

“Coconut Wireless” – Examining the Impact of the
One Laptop Per Child (OLPC) Project on the Niue
Education Community.

A Case Study.

Lynette June Parker Hay

A thesis submitted in partial fulfillment of the requirements for the degree of
Master of Education.
Unitec Institute of Technology, 2012

Declaration

Name of candidate: Lynette June Parker Hay

This Thesis entitled “Coconut Wireless” – Examining the Impact of the One Laptop Per Child (OLPC) project on the Niue Education Community, is submitted in partial fulfilment for the requirements for the Unitec degree of Master of Education.

CANDIDATE’S DECLARATION

I confirm that:

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

Research Ethics Committee Approval Number: 2010-1121.

Candidate Signature:



Date:

23 November 2012

Student number:

1274202.

ABSTRACT

This research examines the impact of the One Laptop Per Child [OLPC] project on the small Pacific Island nation of Niue. Specifically, it focuses on the implementation of computer technology on the Niue education community and considers the impact of the OLPC project from the perspective of teachers, parents and students within this community.

A small-scale qualitative research method was chosen and involved the use of semi-structured interviews and focus group sessions. Semi-structured interviews were conducted with five teachers from the secondary, primary and early childhood sectors as well as with six parents with children attending either the local primary or high school. Focus group sessions were conducted with three student groups; two groups consisting of students from the secondary school and one large group made up of students who attended the primary school. A documentary analysis was conducted on a range of documents specific to the OLPC project in efforts to form an appreciation of the political and regional context in which the project was situated.

The major findings from this research indicate that overall the OLPC laptops had very little impact on teacher practice and that student use of the laptops was more socially oriented rather than the intended educational use outlined by the OLPC project.

The findings from this research also highlight a number of interconnected factors that need to be considered when seeking to successfully implement information and communication technology [ICT] into a learning environment by means of foreign aid assistance. Firstly is the importance of developing an awareness of the economic, political and socio-cultural context in which the learning environment is situated. This must be done through proper consultation with all stakeholders, especially with the teachers. Secondly, the role of the teacher in the successful implementation of ICT needs to be considered from the outset.

The impact of the OLPC project on Niue has extended beyond the bounds of the Niue education community for which it was originally intended, providing a number of opportunities and challenges to the Island's administration. Practical benefits, such as the expansion and the update of the island's previous wireless network, is an example of one such opportunity.

This study has a number of implications for the Niue education community with regard to future consideration of implementing ICT into their learning environments. In particular is the need to focus on the development of technology-supported pedagogy in order to assist teachers to transform their practice in light of ICT.

ACKNOWLEDGEMENTS

Fakaaue fakamua ke he Atua, ke he haana a lagomatai mo e haana a malolo kua tuku mai kia a au ke lata mo e gahua nei.

Fakaaue ke he haaku a magafaoa, ko e haaku taane mo e ha maua a fakahelēhele mo e ha laua a malolo mo e fakaaalofa kua lafi mai kia a au.

Fakaaue foki ke he tau tagata Niue mo e Fakatufono ha Niue ke he ha lautolu a tau lagomatai.

Kia fakamonuina he Atua a tautolu oti.

First and foremost, I would like to give thanks to our God for helping and sustaining me throughout this very long and often challenging process.

To my loving and patient husband William and our wonderful son Joshua, who have been there for me and with me throughout this journey of mine – Thank you from the bottom of my heart.

I also acknowledge and thank the people of Niue and the Niue Government, especially those who shared their stories and experiences with me. Without your input this research would not have been possible.

TABLE OF CONTENTS

DECLARATION	2
ABSTRACT	3
ACKNOWLEDGEMENTS	5
LIST OF TABLES	8
LIST OF FIGURES	9
LIST OF LISTS	10
LIST OF ABBREVIATIONS & ACRONYMS	11
CHAPTER 1 - INTRODUCTION	12
INTRODUCTION	12
RATIONALE	13
BACKGROUND TO THE RESEARCH	15
AIM AND RESEARCH QUESTIONS	18
SCOPE OF THE RESEARCH	18
ORGANISATION OF THE RESEARCH	19
CHAPTER 2 - LITERATURE REVIEW	21
INTRODUCTION	21
PACIFIC ISLAND COUNTRIES AND FOREIGN AID	22
THE DIGITAL DIVIDE	27
INFORMATION AND COMMUNICATION TECHNOLOGY AND YOUNG PEOPLE	32
INFORMATION AND COMMUNICATION TECHNOLOGY IN EDUCATION	39
CHAPTER 3 - METHODOLOGY	49
INTRODUCTION	49
KNOWLEDGE CLAIMS	49
QUALITATIVE RESEARCH	51
CASE STUDY	52
SELECTION OF PARTICIPANTS	53
METHODS OF DATA COLLECTION AND ANALYSIS	54
ANALYSIS OF DATA COLLECTED	56
ETHICAL ISSUES	57
VALIDITY AND RELIABILITY	58

CHAPTER 4 - FINDINGS	61
INTRODUCTION	61
BACKGROUND AND DEMOGRAPHIC DATA	61
PART A: PRE-ONE LAPTOP PER CHILD	62
PART B : THE IMPACT OF THE ONE LAPTOP PER CHILD PROJECT	66
PART C: REFLECTIONS ON THE ONE LAPTOP PER CHILD PROJECT	80
CHAPTER 5 - DISCUSSION	85
INTRODUCTION	85
TEACHER RESPONSES: OPPORTUNITIES AND CHALLENGES	85
PARENT RESPONSES: OPPORTUNITES AND CHALLENGES	90
STUDENT RESPONSES: OPPORTUNITES AND CHALLENGES	93
POST ONE LAPTOP PER CHILD REFLECTIONS	96
CHAPTER 6 – CONCLUSIONS AND RECOMMENDATIONS	99
INTRODUCTION	99
AN OVERVIEW OF THE RESEARCH STUDY	99
CONCLUSIONS FROM MAJOR FINDINGS	100
RECOMMENDATIONS	102
LIMITATIONS	103
SUGGESTIONS FOR FURTHER RESEARCH	104
REFERENCES	105
APPENDIX	114

LIST OF TABLES

Table 2.1	Total and per capita aid flows to the Pacific since 1970.....	24
Table 2.2	Barriers to ICT integration into the classroom.....	40
Table 4.1	Reasons for low levels of computer use prior to OLPC project.....	63
Table 4.2	Use of computers in teaching prior to the implementation of the OLPC project.....	63
Table 4.3	Frequency of use of computers for learning by their children prior to OLPC, as observed by parent participants.....	64

