anything from your matakeinanga. Having that responsibility of promoting the importance and dignity of our marae to the new generations without any hesitation is your way of contributing back – oronganga ngakau aroa.

BIOGRAPHY

I have been involved in education for 46 years but took breaks in between to have my children. Taught at Apii Mitiaro, St Marys Mauke, Apii Rutaki, St Josephs, and Nukutere College. I was Deputy Principal at Nukutere then the Principal in 1989. I moved on to the Ministry of Education in 2000 as the Maori advisor for secondary level until 2014.

It was the first time a Maori curriculum was written while I was there and I was one of the writers that help put it together, written in total Maori. We had a lot of Maori workshops and community meetings with orators, elders, Maori leaders, promoting the importance of our Maori language the importance of holding on to our Maori heritage. NCEA was another initiative from New Zealand that was introduced in 2002 and I was involved in helping teachers to develop resources for the Maori assessment levels. I was responsible with running workshops for our teachers to support them in implementing NCEA tasks, and give support to gather, mark, and assess the results. I attended PD in New Zealand so that I could promote back here to our teachers of reo Maori. I was the first Cook Islander to become a moderator for Maori at NCEA level. I was a member of the Language Commission representing our Ministry of Education when the Language bill came into fruition. I was part of the committee that drafted the bill and presented to parliament.

For some years I was a judge for the main celebration that we have – Te Maeva Nui, also involved with Tauranga Vananga, and National Heritage. I was involved in many Maori traditional initiatives. Not forgetting I was Woman of the Month – a humbling experience.

For my church commitments, I am the president of the Catholic Women's Organisation and we run programmes like bible studies for the youth, taking them on retreats, and for our young women, it's developing their faith. In many areas of the church I have always been involved. I'm also the president of the women's all day of prayer for the world for the Cook Islands branch and I liaise back to New York. It was during my time that we got to be in the world journal for women's all day of prayer. I send reports to New York which is published in the journal that goes out worldwide where the World Day of Prayer is celebrated. I was really proud of that achievement. Now, I'm preparing to volunteer our church community to be a 'writer country' between 2020 and 2025. It is where we will provide background information about our country like geography, politics, economy, history, population, education, religion, women in the Cook Islands. We will also prepare programmes for the World Day of Prayer, which usually happens 4th March of every year, so we looking at preparing children's programmes; bible

studies, interactive themes, youth initiatives, and family activities. So, all around the world our church members will be participating in our programme simultaneously on the 4th March.

I have four children, 11 grandchildren, two great grandchildren.