NGA TAONGA PUORO

WHAT FACTORS PROMOTE ENGAGEMENT IN MAORI STUDENTS?

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DEDICATION

This research project is dedicated to my husband, Mark Dashper, who has contributed a huge amount of time, energy and wisdom from the day it was commenced until this, the final product, and for whom this research is a passion.

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INTRODUCTION

Background to the research.

I am a music specialist teacher, a member of a group of 3 arts specialist teachers, in a very large Auckland intermediate school of around 1150 students. The reason for this project arose from a series of classes I undertook over the school year in 2004. With an inflexible timetable, I often looked at trying to offer different learning experiences in music.

> Music in the New Zealand curriculum promotes the musical heritages of New Zealand's many diverse cultures. In particular, students should have opportunities to learn about the genres and styles of traditional and contemporary Maori music.
> (Arts Curriculum document, Ministry of Education)

Other than offering waiata and kapa haka, I knew of no learning associated with traditional Maori music that my students had experienced in any part of their schooling.

Through a professional development opportunity with the TEAM Solutions Tai Tokerau[i] technology advisor to primary schools, I was able to pilot a unique unit of

[i] TEAM Solutions Tai Tokerau in early 2004 was part of the Auckland College of Education. It is now a section of the Faculty of Education, University of Auckland. It is comprised of facilitators and advisers who offer professional development and support to teachers and schools across the Northland region.

learning to some of the students, which focused on using Maori musical instruments. Across 2004 I trialled the work with students at both year 7 and 8, from classes which included the Independent Learning Centre (a class where students apply and fulfil criteria the school deems specific to being an independent learner, twin classes (variable space, composite classes) and straight year group digital classes (where there is a ration of 1 computer to every 2 students). The constraints of the school timetable and the implications of resourcing the unit of work did not allow me to offer it to any more than these classes, which I spaced out across the year. My school was decile 10 with a predominantly pakeha roll but there were smaller groups of students from other ethnic groups, including both Aotearoa/New Zealand Maori and Cook Islands Maori students. Most students had computers and access to the internet at home.

The students I taught did not have any prior knowledge of the Taonga Puoro, Maori musical instruments, their origins, construction or application in a social context. I felt it was important to find out about these indigenous instruments, and that a meaningful way of doing this, was by making and playing our own instruments.

I was interested in using the associated oral narratives, as part of the learning and I am inspired by the notion of children's lifelong learning: making the connections between the learning experiences they have at school and their world. In the case of these indigenous instruments, I am also inspired by the fact that these instruments had the qualities of an "endangered species" and that making, playing and learning about them in an on-line environment is a juxtaposition of ancient knowledge and cutting edge 21st century modern technologies.

For a number of years I have made connections between ICTs and music, in an area I call music technology. But the compositions and arrangements that my students produced were based on the constructs of Western European musical traditions, to mirror the types of different musical tuition that are available in the Aotearoa/New Zealand school system, even if they were using new musical technologies, such as USB keyboards and music software.

My Taonga Puoro unit of work was a chance to step away from this orthodox path and take a different path. I linked the study with the ICTs in a different way, by using a web-based environment, which I had not done before.

The responses from the students of 2004 were very motivating. Even parents, with whom I rarely met, were commenting about their child's interest in this new topic, at sharing evenings. In post-unit video interviews, which I conducted after the first set of students completed the work, there was heightened student interest. The students carried their instruments around in their pockets and the web-based learning environment continued with hits across the year.

This research project was undertaken to further develop these ideas and work with a group of students for whom these musical instruments are part of their culture. It was also an opportunity to make myself more familiar with the issues, which surround the learning of Maori students, listen to the voices of the students, and to tell their side of the story.

I wish to acknowledge the invaluable help of Dr. Michael Winter as my academic supervisor and the staff at CORE Education, TEAM Solutions Tai Tokerau, the two schools where I carried out the research, and my own school, Northcross Intermediate, in particular, to Karin Fenton, Kim Henry and other teachers, who contributed their ideas, and those of their students, to the research.

A REVIEW OF THE LITERATURE

> The problem of engagement will become the greatest problem to face our schools, and this is further underlined when it is recognised that non-engagement is a major adolescent malaise. Engagement is in the hands of excellent teachers and inspiring teaching.
> (Prof. John Hattie, 2003[1])

Rationale

In order to explore the literature around my research question, I am going to begin by considering the phenomenon of student engagement. I will discuss this with reference to other educationalists' views as well as the views of teachers who have contributed their ideas on this topic to my research project. There will be frequent references to student achievement and motivation as well, in conjunction with student engagement in learning, as in many ways these phenomena are inextricably linked with student engagement.

I will consider the viewpoints of Maori educators on engagement of the learner. Again this will be related to issues of achievement.

I will then explore views on student engagement with relation to cultural artefacts, consider some of the research which has been carried out about students in immersion and bilingual environments, and look at the use of ICTs and e-learning and their part in this phenomenon.

I begin by looking at educators' definitions of engagement itself and then move into some of the writings about the specific indicators of engagement. Some of these I have synthesised with mind maps, which I have created to show connections between some of the dimensions of the phenomenon. I will incorporate the views of my teaching colleagues into the review.

What is Engagement?

> Educational reformers have employed many different terms in their pursuit of thinking. Engagement, higher-order thinking, constructivism, critical thinking, child-centred instruction, active learning, passionate learning, negative education, transformative teaching and open education. (Boostrom, 2005[2])

It is often difficult to separate the phenomenon of engagement from other educational phenomena. In this review some of these phenomena will be included as part of the discussion as, like Boostrom, I believe they co-exist. In retrospect, this project could have been called "Factors which promote thinking in Maori students" to reflect the interrelated qualities of all these phenomena.

Engagement fits into motivational and emotional influences on learning. To be motivated one is influenced by one's emotions. "Motivation to learn, in turn, is influenced by the individual's emotional states, beliefs, interests and goals, and habits of thinking." American Psychological Association,1997[3]).

I will explore the emotions in connection with specific indicators of engagement, later in this review.

Mihalyi Csikzentimihalyi[4] describes engagement as being in a state of "flow". He describes flow as the relationship between enjoyment and challenge. So if a task incorporates both these factors in a balance, then the individual develops aspects of flow or optimal experience. Although Csikzentimihalyi describes this state in many different types of activities, it can be easily related to activities in an educational setting. Csikzentimihalyi considers active and passive experiences linked to a skills base as a way of analysing whether the individual is in a state of flow. Following is a mind map, which illustrates these connections.

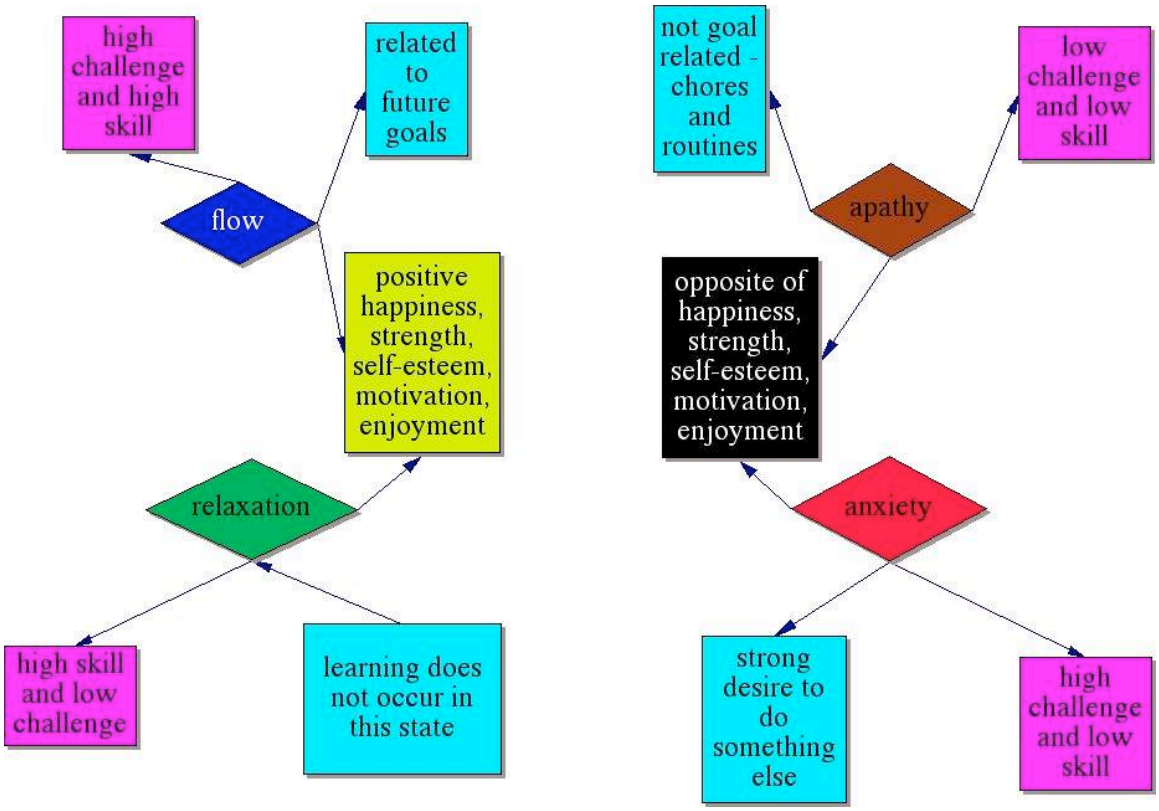

Figure 1 : Diagram showing an analysis of Csikszentmihalyi's flow state.

Skinner et al.[5] defined engagement as " children's initiation of action, effort and persistence on schoolwork, as well as their ambient emotional states during learning activities."

Teachers' views of engagement

The teachers who have been part of my research all describe engagement as 'on task' behaviour. This may be defined in various ways such as showing a desire to learn about a given topic, beginning the work set with purpose and interest.

> This can be totally self-driven or can be initiated by teachers, peers and parents. It can be driven by a need to learn or a desire to learn. When the teacher drives it, it generally works best when the student has clear guidelines and goals and there is some allowance for student choice.
> (Teacher 1)

Another teacher took a more holistic view:

> Engagement is not letting the world happen to you but being involved in it – moving changing and growing and taking responsibility for your own learning, being able to reflect and make changes to it.
> (Teacher 2)

Teachers also indicated that the engaged student shows curiosity and the need to find out more about a subject.

What are the Specific Indicators of Engagement?

According to Mihalyi Csikzentimihalyi[4] a state of flow is manifested in the following ways.

The individual is so fixed on the challenge in combination with the right skill level at hand that they have no room to consider any other influences outside their current situation.

> People become so involved in what they are doing that the activity becomes spontaneous, almost automatic; they stop being aware of themselves as separate from the actions they are performing. (Csikzentimihalyi, 1991[4])

According to teachers, students act in the same way. They also readily discuss their ideas with others – peers, teachers and parents, and apart from parents, will choose to do at any time – not necessarily during the specific class time allocated to the learning.

Having clear goals and feedback is another path to engagement. However, these goals do not necessarily have to be time-limited. Sometimes the goal-posts shift or are improvised, but as long as they are clearly perceived, then they are a part of the engagement process.

The absence of reaction to extraneous influences is also an indicator of engagement or flow.

> The clearly structured demands of the activity impose order, and exclude the interference of disorder in consciousness. (Csikzentimihalyi, 1991[4])

An engaged person also has different sense of control over their situation. Risk-taking is part of the activity as the individual exercises control over their task or

situation. There is a "thrill seeking" mentality where the student's enjoyment and thence level of engagement is increased.

Individuals often "lose themselves" when fully engaged. They temporarily give up self-consciousness to become totally immersed in their activity. After an experience of this type they emerge feeling stronger and more powerful.

> When not preoccupied with our selves, we actually have a chance to expand the concept of who we are. Loss of self-consciousness can lead to self-transcendence, to a feeling that the boundaries of our being have been pushed forward.
> (Csikzentimihalyi, 1991[4])

The last indicator is the passing of time. Time changes and appears to move at a different much faster rate. Time is a result of the rhythms brought about by the activity itself, not the actual time registered on a clock face. Csikszentmihalyi[4] is uncertain as to whether this altered state of time is an indicator per se, or whether it is part of the loss of self-consciousness, which has been identified as an indicator of the "flow" state. He does, however, comment that it "…adds to the exhilaration we feel during a state of complete involvement."

I am now going to consider some of the indicators which have been put forward by Handelsman, Briggs, Sullivan and Towler at the University of Colorado, Denver.[6] These were developed in the form of a questionnaire entitled Student Course Engagement Questionnaire or SCEQ. This questionnaire used 27 behaviours and attitudes.

These authors considered overt behaviours such as asking questions, but then argue that these types of behaviours are not necessarily a true indication, as personal and cultural backgrounds may or may not enc them. They state that "engaged students are good learners" and that "effective teaching stimulates and sustains student engagement." Skinner and Belmont[7] (cited in Handelsman et al.[6]) found " a reciprocal relationship between student engagement and teacher involvement."

and used their SCEQ to focus on engagement in the classroom itself. They asked students to determine their own levels on engagement based on two types: absolute engagement – engagement in the global sense, in that they are encompassing all learning areas, and relative engagement – engagement with particular subject areas.

They came up with a multi-dimensional approach by looking at this phenomenon from two main standpoints. They considered two theories of learning which they title *entity theory* and *incremental theory*. Their entity theory is a belief that the student has a predetermined and limited capacity for learning whereas the incremental theory suggests that learning can be stretched in various directions. They measured engagement accordingly to incremental learning theory.

They also looked at engagement in relation to motivational goals. Again they divide this up. They identify **learning goals** – "where students are intrinsically motivated, seek challenging tasks and maintain effective striving after they experience failure." They also identify **performance goals** where students are more concerned with proving their ability to others and where they are more likely to respond to extrinsic motivation. "We expected that students with a learning goal orientation would be more engaged than those with a performance orientation."

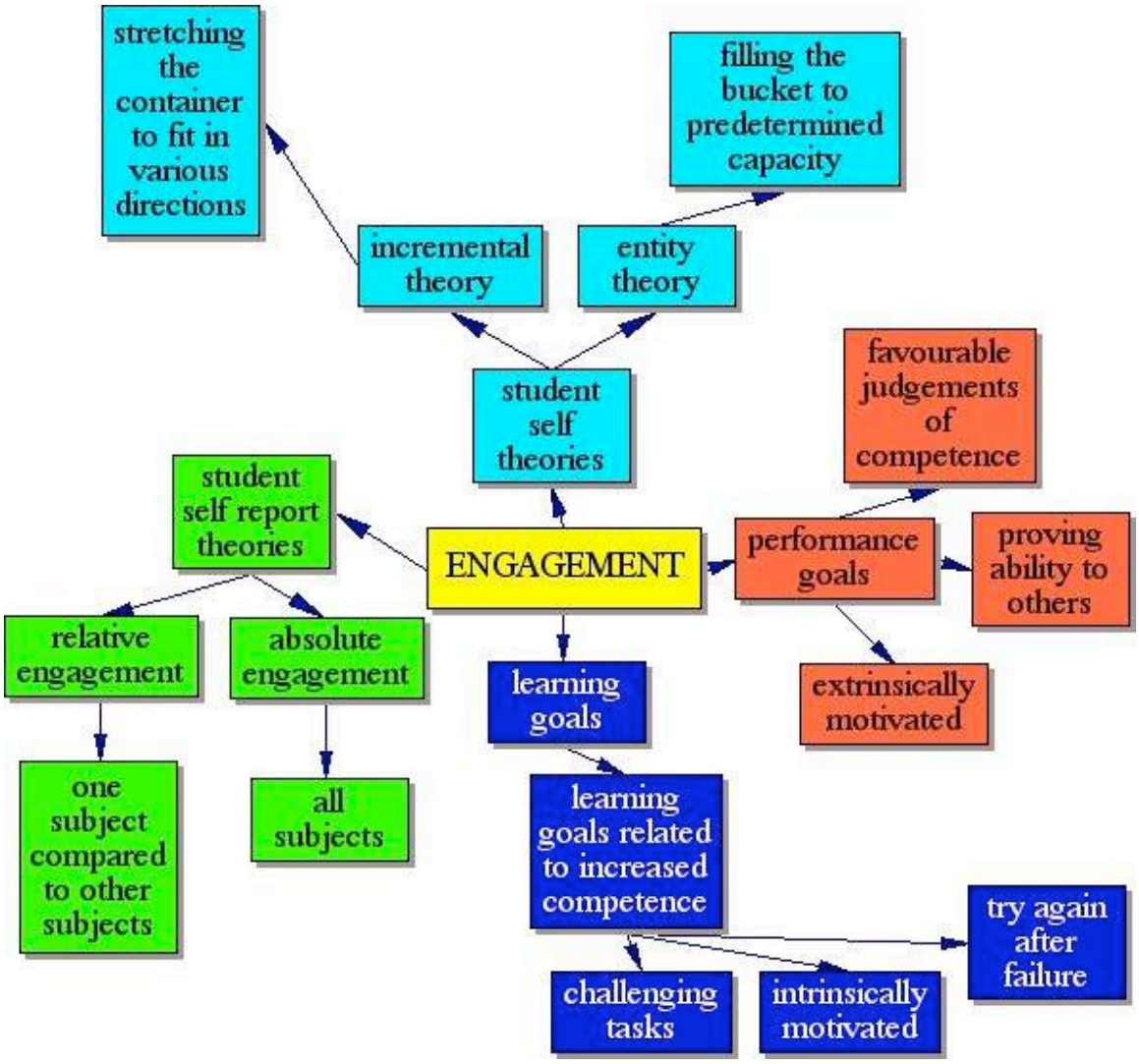

Figure 2: Multi-dimensional nature of engagement, Handelsman, Briggs, Sullivan and Towler.