LIST OF FIGURES

Figure 2.1	Share of the Internet users in the total (global) population.....	28
Figure 2.2	Home ICT access, 2011.....	29
Figure 2.3	Generational Internet adoption over time.....	35
Figure 2.4	Average number of monthly texts and phone calls (U.S mobile teens aged 13 to 17).....	37
Figure 2.5	Integrated model of impact of Teachers beliefs, ICT-related variables and assisted ICT use on integrating ICT into the classroom.....	41
Figure 2.6	Technological Pedagogical Content Knowledge.....	45

LIST OF LISTS

List 2.1	Frequently cited problems/issues resulting from foreign aid.....	25
List 2.2	Tapscott's (2008) Eight Norms of Net Gen.....	33
List 2.3	Online activities more likely to be accessed by Millennials than by their older counterparts.....	35
List 3.1	Pacific values.....	50
List 4.1	Most common challenges of every child having their own laptop: Parent's perspective.....	76
List 4.2	Use of Internet as identified by focus groups.....	77
List 4.3	Most common uses of the OLPC laptops by students.....	78

LIST OF ABBREVIATIONS & ACRONYMS

BECTA	British Educational Communications and Technology Agency
ECE	Early Childhood Education
Gen X	Generation X
GNI	Gross National Income
ICT	Information and Communication Technology
Info Tech	Information Technology
ITU	International Telecommunication Union
IUSN	Internet Users Society Niue
LAN	Local Area Network
MIT	Massachusetts Institute of Technology
NCEA	National Certificate of Educational Achievement
NetGen	Net Generation
NZ	New Zealand
ODA	Overseas Development Assistance
OECD	Organisation for Economic Cooperation and Development
OLPC	One Laptop Per Child
OS	Operating System
PC	Personal Computer
PIC	Pacific Island Countries
PICTs	Pacific Island Countries and Territories
SPC	Secretariat of the Pacific Community
TPCK	Technological Pedagogical Content Knowledge
UN	United Nations
U.S	United States
Wi-Fi	Wireless Connection
WWW	World Wide Web

CHAPTER 1

INTRODUCTION

INTRODUCTION

The world of computer and digital technology has always fascinated me. Since my very first computer, a Commodore 64, technology has evolved in quantum leaps and bounds. What would have seemed like science fiction to me back then, is now within the realms of possibility. Interestingly, the place where I became hooked on computer technology is the same place that this research took place. For the greater part of my schooling years I attended school in Niue and gleaned computer knowledge from New Zealand expatriate workers on contract to Niue. I was there during the times that the population was around the 5,000 mark and I was there when the population began to dwindle as families moved to New Zealand for jobs and further education. I returned after my own time away to teach and witnessed the impact of significant migration on the education community as families sought a 'better' education abroad and I often wondered if there was a way to offer family's access to the quality of education they desired, without having to leave the island. Also during this time, I realised how I, personally and as a teacher, had become so reliant on the Internet for information and how easy access was in New Zealand. I continually used my own laptop to search for resources that I could use with my students and quickly began to realize the without my laptop, my students and I would have to contend with limited, out of date information. The school did not have the funds to have even one computer per classroom and the small pod of computers that did exist were either breaking down or used by computer classes.

In this chapter I set out the background for the research into the impact of the One Laptop Per Child (OLPC) project on the Niue education community. I provide

the rationale for researching this project building on my own experiences and a background summary of the research site and OLPC project are also provided. I discuss the scope of the research problem with reference to the literature leading to a statement of my research aims and focus questions. The chapter concludes with a description of the organisation of the thesis and an outline of each chapter's purpose.

RATIONALE

Indigenous peoples in many Pacific countries like Niue have long found themselves separated from the development achieved in the western world by the digital divide (Dyson, Hendriks, & Grant, 2009; Gupta, 2007; Roy & Raitt, 2003). Factors such as decreasing populations and the myriad of issues presented by the 'tyranny of distance' have exacerbated small Pacific countries efforts to develop socially and economically. With significant reliance on foreign aid, most small Pacific countries find it extremely difficult to advance. Some even find themselves at risk of going backwards. However recent growth and development of Information and Communication Technology [ICT] has begun to present new viable possibilities in which Pacific countries may not only be able to ultimately compete on a global scale, but begin to address issues at a national level by forming the basis of economic development through using ICT to improve educational opportunities and outcomes and create jobs.

Implementation of ICT in the Pacific is still in its infancy, with many nations still unable to meet the financial costs required to install or upgrade local infrastructure and at the time of the OLPC rollout in Niue, no other Pacific Island country had ever experienced an ICT project on such a scale. When I first heard of the OLPC project in Niue in 2008, I was truly excited and believed that this was just the opportunity Niue needed to move towards offering an education that could compete with places like New Zealand. On the face of it, providing an entire community with the digital tools so desperately needed seemed to be an answer to prayer. However, the results of the short-lived project appear to tell another story.

The outcome of the OLPC project on Niue was devastating news for me and I was desperate to find out what had gone so wrong. From the outset it became clear that simply providing the tools to overcome access barriers was far from being the panacea to problems experienced by the education community. A lack of consultation, professional development and tech support, common barriers to ICT integration experienced by teachers in developed nations (BECTA, 2004; Bingimlas, 2009; Cox, Preston, & Cox, 1999; Hughes, 2005; Parr, 2000; Romeo, Lloyd, & Downes, 2012; Tsolakidis, 2004), were further compounded by barriers specific to Pacific Island nations created by limited funds and a heavy reliance on foreign aid (Anderson, 2011; Boone, 1996; Campbell, 1992; Chin, 2012; Engels, 2010; Hughes, 2003) to enable projects such as the OLPC to continue.

Because of the unique nature of this project, there is an extremely limited body of specific literature about integrating technology into Pacific Island schools. While there is some research about ICT in the Pacific in general, each Pacific nation offers its own unique perspective on their situation thus limiting transferability of findings and conclusions generated from that research. The same can also be said of this research, however it appears there are barriers to the integration of technology into the learning environment that are common to developed and developing nations worldwide.

Therefore by examining the impact of the OLPC project on the Niue education community, it is hoped that the findings will inform further attempts at integrating ICT into the education community in Niue and create a platform for further research and support in assisting Niue to achieve their education goals. It is also hoped that this research will begin to fill a significant void in literature specific to education in the Pacific.