As a result of this research Handelsman et al.[6] came up with the following four analyses of student engagement. They are ranked from highest engaged to lowest. For the purposes of this discussion I am not going to elaborate on the nature of the factor analysis and reliability estimates which the researchers undertook.

Skills engagement - which they describe as "student engagement through practising skills". This included such activities as taking good notes and looking back over notes taken to ensure understanding.

Emotional engagement – student engagement through relating course material to everyday life. Students described such feelings as really wanting to learn the material and thinking about this between classes. This type of engagement is part of what they originally stated as being 'not overt'.

Participation/Interaction engagement – participation and interaction in class – 'overt' behaviours. These might include such behaviours as asking questions to clarify understanding, putting up your hand in class, having fun in class, helping other students and participation in small group discussions.

Performance engagement – this included confidence in learning and doing well, achieving good grades and thus doing well in assessments.

Handelsman et al.[6] concluded that helping to emotionally engage students may be a way of developing a classroom culture of learning through fun and interaction. They also state that their research was carried out at one point in a semester, but further development of a measuring tool such as theirs would enable engagement to be tracked over a longer period of time. They also mention that the identification of antecedents of student engagement had not been taken into consideration, nor had the level of engagement of the teacher, which they believe could be a strong means of forecasting student engagement and student learning.

Elaine Chapman[8] also describes various ways of measuring student engagement. She tends to categorise the nature of engagement in three ways – cognitive, affective and behavioural aspects of task engagement. She attributes these categories to the work of Skinner and Belmont, 1993[7]. She does not offer her own specific definition of engagement but quotes from other educationalists. In reading her material I can only assume that she forms her own view of engagement by synthesising others' views, although this is not clearly stated in her writing. My understanding of her synthesis is as follows;

Engagement includes "time-on-task" behaviours, but then also includes participatory behaviours at school such as turning up to class. Chapman[8] mentions "sustained behavioural involvement in learning activities, accompanied by a positive emotional tone"- meaning effort and persistence at tasks, along with feeling enthusiastic and curious about learning. She also makes a distinction between students who choose different cognitive and meta-cognitive strategies which result in shallow learning, as opposed to deep learning. Those who are more persistent are more likely to get to the deeper layers, so engagement is a result of motivation which leads to persistence.

Chapman[8] goes onto identify different ways of measuring engagement. She includes here self-reports, where students describe their level of task engagement including how attentive they consider themselves to be during a given class, how willingly they integrate new knowledge with prior learning, how they deal with failure and how they participate in group discussion. She classifies these as behavioural task involvement. On an affective level, students are asked to evaluate their interest in challenging tasks, curiosity to find out more about some topics, and how their level of interest/excitement might vary at the beginning of a new task.

Chapman[8] discusses checklists for teachers, which are allied to observed persistence at a task by the student, and emotional reactions such as a students' happiness. She also includes directly timed observations, where certain behaviours are recorded for a set period of time. This would not concur with the argument put forward by Handelsman et al.[6] that overt behaviours are not necessarily a true indicator.

Looking for evidence in a student's work of higher order thinking and problem-solving, planning and self-evaluation are another tool she incorporates in measuring engagement, as well as recording students' interaction with others, such as peers and teachers. The latter allows the observer to consider antecedents to possible engaged behaviours, as well as looking at the student in a classroom context.

There is a link between cooperative learning, as opposed to individualised learning, and levels of engagement in students. Cooperation is described by Johnson and Johnson[9] as "working together to accomplish shared goals – whereas collaboration happens in both small and large groups, cooperation refers mainly to small groups." The connection between engagement and cooperative learning is, they propose, that cooperative learning creates intrinsic motivation and natural curiosity in the student, that as group tasks are achieved more readily, and that ways of thinking change so that the student is bouncing more new ideas off the members of the group, uses higher order reasoning strategies, and becomes more metacognitive. Some of the indicators of engagement may well also fit cooperative learning – those of sharing ideas and resources, and feeding back to peers.

Vygotsky's theory[10] does not dwell specifically on the indicators of student engagement, but does suggest that the zone of proximal development is the area in which effective teachers carry out effective learning. This is combined with scaffolding where the student is supported but encouraged to take responsibility in their learning, and where dialogue is at a level to challenge the student. Effective learning suggests that students are engaged and motivated. Vygotsky also suggests a collaborative classroom environment as a means of encouraging effective learning.

Kort, Reilly and Picard[11] describe the indicators of engagement as " observation of facial expressions, gross body language and the content and tone of speech." They continue by suggesting that a way of confirming engagement is to converse with the student, noting, "unmistakable elation, often jointly celebrated with high fives." They present a model of constructive learning, which employs extremes of emotion in one direction, and levels of learning from the constructive to a term they use – "unlearning". They see the student starting from either of two points. They can begin

with a feeling of curiosity or wonder about a topic (positive affect) or from a negative affect of confusion and disappointment. Kort, Reilly and Picard[11] suggest that the student will move towards a positive affect and constructive learning from both these start points. I find this interesting, as my experience as a teacher would suggest that starting from the positive affect is a greater guarantee of ensuring student engagement in learning. My understanding of Inquiry methods of learning would suggest that creating a sense of 'wonderment' at the outset fires the curiosity and then the enthusiasm. This is more likely to result in prolonged student engagement with a topic or task. Kort, Reilly and Picard[11] suggest that the deconstruction of learning which confuses and frustrates the student initially, prompts rethinking and the creation of new ideas. This, in turn, leads to a movement towards the positive, where the student will engage.

My conclusions from this reading centre on the fact that our emotions have a big part to play in whether we engage in an activity or not. Even though the learning process may involve a movement through a series of wilfully negative states, ultimately engagement focuses on the positive. Teachers can gauge whether a student is engaged in their learning or not through conversation. The use of conversation or dialogue would concur with the theories of Vygotsky[10] discussed previously.

In an article published by the North West Regional Education Laboratories[12] motivation and engagement are considered together. This article also links them to student success rates. The article claims that student disengagement rates increase as students get older, resulting in rising drop out rates at high school level. It also claims that "there are ways to make assigned work more engaging and more effective for students at all levels".

The connection with home and parents, particularly through homework, is essential in motivating the learner, according to this report. There is an interesting similarity here with Maori philosophies of education, which also link the support of the whanau strongly to the success of the learner. It is the family environment where early learning happens and where the motivation to learn is cultivated.

Following on from the previous statement by North West Regional Education Laboratories[12] about students becoming less engaged as they grow older, reasons are given, such as the unlikeliness of older students to take risks where they could fail. They are less likely to re-engage in a task, which they have initially failed to complete. However, a definition of failure for these students can be ambiguous. Is failure a lack of skills pertinent to the actual task, or is it a deeper, more personal deficiency? The article asserts that it is a lack of skills pertinent to the task. Csikszentimihalyi[13] puts forward a theory that when adolescents are in flow they report levels above their own averages for concentration, enjoyment, happiness, strength, motivation and self-esteem, as well as the feeling that the activities in which they are engaged are important to their futures. "As students grow older, their motivation to engage in learning may be influenced by their social group just as much, if not more than it is by teachers, parents and other adults." (MacIver and Reuman, 1994[14].)

Skinner and Belmont, 1991[15], also cited in this article, noted that:

> Students who are motivated to engage in school select tasks at the border of their competencies, initiate action when given the opportunity, and exert intense effort and concentration in the implementation of learning tasks; they show generally positive emotions during ongoing action, including enthusiasm, optimism, curiosity and interest. Less motivated or disengaged students, on the other hand, are passive, do not try hard, and give up easily in the face of challenges.

This concept of motivation and engagement resonates to some extent with Csikszentmihalyi[4] whose flow model compares the equally high levels of challenge and skill, (see Figure 1). However, it does not sit so easily with Kort, Reilly and Picard[11], who would argue that emotions can be positive or negative, and that as long as a shift towards the positive is effected, then ultimately engagement will take place.

The article then goes on to suggest a number of ways to provide more engaging tasks. These are as follows:

- making links between prior knowledge, everyday experiences and the required task

- giving students choices to promote more autonomy over their learning and relinquishing some of the traditional teacher control
- tailoring tasks so they are achievable by all students at whatever level, by promoting success
- getting students to discover for themselves
- using collaborative learning projects to promote sharing

The physical arrangement of the classroom is also mentioned, and, in particular, the fact that teachers should be able to rearrange the seating, , to reflect the task at hand. This means that there should not be a fixed seating plan.

The place of homework is discussed as a reinforcement tool for in-class activities and hence, for the promoting of engagement in the learner. But it can also have negative connotations, if the home is not a suitable study environment. The subject of homework can be contentious between students and their parents, or, in my experience, that sometimes homework is done by, and for, the parents and not the student.

In a presentation at Navcon 2K5[16], John Corrigan of Group 8 Education[17] put forward the idea that engagement of the learner is a result of the relationships within a school –particularly between the student and teacher and the level of respect demonstrated in this relationship. He felt that the learner and the teacher had common needs. These include respect for the individual, caring for the individual, the development of the individual and the binding of these with integrity. He saw these as the necessary components for both students and teachers to thrive. "An environment in which to thrive" was his definition of what a school should create for its learners. His presentation built on the core idea of respect as paramount, so that emotional intelligence grows as a result of engagement. He also alluded to the relationship between parent, school and teachers as being part of the requirement to provide "an environment in which to thrive". His description of the 'system' is that the professionalism of teachers drives parent attitudes. As the system currently treats teachers as non-professionals (i.e. they are valued on outcomes and not on attitudes, skills and behaviours), then teachers will not recognise themselves as professionals.

His actual definition of engagement is "Engagement is a feeling of self-confidence and reciprocal respect, and the desire by the student not to disappoint the teacher." From a student point of view-"I feel safe at school, teachers respect me. School is a happy, friendly place."

Corrigan made direct links between engagement and learning outcomes.

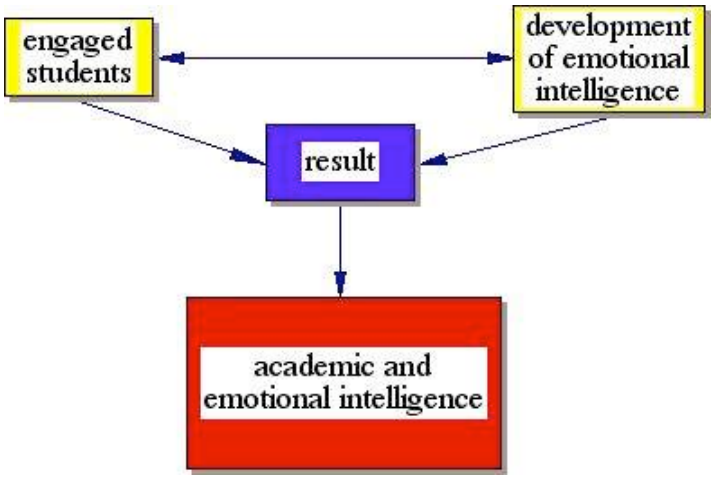

Figure 3: Correlation between engagement and emotional intelligence as demonstrated by John Corrigan at Navcon 2K5.

To conclude this section of the review I would like to include the ideas of several teachers I asked about the phenomenon of engagement and how it is manifested in their students. These are their responses:

> Engaged students ask questions and seek clarification as they progress through a learning task. These questions are generated from their genuine interest and enthusiasm about the topic.
>
> These students are persistent and committed to complete the task, and as such will not want to stop doing it, losing track of time in the process.
>
> Some students propose innovative changes to the work set and may carry their ideas across a range of curriculum areas.

They relate their new knowledge to prior learning and use what they have learnt again when the opportunity presents itself.

They are able to effortlessly apply their learning to new situations.
(Teachers of Year 7 and 8 students)

Maori students and engagement

This section of my review will focus on Maori students and engagement.

I will be referring in the main to three publications. They are:

- Te Kotahitanga – The Experiences of Year 9 and 10 Maori students in Mainstream Classrooms[18]

- Culture Counts – Changing Power Relations in Education[19]. These two publications work together.

- Nga Haeata Matauranga – Annual Report on Maori Education[20]

There will also be more minor references to other published works.

For the purposes of the discussion I will be referring to Maori students compared to other students (non-Maori). The group of other students comprises mainly NZ European (Pakeha), Pasifika students and Asian students.

In 1994 over one quarter of students in the Aotearoa/New Zealand school system were Maori. By 2040 it is projected that the majority of students in Aotearoa/New Zealand schools will be Maori or Pasifika. (Best Evidence Synthesis, 2003, p5[21])

KAUPAPA MAORI

It is useful to have an understanding of the following to be able to understand references in the literature.

Kaupapa

Kaupapa means philosophy or collective vision.

Whanau

Maori attitudes to education are centred around whanau[ii]. "Involving whanau is critical to raising student achievement", according to the Te Kauhua Maori Mainstream Pilot Project[22]. This was identified as one of seven recommendations within the above evaluation report.

The word whanau is also connected with **whanaungatanga** and **whakawhanaungatanga**. Their meanings centre on ideas of kinship and common interests. Whanaungatanga speaks of the interrelatedness and oneness of all things and whakawhanaungatanga is described as "the process of establishing relationships in a Maori context", (Bishop and Glynn, 1999). Bishop and Glynn continue by saying that in the classroom where whanau-type relationships exist, commitment and connectedness are the focus. This results in a community of learners who all participate in decision-making and collaborative story-telling processes. Angus McFarlane[23] describes Maori as "having a co-operative orientation towards learning and life generally and whanaungatanga aspects within co-operative learning structures have the potential to facilitate improved academic engagement."

Ako

Ako can be described as the reciprocal nature of learning and teaching. Learning is shared between teacher and student and the concept of the teacher as the 'holder of the knowledge' and, therefore, the power does not exist. This fits within the connectedness of whanau. Teacher and student construct "ways of knowing" together as equal partners.

> This means that students can participate, using sense-making processes they bring to the relationship, and share these with others, as of right. (Bishop and Glynn, 1999[19])

[ii] The whanau, an extended family group spanning three to four generations, continues to form the basic unit of Maori society. Before Maori came into contact with Europeans, whanau comprised the elders, the pakeke (senior adults such as parents, uncles and aunts), and the sons and daughters together with their spouses and children. A whanau generally numbered between 20 and 30 people. Depending on size, they could occupy one or more sleeping houses... (Te Ara, Encyclopaedia of Aotearoa/New Zealand, http://www.teara.govt.nz)

Manaakitanga

Manaakitanga is the ethic of caring. Again this is reciprocal. It can be identified in the teacher-child relationship as well as the home-school relationship. Examples of manaakitanga in the teacher-child scenario might be equal attention to all students in the room, using appropriate language and, when working with a student, actually working at the same physical level as the student, even if it means kneeling or sitting on the floor.

In a home-school scenario an example could be-

> Recognising that all students live in a network of significant people like family, friends, community, school mates and teachers. To support students' learning, these people need to form co-operative, collaborative partnerships where each one's contribution is recognised and valued.
> (Te Mana Korero, Ministry of Education,[24])

Tino Rangitiratanga

The kaupapa of Tino Rangitiratanga describes self-autonomy, linking the concepts of self-empowerment, self-determination and commitment to one's learning. This can be exemplified through an all-encompassing approach to behaviour management in the classroom.

Taonga tuku iko

"The cultural aspirations Maori hold for their children – the treasure of the ancestors"[19] – where being Maori is considered normal and where Maori identity is valued.

Why look at engagement in learning with respect to Maori students? To date, statistical data has shown that many Maori students achieve at a significantly lower level compared with other students. The following quotes from educators will highlight this.

In a speech at the Knowledge Wave Leadership Forum in February 2003, Professor John Hattie, of the University of Auckland, made the following statement:

> When we investigate the evidence of the successes and the problems of the Aotearoa/New Zealand education system in comparison to many in the world we wish to compete with, we see that the top 80% of our students are very competitive and performing at world class standards, while the bottom 20% are falling backwards – like no other country in the western world.

He continues:

The effects of the lowest performing 20% of students already is evident in the workplace:

- a third of the unemployed have no school qualifications and of these one third are Maori and another 10% are Pacific Islanders"

He also quotes Bishop[18]:

> We are doing something, or probably NOT doing something, to Maori and Pacific Island children within our schools across all decile levels that is just not connecting with them. It is not socio-economic differences. Instead, the evidence is pointing more to the relationships between teachers not socio-economic resources – as these differences occur to ALL levels of socio economic status.

Hattie continues by suggesting that the fact that this is happening is really nothing to do with Maori students. It is to do with teachers and how they relate to students from different cultures. It is about giving them a sense of belonging in the school. It is also not about money, or the home or the parents. The major issue is "esteeming" culture and Maori students:

…the overall academic achievement levels of these Maori students is low, their rate of suspension from school is three times that of non-Maori and they tend to leave school with less formal qualifications than do their non-Maori peers, (38% compared to 19% respectively).

Through an examination of existing teaching and learning strategies found in mainstream English speaking schools in Aotearoa/New Zealand, we are able to look at the potential reasons for a lack of engagement for many Maori students, which in turn leads to lower achievement levels. Over 90 per cent of Maori students in the 12-15 age group attend mainstream English schools.
(Te Kotahitanga,[18] p5).

In my mind there can be no doubt that the research of Russell Bishop has had a profound effect on attitudes to Maori student learning through his discussion of the use of Kaupapa Maori educational theory. He has found that many Maori students feel excluded through mispronunciation of their names, lack of use of Te reo in the mainstream classroom, and by their culture being interpreted through surface learning, such as topic work in Social Studies.

The Ministry of Education funded the Te Kotahitanga[18] project in 2002 to look at influences on Maori students' educational achievement. It took three forms:

1 a series of narratives
2 the generation of a professional development model
3 measuring changes in student achievement

Factors which influence the achievement of these students were listed as "home-school relationships, pedagogy, teachers' expectations, teachers, experience and skill, schools (climate, environment and leadership), peer effects, classroom/group dynamics, transition (from intermediate or full primary, to secondary school), mentors, whanau support and socio-economic factors."(p3)

The project investigated the influence of these factors on students.

Bishop discusses the need for the 'discursive' classroom, where meaning is co-created between teacher and students, as opposed to the traditional. Students' knowledge is "acceptable and legitimate". Through this the school and home environments work together, "where what students know, who they are and how they know what they

know forms the pattern of interactive patterns in the classroom." (Te Kotahitanga,[18] p16).

The 'traditional' classroom sees curriculum coverage as the ultimate goal by using a teacher's control over the learning of the students. In this model the teacher is seen as active and students passive – the teacher makes all the decisions as to what knowledge is legitimate in the classroom.

Bishop suggests that to realize a discursive classroom the following set of practices should be adopted:

narrative pedagogies
problem based active methodologies
cooperative learning strategies
integrated curriculum

But is it not true that this would benefit all students? What makes this particular to Maori?

In terms of narrative pedagogies, Bishop argues that "mutual telling and retelling of stories by people who are living those stories" allows students to make sense from "within their own cultural context and preferably their own language." (Te Kotahitanga,[18] p19).

Problem based active methodologies allows students the opportunity to create knowledge by confronting problematic situations. In doing this the student in constantly evaluating and critiquing strategies. The process involves metacognitive skills. It may require the learning to go outside the classroom, forming connections to the home and community and making the learning more 'real'. Both this and the abovementioned narrative pedagogies function within the construct of whanau. When whanau is actively involved, students tend to achieve better at school.

Cooperative learning strategies recognise ako (reciprocity of teaching and learning) and an integrated curriculum approach allows for the development of "collaborative learning partnerships which respond to the specific cultural needs and interests of the learner."(Te Kotahitanga,[18] p21)

To conclude this section, the argument is that if strategies such as the above were utilised in mainstream schooling environments, power-sharing and classroom interaction patterns would be such that young Maori people would be far more likely to engage and therefore achieve. For many of these students the current situation is about a teacher from a 'dominant culture' delivering the learning. In this situation, the teacher already knows the answers and the student is expected to adjust to the teacher's ways of understanding. Some of the pre-determined answers are beyond the realm of knowing for students of 'subordinate' cultures. Discussions are aimed at 'filling the gaps' of the students' knowledge, and are not about 'conversations' beyond questions already answered. Bishop maintains that the indigenous people of Aotearoa are "becoming increasingly vocal in their concern about such power and control". (Te Kotahitanga,[18] p23)

Bishop's findings made the following recommendations for teachers in Aotearoa/New Zealand to allow their Maori students to engage more in their learning and enhance their achievement at school.

- teachers need to trust and like their students and "know" them as Maori
- students need to "have a say in what we do and how it is done"
- the living realities of the students should form a foundation for the pedagogy
- different learning styles are legitimised
- teachers need to use fair methods of rewarding students
- teachers should be patient and explain ideas carefully
- teachers should provide real feedback to students
- teachers should understand that most students have high expectations of themselves and want to achieve

- teachers need to handle the negative influence of some peers more carefully
- students should be allowed to work in groups more often

How has the Te Kotahitanga project affected Maori students' engagement and achievement ?

The report has identified what students want from school. Below are some of the ideas articulated by students in the report.

- to stay through and complete Year 13
- to get a good report
- to do better than their parents did at school
- to stay at school and not wag

They also made positive comments about their changed classroom environment because they recognised that:

- having something to say about the work in class makes it more meaningful and easier to get on with it
- learning happens when students can ask questions and the teacher actually listens

These responses along with those of parents, some principals and teachers formed the basis of the development of an effective teaching profile to be used through professional development. Use of this model, according to Bishop, "when implemented by effective teachers of Maori students creates a culturally appropriate and responsive context for learning". (Te Kotahitanga,[18] p116)

Nga Haeata Matauranga[28] – the Annual Report on Maori Education 2004 claims that it sets out to:

- provide an overview across all education sectors as to what is happening in Maori education

- discuss key themes in Maori Education

- provide information on policies and programmes in place to improve outcomes

- consider research data and how that impacts on issues and achievement in Maori education.

Part of the report looks at the area of effective teaching. It categorises effective teachers as having:

- high expectations of all learners' ability to achieve
- in-depth knowledge of their subject
- an ability to teach very well using a number of teaching strategies that change in the light of new information such as assessment information
- a caring attitude towards students

(Nga Haeata Matauranga, 2004[28])

In order to support educators of Maori learners the report maintains that the following initiatives have been put in place :

- the raising of teacher expectations of Maori learners
- supporting professional capability of educators working with Maori learners
- supporting professional leadership
- increasing the supply of high quality teachers

Between 2001- to 2004 ERO focused on improving learning outcomes for Maori students, and has stated that mainstream schools are making "significant progress" in collecting data on Maori achievement.

Te Kauhua[20] is a pilot programme, like Te Kotahitanga , which provides professional development for teachers to support Maori learners in mainstream settings.

Aspects which were found to be successful include the following:

- constructive learning partnerships between teachers, other adults in the school community and parents and whanau
-
- a collaborative and collegial school culture between Maori and non-Maori
- teacher belief that change is possible
-
- more Maori representation in staffing, Boards of Trustees and bringing in previous students as role models

(I was unable to get hold of a copy of Te Kauhua, so this synthesis has been sourced from the Nga Haeata Matauranga document.)

Nga Haeata Matauranga document also outlines other Ministry initiatives which it considers part of the strengthening student learning among Maori. These are Tu Tangata, He Ara Tika, over 150 after-school study support centres and other initiatives (e.g. The Flaxmere Schooling Improvement Project), Boards of Trustees, school planning and reporting policy (for kura kaupapa). All of these involve community, whanau and schools working together. There are numerous other home-based schemes funded by the Ministry of Education for parents and whanau.

From the Te Mana Korero resource, students echo many of the same ideas, as in the recommendations put forward from Te Kotahitanga.

This is what students were reported as saying about teachers making a difference for Maori students:

- Give good instructions
- Have a caring ethic
- Monitor poor behaviour on a one to one basis away from the whole class

- Recognise prior knowledge
- Provide feedback and feedforward
- Let students have a say about what goes on in the classroom
- Don't give up on students
- Tell students constantly that they will make it
- Pronounce names correctly
- Greet students when they enter the room
- Provide a non-intimidating classroom environment
- Provide support and tolerance for everyone
- Believe in a student's potential
- Don't conveniently stereotype students (Maori as always being kinaesthetic learners)
- Have high expectations of all students

In conclusion and to encapsulate the ideas from the literature in this review, I quote from a speech by Peter Witana, Principal of Kawakawa Primary School in Northland[25].

> What we have found is that to achieve quality in a school, or, by inference, in a life, you have to look enthusiastically for mistakes. So the faster you recognise, admit and correct your errors the more precisely you can stay on target. Success is error driven. Where you stumble becomes your opportunity to make corrections, to learn and grow. Student performance does not derive from family background – it derives from a school's response to that background. Kids from destitute families are not naughtier than the rich kids down the road. Yet the richest schools have the lowest number of stand-downs and suspensions. How well Maori students do at school is strongly linked to how well parents and children relate to school and school staff. When teachers take an active interest in their Maori students, their students become more engaged at school.

Using cultural artefacts

In searching for literature about the use of cultural artefacts and student learning, I found only material about technological artefacts. But in the context of this project, much of the activity is centred around technological practice in combination with arts practice, so I consider that the literature is relevant.

Davis, McRobbie and Ginns[26] asserted that there are two schools of thought on the use of artefacts. The first is that learning is embedded in the creation of the artefact as the end product, and the second is that the artefact is just a by-product of the whole learning process with which the student is involved.

Mayo (1993 – cited in Davis et al.[26]) maintains the following - "an artefact embodies the ideas that are held in common with the people for whom the design is intended". This would concur with Taonga Puoro as the very use of the word Taonga means treasure, and is a symbolic representation of the essence of that which is Maori.

This article also suggests that artefacts are perceived differently, depending on those who use them and what they are used for – "the artefact….must be interpreted through the people who have a relationship with it." Again, this is true for Taonga Puoro. These artefacts have had many uses apart from the obvious use as musical instruments. They have been used as warning devices, declarations of hostility, and, in one case, as *utu*[iii], or revenge in tribal wars.

Davis et al.[26] believe that artefacts should be part of the narrative but not the focus of it. In the context of Taonga Puoro this could also be true, as in the long term, although the actual musical instruments may perish or disappear, the process in which the students have engaged is a learning experience which will stay with them. In the

[iii] utu means revenge

short term, the focus is on the creation of the artefact itself, but in fact, this is only an symbol of the construction of their knowledge around Taonga Puoro.

John Stevenson[27] sees artefacts as central to learning. "Individuals try to make sense of their worlds as they participate in various situations, seeking to engage with different objects."

Maori Bilingual/Immersion Environments

According to the Ministry of Education there is very little information about the effectiveness of bilingual/immersion programmes in Aotearoa/New Zealand. Not only is there a lack of research about programmes, but also about pedagogy and practice.

Jacques[28] conducted the earliest evaluation available about Maori bilingual units in 1991 using six classes within mainstream schools in the South Island and found that while the programmes provided positive outcomes in self-esteem and cultural identity, included whanau and safe learning environments, he also had some negative outcomes. These included the ongoing use of English as the main language of instruction. The minimum ratio considered for an authentic bilingual programme of instruction is 50% and all the programmes studied had a significantly lower ratio than this.

Hollings, Jeffries and McArdell[29] carried out research in 1992 which considered that "Maori language assessment, variables affecting Maori language, teachers' knowledge of assessment and how assessment procedures are used in other situations (total immersion)." They used a much larger number of Maori-medium programmes and teachers of those programmes in their research. The conclusion to this research was that assessment was largely based on anecdotal evidence, which needed to be better co-ordinated and that Maori-medium language resources needed improvement.

Bishop, Richardson, Tiakiwai and Berryman (2001)[30] in a research project called Te Toi Huarewa, concluded that although development was still needed for effective resources , effective teaching and learning strategies in reading and writing Maori were being demonstrated in a range of settings. This report also found that these settings were providing caring relationships, positive and cooperative learning environments, using prior learning to promote tino rangitiratanga, and using feedback. There was also evidence of ako and contact with whanau.

The National Education Monitoring Project undertook a comparative study of the achievement levels of Maori students at Year 8 in Maori-medium environments and English-medium environments in 2001. Language immersion levels were at 80% or above. The tasks assessed included speaking and reading skills, music skills and technology skills. Overall the two groups performed similarly in 55% of the tasks, with 14% where Maori-medium students performed better and 31% where English – medium students performed better. However it was noted that the actual nature of the tasks, in some cases, may not have been equitable as they were developed by mainstream teachers and researchers. Some texts used were translations of English texts and therefore did not necessarily use vocabulary familiar to Maori. There were inconsistencies in the amount of time spent in Maori-medium environments by some of the students involved. The Maori-medium sample group was a smaller size. The activities in the Maori texts were not the same level of complexity as the English texts. Finally, the levels of resourcing available to the Maori-medium students, including teachers as resources, were lesser than the other student group.

In 2003 Rau[31] conducted research on Maori-literacy skills of students in Maori-medium programmes having immersion levels of 80% or above. Students in this study had undergone at least one year in a high immersion context. There were two parts to this study – the first was 1995, followed up by another in 2002-2003. Maori-developed literacy assessments were used this time and the results indicated in this latter study scored consistently better. This difference was attributed to increased resourcing and support for Maori-medium programmes, increased recognition and development of pedagogy surrounding these programmes, more teacher professional

development and the dedication and commitment of the teachers working in Maori-medium environments.

Another project was conducted by Berryman, Walker, Reweti , O'Brien and McDonald in 2002[32]. This trialled a language assessment resource, Kia Puta Ai Te reo. It consisted of four programmes and assessment tools and is designed to build Te reo in a Maori-medium setting. Although the four programmes are designed to meet differing student needs, the early results are promising. These programmes focused on Maori ways of knowing and understanding, rather than some of those developed previously which used tools created by non-Maori.

How does interaction with ICTs contribute to engagement?

We need to reinforce the communal process of learning (education is a human process). The genuine power of socializing knowledge must be accentuated. Technology, with its diverse potential, can and needs to be a vehicle to support, enrich and drive this social enquiry. (Toffler quoted in Sleeter and Grant, 1993 [33].)

In this section of the review I will be considering the implications of the use of ICTs in relation to my core phenomenon of engagement. For the purposes of this discussion ICTs will include digital electronic media including computers and peripheral devices, use of the internet and web-based environments .

There appears to be very little literature available about behaviours associated with web and online learning communities, virtual learning spaces and managed learning environments that does not pertain specifically to tertiary courses and that is designed to cater for much older students. This is a new area for school-aged students, and it is too early for much published data to be available on the effectiveness of this kind of learning. I will include some viewpoints, nevertheless, about these environments in general terms, as the attitudes and behaviours described would no doubt be applicable to anyone using them. It would be an interesting exercise to make some comparative studies of these behaviours when more data does come to light on younger students and the effects of web-based learning.

Why do school students like using computers?

According to John P. Cuthell[34], students enjoy interacting with a computer. He explains that the reason for this is that "the focus of many consumer electronic technologies has been on ludic elements. That is to say, aspects of games and play." These elements can be seen in the form of wizards, tips and icons.

This idea is further explored by Papert and Heppell[35] who focused on the metacognitive activity which takes place when students are 'playing' with computers. Their comments about students using computers in a learning environment are as follows :

- they learn from their mistakes
- they try moves
- they question why they have failed
- they make logical decisions about their next moves based opn previous experiences
- they repeat their actions time and time again until they reach the desired outcome
- they fix certain variables and change others in ways they would never consider in science or mathematics lessons

Marilyn Leask[36] asserts that 80 percent of children do not find traditional reading and writing technologies easy and comments:

> One of the top prizes in the 1995 NCET National Educational Multimedia Awards (NEMA) was won by a team of Scottish 6 year olds. They had used multimedia as a way of describing concepts that are hard to handle in words. The key to success was the integral use of graphics and pictures as narrative.

The use of computers has also provided the opportunity for social interaction amongst students. Students tend not to function in a lone environment when

interacting with ICTs, but bounce ideas off each other. "The traditional divisions between teachers and students quickly dissolve when both participate as learners, raise questions and volunteer answers, and share the same problem-solving experience." (Lai[37] 1992)

In my opinion, this depends on whether the teacher has provided a cooperative learning environment in which these behaviours are encouraged. In my experience of using ICTs this has always been the case. There is a sense that we (students and teacher) are all finding out, all of the time how powerful these tools can be. This fits Vygotskian ideas of co-constructing learning. The use of ICTs obviously also has the power to scaffold students to their zone of proximal development, depending on the task, nature of the software and connectedness to the student's world, it engages them. Lai writes -

> In my own research I have seen time and time again, highly motivated students participating actively in computer based environments…..The value of learning by doing was recognised in this learning environment and the use of computers gave rise to the opportunity for the students to be involved in hands-on activities.

According to Weir, 1989, (cited in Lai[48]), using computers gives students the chance to "mess about", use their individual learning styles, and set personal goals for their learning, which in turn generates greater success and self-confidence.

I can vouch for this, for as a classroom teacher as I have had the pleasure of working with many students who have enjoyed more success in the arts through the use of music software in an ICT environment, than the little or none they had previously experienced when there were no ICTs present. Students were used to having few choices as to how they worked. And using ICTs was not on offer as an acceptable choice in the area of arts education.

Carbonara[38] stated that

> The use of Information Technology as a tool itself, may also be acting to enhance the ability of younger learners to question conventional wisdom b y communicating frequently with instructors instead of passively accepting that wisdom.

Working in Web-based Environments

In this section I will describe the various positive and negative arguments for these environments. As previously mentioned, I have not found any published data on the effects of web-based learning environments with younger students. The reader will undoubtedly be able to make mental connections with these views and their implications for younger learners. I will also describe a web-based environment for younger students.

Lai[39] considered the design of these environments was to scaffold student learning through-

- Interactivity – where environments were interesting, reflective and meaningful. Social and interpersonal environments were more conducive to learning.

- User control – the environment was user friendly and participatory.

- Flexibility – information on tasks was explicit and feedback was just-in-time.

- Collaboration – support was available for both the individual leaner or collaborative group.

Glennis L. Vinton (2003)[40] maintains that initial attempts at setting up online learning communities were based on the teacher-pupil transmission model. This meant that activities were mainly reading and that tasks were individually-oriented. This view would concur with Lai who also believes that early environments were cognitively,

not socially based. Now the addition of photos, biographies, synchronous chat rooms, email, collaborative tasks and areas such as "the coffee lounge", creates a social aspect, which encourages interaction.

Weller (2002)[41] upholds that constructivism is the dominant teaching approach and that the "social construction of knowledge is emphasized through dialogue with others in the community as well as the teacher/facilitator." He also suggests that learning is situated, problem solving is realistic, learning is scaffolded, and the growth of the individual or the community as a whole can be assessed. Collaborative activities are the basis of the learning.

Brown[42], cited in Lai[50], also stresses the importance of social interaction in what he terms 'Internet Mediated Learning'. He stresses that "students learn best where thinking processes are distributed in collaborative and reflective learning environments", although one could argue that this does not specifically pertain to web-based learning environments.

One web environment designed for younger students is GlobalNet – (www.globalnet.org.nz)

This is the statement for teachers on the home page section of the site.

> With the continual development of technology, educators must increasingly understand and use up to date technology in the delivery of the curriculum. Sophisticated information and communication technologies are allowing people from different cultures around the world to communicate and exchange ideas. Relationships can be built to further understand cultures, values and beliefs. As a result of the use of inquiry, an essential skill in this day and age, students will amend, adjust and reconstruct their view of their own world.

GlobalNet involves several schools across Aotearoa/New Zealand and Australia involved in collaborative online projects. It has resources for educators available on the site, but focuses mainly on students. For students there are the following features.