BACKGROUND TO THE RESEARCH

In 1901 Niue was annexed to the New Zealand administration that played a major role in the development of Niue. However in 1974, Niue achieved self-governing status thus affording Niueans their rights as citizens of New Zealand (Chapman, 1976; Niue, 1982). Since the 1970s, Niueans have migrated to New Zealand in substantial numbers, motivated for the most part by greater employment opportunities with the added bonus of 'better' educational opportunities (Tuhega, 1977). Motivations, which according to Nosa (2009), were brought about due to the influx of western ideologies concerning social and economic advancement. Prior to this, opportunities for further education were afforded only to a select few who managed to attain foreign aid-funded scholarships, thus leaving the majority of young Niueans to either secure employment on the island (which was extremely difficult) or migrate to New Zealand.

The education system in Niue is limited in both human and teaching resources. In the mid-to-late 1980s Niue's population was sufficient to sustain eight village-based primary schools and one high school. However, rapid population decline coupled with the relative reduction in financial assistance by New Zealand, forced the closure of all outer village schools, thus requiring all pupils to attend Halamahaga (Niue's main Primary School in Alofi). Though some financial savings were achieved initially through the reduction of the teaching workforce and resources required to keep the village schools running, other more long-term costs (such as the transportation of all outer village children into the main school) continued to impact financially on Niue.

A limited budget combined with the commitment to provide free education to all its citizens (Niue Education Act, 1989) constantly challenges the Niue Education Department to be able to provide quality education whilst keeping within its budgetary constraints. Currently Niue's official resident population count sits at approximately 1,269 with both schools each averaging approximately 170

students. This in itself presents major difficulties, especially for the high school, in being able to find, employ and justify staff numbers to provided coverage for a variety of New Zealand Curriculum-based (NCEA) subjects.

Like many other Pacific Nations, Niue relies heavily on international aid. New Zealand, Niue's greatest aid donor, has for the most part afforded Niue the freedom of utilising the funds as deemed fit by the local government. This aid however, is usually sufficient only to maintain pre-existing infrastructure and pay the wages of government workers, which make up approximately one third of the current population. Other international funding bodies are generally more prescriptive often resulting in project-based assistance.

One such project, namely One Laptop Per Child (OLPC) Oceania, was implemented in 2008 of which Niue was the first nation in the world to receive 100 percent saturation of laptops. Established in Massachusetts (U.S.) in 2006 the OLPC group rapidly became an international association aimed at designing, creating and distributing laptops to targeted communities in the developing world. OLPC Australia was the main contributor to the project involving Niue.

According to their mission statement, the goal of the project remains to "empower children of developing nations to learn" (OLPC, n.d.) by providing every school aged child with the means by which to access information through the World Wide Web. Despite the programme being implemented in July 2008, there has yet been no substantial study investigating the impact of such a pervasive project on Niue's education community or its potentially further reaching consequences. For the purposes of this study the Niue education community has been defined as teachers, students and parents of students of both state schools on Niue.

The One Laptop Per Child Association, Inc. (OLPC) is a non-profit organisation based at the Media Lab of the Massachusetts Institute of Technology [MIT], in Boston, USA. Founded by Nicholas Negroponte, OLPC was set up to oversee the

creation of an affordable educational device for use in third world countries. More commonly referred to as XO laptops, OLPC are quick to emphasize that the XO are not office productivity tools like Windows laptops, but are instead 'learning tools' to encourage hands on learning.

Based on constructivist theories of learning, which argues that people produce knowledge and form meaning based upon their experiences (Papert, 1980), the creators of the XO claim that their laptop is a "potent learning tool created expressly for children" whereby the user, "...with or without the guidance of their teacher, can learn literacy, numeracy and... other skills" (OLPC, n.d.). Underpinning this belief are five core principles held by OLPC; child ownership, low ages, saturation, connection and free and open source.

In 2007, Pacific Island Forum Leaders met to discuss (and endorse) the implementation of Initiative 2.2 of the Pacific Plan – *Implement a regional digital strategy for improving information and communications technology [ICT]*– to bridge the communication divide between urban and rural and remote communities in the Pacific Island region. The piloting of OLPC as an educational tool in several Pacific Island Countries and Territories (PICTs) was one of three technological initiatives proposed to support Initiative 2.2, which according to the Secretariat of the Pacific Community [SPC] had achieved the highest level of implementation of all the Pacific Plan priorities.

Following the Forum Leaders 2007 request, SPC secured a gift of 5,000 OLPC units (worth approximately USD 1.1 million) for a Pacific-wide pilot project. Six of twelve PICTs were selected to pilot the OLPC programme, of which Niue was one and more significantly, the first in the world to achieve 100 percent saturation with OLPC laptops.

AIM AND RESEARCH QUESTIONS OF THIS STUDY

The aim of this research is to provide insight into the impact of the OLPC programme on the education community in Niue, from the perspective of the lived experiences of some of those within that community.

To critically examine this impact the research objectives will seek to determine:

1. What impact did the OLPC project have on teaching practice?
 - a. Opportunities.
 - b. Challenges.
2. What impact did the OLPC project have on student learning?
 - a. Opportunities.
 - b. Challenges.
3. What are the implications of the OLPC project implementation for the future use of technology in the Niue?

SCOPE OF THE RESEARCH

As this study focuses on *tau tagata Niue* (the Niuean people) and their experiences, a qualitative approach has been adopted as it stresses the socially constructed nature of reality, the intimate relationship between the researcher and what is studied, and the situational constraints that shape this inquiry. As such, the research has been conducted by a Niuean, with insight and consideration into indigenous practices, attitudes and beliefs significant to *tagata Niue*. The Niuean language has also been used in interviews to further support communication and understanding of the context of the participants.

This research looks at the impact of the One Laptop Per Child project in the context of the education community on the island of Niue. The study examines participant perspectives and experiences before, during and after the implementation of the OLPC project. As the total population of Niue is itself quite small, only a small number of participants were involved. Consideration was

given however, to ensure a good cross-section of participants were chosen and sufficient data had been collected.

ORGANISATION OF THE RESEARCH

This thesis is organized into the following six chapters.

Chapter One - Introduction

This chapter outlines the reasons for taking up this research. It provides a brief overview of the topic; the historical, social and political context of the case study; aims and objectives that led to the research questions; the scope of the research and provides an overview of the organisation of the research.

Chapter Two – Literature Review

This chapter presents a review of literature relating to four specific themes; Pacific Island countries and foreign aid, the Digital Divide, Information and Communication Technology and young people and Information and Communication Technology in education.

Chapter Three - Methodology

This chapter outlines the research problem and justifies a research methodology used to collect the data. The methods used for data gathering are outlined and ethical considerations explained.

Chapter Four - Findings and Data Analysis

This chapter presents the findings generated from semi-structured interviews with the participants of this study. A description of the participants is provided, followed by a description of the data according to three board categories represented in the interview questions.

Chapter Five - Discussions

This chapter presents identified themes that emerged in the literature review and the findings. The findings are substantiated through literature and direct quotes from participants. Discussion of the relevant literature, the analysis developed and the results provides valuable elements of engagement.

Chapter Six – Conclusions and Recommendations

This chapter provides a summary of the main findings in light of the relevant literature, a consideration of the research limitations and concludes with a set of recommendations for further action and research.

CHAPTER 2

LITERATURE REVIEW

INTRODUCTION

Pacific Island Countries have long experienced developmental challenges over the last 50 years due to a number of economic and political factors. Exacerbated by geographical isolation and significant dependence on foreign aid, Pacific Island countries have struggled to compete on the world market and even socially, resulting in the loss of many of their sovereign citizens to more developed countries such as Australia or New Zealand. Recently however, with the growing influence of Information and Communication Technology [ICT] significantly impacting global trade and business, Pacific Island countries are beginning to see a way in which to lessen the impact of geographical isolation and aim toward more sustainable growth and development of their sovereign nations.

This chapter begins with an overview of the historical context of foreign aid into the Pacific and then considers the impact of the digital divide in relation to the Pacific context. Literature on youth perspectives and interaction with information and communication technologies are then examined from an international perspective. The role of information and communication technology [ICT] is then examined in the context of education, with specific focus on the barriers to integrating ICT into the learning environment.

Literature for this review has come largely from the perspective of those in developed nations such as Australia, United States and England, as little relevant literature exists from the perspective of those living within the Pacific Island Countries.

PACIFIC ISLAND COUNTRIES AND FOREIGN AID

Many Pacific Island Countries (PICs) have a long history of receiving foreign aid. Over the last 50 years nations such as the likes of Niue, Tokelau, Tonga, Cook Islands, Papua New Guinea, Solomon Islands and Palau to name but a few, have relied heavily on financial support from former colonial powers to prop up existing infrastructure, mainly in the way of salaries, or to further economic development (Anderson, 2011; Campbell, 1992).

A bi-product of the 'decolonization' process, foreign aid (also known as Overseas Development Assistance, ODA) was established to assist PICs as colonial administrators withdrew from the Pacific due to the changing international climate of the 1960's. This Pacific-wide trend toward 'independence' left many former expatriate civil servants and Pacific Island leaders feeling anxious over the ability of PICs to continue to develop on their own, leading to many Pacific Island leaders themselves requesting foreign [aid] assistance (Campbell, 1992).

Early foreign aid schemes in the Pacific were mostly in the form of grants or 'soft loans' (low, or no, interest charged) and were focused on development. This form of assistance was however intended to be a short-term measure until PICs developed to a point where their economies could sustain themselves (Anderson, 2011; Campbell, 1992). This ideal however was never fully realised. According to World Bank (2008) statistics estimate, PICs collectively receive in excess of \$120 billion per annum, thus collectively making them greater recipients of aid per capita than any other region in the world, though not the neediest (Anderson, 2011). Anderson (2011) also argues that whilst there are some practical benefits to recipient countries, the longer aid programmes persist, the more they undermine democracy of the local population and disempower citizens.

To date (and historically), the largest contributors of financial aid to the Pacific are Australia and New Zealand. This is due largely to their geographical proximity, common history, complementary economies and settler societies (Campbell, 1992). In 2007 New Zealand's foreign aid contribution was 0.27% of

its Gross National Income (GNI), most of which went into the Pacific region. While both donor countries may have 'inherited' the relationship from Britain, supporting the PICs through aid is suggested as a strategy being employed to limit the influence of China which is the third-largest donor in the South Pacific, trailing only Australia and the United States (Poling & Larsen, 2012).

MYTHS, PROBLEMS AND ISSUES

Critics of foreign aid, (of which the literature reveals to be numerous), highlight a range of problems, issues and myths associated with the practice of supporting PICs through foreign aid. One of the greatest myths (Sachs, 2001) encouraged by promotional arms of aid agencies and aid elites, is that foreign aid transfers resources – for example, that one million dollars in aid equates to one million dollars to the people and that increasing aid flow will increase the general welfare of the recipient nation. Despite billions of dollars being poured into the Pacific, there is often very little evidence of success in making a lasting impact or reducing poverty (Anderson, 2011; Boone, 1996; Hughes, 2003).

Aid failure is common, but rarely admitted (Anderson, 2011; Pavlov & Sugden, 2006). While there may be a myriad of reasons why aid programmes fail, the following are some common reasons, which regularly appear in the literature.

The 'Boomerang effect' is touted as one of the major issues why foreign aid has little effect on recipient countries. Most aid returns or 'boomerangs' back to donor countries in remuneration (salaries) for consultants or (foreign) implementing companies which often have the inside running on lucrative aid contracts (Anderson, 2011; Campbell, 1992; Hughes, 2003). For example, in Australia's 2003-04 country aid budget for Papua New Guinea, six companies were awarded 23 contracts totaling A\$504 million, or 65% of that country budget (Aid/Watch 2005). Hughes (2003) also estimates Niue's aid to be three times its per capita US\$1,300 income, illustrating the extremes of 'boomerang' aid.

Table 2.1 Total and per capita aid flows to the Pacific since 1970.

	<i>Total flows since 1970 US 1998 million dollars</i>	<i>Average annual aid flow per capita since 1970, US dollars</i>
Papua New Guinea	15,592	104
Fiji	1,576	65
Solomon Islands	1,477	110
French Polynesia	8,533	1,210
New Caledonia	8,708	1,363
Vanuatu	1,285	217
Samoa	1086	213
Tonga	698	233
Kiribati	593	217
North Marianas	-2	0
Marshall Islands	362	232
Cook Islands	407	646
Palau	532	933
Wallis & Futuna	274	457
Micronesia Fed. States	630	178
Nauru	18	51
Tuvalu	214	647
Niue	182	3,558
Tokelau	91	3,026
Pacific Islands (trust Tr.)	5,193	
Oceania Unallocated	1,449	
Total	49,258	220

Source: The Development Assistance Committee, *Development Co-operation Reports, 1971-2000*, OECD Paris. Aid flows include official development assistance (including the concessional elements of loans) from OECD countries, multilateral organisations and Arab countries.

Another common issue responsible for aid failure is one, which according to literature lays both with the donor as much as it does with the recipients.

Corruption by local elites, whereby particular locals misuse or abuse local authority for personal gain, is frequently cited by donor countries as one reason why foreign aid programmes fail (Anderson, 2011; Campbell, 1992; Hughes, 2003). The local elite group is often made up of a small number of individuals in positions of local governmental or cultural authority. These individuals are often keen to espouse the virtues of whatever project may come their way, despite either knowing very little of the inner workings of the project or how they might affect the larger local population.