- games

- news
- topic-based challenges
- webquests
- issues-based surveys – visible to all participants so comparisons on views are available via graphed results
- inter-school links through collaborative projects
- published student work area

All of these are "facilitated" through a character called an "extra terrestrial web mentor".

I now address some of the negative comments made about web-based learning environments.

Weller suggests that these environments can be "smokescreens for poor teaching". Students may be left to flounder through a sense of "abandonment' where facilitators do not give direct answers. Students need meaningful activities that are well planned and executed.

Wright[43], who maintains that the communication can be shallow where students find it hard to maintain a conversation when there has been no real point articulated, reiterates this opinion to some extent. It is possible that she means that these environments sometimes create 'unmeaningful' conversations and just because the feature is present, the student feels duty bound to use it.

Weller continues by adding that the online community may adopt the beliefs of a dominant member of the group and that participating in such a group may be more time-consuming for students wanting to understand concepts because of the lack of immediate dialogue.

However, Weller does positively comment on these communities by saying that deeper understanding can be reached by the contributions of participants with varying

towards a task, and the communities promote active learning through students having to be reflective and explain their ideas.

So, in conclusion, most of my reading has suggested that interaction with ICTs does contribute to engagement. Whether this occurs in a web or non-web environment, the design of the learning experiences using the technology is the key factor in its ability to engage. Elements of interactive gaming, with high visual content seem more likely to appeal than older-style text-based learning environments. The social context of ICTs interaction, where learners are able to co-construct knowledge, adds to engagement, as opposed to the student operating in isolation. But ultimately, it still rests with the teacher/facilitator, using the ICTs in an exciting, supportive and creative atmosphere where learning can take place.

METHODOLOGY

Students

I worked with nine students at Year Seven level. Six of the students were girls and three students were boys. All students had varying degrees of "being disengaged" in their learning, although disengagement manifested itself differently with different students.

Gathering Data

I used several different sources for data in order to carry out my research on engagement factors with Maori students. These included the following:

Video footage of all hands-on sessions

Digital voice recordings of working sessions with the students

Questionnaires with students- at the end of sessions of work

Questionnaires with teachers – general perceptions of engagement and the indicators specific to engagement in their own particular students

Meetings with Te reo adviser in the Northland area

Interviews – some of which were recorded digitally then transcribed and others, which were taken in note form. Conducted before the unit of work was commenced

Informal interviews conducted at the end of the process

Observations of the students in their normal classroom environment prior to the unit of work, followed by observations of students whilst involved in the unit of work

The most important factor in all of this was the necessity to form relationships with the students. This allowed them to be open with me about teaching and learning in an environment where they could voice their opinions safely. Some of these opinions were contentious and controversial and the information they freely gave was invaluable.

This freedom with comments would not have happened if I had not invested a considerable amount of time in getting to know them during the course of our learning experiences together.

Ethical Considerations

Students themselves provided written consent to participate in the research. Written parental consent was also obtained. The Principal of each school was notified in writing and permission was gained. Teachers of the final students selected for the research group were notified in writing. All parties had the option of withdrawing from the research project if they desired, although this did not occur.

Copies of ethical forms are contained in the Appendices to this report.

Case Studies

In order to carry out my research I decided to use a descriptive case study approach. This enabled me to look at an issue in a real context. The nature of the data I gathered was qualitative i.e. interpretive and subjective.

> Case studies strive to portray 'what it is like' to be in a particular situation, to catch the close-up reality and 'thick' description of participants' lived experiences of, thoughts about and feelings for, a situation. (Geertz, 1973)

In using a case study, I have attempted to adhere to some of the key characteristics, as described by Cohen, Manion and Morrison (2000).[55]

The aim of my case studies was to provide a rich description of the events that unfolded during the unit of work I undertook with the students.

As the researcher I have been actively involved in the case studies in two roles. Firstly when making the Taonga Puoro, as a participant and, secondly, with the e-learning as the teacher/facilitator/participant.

The writing of the report is deliberately in narrative style. The reasons for this are, that it is a reflection of traditional Maori storytelling, and, it tells the story of the research in a way which will appeal to the teachers who are most likely to read it.

> The results are more easily understood by a wide audience (including non-academics) as they are frequently written in everyday non-professional language
>
> They are immediately intelligible. They speak for themselves.[44]

The central focus on Tikanga Maori gives the project depth and richness.

In the analysis of the data I will be looking at the characteristics and behaviours of the individual students involved. Sometimes this will be on an one-to-one basis and at other times it will be in the small sub-groups which form the whole sample group.

As mentioned above, I was a participant observer in these case studies. I was actively involved with the students in what I have set out to observe – I was "doing" the work with them, and at the same time being an observer - recording and discussing their behaviours. As such I was able to track, for an extended period of time, ongoing behaviours which are specific to my indicators of an extended period of time. This makes the data richer and more meaningful.

I set out initially to devise a set on indicators for student engagement. Although there is a wealth of literature about specific types of behaviour, I narrowed the lists down to four categories of behaviour – body language, verbal, inquisitive and collaborative. From these I extracted those actions, which I felt were specific to the group of

students, after I had observed them in their normal classroom environment and formed a relationship with them. I felt that any list of indicators I used had to reflect the nature of the group who were being observed. There is undoubtedly a myriad of other types of behaviour, which could be observed, however, I chose those which I thought were most relevant and useful for the group.

Being a Pakeha and Researching Maori

> One faces a great danger of believing that the only way of understanding Science. Thus, other cultures and ways of knowing are given their authenticity and validity, not from the roots of their own tradition but by using the yardstick of the economically dominant West.Indigenous science would be to explain it in terms of the truths of Western
> (F. David Peat cited in Tolich and Davidson,1999.[45])

I was especially aware of the fact that I was going to be working with students from a culture different from my own. I needed to do the following before embarking on the research:

- talk with the group of students in some depth, including those who were potential participants so they were all aware of what we would be doing.

- in these discussions allude to the fact that what these students were doing would quite probably affect outcomes for subsequent groups of students students later on.

- acknowledge that Tikanga would be integral to my approach and that their personal stories and experiences as Maori would be invaluable to me and the group as a whole.

- affirm that, although the reason for doing the research might be based on some negative statistics, the outcomes would be positive and have positive influences on future Maori students. It might also help

students to understand their own learning better and make more informed choices on the way they approach some learning tasks.

I also was aware of the need for a person who would initially guide me in my research. For example, how I was approaching my research question, who would give me guidance on what schools would be appropriate participants in the research. I also needed to check that my work in a bi-lingual unit was conducted according to the Tikanga of the unit.

My underlying belief was also that while the research was about Maori and with Maori, it was also for Maori. It may alter some thinking about Maori achievement and make differences for students.

Using the Maori Pedagogies

In the research project I have embraced the following Maori pedagogies: An explanation of how the pedagogies were reflected in the research project is shown below in italics.

Tuakana/Teina whereby an experienced adult or student (the mentor) helps a student of similar interests and abilities (the mentee), gain new skills and knowledge, and may assist with assessment or critical feedback / evaluation through a co-operative relationship.
Students working as buddies from time to time.

Whakawhanaungatanga where connections are formed between teacher and student or student and student, that link some part of their background to others.
Talking with the students and making connections with the individual in relation to the group. Making connections between the students and me as the researcher

Wananga offering a 'Maori school of learning' which is specialist in nature.

The initial withdrawal from the students' classroom to discuss the research project, followed by the making of the Taonga Puoro in the same room where the first seeds were sown.

Ako placing students from one or more levels in a learning situation with a teacher who possesses similar special skills or interests,
The act of selecting the final group of students to participate in the research.

Taonga tuku iho a learning centre approach providing a choice of activities based on high-interest topics to challenge and stimulate small-group or independent study,
The actual unit of work to form the basis of the research – how these students engage in their learning.

Kotahitanga individuals or selected and directed small groups of students, may investigate topics related to the curriculum, and to personal interests and strengths
Students making choices about how they present the e-learning aspect of the unit of work.

Rangatiratanga flexible grouping according to abilities and / or interests with teachers planning ability groups on the basis of assessed skills and knowledge.
Students had been identified as non-engaged students by the respective teachers to form the overall group.

Mana motuhake consulting teacher or specialist teacher working within the regular classroom with individuals or small groups of students.
Consultation with classroom teachers about the activities completed by the students and showing the final work produced by the students. Students gaining self-esteem from succeeding tin the research group.

Kaupapa integrated curriculum using broad-based, conceptual themes, involving the integration of multiple disciplines, allowing learning across wide issues as opposed to narrow topics.

The holistic nature of the unit of work, which combined hands-on activities and e-learning activities, as well as incorporating a number of different curriculum areas.
(See Appendices for actual unit).

DESCRIPTION OF THE CASE STUDIES

Initial interviews with students

I interviewed all the students before undertaking the unit of work with them. Interestingly, the students in School A, the mainstream year 7-13 school, could not tell me the name of their iwi when I first asked. They subsequently went home and asked their whanau, although I had not pressured them to do so.

The purpose of the interview was to establish the student's own understanding of the following:

- what they perceived as indicators of their own engagement in schoolwork
- what constitutes a 'good' teacher for them
- their attitude to ICTs in general (home and school)
- their attitude to being Maori in a mainstream Year7-13 semi-rural school
-

School A

Results which emerged from this series of interviews were as follows:

How the students recognise that they are engaged in an activity?

Students all described themselves as feeling happy, having fun and a sense of enjoyment when they felt they were fully engaged in an activity.

One student used challenge as a means of describing his own focused behaviour – but then went on to qualify this by saying that the 'challenge' was a balance of knowing some of what he had to do (prior knowledge) and not knowing. His overall understanding of challenge was that he would be able to complete the task successfully.

Two students out of the group mentioned working collaboratively as being a pre-requisite to achieve successful engagement in a task, as the group ethic gave them the opportunity to discuss ideas.

All of the students described time as moving quickly, or else that they lost track of time.
All of the students reported that they discussed activities in which they feel immersed and fulfilled i.e. engaged , they told whanau, but none of them contacted their friends after school hours about what had happened at school, although they might mention it in passing if a friend had contacted them first.

It should be noted that four of the five students felt that the subject in which they most frequently felt fully engaged was Physical Education.

The other student in the group chose Technology – specifically ICT.

What is a good teacher?

I asked the students to consider the teachers they had had over their entire schooling before answering this question.

They collectively came up with a list of qualities which included such personal qualities as being encouraging, caring and patient. One student said a teacher needs to be funny, whilst another described a good teacher as having a sense of fun.

Good teachers are always comfortable to talk to about anything at all.
(Student S)

One student also felt that a good teacher provides lots of variety in the way the learning is delivered – such as taking the learning outside the four walls of the classroom.

Attitudes to ICTs

All five students commented on the number and range of activities which could be accomplished using a computer. They used statements such as-

You can do heaps of stuff on them.
(Student M)
and
You can just do everything on them.
(Student S)

None of them qualified this by mentioning specific pieces of software or individual activities, but two out of five mentioned the use of games.

All the students felt that using ICTs more in the classroom would help them focus better. My own observations within each classroom prior to these interviews noted that the computers were seldom used and that when teachers planned for the class to use the ICTs,they booked a whole suite of computers elsewhere in the school. They did this rather than allowing groups of students to work in the classroom, whilst other students were involved in non-ICTs –based activities.

Three of the students used the term 'cool' to describe using computers and the other two used the word 'fun'.

Attitudes to being Maori at this school

Firstly students were questioned about the evidence of Maori around the school environment – physical and personal factors in the school that they had noticed.

Three out of five students mentioned the school kapa haka group, although only two members of the entire group participated in kapa haka. These two plus one other commented on this. Three out of the five listed the wharenui on the school grounds . Four members of the group said the Te reo classes were evidence and one member mentioned the school haka competition. (This is an inter-house competition held once

a term where the six school houses perform the school haka. This haka was written by the Maori teacher.) Two students referred to Maori people, both teachers and students, as being part of the "Maoriness" of the school environment.

According to all students in the group there was no evidence of Te reo in their classrooms, nor any cultural artefacts, neither was there integration of Maori into curriculum areas that they were aware of. Two of the students referred to teachers at their primary school who had used Maori language and Tikanga. Te reo was for the terminology in a classroom reward system, an art unit of work, and a kapa haka group.

Another question I asked the students had on a multiple choice answer. The question was to ascertain how often they thought about being Maori during their day at school. Possible answers were *every day, sometimes, hardly ever* or *never*. Four out of five returned an answer of *everyday* and one an answer of *sometimes*.

My final question centred around whether these students would like to see more integration of Maori in their classroom. All agreed that this would be a good idea and one student who was asked reasons for this commented:

Yes. I am learning more about my own culture and who I am.
(Student S)

School B

I interviewed the four students in this group with the same questionnaire as the group at School A. The final question was slightly modified, as I wanted to elicit the students' opinions on being a learner in this bi-lingual unit.

The students were all very reticent and I had often use probe deeper to gather the information I needed.

As with School A, the findings are categorised under the same headings of:

- what they perceived as indicators of their own engagement generally at school
- what constitutes a 'good' teacher
- their attitude to ICTs
- their attitude to being Maori and the experience of the bi-lingual classroom

How the students recognise that they are engaged in an activity.

Of the four students, three described feeling happy as central to their focusing on the tasks when engagement occurred. Other descriptors were the activity being 'cool' and feeling excited by the activity.

When questioned about the difference between an engaged learning situation as described above and other times completing work at school, they came up responses such as feeling better about their learning and feeling that they had learnt more. One student commented by saying the following,"In Tech you don't use your mind so much. You use your hands." (Student T)

Three of the four students chose Technology as the curriculum area in which they felt engaged more often. One student chose Music. She commented on how she liked the freedom of being allowed to play and listen to music loud!

All the students felt that they lost track of time when they were learning in the areas they had chosen and all of them regularly went home and told whanau. One student detailed how she had repeated the learning from school when she got home for her family.

One of the students contacted their friends to share their experiences in these classes.

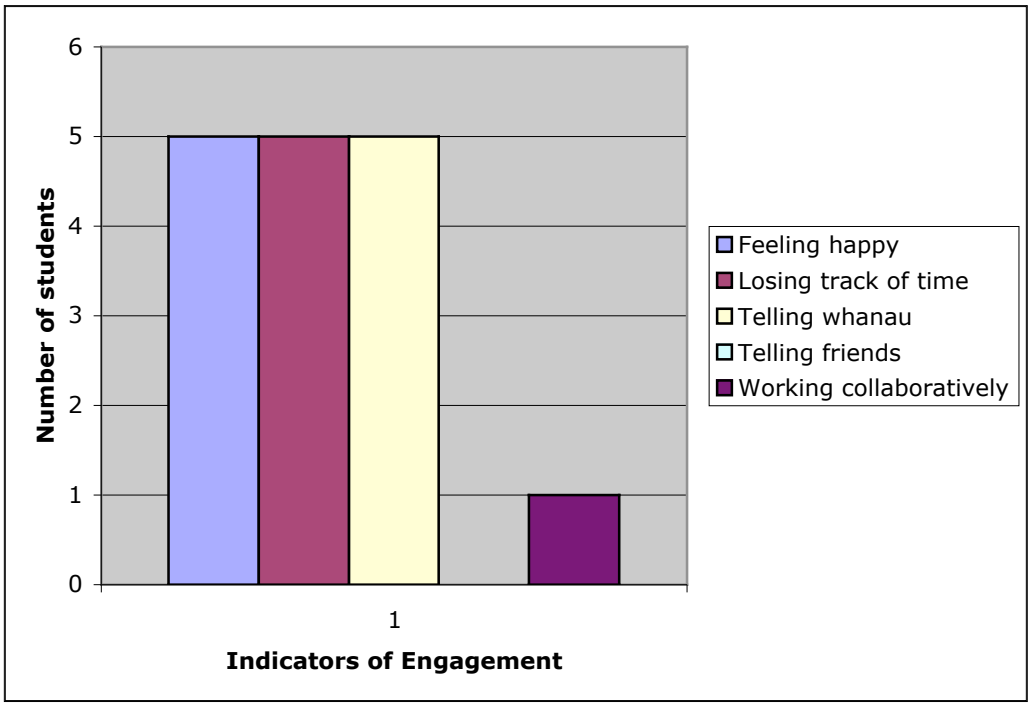

Figure 4: Students' perceptions of engagement

This graph shows how students perceive their own engagement in an activity at school. (Based on initial interviews with the students). There are five indicators that they were able to identify from everyday classroom interaction.

What is a good teacher?

Again, as in School A, the characteristics of being fun and funny were most frequent in the responses. The students also mentioned being helpful. One student in this group also used the reference to being able to provide variety in the way the students learn – both inside and outside the classroom.

Attitudes to ICTs

Two of the four students felt that using computer helped them to be more focused and on-task. They said that it was a quieter place where there were less interruptions. One student remarked that she would be more focused because of the fun/cool element of the computer.

As far as computer use was concerned, two of the students mentioned game use, two talked about using the internet, publishing stories and undertaking research. One student spent time using the computer for drawing.

Attitudes to being Maori at School B

The school is particularly strong in kapa haka and this, along with the wharenui on the school site, was the most commonly chosen evidence of Maori at school. Two students also mentioned pictures and signage around the school, as well as books in the library, Maori games and dance.

Three of the four students commented on pictures and designs on their classroom wall, and written material around the room. They all mentioned the Maori ethnicity of the students and teachers as part of the evidence of Maori in their classroom environment.

All students agreed that Te reo was a feature of the class, not only in teacher instructions to the class as a whole but also in the area of language acquisition.

When asked about how often they thought about being Maori at school , the multiple choice question, they all chose *sometimes* rather than the majority *everyday* of School A.

They were less sure about integration of Te reo and tikanga into curriculum areas. Two said that they thought they had covered some topics, especially Health and Physical Well-being, and the other two were undecided. I had observed them, however, preparing for speeches, and they had been given specific instruction from the teacher that there had to be a Maori slant to their speech.

Their feelings about learning in the bi-lingual environment were mostly positive. One student commented by saying, “We have more fun and opportunities in here.”
(Student N)

Summary

In conclusion, there are common threads across the two schools when looking at the responses to the students' interviews before the commencement of the Taonga Puoro unit of work.

The students described their ability to recognise engagement in their learning by feeling happy. They expressed a sense of enjoyment and fun associated with what they were doing. Time passed quickly in every instance and whanau were regularly given feedback on the engaged learning experiences the students had been part of.

Good teachers were also connected strongly with the word, 'fun' as well as offering help.

The students' felt that increased access to ICTs in their classroom environment would help them to be more focused and less distracted by classmates. At home students had access to a wide range of software, including games, which they used for a variety of different purposes. Only about half of the students in the groups had internet capability at home.

The common thread begins to unravel somewhat when attitudes to being Maori are compared.

Aspects of Tikanga and Te reo are much more visible to the students in School B, even though the provision of language acquisition and physical examples, such as wharenui, are similar in both schools. Students at School A expressed the fact that they think about being Maori all the time at school whereas the students at School B thought about this less often. All students participate willingly in kapa haka at School B, whilst less of the group at School A are participants.

However, both groups considered the inclusion of their culture as something that they valued and wanted in their classroom.

MAKING THE TAONGA PUORO

This section of my research gives a commentary on the first part of the learning we undertook – the actual making of the Taonga Puoro, the Maori flutes.

I will discuss each school separately first and will follow a journey with each student or specific groups of students through the hands-on unit of work we undertook.

How the sessions were structured

The making of the Maori musical instruments for each school took place over four sessions. For these sessions the students were withdrawn from their regular classroom to join the group. Each session lasted approximately one hour. Two of the sessions were during the morning and two during the afternoon. The size of the group differed slightly between each sessions. It was often difficult to find some of the students for the afternoon session, as they were away from their regular classroom.

Creating the instruments was based on a combination of the use of narratives, and showing the students how to use clay and various other simple pieces of equipment. It was really a demonstration of basic form and structure, according to *tikanga*[iv], and then allowing the students to add their own designs to personalise the instruments.

Each session commenced with a *karakia*[v]. Initially this was at the instigation of the teacher, but it soon became an expectation of the students. After the second session they were requesting more karakia at the end as well as the beginning. My observation was that this served two purposes. One was to bring the group together and focus the participants. The second was to strengthen the connection between the activity in which they were about to engage and the their culture. It was like a stamp of approval on what we were about to do.

[iv] tikanga means Maori ethos/customs
[v] karakia means prayer

The session then continued with a description from the teacher of what was going to happen and stories associated with the instruments. This required the students to focus directly on the teacher before having access to the clay and equipment and information needed to make their own Taonga Puoro.

Description of the sessions at School A

Physical environment

These sessions required the students to be in a relatively small room. It was at times cramped with two adults and a video camera as well. The room was uninspiring as a learning environment, as it was usually used a withdrawal space and a teachers' workroom.

Timing of sessions

The first two sessions were in the morning and the latter two in the afternoon, in the last hour of the school day.

Scaffolding on Prior Knowledge

None of the students at School A knew of the existence of Taonga Puoro. There was no prior knowledge for me to build on. The histories of the instruments were new to them, as was the technique of making the instrument

Student J

In the beginning stages of the unit of work, this student made frequent eye contact with the teacher. He was obviously happy, laughing and smiling at stories and background information about the instruments.

Figure 5: Student J during the initial stages of the learning

As previously discussed in the introduction to this report, J was used to moving around the room when he felt like it, and often when this was not the desired behaviour. As you can see from the above clip, he sat quite still, and did not attempt to move from his seat. He appeared to listen attentively. There was a considerable period of time – twenty minutes - before the students were able to get involved in the making of the instruments. At one stage, there was a distraction outside the room and he did not respond at all – seeming quite oblivious to it.

Student J was very eager to start making the instruments. He was focused on the activity for the duration of the session and only spoke to ask relevant questions.

Figure 6: Shaping the instrument out of clay

At no time did J call out. He tried hard to complete the making of as many instruments as possible. He worked efficiently, experimenting with the instruments by attempting to play all of them as they were at various stages of completion. Towards

the end of the session he wanted to stay and asked if this was possible. After he had one instrument completed, he spent most of his time playing it and perfecting it.

Figure 7: Making the hole into the instrument

In the second session, when the instruments are carved down to their final shape and size, burnished and decorated, J again was completely absorbed. As the teacher in the background retold histories, he worked at creating his own design for his instruments and carving them into the surface of the clay. The student sitting next to him had completed no instruments and was playing around with the clay. This other student was totally off-task. This did not distract J from what he was doing, as he paid meticulous attention to detail in the crafting of his selection of *nguru* and *koauau*[vi]. He did not contribute significantly to any conversation and continued to experiment with the playing of his instruments until he was happy with them. At the end of the session he discussed his designs/patterns carved on the instrument with the teacher.

Figure 8: Kiln during firing

[vi] koauau and nguru are certain types of Maori flutes

When the instruments had been fired and were ready to take out of the kiln, J was openly eager to see how his had turned out. He was also concerned that it should reach home without getting broken. He carefully wrapped all of his in newspaper and collected them together away from the group, so they did not get mixed up with anyone else's. Before doing this he had asked the teacher to give them a final try-out to see if they were successful and playable.

Figure 9: Removing the fired instruments from the kiln

After the group disbanded and went home for the day, I received this email from another teacher.

> well, j came in to show me his flute and was so proud!!! he said he could blow it straight away and man, he was happy. so, even if you made one kid have a smile where there was indifference and everything sucked! it was worth it. they looked great, the ones i saw, such awesome texture and smell, and really something to keep! well done! see you later.... m
> (Year 7 Teacher School A).

Figure 10: One of the students trying the fired instrument (nguru)

Student R

At the initial karakia and *mihi*[vii] R appeared almost embarrassed by the confrontation with te reo. It was obvious that he was not used to witnessing a teacher conversing this way, even though he had one parent who was a Maori speaker. He fidgeted with anything in his hands and avoided eye contact with the teacher for some time. He then interspersed the eye contact and fidgeting until he was able to start making the instruments.

He worked at a slower pace than other members of the group and found it difficult to decide which sorts of flutes to make. Once started he was very focused on making the instruments, and asked questions about them of the teacher. He tried to play his flutes as he made them. His on-task behaviour gave way to fiddling with other objects not relevant to his activity occasionally.

In the second session of making the Taonga Puoro, R was more focused and did not engage in any extraneous activity. For extended periods of time he did not talk to anyone, only looked at what others were doing and how their instruments were taking shape. He sometimes got up from the table to get a closer look at others, and he constantly watched whoever was trying out their instrument. For this session, he appeared more engaged with his learning than during the first, and was noticeably quieter.

At the opening of the kiln R was obviously happy at seeing his work completed and asked relevant questions about the effects of firing the instruments.

Student M

Student M missed the first session of Taonga Puoro, but some students had made him basic instruments, which he was able to continue working on with the group.

[vii] mihi means ceremonial speech of welcome

Again this student listened attentively and only talked very infrequently. Eye contact was made with the teacher during the *paki waitara*[viii]. He offered ideas about sound production and was overtly happy and enthusiastic in the activity.

However, when the opening of the kiln was in progress, although happy and eager to ask questions about the kiln, he was distracted by a rugby ball which he brought to the session. He eventually distanced himself from the group around the kiln to play with other students in the group who were not part of the research sample.

Student H

This student watched the teacher very carefully at all times. She responded directly to questions asked by the teacher and was readily able to articulate her observations on the making of the instruments. She asked relevant questions about the activity and freely talked amongst the group about what she was doing.

She was obviously happy and enthusiastic about the work and demonstrated this by frequently smiling and laughing.

When instructions were given she stopped and listened.

She shared her work openly with other students and organised other members of the group to have the correct materials and equipment.

She sometimes made references using te reo. She openly discussed who would receive her completed instruments. She asked when should come back to continue working next session.

In the following session, H continued to ask relevant questions and ask for help from both the teacher and peers when it was needed. Her demeanour again was one of happiness and enthusiasm and she smiled and laughed constantly. She was totally absorbed when listening to the teacher playing the instruments. She experimented with trying her flutes out as she completed them.

[viii] paki waitara means storytelling

At the unpacking of the kiln, I observed more of the same behaviour. At this point she also demonstrated an interest in the digital still camera. By the end of this session, she had focused her attention more towards the camera than the Taonga Puoro.

Student S

Student S had been involved in making Maori artefacts before, but not musical instruments.

She smiled and laughed indicating she was happy to be involved. She asked questions relevant to what she was doing and was able to relate some stories of her own *iwi*[ix] and whanau in relation to the activities.

She looked at the work of others in the group and appeared very focused throughout the first session of work. She tried out her instruments as they came to completion.

As the session drew to a close, she asked if she could stay back during her own time. She also asked about the next session as she did not want to miss out.

In the second session S was more talkative. But she listened intently to the histories told by the teacher. Whilst engaging in the activity she talked about what she was doing constantly and leaned over to make comparisons between her own and the next student's instruments. S asked questions during the paki waitara.

During the opening of the kiln, S made frequent accurate observations about the events surrounding the firing of the instruments. She was again happy and enthusiastic about her work. At the end of the lesson, she spent some time discussing with the teacher how she would share what she had learnt with her cousins who lived in the U.S. She spent considerable time after school had finished working out how she could best convey the process of making the instruments.

[ix] iwi means tribe

To summarise, the overall behaviour of the group indicated that they were having fun. This was characterised by smiling faces and intermittent laughter. Some students were more forthcoming with comments while others were immersed in the activity. Questions were asked and there was evidence of sharing of ideas across the group.

Description of the sessions at School B

Physical environment

The initial making of Taonga Puoro took place in the school staffroom. Whilst a spacious and aesthetically pleasing environment, it nevertheless, had a number of distractions for the students. Telephones ringing and members of staff coming in and out of the room continued frequently across each session. There were also intermittent intercom announcements. It was interesting to observe that this did not appear to disturb the students, nor cause them to be distracted from the tasks in which they were engaged. The group of students was located to one side of the room and had a large area to work in, as tables had been rearranged to accommodate an array of existing taonga as well as the new ones being created by the students. However the time spent on paki waitara and experimentation with the clay was limited to some extent, as the room had to be packed up and vacated by morning tea. Time had not been so limited at School A.

Unfortunately, the only boy in the initial group of five had to leave with the classroom teacher as his *koro*[x] had died. Although we planned for him to return later in the process, he did not, and in fact, did not return to the school.

Timing of the sessions

The classroom teacher had agreed to release all the students for the first block in the morning. This meant that each session was approximately 1 hour and 15 minutes in duration.

Scaffolding on Prior Knowledge

Of the four final students in the group, one had already made Taonga Puoro with her previous year's teacher (Year 6). She was asked whether she wanted to make the

[x] koro means grandfather

instruments again, and hastily agreed to it. As it turned out, she had much to offer the other students as she seemed to have retained many of the making skills and could act in as a helper to the others. She had not, however, taken the learning into an ICT environment before. For the other students, this was a new experience.

Student Journeys through the Learning

As these students were all from the same class I am going to describe the whole group as they worked together on the instruments. I will note particular differences with individual students as the account unfolds.

Three of the four girls sat together on one side of the table. Student R, who was naturally shy, sat herself on the opposite side of the table from the other girls in the group.

There was continual eye contact with the teacher from all students, despite numerous distractions in the room. They laughed and smiled during the making of the instruments.

Much of these sessions comprised storytelling and all the students listened intently throughout.

When the instruments were first demonstrated by the teacher, Student R was visibly affected by their sound. She moved away, possibly because she had not heard such a sound before. She seemed to be very wary of the sound. Student T smiled and laughed in response to the sounds. She commented that she liked the sound of the instruments. Three of the students made a lot of instruments, saying that they thought this was "cool". Student N did not make as many and needed more help than the others to keep up. Student R was the only one of the group who interspersed playing the existing instruments whilst completing the making of her instruments. She was very determined to get a sound out of all instruments, whether completed or not. The other students were more intent on just the making aspect. It was obvious that they had no intention of packing up on time, as when reminded that the bell for morning

tea was about to go, they continued making new instruments. Student R kept playing them as she went along. They left the packing up to the very last minute.

Student M: We can just stay in here.
Student N: They (the teachers) can all go over there,
Student M: Yeah. They can go over there. (Pointing to the other side of the staffroom.)

When it was suggested that there was a possibility of extending the making session back in the classroom, this was the response.

Teacher: We could actually take our stuff over to the classroom and keep going.
Students: Yes, yes, yes.

During the kiln-making sessions, three of the girls were actively involved. Student N, unfortunately, was absent from school for the entire week. They shared the tasks and again were smiling and happily caught up in the activity. There was much questioning and Student N was able to offer a lot of useful information based on her previous experiences with the instruments. At one point she told the teachers that she had brought her last year's instruments along to show the other girls.

Student R took over the filming for a short period and at the same time asked questions and made observations. She was able to explain to the teacher how the kiln was put together. Student M also had a turn doing some of the filming when the kiln was being unpacked.

The rain, cold conditions and wind were of no concern to any of the group. Neither was the dirty environment or the fact that it was well into morning teatime. They remained focused throughout the making and firing of the instruments.

To summarise, the most commonly demonstrated behaviour was laughing, smiling and being obviously happy in the activity. Questions and comments relevant to the tasks occurred throughout. The group were oblivious to outside distractions, whether

in the form of bells, and telephones ringing, people coming and going or inclement weather conditions.

Using the ICTs

This section of my research provides a commentary of the following:

- the software and peripherals the students chose to present the process of making their Maori flutes
- how they manipulated the software to produce a result
- how this type of activity compared with a presentation they might be expected to produce in their normal class environment
- how they felt about what they were doing.

What ICTs did we use?

Initially I had intended to use a Learning Management System (WebCT)[xi] as the focus of interaction with ICTs. This was to be monitored through the University of Auckland. However, I later opted for alternatives.

All the students were offered the use of a digital still camera, digital video camera, USB flash drive, laptops and the choice of one of three pieces of software to present their work. This equipment did not belong to the school, as I provided it each time. I decided it was easier to withdraw the students and work with them outside their classroom. That way our work would not conflict with the classroom teacher or distract other members of their classes.

They had little or no previous experience of using any of this equipment. The software packages offered were iMovie, Powerpoint and Comic Life.

School A

Two distinct groups were formed from this school. They were a group of three boys from the same class and a group of two girls, from another class. In addition, these

[xi] See Appendix LMS WebCT for further discussion about the use of this interactive web environment.

students were provided with the use of an interactive whiteboard and accompanying data projector.

The Comic Life Boys

The boys opted to use a new piece of software called Comic Life, available recently for the Apple platform. This software relies on digital still images that can be presented using a variety of templates, or the user can make up templates for inserting the photos. The programme includes some of the traditional characteristics of a comic book. These include captions and many designs of speech/thinking bubbles, which only use uppercase writing in a font similar to that which would be found in paper comics, expletives which can be changed into a graphic format and reshaped, sized and colour choices for the backgrounds of the pages. There are also choices as to which format the final comic is presented – slideshow, Quicktime movies, a series of images or printed and compiled like a traditional comic. The group chose the latter as the final format for their work.

The students required little assistance to manipulate the software. It was intuitive and easy for the students to use. The addition of the interactive whiteboard to create the comic had a very positive effect on the students' ability to experiment with different photos and layouts for the comic as well as on getting the work completed. The combination of laptop computer and interactive whiteboard also meant that the students needed to share these tools and work effectively together to come up with a result. They could not all use the same ICT components at the same time, so they had to use their negotiating skills to work out how they could best get the work done in the limited time we had together when the ICTs were available to them.

Compared to their usual classwork, the creation of the comic was a totally new experience. Their classroom presentations were usually text-based or in a poster format. Because one of the boys had told me of his links to graffiti and tagging, he especially liked the idea of a comic book format. We tried to add graffiti to the comic presentation, but this proved just a little too much for the software and we were not able to do so. The use of the computer alone was a major departure from normal classroom practice, but the addition of the camera and the interactive whiteboard

made it even more engaging for the boys. There was a far greater degree of user control as the decisions were made about the contents, layout and other aspects of the comic. This was quite different from the normal, timetabled whole class trip to one of the school's computer suites, or any activity on the three computers located at the back of their classroom, which were primarily used for publishing. (As I noted earlier – there was no evidence of their use in my observation of the students.)

I had the completed comic professionally printed. The result was outstanding. The three boys were presented their completed comic by the school principal and the school and classroom teacher retained a copy. The principal rewarded them all, as their work was quite different from their normal small output. The fact that it was actually finished was a major triumph! The boys were suitably proud of themselves. There was no doubt that their self-esteem had increased markedly and that they had gained mana with their peers. The fact that their work was also going to be presented to other teachers at conferences in New Zealand and overseas was also a contributing factor to the rise in their self-esteem. They were not accustomed to completing work.

The iMovie Girls

My second group of two girls from the same class chose iMovie as their preferred method of dissemination. They were very hasty in this decision as they both indicated that learning to use a digital video camera was one thing they really wanted to do. We discussed how they would have to not only learn about the camera's controls, but also about taking video in terms of types of shots. They would have to both share the roles of filming, acting/presenting, editing and compiling the material. They would have to learn how to use the software iMovie, which they had not done before. They assured me that this would be no problem and that they would rise to the challenge willingly, in fact, hungrily!

We spent the first session together learning about the digital video camera. The two girls practised various shots both inside and outside. After we had taken many working examples, we looked at the software and how it could be used. The girls worked very successfully in collaboration with each other. They were an excellent team. There was a bit of organization required in the setting up of the movie. They

needed props, they needed to be able to speak at the same time as showing the viewer about what they were doing. This involved a fair degree on self-confidence on their part, as well as showing me that in fact they had engaged deeply in their learning about the Taonga Puoro. They needed to have done this in order to articulate their message so effectively with so little experience.