It is often elite groups such as these, that donor countries or organisations will consult with (Anderson, 2011) in order to gain access or permission to carry out aid programmes. It is this pretence at consultation, which Anderson (2011) states compromises the freedom and democratic processes of recipients and a

major reason why donors will never be held accountable to the local people. Yet while sovereign (local) people desire to have their say towards what programmes should or should not go ahead, Campbell (1992) believes that saying 'no' might be seen as an unfriendly act and block the potential of any further aid programmes which PICs have come to rely on for development.

List 2.1. Frequently cited problems/issues resulting from foreign aid.

- Obligation to donor countries
- Debt
- Policy leverage (through soft loans)
- Aid elites
- Aid trauma

(Anderson, 2011; Campbell, 1992; Hughes, 2003; Poling & Larsen, 2012)

Another shortcoming of many traditional aid programmes has been a failure to plan in proper exit strategies (Anderson, 2011; Chin, 2012; Engels, 2010). While the intentions of many donor organisations may be towards promoting development within recipient nations, many aid programmes exit by simply shutting down at the end of the allocated time without turning the project over to another organisation to continue implementation (Engels, 2010).

This strategy or lack thereof ends with whatever impact the programme made and more often than not, leaves recipient countries ill-equipped to finance and/or supply the required skilled personnel to continue on with the project (Anderson, 2011; Engels, 2010). While Chin (2012) acknowledges that exit strategies are often a neglected part of donor co-operation, he highlights that the current realignment of the world economy (due to the global financial crisis) is causing many traditional donors to re-evaluate their approach and factor in

more deliberate exit strategies in order to assist aid recipient nations towards more sustainable development.

The dynamics of donor/recipient aid relationships however have more recently begun to change. Where earlier more traditional bilateral aid relationships were dominated or dictated by the donor countries, more recent developments in the last four decades have seen small independent Pacific nations wielding more negotiating power.

As an unintended consequence of the United Nations (UN) system, 11 small independent Pacific nations have been given voting rights at the UN. With most current issues being discussed by the UN having little relevance to these small independent nations (largely due to geographical isolation), these nations have found themselves in a position with great bargaining capacity. According to Poling and Larsen (2012), the service of voting at the UN in exchange for monetary assistance has become big business for some of these small independent Pacific nations. Poling and Larsen (2012) caution however, that whilst these small nations may consider this new found bargaining power to be leading towards greater autonomy, it may actually be causing Pacific Island countries to give up sovereignty to their creditors.

While it appears there are a significant number of issues associated with PICs receiving foreign aid, commentators do point out that there are definite practical and longer-term benefits associated with receiving aid. According to Anderson (2011) aid programmes have the capacity to answer 'national interests' of the economic, commercial and strategic kind; interests that recipient countries may not have the financial or personnel resources to achieve. Longer-term benefits such as training, business opportunities, improved local infrastructure and so forth are also seen as practical benefits of aid relationships.

This overview demonstrates the long-term effects of the colonization of the Pacific on the ability of Pacific Island nations to develop or maintain development as seen fit by the local indigenous population. The implications of

this will be explored in this research from the perspectives of the members of the education community in Niue.

THE DIGITAL DIVIDE

The term 'digital divide' was first coined in the early to mid 1990's (Foster & Borkowski, 2004) and subsequently has been used to describe a range of technological issues that result in disparities amongst individuals, societies and nations (Warschauer, 2003). Whilst the original phrase may have been coined to reflect the socio-economic gap between those who had access to computers and the Internet and those who did not (Sahay, 2006; Underwood, 2007), more recent definitions have come to expand the definition to include not only barriers to accessing the physical tools required to access information, but a number of different levels or scales such as the discrepancy between those who have the skills, knowledge and abilities to use the technologies and those who do not. (Black & Atkinson, 2007; Evans, n.d; Iding & Skouge, 2005; Underwood, 2007; Wolff & MacKinnon, 2002).

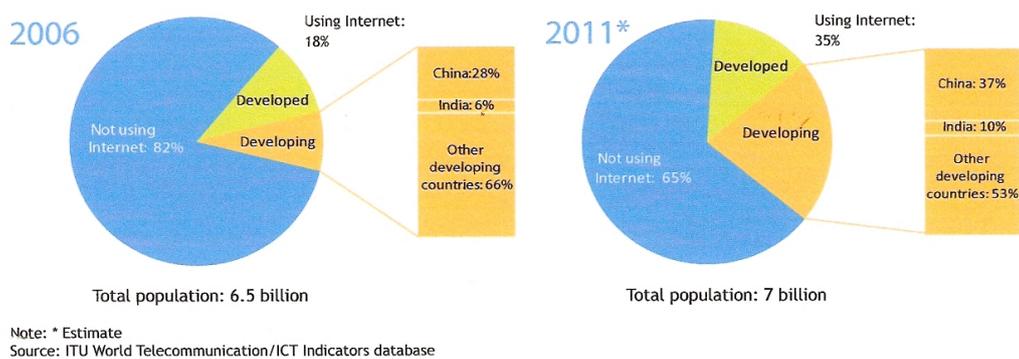
In addition to a variety of definitions, many authors highlight the complexity of the digital divide in relation to a number of influencing factors such as location, poverty, class, gender, age or disability. For example Wolff and MacKinnon (2002) identified particular 'information underclass' groups (within the US), such as "...Black American, Hispanic, Native American, unemployed, disabled, single parent (especially female headed) households, those with little education, and those residing in central cities or especially rural areas..." (p. 7) as being the most likely to have little or no access to information technology.