They readily worked with the software. They needed little reminder on how it functioned and I acted only as a facilitator in the room. There was constant discussion by the two of them on how the footage should look, who should do what and how they would best get their message across.

The girls also had access to the interactive whiteboard. However, it was not use by them, other than as a screen for the data projector, as they preferred to collaborate on the laptop.

There was a great deal of discussion between them about the type of musical backing for the movie. In their opinion, it had to continue throughout and provide the right atmosphere. Apart from their attempts at playing and demonstrating the instruments they had made, they opted for a recent piece of commercially produced New Zealand music, which incorporated Maori flutes and piano.

The girls indicated to me that their usual method of presentation was by publishing their work and that writing was a major focus in their classroom. There were times when publishing on the computer was not allowed as the teacher preferred handwriting. The most common format was a poster to show information they had gathered. They had no choice as to this format for class work, but did sometimes have a choice when it came to homework presentations, which they termed "their own project". I asked them what would happen hypothetically if they had access to all the equipment we had used in their classroom with their class teacher. I was interested in finding out if it would really get used. They thought about this for some time and then commented that they thought their teacher did not really trust them with any ICT gear and that perhaps, he was scared of the gear anyway.

They were very open with their positive feelings about what we had done. We referred back to their initial interviews, where they had told me about a time when they had really felt they were fully engaged in a class learning activity. They had now moved on and both believed that the Taonga Puoro project was the best thing they had done – far better than their original favourite. I asked them what would happen to their learning if they had access to this level of ICTs on a regular basis.
The comment was, "It would rocket off."(Student S)

Their work was outstanding but has not been viewed by their class teacher nor any other members of the school staff despite attempts to make arrangements for this. They were proud to have it included in conference presentations and for other teachers, especially around New Zealand, to view it.

Perhaps this comment best encapsulates their feelings:

> sup ms dashper thanks for being such an awesome teacher to us all im really going to miss u when your not teaching us day 1 isnt going to be a day to look forward to any more see ya later
> (Student S)

School B

The group of students at School B, four girls from the same classroom, opted for using Microsoft Powerpoint to present their work on Taonga Puoro. Although I showed them the other two pieces of software, they were keen to stick with Powerpoint as they had briefly learnt it in their computer classes at school. I thought they might have preferred to try something new. They worked in two buddy groups.

Their previous experience with the software was at a basic level so when I told them that we could insert digital photos and small mpegs and background music, they were convinced that this was what they wanted to use. We decided not to use a digital video camera as the digital still camera would suffice with short movies and they could also clip video footage I had taken during the hands-on part of the Taonga

Puoro learning. They had not used digital cameras before in any capacity, nor had they manipulated video footage.

They needed minimal help with taking the photos and mpegs. They took a large selection – more than they actually needed - and stored them in the computer. They had to learn how to use a flash drive so they could swap the photos between the laptops. They were able to share the roles of setting up the presentation slides and gathering the visual material they needed. Like the girls who worked with iMovie, they required some setting up and organising themselves with props and finished instruments so they could best demonstrate what they had learnt.

There were several functions of the software that they were not familiar with, but this took hardly any time at all to master, as they watched their work take shape. They had to learn how to use iPhoto, including sizing and cropping photos to import and exportdigital photos. They also had to learn to use another piece of software, which would download the mpegs from the camera.

This group had more confidence with using the ICTs than those in School A. Although I had not observed them using computers or any other digital equipment in their classroom, they seemed more cognisant of what they could do and had definite expectations of what the ICTs could deliver. This led me to think that they had had more experience with them at school. There had been some interaction with the Powerpoint software, but none that I could ascertain with the peripherals. One student had access to the software at home and it was obvious through her increasing level of skill, that she was taking the learning home, scaffolding on it and then coming back to the next session with a new confidence and wider knowledge of what it could do for her presentation. She was able to share this growing experience with the rest of the group and became the most "expert" of the group.

When I asked them about using this method of presentation compared to normal expectations they all considered the value of pictures to be of most significance. They could not see why text would be used when a digital photo or small movie would show something so much more efficiently. It was the actual ability of the ICTs to

demonstrate what really happened in a real context, which they felt was most valuable. Being able to make effective presentations quickly was also a feature of this mode of work that they favoured over any other. They liked being able to collaborate with each other and use their individual strengths to come up with a finished product.

There was no doubt that this group were very excited about the success of their presentations. At the time they were not able to share them with their classmates, but were anticipating that they could do so at a later stage. They took copies of their work home to share with their whanau. This opportunity brought out leadership skills in the students – and with one in particular – a definite ongoing talent for future work using ICTs.

This group spent some time using the LMS WebCT referred to at the beginning of this section. Their use was spasmodic, with most communication being through the email facility, but it did continue over the nine weeks of the school term.

ANALYSIS OF THE DATA

In this section I will describe the tools of analysis and detail the method in which the data commentaries in the case studies will be analysed.

Tools of Analysis

My intention is to use two different tools to analyse the data collected.

The first tool is my own framework, which I developed, based on the use of the indicators of engagement I devised for the research. This is shown in the format of a diagram below:

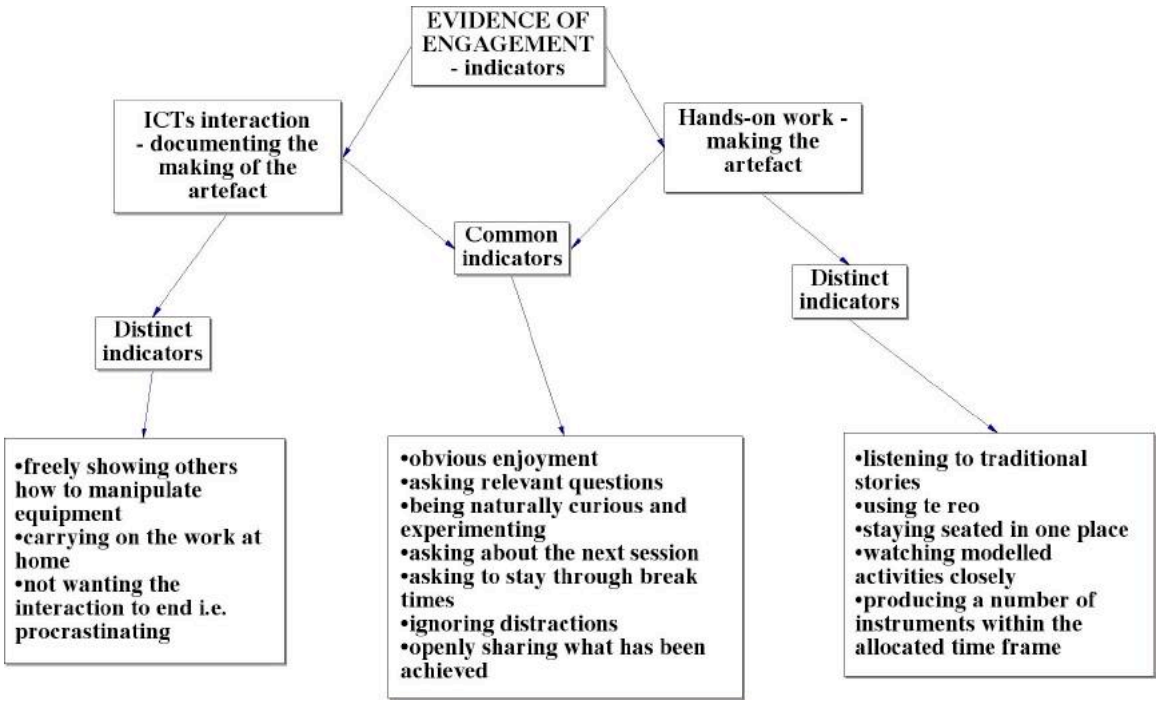

Figure 11: Diagram to show Evidence of Engagement by indicators

I am using this framework because it is specifically relevant to my own observations of, and relationships with, the students in my research, and shows connectedness to the socio-cultural environment in which the research is situated.

There are some indicators which are common to both areas of the case studies and other indicators which were more specific to the two different areas of making Taonga Puoro and working with the ICTs to document what was done. I will view the data with respect to these indicators.

The second tool I will use is Productive Pedagogies[46], developed by the New Basics Branch and the Queensland School Reform Longitudinal Study commissioned by Education Queensland, State of Queensland, Australia, 2002.

I will adopt this framework because should give sound academic rigour to the analysis and cover

How the second framework will be used

I will consider my data in terms of their four main themes – Intellectual Quality, Relevance, Supportive Classroom Environment and Recognition of Difference. These will be split in to related sub-questions. See the suggestions to Analysis tools. There will obviously be more analysis in some areas than others, as I fit my data to their model.

Framework 1

Indicators Specific to the Making of the Taonga Puoro

Listening to Traditional Stories

An important way of embedding the making of Maori musical instruments in their true context is through the use of oral narratives. There are many stories associated with Taonga Puoro – some are histories and some are more recent. Both types of story were used as a stimulus for the making of the instruments, to create an atmosphere which reflects the culture and to encourage the use of te reo instead of English terminology. These stories are exciting and interesting and they provide a range of themes such as love, struggling against the odds, horror, and mystery. Instructional techniques and skills, such as who invented the hole placement systems on the flutes, who played them using their nose, how authentic flutes were made before Europeans came to New Zealand and others are also subjects of stories. The students obviously enjoyed the stories and in subsequent sessions, began to bring stories from their own whanau to the group to share. By doing this it was easy to see that they had grasped the use of narrative as an appropriate component of what we were doing.

Using Te reo

I noticed that as the sessions progressed, particularly at School A, the use of te reo increased. The reactions of the students to the initial karakia and mihi were clear. They were not used to this sort of thing at the beginning of a unit of work, no matter how different it was. Even by the second session, it had become an expectation that this would happen and by the end of that session they were asking for a closing karakia and were saying good-bye to everyone in Maori. This appeared to be a natural phenomenon towards which the students gravitated. The atmosphere in the room during the making of the flutes lent itself to using te reo more naturally, rather than in the language classes where language acquisition is teacher-driven and based more on a system of rote learning.

In School B the response to the level of Te reo use was less obvious, as I would have expected. These students were used to their morning and afternoon classes being preceded by the same type of ritual. Their level of te reo use was higher in their immediate classroom environment, both in speaking and in printed material around the room. They too had separate te reo classes like School A. But because of their bi-lingual classroom environment, they seemed to absorb the language into their everyday lives, including school, and the use of it in the making of the flutes was of no particular consequence to them.

Staying Seated in One Place

For more than half of these students, staying in one's seat was not the norm. This was especially so for the boys in the group. In previous discussions where I observed the students in their normal classroom environment, I commented that they would wander around the room at inappropriate times and swing on chairs, amongst other activities. This sort of behaviour is often associated with disengagement. However, during the making of the Taonga Puoro, this did not occur. They were so intent on either the stories being told, or the actual making of the instruments, or both of these aspects working in tandem, that they did not get out of their seats. They did not even move around the room to view one another's progress during the construction phase, but stayed put, choosing just to lean across and take a look at the work of their peers, whilst continuing with their own instruments. This was a marked change from their normal behaviour.

Watching the Modelled Activities Closely

Closely connected with the attentiveness of the students to the stories which were an integral part of the learning experience, was their observation of teacher modelling when making the instruments out of clay. Again, in their normal classroom environment, I had experienced that attention to modelling by the teacher that was short-lived. This was followed often by their need to ask questions like, "What are we supposed to be doing?' and comments like, "I don't get what we are supposed to be doing." This would be followed by asking their peers and then making a nuisance of themselves because they had not taken on board what the teacher expectations of

the required task were. Thus they did not allow themselves time to become even involved in the learning, let alone engaged in it. Although watching teacher modelling can be classified as a passive learning activity, its cultural significance and personal relevance for the students meant that it captured their attention for a longer period of time. All students, with the exception of one, from School B, indicated that they had never made such instruments before, so they were intent on taking in as much visual information as possible. Even the student who had some previous knowledge used the modelling to refresh her skills and comment to the other students in the group on how she could show them if they needed any help.

Producing a Number of Instruments Within the Allocated Time Frame

In their initial learning session, students were required to produce a number of instruments within a limited time. Tikanga requires that the first instrument is given away to a special person and the students had to take this into consideration when they started producing their own flutes. There were two types of flutes being modelled, the *nguru* and the *koauau*,[xii] and students were encouraged to make examples of each type. In order to produce a number of instruments, they hard to work efficiently as there would be no further opportunity beyond this first session to create new flutes. Subsequent sessions would require the clay to be at specific levels of dryness. For this reason, we had to adhere to a fairly strict routine to complete the instruments. This required on-task behaviour of the students. Much of their typical classroom behaviour contributed to non-completion of tasks. However I did not observe any of these behaviours whilst we were making the instruments. Rather they would encourage each other with questions like, "How many have you made so far?" and "I have made [number] – then I can give them to [person who they had identified as being special]…..". While the instruments were being constructed the narratives continued, with the students adding relevant comments as the session progressed.

Indicators Specific to the Interaction with the ICTs

Freely Showing Others How to Manipulate the ICTs

> Using ICTs encourages students to be reflective learners.
> (Weller, 2002 [41])

As my students were working in collaborative groups ranging from a trio to pairs, they had to be able to explain their ideas to those working with them. All the students came to the project with varied levels of prior learning when it came to using computers and the associated peripherals. One student from School B had experience with the technology, which was clearly beyond the rest of her peers. Interestingly, she did not become bored or frustrated with the other students at all. Incorporated in her approach were aspects of being a 'tutor' to the others. This occurred naturally – she had expertise to offer and they needed it.

The group of boys from School A had far less experience with using the technology. Two of these students had no access at home either, so they were not able to try out any of the skills using the software that they had accessed at school. However, these variations in levels of ability did not seem to influence the level of engagement with the technology nor the students' readiness to share their skills in the group. With the boys it was a classic case of 'just-in-time' learning. Because they really wanted to make the ICT interaction happen – they saw value and purpose in what they were doing - they took all the new learning on board straight away. Again it was a natural occurrence.

Carrying on the Work at Home

One of the students created a parallel presentation at home. Although I did not see what she had done, she reported everything about her "home" Powerpoint each time we met. She used this opportunity to try out her new learning from school. This would also have been the time to show whanau. At home she was using a different platform, but was able to transfer her skills seamlessly. I provided her with CD copies of digital photos, and mpegs that had been taken, as she had no access to

camera or video equipment at home. She was so eager to get these at one point, which I had to post them to her home.

Procrastinating

The students all genuinely enjoyed using the ICTs. Perhaps this could, in part, be attributed to the "fun" nature of using these tools.

Students had committed to memory the times and days that I would be at school with them, bringing the gear to work on the presentations. There was never any reminding done as they all turned up at the allotted place and time without hesitation. The only obstacle was if they were absent from school. When the presentations were nearing completion all the different groups actively tried to drag the interaction on as long as possible. They did not want to return to their classrooms because "it was boring there" and "we don't get to do any of this cool stuff." They kept thinking of new things they could do to prolong our work together. All of these suggestions involved the ICTs, but were not entirely based on them. For instance, the boys wanted to create a rap to accompany their comic. To do this they would have needed to use Garageband. They also wanted to add acoustic tracks and thought they needed my assistance. It was not only a case of wanting to use the ICTs, but also wanting to continue the relationship they had formed with me. In reality, time had run out and I had to sever my connection with them. It was difficult to do that. Both they and I knew that we had all been part of something special, where learning was fun, the teacher was there to guide, rather than completely direct their learning, and where their cultural background had been valued.

Indicators Common to Both the Making of Taonga Puoro and the Interaction with the ICTs

Enjoyment

The most obvious indicator of engagement in all the groups I worked with was individuals' enjoyment of what they were doing. This was outwardly demonstrated in all of the students by laughing at regular intervals during their learning experiences, and by smiling. The noise level in the rooms of all groups was noticeably higher than their normal classroom environment. But my observation was that the talking was about what they were doing, not personal or off-task talk. They were being challenged as all except one student had not made Taonga Puoro before. This student used the opportunity to try to reflect on her previous experiences. Making the instruments was not an insurmountable challenge for them. When I questioned them about whether they thought the learning was difficult they said it was not. But they did not say that it was easy, which leads me to believe that they had achieved a balance between the skills they had and the level of challenge required to do the activity. This feeling can be described as a sense of flow.

But by far the overwhelming proportion of optimal experiences are reported to occur within sequences of activities that are goal-directed and bounded by rules – activities that require the investment of psychic energy, and that could not be done without the appropriate skills.

> …enjoyment comes at a very specific point: whenever the opportunities for action are perceived by the individual are equal to his or her capabilities.
>
> Enjoyment appears at the boundary between boredom and anxiety, when the challenges are just balanced with the person's capacity to act
> (Csikszentmihalyi, 1991[4])

When asked about whether the activity could be classed as 'fun' all the students in the groups agreed that it was. The students in School A went onto further question whether learning could involve 'fun', or whether in fact they could not really be

learning because this was definitely fun – for them a separate entity from learning. They were genuinely confused as to whether the two could coexist.

As far as the ICTs were concerned, as previously mentioned, they outwardly enjoyed the experience. One student commented:

> This is way cool.
> (Student S)

Asking Questions

Both types of activities in the unit of work resulted in students continually asking questions. . They also made relevant comments. Examples of questions and comments during the various phases of the research are:

Hands-on activity

Questions

> Do you touch the sides?
>
> Why do you blow these ones on this side?
>
> Can I try that one out?

Comments

> You can remember your instrument by remembering your own design you made up.
>
> This is like peeling potatoes [carving down leather hard instrument}
>
> Look at that! [Putting holes in flute]. Ka pai!