ACCESS BARRIERS

Arguably the most common barrier to the take up of technology is the issue of access. A report published by the OECD in 2001, highlighted access as being "...the most basic, and the most important, indicator of the digital divide..." and

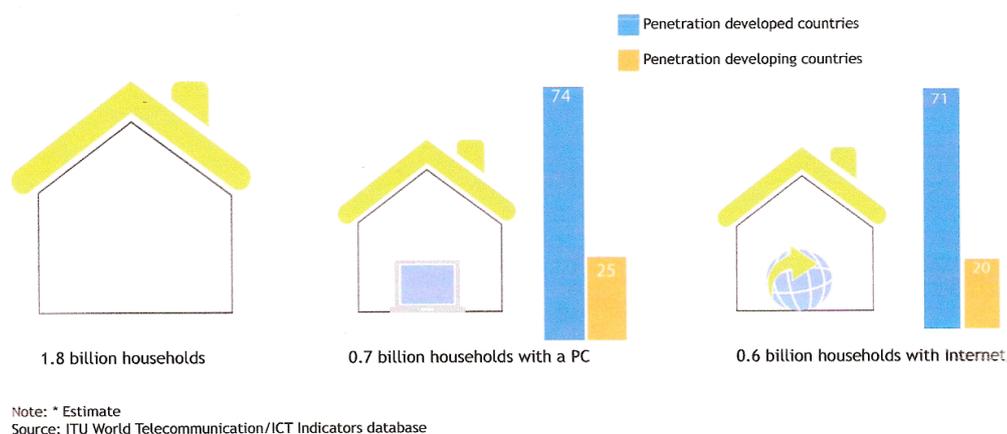
the “...fundamental measure of the international digital divide.” (p. 7). Whilst a recent report released by International Telecommunication Union (ITU, 2011) appears to show a rapid increase in Internet and mobile technology access and use by developing nations since 2006 (Fig. 2.1), the inclusion of China and India, the two most populous nations in the world, into the developing nations category, gives the perception that ICT access in the ‘developing world’ as a whole is increasing. However, a closer look (at figure 2.1) actually reveals a drop in percentage by ‘other developing countries’.

Figure 2.1 Share of Internet users in the total (global) population.



ITU estimates also suggest a growth in Internet usage globally (Fig. 2.1), however estimates of home ICT access (Fig. 2.2) indicate that developing countries still lag significantly behind their developed counterparts (ITU, 2011).

Figure 2.2 Home ICT access, 2011 (estimates).



Within the Pacific however, the island of Niue, which boasts free wireless Internet across the entire island, currently has the highest penetration per head of population. According to statistics supplied by the Internet Users Society of Niue (2011), Internet access is available to 65% of Niuean households, compared to 2% in Papua New Guinea, 8% in Vanuatu, 12% in Fiji, 26% in Palau, 30% in the Cook Islands and 61% in Guam.

According to Iding and Skouge (2005) access or lack thereof, to information technology in Pacific Island Countries (PICs) is frequently precluded by economic limitations. Local infrastructure factors such as frequent power outages and limited bandwidth along with the financial expenditure related to maintenance in areas where replacement parts are few and climate conditions are 'unfriendly' to technology (Ravaga, Evans, Faasalaina, & Osbourne, 2001) are the most common limitations.

Geographical isolation is an additional barrier to access experienced by a large majority of PICs. While wireless technologies are thought to hold promise for providing connectivity to remote areas, particularly in developing countries, they also have the propensity to develop new problems as the gap in developing countries between the 'haves' and the 'have-nots' continues to grow (Guri-Rosenblit, 2009).

DIGITAL NATIVES VS. DIGITAL IMMIGRANTS

Coined in 2001, Marc Prensky sought to delineate between those 'born' into an era where computers and computing were ubiquitous and those who had 'migrated' into the era from previous technological generations. According to Prensky (2001) 'digital immigrants', those born before 1980, had a preference for print and face-to-face interaction and thus retained an 'accent' while feeling compelled to learn modern computing. Whereas he argued 'digital natives', also known as the Net-Generation or Millennials, had a lower threshold of technological acceptance and usage than older generations, thus accepting ICT as a part of everyday life. While many commentators (Bayne & Ross, 2007; Bennett, Maton, & Kervin, 2008; Brown & Czerniewicz, 2000; Helsper & Eynon, 2009; Kennedy, et al., 2008; McKenzie, 2007; Palfrey & Gasser, 2008) have since argued that Prensky's definition is too broad and that there are a number of other sub-groupings and causal factors (other than age) that influence the 'native-immigrant' divide, recent estimates from ITU (2011) indicate that younger people (those under 25 year old) tend to be online more than older people (those over 25 years old) in both developed and developing countries.

THE KNOWLEDGE/SKILL DIVIDE

While the access barrier continues to be a major contributing factor to the digital divide, many are beginning to rethink the digital divide in terms of the knowledge required to fully access the information age (Evans, n.d; Iding & Skouge, 2005; R. Lloyd & Hellwig, 2000; Underwood, 2007; Wolff & MacKinnon, 2002). According to Downes and Neiss (2002), the use of English as 'la lingua franca' or common language on the Internet exacerbates the divide as it excludes many indigenous first language peoples from being able to participate in the World Wide Web (WWW).

Iding and Skouge (2005) highlight the non-existence of materials in Pacific Island first languages and cultural conflict in regards to oral traditions as major

inhibitors to the use of ICT by PICs. For example, in many Pacific Island cultures, the transmission of information and maintaining of traditional knowledge is by means of oral tradition (Hau'ofa, 1988) which, following strict hierarchical traditions, is held by elders and passed on as and when deemed fit.

In a paper written by Olutimayin (2002) on the adoption of modern information technology in the South Pacific, the tension between oral traditions and modern information technologies is discussed by Moala, Rokovada, Kuridrani, Nacanaibata, Tuimoala and Tabe, et al. (1999) who argue that Pacific Island societies regard information as something to guard and hide rather than share and publish. They further go on to state that access to this information was a matter of responsibility, rather than right and that the custom made the knowledge and sharing of secrets a sacred rite. However with the emergence of information technology such as the Internet, the information domain appears no longer to be the domain or exclusive right of a particular person within that society. Stanley (2003) further adds to this argument indicating factors such as the perceived lack of relevance of computers to traditional lifestyles of growing plantations, fishing and social control for example (Moala, et al., 1999) and the intimidation caused by the introduction of new and unfamiliar technologies as major barriers to the take up of ICT within the Pacific.

Not all commentators however believe that responsibility for providing accessibility to the WWW falls with Western cultures or those who use only English as their primary language of communication. Williams (2005) for example, suggests PICs be more proactive towards their own development in ICT. Rather than sitting back waiting for the WWW to change, Williams suggests PICs find ways to catch up or risk being left behind, with “...their people perpetually ICT illiterate and their economies restrained by a third world straitjacket” (p. 6).

In summary, the digital divide experienced by Pacific Island nations is due largely to the heavy reliance on foreign aid which is signaled as the number one barrier to the integration and development of information and communication

technology in the Pacific. The issue of access caused by geographical isolation is also highlighted as a significant challenge faced by Pacific Island nations. These issues form an important basis for this study.

INFORMATION AND COMMUNICATION TECHNOLOGY AND YOUNG PEOPLE

Information and Communication Technology [ICT] has evolved rapidly over the last few decades. Used as an umbrella term to describe any product or system that can store, retrieve, manipulate, transmit and receive information electronically in a digital form, ICT includes common hardware such as computers, cell phones or digital cameras and common software such as your standard office applications e.g. MSWord, Excel, etc.

ICT has been introduced into society in a dynamic way over the last 10 to 15 years seeing the capacity of such technologies growing exponentially (Bates, 2001; Tsolakidis, 2004) and no other group appears to have integrated ICT into their everyday lives more than today's youth.

The Net Generation (Net Gen), also referred to as the Millennials, iGeneration, Generation Z or the Internet Generation, are names driven by the media and commonly given for the group of people born from a currently undefined point in the last decade of the 20th century and the beginning of the 21st century, that reflect the impact of the Internet on the lives of today's users (Tapscott, 2008). While there are those (Howe & Strauss, 2000) who may argue that this particular group have definite characteristics that help identify them from other previous (technological) groups such as Generation X (Gen X) for instance, there are those within the Net Gen that argue that the iGeneration are a subgroup of users who actively engage with technology in its development, progression, and its use in the workplace, so that the technology can evolve within the means of the generation (Rosen, 2010; Whittaker, 2010).

According to Rosen (2010), the iGeneration represents both the types of mobile digital technologies being heralded by children and adolescents (i.e. the iPod, iPhone, iPad, etc.) and the fact that many of these new technologies are and can be individualized in the way they are used. Rosen also stated that children and teens born in the new millennium are defined by their technology and media use, their love of electronic communication and their increased need to multitask. Tapscott (2008) however offers a more defined set of identifiers of today's technology users, citing eight norms of the Net Generation (List 2.2).

List 2.2 Tapscott's (2008) Eight Norms of Net Gen.

1. They value freedom – freedom to be who they are, freedom of choice.
2. They want to customise everything, even their jobs.
3. They learn to be sceptical, to scrutinise what they see and read in the media, including the Internet.
4. They value integrity – being honest, considerate, transparent and abiding by their commitments.
5. They are great collaborators, with friends online and offline.
6. They love to deal with entertainment.
7. They thrive on speed.
8. They love to innovate.

Characteristics aside, what is agreed upon throughout the literature, is that young people these days interact with technology in a way that was neither predicted nor comparable to their previous cohorts (Bates, 2001; Oblinger & Oblinger, 2005; Tsolakidis, 2004; Whittaker, 2010).

PERCEPTIONS OF ICT BY YOUNG PEOPLE

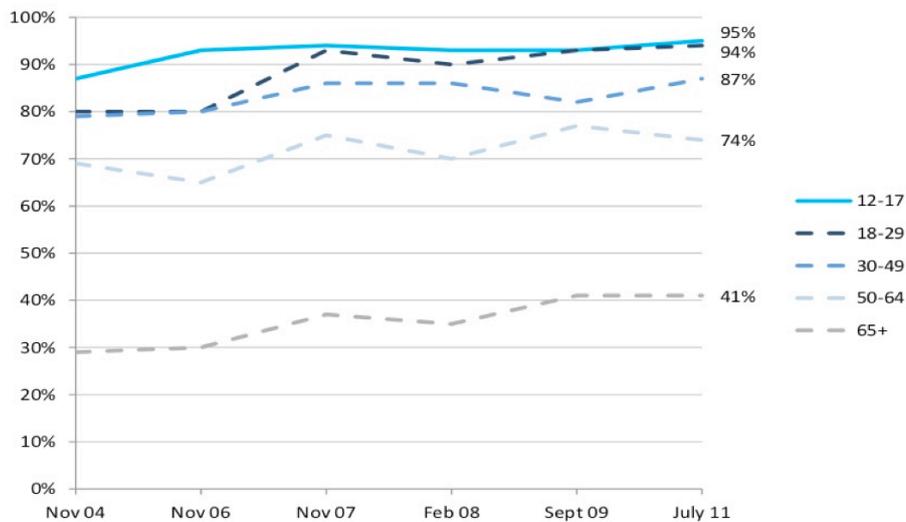
Arguably the group with the greatest affinity and uptake of digital technology are those within the adolescent sector of society. According to a survey taken by Lenhart (2009) an average of over 68% of American teens between the ages of 12 and 17 years old own a digital device such as a game console or computer, while 65% own a portable digital device capable of accessing the Internet. The study also identifies 93% of American teens between the ages of 12 and 17 years go online. Estimates from Statistics NZ (2004) indicate that over half (56%) of New Zealand households with children between the ages of 10 and 14 years have regular access to ICT. Use of ICT such as the Internet, is often encouraged in young people, as it is expected to improve academic performance and technological skills and prepare them for the modern working environment.

While some studies have indicated that young peoples perceptions and use of ICT (or digital technologies) are significantly different than those of their parents or teachers, other are not so easily convinced. A debate spurred on by Prensky's 'digital natives – digital immigrants' premise which suggests intergenerational differences in the adoption and use of ICT, has led to a proliferation in literature either bent on debunking Prensky's premise (Bayne & Ross, 2007; Bennett, et al., 2008; Brown & Czerniewicz, 2000; McKenzie, 2007; Wolff & MacKinnon, 2002) or discussions about how to integrate this new innovation in learning into the classroom (Baytak, Tarman, & Ayas, 2011; Brand, 1997; Buabeng-Andoh, 2012; Buzzard, et al., 2011; Cox, et al., 1999; Downes & Niess, 2002; Hartman, Moskal, & Dziuban, 2005; Henderson, 2011; Martineau, 2009; McNeely, 2005).

In a small-scale case study by Salajan, Schönwetter and Cleghorn (2009), which set out to test the generational divide, the study conceded that age-related interface differences did exist though to a limited extent.

Figure 2.3. Generational Internet adoption over time.

% within each age group who go online



In a report produced by Zickuhr (2010), there were still noticeable differences between generations in the adoption of the Internet (Fig. 2.3) and online activities (when compared to the first “Generations” report in 2006), with Millennials (those aged between 18 and 33) clearly surpassing their older counterparts online in certain activities (see List 2.3).

List 2.3 Online activities more likely to be accessed by Millennials than by their older counterparts.