ICTs interaction

Questions

Shall I make this photo bigger?

Shall I list what I need?

Comments

The next one [Powerpoint slide] I do will be on how to make a kiln.

I need to put a picture with this one.

There were many questions asked – both of the teacher and the other students in the groups. They ranged from questions specific to the actual activity to deeper questions to do with the implications of what they were doing. Students also asked about the stories associated with the instruments, so they were making connections with what they were doing in relation to the histories of the instruments.

Would Tutanekai's koauau look like this one?
[Comparing an instrument from the collection shown to the students with a famous historic instrument which features in a story.]

I wonder if I should give my first koauau to my koro?

Being Naturally Curious and Experimenting

For some of the students, using clay was a new or near new experience. So students naturally explored its properties before attempting to shape an instrument. All but one of the students had not handled traditional instruments before so they were keen to attempt playing them as well as looking at their construction. They focused mainly on trying to get sounds from the instruments. They were very persistent at working to produce a clear sound, another indicator that the task was engaging. I deliberately did not tell them about playing techniques until after some time had passed, as I wanted to

encourage them to try the instruments for themselves. The aim was for them to 'discover' their own way of playing. The instruments are quite challenging to play at first, so eventually I modelled some playing techniques for them. When crafting their own instruments, all students had several attempts at shaping the clay until they had a feel for the flexibility of the medium and the nature of the shape they were trying to create.

It was the same with the e-learning. The three boys spent a lot of their time trying out templates for the pages of the comic before any digital photos were inserted. They had to take into consideration aspects of design and layout. There were opportunities for them to insert many photos but students had to consider what would be effective and have impact for the reader. Much of this experimentation was collaborative. Students would try an idea together and then decide if it worked or whether to move on to try something different.

The girls making the iMovie had a steep learning curve as they got to grips with the controls of a digital video camera and getting meaningful video footage. They also had the challenge of learning to manipulate a new piece of software. This required them to test and retest things until they had the result they were looking for. As they had told me when they initially decided to use this medium, they really wanted to use a particular type of camera and their curiosity about this equipment led them to go through a process of refining their skills until they had mastered both camera and software. They listened to several audio-backing tracks until they chose one, which provided the atmosphere complementary to their visual material.

The two groups of students producing Powerpoint presentations tried numerous layouts, colours and slide designs. They also had to consider the combination of text on slides, digital still photos and small movies. Because they had not had access to a digital still camera to make such presentations before, they were clearly curious about how doing so would enhance their work – particularly with regard to reducing the amount of text and giving more effective explanations using photos and video. Again students looked at incorporating appropriate music in the background, choosing from a number of different tracks.

Ignoring Distractions

When asked at the initial interview what most prevented them from doing well at school, seven of the students cited being distracted. This was also borne out through my observation of them prior to undertaking the Taonga Puoro unit of work. Distractions can take different forms. The students classified them as interruptions that included other students talking around them, people coming in and out of their classroom, a generally noisy classroom environment and issues of bullying:

> People that bully me and lead me in the wrong direction and stuff.

> A noisy classroom. Kids yelling and throwing things and shouting around the room.

All the students I worked with were also likely to cause distractions themselves. This was through getting out of their seats and wandering around the room when it was inappropriate, yelling out when the teacher was speaking, yelling out when the class was supposed to be working under test conditions, and laughing at inappropriate times:

> Sometimes I laugh at things and he sends me out of the room.

The students at School A all worked in a cramped, small room when we made the Taonga Puoro. At times their peers were outside walking between classes, and PE classes were taking place within a short distance. The students were not interested in any of these extraneous activities and the associated noise but remained intent on making their flutes. I had previously observed, some of these students getting up and yelling out pf a window at their friends during their normal school classes. At School B our workspace was the Staff Room. There were constant interruptions including a telephone ringing and staff members coming in and out of the room via two doors. In this room distractions were constant. Also, many of the staff were interested in what

the students were doing, and came over to look at what they were doing and sometimes asked questions. The students continued working, remaining engaged in the task. I believe they also felt a sense of power or *mana*[xiii] as they were doing something that no one else in their school had done, including the teachers!

At School A the students did become more distracted when we were constructing and lighting the kiln. This was because it was situated on the cricket pitch and ringed by classrooms on 3 sides and a very busy road on the other. Also it was the last period of the timetable, whereas all our other interaction had taken place during the morning. However, the level of off task activity was still not what I would have expected of these students under normal circumstances. They stayed as a group in the work area. They were not huddled together and the two of the boys had to be reminded to keep with the group. The girls, however, were working around the kiln area all the time. At School B students were totally focused on what they were doing when we moved outside. The weather was extremely distracting – cold and wet with occasional gusts of wind. It was also the last week of the school term – a time when many students lose focus on activities at school and are more easily distracted than normal.

During one session using ICTs, the boys' group was threatened with having to leave the space we were using. Two other teachers wanted to use it for a combined rehearsal. The boys, realising that while this would not prevent them carrying on with the laptop and camera, it would prevent the use of the interactive whiteboard. It was a much more difficult piece of equipment to relocate at short notice. The boys managed to convince the teachers that **they** should move elsewhere. They would normally not have attempted to negotiate this, but their increased self-esteem and recognition of the importance of what they were doing as Maori empowered them to the point where they felt able.

Time

All the students were oblivious to time passing during both the hands-on sessions and working with ICT. They all stayed through their breaks, despite the fact that they had

[xiii] mana means influence or power

to do without their morning tea. They made comments on how the time had passed really quickly, that they had not even realised that it was time to pack up.

The girls at School B had to leave during morning tea, when staff came into the staff room, but later on, when the work using ICTs started, we managed to work in other spaces, which did not have to be vacated by any set time. However, there were time constraints imposed by the classroom teachers. My feeling was that the girls would have stayed for the duration of the school day if their teacher had allowed them.

Students at School A were working to a four-day timetable. They had a block of time allocated to work on a set day. I had negotiated these times with their teachers. It was the students' responsibility to remember the meeting times. All attendances were subject to their behaviour and level of work output being satisfactory. Over the duration of the work we did, I never once had to remind them to be present, nor did I have to send for them. There was an occasion when a kapa haka performance interfered with the time for the group of two girls. They came to see me to make sure that they could schedule another time instead and that the work would continue despite the disruption to our arrangement.

During our time together all the groups of students always made sure that they asked about the next meeting. They needed to confirm that the work was continuing. It was as if they were really looking forward to it. I soon decided that if I was not able to work with them for some reason, I had to let them know, as they would be disappointed and would feel let down.

Sharing what has been achieved

The groups of students were eager to share what they had achieved in our work together. This was evidenced by the fact that they showed their instruments to other students and peers and teachers, when they were completed. The students at School B took their instruments straight back to their classroom and passed them around their immediate group of friends. Originally, the group was intended to be larger, with the inclusion of some boys, but the clash of sports trials with my work sessions prevented

their attending. I heard them say that in retrospect, after seeing the completed instruments, which they would rather have stayed with us. Other students in the class also asked if there was any possibility that I would work with another group, or even the whole class, so they could all have a go at making the Taonga Puoro.

They also shared with whanau. I tried unsuccessfully on several occasions to get feedback from the students' whanau. I did however hear that individual students had been really engaged with the work. Some parents then went on to say that they were very happy to hear this as they were used to receiving negative messages from school about their children's activities.

Students' work was shared, with their permission, at a conference in Australia. Teachers from Australia and New Zealand appreciated the comic book, the girls' movie and the Powerpoint presentation. Knowing that their work had been shared in this way undoubtedly increased the students' self-esteem.

Framework 2

Productive Pedagogies uses four main themes that are broken down into areas based on key questions. The definitions of the factors to be considered in answering the key questions are set out in the Productive Pedagogies Classroom Observation Coding Sheet In the following account, these factors will precede discussion of the data in relation to each of the key questions.

The diagram below gives a visual representation of these themes and their sub-themes to which questions can be attached.

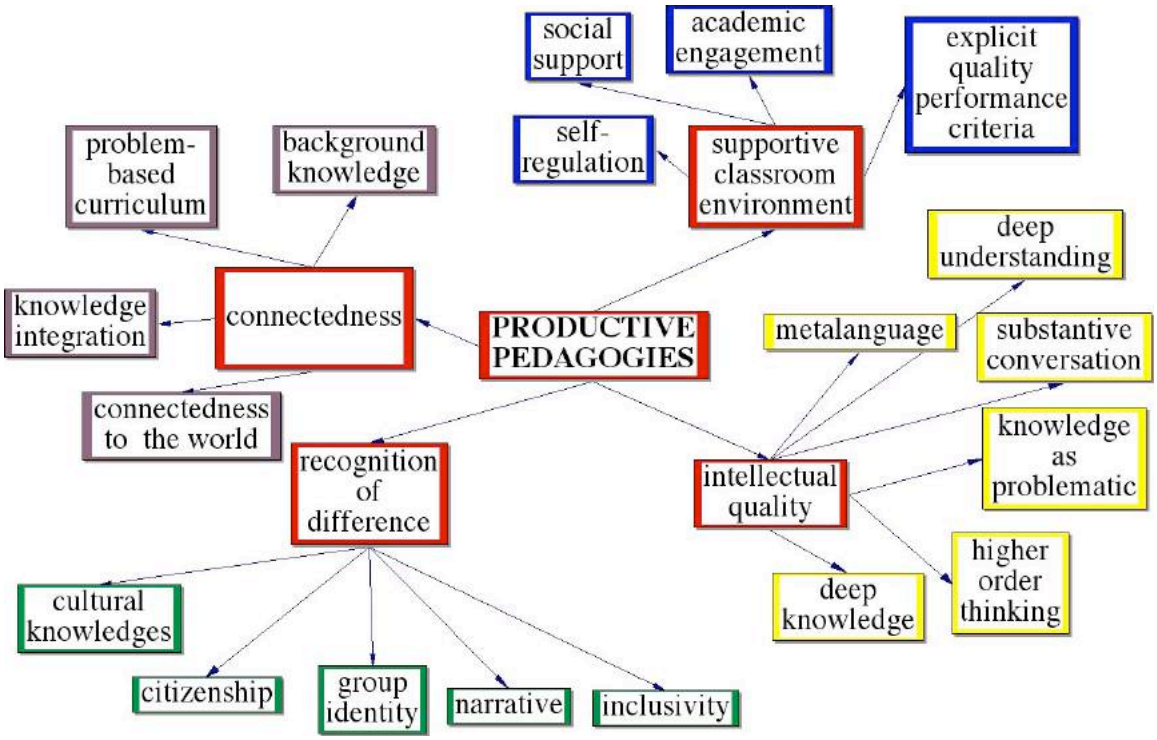

Figure 12: Productive Pedagogies mind map showing connections between the four main areas and sub-areas.

Intellectual Quality

The first theme I wish to deal with is Intellectual Quality. Key questions to be considered associated with are as follows:

Intellectual Quality	
Higher Order Thinking	Are higher order thinking and critical analysis occurring?
Deep knowledge	Does the lesson cover operational fields in any depth, detail or level of specificity?
Deep understanding	Does the work and response of the students provide evidence of understanding of concepts or ideas?
Substantive Conversation	Does the classroom talk break out of the initiation/response/evaluation pattern and lead to sustained dialogue between students, and between teachers and students?
Knowledge as problematic	Are students critiquing and second guessing texts, ideas and knowledge?
Metalanguage	Are aspects of language, grammar, and technical vocabulary being foregrounded?

Higher Order Thinking
Are higher order thinking and critical analysis occurring?

Factors: Higher order thinking requires students to manipulate information and ideas in ways that transform their meaning and implications. This transformation occurs when students combine facts and ideas in order to synthesize, generalise, explain, hypothesize or arrive at some conclusion or interpretation. Manipulating information and ideas through these processes allows students to solve problems and discover new (for them) meanings and understandings.

The group of two girls at School A state at the beginning of their movie that the purpose of making Taonga Puoro is so that they do not become extinct. They also said that they considered knowing about them is important.

The girls had come to that conclusion by going through the hands-on experience of making the instruments and then transferring their experience into an e-learning environment. The process of having to handle clay and some basic tools gave them an appreciation of the experience that their forebears would have had in the creation of traditional musical instruments. To make the instrument the students followed simple steps and modelling from a teacher/expert. However, the true realisation that making these instruments was important and relevant to them came when they were asked to use an appropriate format to present their experiences to an audience. At this point, I believe they really understood the relevance of the work for them as active participants in their culture. It was then that they could discuss and think about the future of such artefacts as musical instruments – hence their comments about why they thought their newly constructed knowledge was important.

Deep Knowledge
Does the lesson/do the lessons cover operational fields in any depth, detail or level of specificity?

Factors: Deep knowledge concerns the central ideas of a topic or discipline. Knowledge is thick or deep because such knowledge is judged to be crucial to a topic or discipline. Knowledge is deep when relatively complex connections are established to central concepts.

Making the Taonga Puoro allowed the students to make connections. Their learning experience as a result was richer and more meaningful. Students had all commented in the initial interviews, that their learning at school did not usually allow them to make such connections. The exceptions were activities such as kapa haka and language acquisition of te reo. The protocol of having to give the first instrument away created a connection with whanau. During the crafting of this instrument the student's mind was on the recipient of the Taonga – why this person had been chosen, and what designs and shapes can be created on the instrument's surface to reflect to the recipient. Making the instruments and hearing their associated paki waitara linked the students with a historical perspective. They were able to consider their place as Maori and as part of Aotearoa and to appreciate that they were contributing to keeping a tradition alive. Finally, the connection to their identity was obvious. This was an activity specific to Maori. I heard them tell their Pakeha peers that this was

what Maori used to do before European occupation of New Zealand. They also stated that it was important to know about these things because they are "part of who we are."

Deep Understanding

Does the work and response of the students provide evidence of understanding of concepts or ideas?

Factors: Deep understanding is shown when students develop relatively complex understandings and demonstrate them by discovering relationships, solving problems, constructing explanations and drawing conclusions.

The groups of students were all able to articulate the importance of knowing and finding out about Taonga Puoro. The evidence of this is in the precise nature of the material they produced using ICT, as well as their attention to the narratives that accompanied the making of the instruments. In order to present material such as they did, they needed to understand why it was important that they knew about the instruments. They also needed to have a working understanding of the process of making the instruments. They created a connection between themselves and their instruments, how the connection was important to their particular place in the world and how it gave meaning to their identity. The comments made by them about ensuring the continuation of indigenous instruments made the learning meaningful for them, especially with regard to its relevance and purpose.

Substantive Conversation

Does the classroom talk break out of the initiation/response/evaluation pattern and lead to sustained dialogue between students, and between teachers and students?

Factors: Substantive conversation is evident when there is considerable teacher-students and student-student interaction about the ideas of a substantive topic; the interaction is reciprocal, and it promotes coherent shared understanding.

A large proportion of the first session of making the Taonga Puoro was taken up with narrative and actually showing the making of the instruments. However, once this period had passed the students were able to communicate freely as they worked. As I

have previously mentioned, at School A the noise level in the room was significantly higher than their normal classrooms, but the discussion was all around the making of the instruments or associated paki waitara. Teachers acted as facilitators and were involved in making their own instruments alongside the students. Questions arose through the process of the instrument-making and were answered by students or teachers. Comments were made as students worked alongside other students and teachers. The whole process of making the Taonga Puoro had a sense of community about it.

Knowledge as Problematic

Are students critiquing and second-guessing texts, ideas and knowledge?

Factors: Knowledge as problematic involves presenting an understanding of knowledge as being constructed, and hence subject to political, social and cultural influences and implications.

The background information presented to the students about the Taonga Puoro came from oral narratives and histories – in the manner in which such knowledge would have been imparted in pre-European times. The narratives describe the political situations of the times – tribal conflict and resolution, possession of land, issues of power. Socially, they include aspects of tikanga – how events happened around individuals who did not observe the correct protocols and did not conform to the expectations of the iwi, and how the actions of these people influenced the course of New Zealand history. The students had to consider how their own thinking about their cultural background was related to some of these events and what was important to them in acknowledging their ancestors. If time had allowed, It would have been an interesting exercise to consider some of the questions I had originally intended, such as:

What does the future hold for Taonga Puoro? Do you think it is the responsibility of Maori to look after and preserve them?

Do Taonga Puoro have a place in NZ music today? Is it important to play them or should they be used for displays at the museum?

Metalanguage

Are aspects of language, grammar, and technical vocabulary being foregrounded?

Factors: Metalanguage instruction is evident when there are high levels of talk about; talk and writing; how written and spoken texts work; specific technical vocabulary and words; how sentences work and don't work; meaning structures and text structures; and issues around how discourses and ideologies work in speech and writing.

The use of Te reo featured strongly in the sessions with the students. However, I feel that its impact was more noticeable for the students of School A, who had told me that the use of spoken or written Maori language was not a feature of their class environment, The students did, however, have one term per year where they attended a timetabled language class with a specialist teacher. The use of the language with these groups of students was a natural incorporation, along with the language in the narratives and the terminology of the instrument making. It was a deliberate move on my part to subtly introduce this with the students of School A, rather than to give out lists of words and their meanings.

Relevance

The second theme is Relevance. The associated key questions are as follows:

Relevance	
Knowledge Integration	Does the lesson range across diverse fields, disciplines and paradigms?
Background knowledge	Is there an attempt to connect with students' background knowledge?
Connectedness to the World	Do lessons and the assigned work have any resemblance or connection to real life contexts?
Problem-based curriculum	Is there a focus on identifying and solving intellectual and/or real-world problems?

Knowledge Integration

Factors: Knowledge integration is identifiable when knowledge is connected across subject boundaries, or subject boundaries do not exist.

The plan for the unit of work we undertook includes objectives from the Arts curriculum, specifically Visual Art and Music and the Technology Curriculum. There are also links with other areas – Languages (te reo) and Science.[xiv]

Although these different areas are designated in the plan, the moves between them as far as the students were concerned were seamless. The Visual Arts connection was centred on the use of clay as a medium for three dimensional, sculptural work. There was also the aspect of design associated with the flutes – the students had the choice of using an existing design decoratively on their instruments or creating their own. All of them chose to create their own designs.

Music featured strongly as a vehicle for the learning. The most obvious link was with the social/musical context in that the students were exploring the music of their own culture. They spent time listening to music created by other people in the making of their own instruments and also used recordings of Taonga Puoro as part of their e-learning presentations. In a longer study I would have worked with musical composition using their instruments and looked at alternative methods of musical notation.

There was a strong link to technology covering Technological Knowledge and Understanding, Technological Capability and Technology and Society.

The properties of clay were also discussed – its composition, and how it is affected by air and heat. The link to Maori language was very strong – as explained previously.

[xiv] See Appendices for unit plan.

Background Knowledge

Is there an attempt to connect with the students' background knowledge?

Factors: Background knowledge is valued when lessons provide explicit links with students' prior experience. This may include community knowledge, local knowledge, personal experience, media and popular culture sources.

The learning concentrated heavily on students' background knowledge and what other community knowledge they brought to this new experience of making Taonga Puoro. Students in School B closely linked their work to their whanau. For example, they were able to comment freely o n what made the patterns which they used on their instruments personal for them,. There was discussion about the patterns' connections to the iwi in the various paki waitara. In School A one of the boys researched fully his familial ties only to discover that he was a direct descendant of the protagonist of one of the main histories we had discussed – a history which is well known throughout New Zealand. He would have been unlikely to find this information out at all, were it not for the work we undertook and the associated narratives.

Especially noticeable were the connections with background knowledge and the various protocols of karakia, mihi and use of te reo. Students were able to make associations with how "they did things on their marae" compared to what we were doing. Students in School A had not had the opportunity of sharing this information in their normal class.

Students were sharing the learning with whanau and relating what they had done at school in the sessions. More information and stories came to the surface as our time together progressed.

There were also connections for those seven students who were active participants in school kapa haka as they were able to discuss how traditional instruments could be used in this setting.

Connectedness to the World

Do lessons and the assigned work have any resemblance or connection to real life contexts?

Factors: Connectedness to the World measures the extent to which the lesson has value and meaning beyond the instructional context, exhibiting a connection to the larger social context within which students live.

It was obvious that there were strong connections with where students saw themselves in terms of their cultural background. For example, one student commented:

> I am learning more about my own culture and who I am.
> (Student H)

Links were made back to whanau and marae; and there were discussions on how students' *tupuna*[xv] would have used musical instruments, and how they would have created them using bone, wood, whales' teeth and gourds. Students also discussed where the inspiration for the scales the instruments are tuned to would have come from. The use of paki waitara sparked discussion on what traditions were peculiar to the students' own whanau and iwi. They brought their own narratives to the sessions. I do not know whether they knew these stories already or whether they were going home and finding out from their whanau after each class together. The important thing was that they were making a connection between the use of narrative and the making of Taonga, the place of stories in relation to the activity and how all that fitted into their cultural heritage. For one student, she extended this idea even further by considering another Taonga and the tikanga associated with it and her iwi.

[xv] tupuna means ancestors.

Problem-based Curriculum

Is there a focus on identifying and solving intellectual and/or real-world problems?

Factors: Problem-based curriculum is identified by lessons in which students are presented with a specific real, practical or hypothetical problem (or set of problems) to solve.

If I had been able to use my original plan I would have used the set of questions I devised which focused on real contexts for the use of Taonga Puoro. I would have asked the students to consider potential problems associated with their integration into mainstream New Zealand music[xvi]. But for various reasons outlined in this appendix, this did not happen. However, It was significant that students had realised that the continued existence of the instruments was important and stated this in their presentations. They also realised the significance of the fact that the path to guaranteeing the future of the instruments was in the hands of children who could learn about them,and who could make and play them.

The students in School A had identified that not incorporating cultural artefacts across their everyday learning meant that there were gaps in their knowledge of their own cultural background. When prompted, students had all commented that they would like to have more learning connected directly to their culture using such artefacts as Taonga Puoro. They all also believed that they learnt better by making things and working with the information and communication technology:

> I like touching things.
> (Student J)

Students at School B had similar opinions about using artefacts. But the nature of their normal bi-lingual classroom environment meant that they were more comfortable making links with their culture and feeling that this was acceptable practice. Students in School A were far less likely to make such links, and would certainly not suggest them.

[xvi] Refer to Appendices for discussion on LMS WebCT.

Supportive Classroom Environment

The third theme is Supportive Classroom Environment.

Supportive Classroom Environment	
Student direction	Do students have any say in the pace, direction or outcomes of the lesson?
Social support	Is the classroom a socially supportive, positive environment?
Academic Engagement	Are students engaged and on-task?
Explicit quality performance criteria	Are criteria for student performance made explicit?
Self-regulation	Is the direction of student behaviour implicit and self-regulatory?

Student direction

Factors: Student direction examines the degree of student influence on the nature of the activities and the way they are implemented.

The students could not dictate the structure and timing of the hands-on sessions and we were constrained by time released from ordinary classes. The making of the flutes had to be carried out to a strict timetable because of drying times for the clay.

However, when the students began the e-learning part of the study, they had more flexibility with their time. We were still constrained by release times but the pace of the learning and the speed at which the presentations were put together was entirely the responsibility of the students. The role of the teacher was different in this part of the work. ICT offered many choices for the students in terms of their presentations and they were able to manipulate their ideas time and time again until they were satisfied with the results.

Social Support

Factors: Social support is present in classes when the teacher supports students by conveying high expectations for all students: these expectations include that it is necessary to take risks and try hard to master challenging academic work, that all members of the class can learn important knowledge and skills, and that a climate of mutual respect among all members of the class contributes to achievement by all.

From verbal data gathered during the study from the students of School A I ascertained that the reciprocal nature of the learning, the opportunity to try new things, the chance to explore the use of both cultural artefacts and digital technologies was something that did not happen often for them. They also said that teachers had high expectations of them, but there was sometimes subtle verbal bullying by other peers about being Maori and how they were different (especially in appearance). They also commented that other students assumed that their behaviour was not always appropriate.

Students at School B had told me that they had more experience with ICT and as such, seemed more confident in creating their presentations. However, They still had to master the use of the peripherals, which they had not encountered before.

In undertaking the e-learning part of the study, all the students were able to try things out in an environment where there was no real failure, where their ideas were all considered worthy and where the teacher's expectation was a high level of commitment to the unit of work. The students all demonstrated that they met these expectations by the standard of the presentations they completed.

Academic Engagement

Factors: Academic engagement is identified by on-task behaviours that signal a serious investment in class work; these include attentiveness, doing the assigned work, and showing enthusiasm for this work by taking the initiative to raise questions, contribute to group tasks and help peers.

Please see Framework 1 for a detailed analysis using the above criteria.

Explicit Quality Performance Criteria

Factors: Explicit quality performance criteria are frequent, detailed and specific statements about what it is students are to do in order to achieve. This may involve overall statements regarding tasks or assignments, or about performance of difference stages in a lesson.

All the students were told of the nature of the unit of work and how it would work. They were also made aware of the fact that they would be doing a presentation as the e-learning part of the study. However, there was no summative assessment task associated with the presentation as feedback was ongoing with opportunities for the students to shape and edit their work. As with my previous experiences of working with ICT, students tend to discuss ideas as they went along and the nature of the work was ever-evolving. Positive statements about progress were frequent. All the students produced material which they claimed far exceeded their normal standard of presentation. They said that this was because they had choices in what they did, found the challenges, which were presented, fun and interesting, and therefore put more effort into what they produced.

Self-Regulation

Factors: Self-regulation by students is high when teachers are not making or not having to make statements that aim to discipline students' behaviour or to regulate students' movements and dispositions.

Whilst our sessions together were fairly structured in the hands-on part of the study and were limited to specific times that were allocated to us by classroom teachers, the students' motivation was high and they did not need any reminders to attend. These

students would often be disorganised and unreliable in other classes – as attested by their teachers. Some of them found it difficult even to have writing implements at school. Because they were fully engaged in the flute making and presenting activities, and were also aware that the time they had was short, there were no issues of behaviour. They came to all the sessions with a keen attitude, full of enthusiasm to achieve results and get on with the work.

Recognition of Difference

The fourth area is Recognition of Difference.

Recognition of Difference	
Cultural Knowledges	Are diverse cultural knowledges brought to play?
Inclusivity	Are deliberate attempts made to increase the participation of all students of different backgrounds?
Narrative	Is teaching primarily narrative, or is it expository?
Group identity	Does teaching build a sense of community and identity?
Citizenship	Are attempts made to foster active citizenship?

Cultural Knowledges

Are diverse cultural knowledges brought to play?

Factors: Cultural knowledges are valued when more than one cultural group is present and given status within the curriculum. Cultural groups can be distinguished by gender, ethnicity, race, religion, economic status or youth.

The groups I worked with were all identified as Maori. The work we were doing was specifically about Maori. In School A this had been identified as severely lacking by both me and the students involved in the study. So for the students of this school, what we did would have increased the status of their learning in general. One of the groups was all boys, whereas the other two groups were girls. They initially worked together in the making of the Taonga Puoro but then split into separate groups for the e-learning. Although the groups were not together they were all able to share their work – and the two schools were able to share work as I moved between them. There were no delineations of gender in that the expectations were clearly set at the beginning by all of us in consultation.

Inclusivity

Are deliberate attempts made to increase the participation of all students of different backgrounds?

Factors: Inclusivity is identified by the degree to which non-dominant groups are represented in classroom practices by participation.

The group of boys particularly was used to being dominant in their own classroom through their poor behaviour. When they worked on the instruments, their behaviour changed. It is my belief that this was in part because their status changed. They had more mana because they were Maori and what we were doing was Maori-centred. They were being given choices as to how they could do things – there was seldom a situation were the answer was a non-negotiable "no". They participated fully in everything that was on offer. The groups of girls did the same. They were enthusiastic to try all sorts of ways of presenting their learning experiences in an environment that was safe – where they could change their minds. The group of girls at School A also commented on how this work gave them mana, boosting their self esteem when sometimes this did not happen in their classroom.

> He picks on people in the class. Other kids don't get into trouble for doing the same things that we do.
> (Student S)

Narrative

Is teaching primarily narrative, or is it expository?

Factors: Narrative in lessons is identified by an emphasis in teaching and in student responses on such things as the use of personal stories, biographies, historical accounts, literary and cultural texts.

> Narrative storytelling is a prime example of a powerful and inclusive teaching and learning strategy.
> (Bishop, 1999[19])

Narrative was a central current that ran through all of our learning sessions together. It was used as a stimulus by the teacher/s to give meaning to the making of the

Taonga Puoro. It was used as a sharing tool by which the students were able to connect themselves to each other as Maori. It also connected them to the study we were involved in as a group. It was natural to focus on narrative as an important tool as the oral tradition is integral to Maori culture.

Group Identity

Does teaching build a sense of community and identity?

Factors: Group identity is manifested when differences and group identities are both positively developed and recognised while at the same time a sense of community is created. This requires going beyond a simple politics of tolerance.

I believe that the work I undertook with both the schools was carried out with a sense of community. (I alluded to this in the section on Substantive Conversation). For the students at School A this group was arguably the most positive learning environment they had been involved in all year, with the exception of those who participated in kapa haka. The group of two girls would not have been forthcoming with some of the information they told me if they had not felt a sense of belonging within the group – and I include the teacher in that community. The "positiveness" came from the fact that the students were engaged in what they were doing – something that they said did not happen to them during normal school activities. From what the students told me, they often felt 'tolerated' at school and not truly valued.

The students at School B were already part of a strong community within their bi-lingual environment and I believe it was more a case of me, the teacher, becoming part of their community. Their experiences at school were, from what I observed and what they told me, mainly positive anyway. The issue of tolerance did not apply here as they had 'applied' to be in this class and had guaranteed support from whanau and senior management of the school.

Citizenship

Are attempts made to foster active citizenship?

Factors: Citizenship is developed when the teacher elaborates the rights and responsibilities of groups and individuals in a democratic society and facilitates its practice both inside and outside the classroom.

As discussed before these groups of students worked with me outside the normal classroom environment. As such I can only make a contribution to their feeling of citizenship. We had many open discussions about how the three different groups felt about their normal classroom, about how they saw themselves in relation to other ethnic groups (School A). It is my opinion that there was work to be done to promote a true feeling of citizenship for these students, but that in doing our study using Maori flutes they had come away with more positive feelings about themselves and the contributions they, as representatives of their culture, could make to their class.

Students at School B were in a different position. As an observer in their classroom, it was evident that citizenship was a given, that all members of the class, including the teacher, felt part of a whole community working together, where everyone had a say and everyone was valued and respected.

CONCLUSION

The purpose of this conclusion is to draw together what has been presented through both my own framework (Framework 1) and Productive Pedagogies (Framework 2).

In doing this, I am going to discuss how the findings address the research sub-questions.

What is Engagement? What are the Specific Indicators of Engagement?

In my own framework I addressed a number of specific indicators of engagement, which I believe to be at the heart of the core phenomenon of this research that I have undertaken. These were a result of forming relationships with the groups of students over a period of two terms - observing them, talking with them, teaching and learning with them, and evaluating their record of their work with me. In doing this, a sense of whakawhanaungatanga was created.

The most significant factor was the enjoyment of the students in what they were doing. This enjoyment was not only an obvious happiness, but also a sufficient challenge in the work to keep them enthused and motivated. To quote Vygotsky, they were, for most of the time, in their "zone of proximal development".

Their engagement with the work meant that they got to a point where surface thinking had transformed into deep thinking, that they had reached a more profound understanding of how it was important to know about Taonga Puoro by actually making them, playing them and situating them within their own culture. They were making connections to their real world. The questions and discussions were spontaneous as the study progressed because the learning environment was supportive and inclusive. They felt valued in that their language was part of the delivery, their

prior knowledge was linked and that stories – related by both teacher/s and students - were integral to all of our work together.

The work was co-constructed. The teacher/researcher is as involved with the work as the students. Apart from initial modelling of the making of the instruments, because almost all of the students had no experience with the use of clay as a medium, students were able work at their own pace, making their own discoveries and creating new knowledge for themselves in the process. This was particularly evident in the e-learning aspect of the study.

How can interaction with ICTs contribute to engagement?

From the discussion with the students as to why they felt they were fully engaged in the unit of work, an underlying theme emerged. This was across the board – regardless of the gender or school. The students felt that too much emphasis was put on the importance of text in their learning. There were comments such as:

> Our teacher has a thing about handwriting.

This was not to say that handwriting is a bad thing, but that the group of two students at School A aid they were praised more highly for producing work that looked nice in a handwritten format, rather than using a combination of different modes of presentation. All the students wanted to use more pictures and less text in all their work. They said that the reason was because pictures/video had the ability to share what they wanted more powerfully and effectively, it was more exciting to use, and it was quick and efficient.

How does a bilingual class environment influence engagement compared to a mainstream environment?

One of the most interesting findings in the early stages of the research was the fact that the students in the two schools responded consistently differently to the question I

asked them about being Maori at school. The students had to chose an answer from four choices – 'Never, Hardly Ever, Sometimes, Everyday'. The students at School A told me that they thought about being Maori at school everyday. The students at School B said that they thought about this sometimes. My conclusion from this is that the students at the first school are constantly thinking about their identity and how they fit in to the mix of students. They might be asking themselves such questions as. "How does my culture make me different to everyone else?" And "What does being different mean at this school?" There are potentially many other questions and possible conflicts with how they see themselves compared to others.

The students at the second school appeared more comfortable in their classroom environment. The daily routines of karakia, mihi and waiata kept Maori very visible to them, and the interspersing of English and te reo made the connection between learning the language and using the language. Even though they were a 'unit' within the school, the sense of whanau, support, manaakitanga and friendship among the students allowed them a confidence I did not observe in the Students of School A.

Engagement is more positively influenced in the students I observed and worked with in the bi-lingual environment. The students had a strong sense of identity and belonging. This allowed them to be confident learners, knowing that their culture is valued and an integral part of what happens at school. Students in the first school were still 'battling' to find their sense of identity and belonging in a mixed environment.

How can interaction with cultural artefacts contribute to engagement?

The students articulated that the making of the Taonga Puoro made the learning more relevant for them. It was deliberately connected to their culture and as such, provided more motivation for them to engage. They were able to draw on their prior knowledge through links with whanau, plus there were added extras such as Te reo, paki waitara, which the students in School A had stated did not occur in their everyday learning environment. Students at School B were able to infuse the activity of making the flutes with the use of Maori language, stories and work, which had

previously gone on in their classroom. This gave these students an insight into an activity specific to their culture, but still not the sort of activity which would normally occur at their school.

All the students told me that they would like more interaction with ICTs and that the opportunity which I had provided – by offering them an e-learning enriched environment – had made our learning experiences together far richer and more meaningful than other classroom –based learning experiences.

The Taonga Puoro were a vehicle for allowing the e-learning to happen. But by the nature of these cultural artefacts, the students were more intrinsically motivated to become involved in the learning. Their comments about this learning being fun and exciting (engaging) I suspect would have been less enthusiastic if I had used another type of artefact, which was not Maori. Maybe it would have sustained them for a while, but my belief is their interest and motivation would have waned earlier.

Through the power of e-learning, as teachers, we are able to access all manner of information about Maori artefacts and practices and weave this into our own practice. We can also find members of our communities, both Maori and non-Maori who are able to contribute their wisdom to enrich our teaching by integrating Maori technologies into cross-curricula units of work. If we are to reach some of the students in our classrooms by using these technologies, we are setting in place a changed attitude in the students towards their learning.

He iti ra, he iti mapihi pounamu.

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