- Use of social networking sites
- Use of instant messaging
- Using online classifieds
- Listening to music
- Playing online games
- Reading blogs
- Participating in virtual worlds

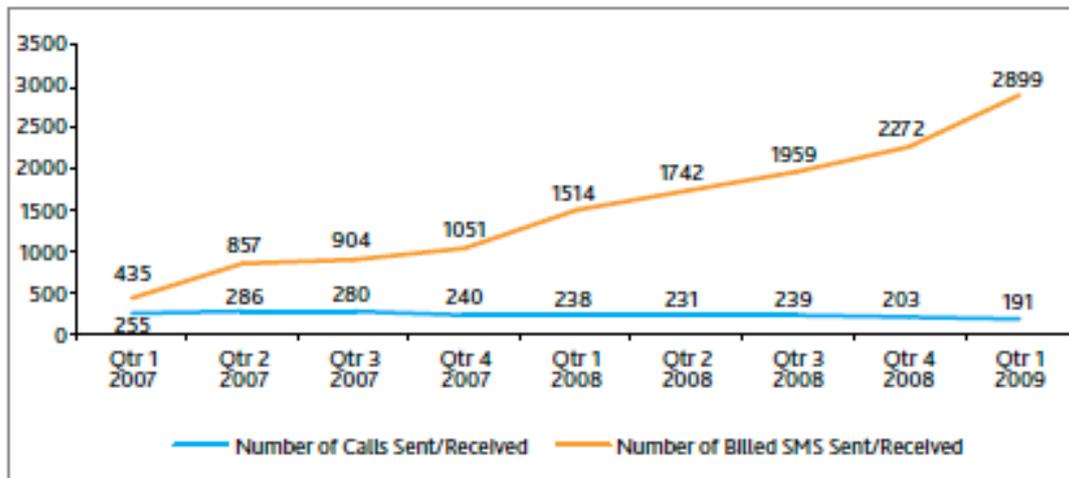
Zickuhr (2010) reported however that in some aspects of using the Internet, the

older cohorts (those aged 34-45) were more likely than their younger counterparts to engage in online activities that related more to *retrieving information*. As summarized by Herring (2008) this generation *socialises* more online, downloads more entertainment media, and consults the Web for a wider range of purposes than do present adults or young people of the previous generation.

Previous studies also suggested that young peoples perceptions were influenced by their parents' level of education and that the higher the tertiary education level of the parents, the more positive the affect on the young persons perception toward ICT. In a recent study conducted by Baser, Mutlu, Sendurur and Sendurur (2012) however, this theory was found to have little impact.

Factors that were found to have an affect on young peoples perceptions of ICT had more to do with functionality of the technology itself, to do the things which young people valued as important. For instance Baytak (2011) suggests that young peoples strong desire to connect with peers anytime and anywhere, dictates whether or not a digital device has relevance. In other words, can it do what the user desires for it to do? In a survey conducted by the Nielsen Company (2009) it was found that the average (U.S) teenager sent and received an average of 2,899 texts per month compared to making and receiving an average of 191 phone calls (Fig. 2.4).

Figure 2.4. Average number of monthly texts and phone calls (U.S mobile teens age 13 to 17)



Source: The Nielsen Company

While Nielsen’s 2009 report indicates a significant number of texts being sent by the average U.S teenager, Lenhart’s report from the same year states that only 58% of teens (surveyed) communicate with peers using text messaging.

YOUNG PEOPLE, SELF IDENTITY AND ICT

Teenagers the world over, irrespective of cultures, still seek strong links with others, but continue to grapple with issues of self-esteem and public perception (Bucholtz, 2002). This strong desire to connect with peers anytime and anywhere (Baytak, et al., 2011) has seen a flexible intermix of online and offline (otherwise known as face to face interaction) forms of communication whereby young people manage their lives.

In a survey conducted in the U.S (2009) of over 1800 young people aged 12 to 17 years, 65% of all teens that go online had an online profile. Girls (86%) in the upper end of the surveyed age bracket (15 -17years) were more likely to have a profile online than boys (69%) surveyed in the same age bracket. According to Lenhart (2009), age was one of the major contributing factors as to whether teens would have an online profile or not, whereas demographic factors such as parental income and race or ethnicity were less significant.

These online 'personas' or 'identities' are created and co-created by teens to express themselves and share experiences and evolve as the technology evolves. Formed through interaction with one another, teenage users seek and give regular feedback online on what each other do and say, in ways that they would be less likely to do in person. Current social networking sites such as Bebo, MySpace and Facebook, have been designed to be customised (manipulated) and allow teens and young adults to be 'out there', yet anonymous and live their everyday lives online, yet maintain their privacy (Livingstone & Brake, 2009). According to Gill (2008), one of the main reasons children and teenagers worldwide have enthusiastically adopted the virtual world (via social networking), is partly due to the erosion of children's freedom in the physical world.

While technology is being acknowledged as providing more opportunities for young people to connect, explore and create it is believed that it is also increasing their exposure to risk. Along with the increase opportunity that social networking provides, concerns are growing over the increased probability of cyber-bullying, sexual harassment, violent behaviours, racist attacks, theft of personal information, exposure to harmful content and the encouragement of self harm; some of which (forms of harassment) are perpetrated by children themselves (Livingstone & Brake, 2009). According to a study done in the United Kingdom in 2009, 57% of 9-19 year olds had seen online pornography, 31% had been exposed to violent content and 11% to racist content. Added to this were 31% who had received sexual comments online and 28% who had received unsolicited sexual material. This in turn has given rise to the creation of specialised services, software and greater vigilance in monitoring by parents and teachers in order to prevent or limit the harm being done.

The literature highlights significant generational differences in the perception and use of information and communication technology [ICT]. This study will draw upon key issues identified in the literature regarding the way in which young people assign value, make choices and use technology in different aspects of their lives.

INFORMATION AND COMMUNICATION TECHNOLOGY IN EDUCATION

ICT may be taken for granted as part of life nowadays, however its integration into every part of our lives or society, is at various stages. While it may be pervasive throughout the business and entertainment sectors for instance, it seems yet to make as great an impact on education or more precisely, in the classroom (Romeo, et al., 2012; Tsolakidis, 2004). According to Romeo (2006):

...After nearly five decades of computers in education, there is still confusion about the use of technology in classrooms and widespread reluctance to move beyond tokenistic use. There is not a universal, shared vision regarding the use of technology in the classroom and teachers are confronted with many theories and instructional designs and bombarded with confusing, even romantic, views of what the technology is capable of delivering (p. 150).

A range of literature suggests responsibility for this lack of progress towards ICT integration into the classrooms sits squarely with teachers.

Far from being a recent issue, literature from a wide variety of commentators over the last 12 years (Parr, 2000; Tsolakidis, 2004; Romeo, 2006; Romeo, Lloyd & Downes, 2012) has continued to cite teachers as pivotal to the success (or failure) of integrating ICT into the learning environment.

TEACHERS AS BARRIERS TO ICT INTEGRATION

There exists a dearth of literature on the impact teachers can have on the integration of technology into learning environments. Some researchers (Brickner, 1995; Ertmer, 2005; Tunca, 2002) have classified them as either first or second order barriers. First order barriers refer to those that are extrinsic to

the individual, such as organisational support or access to equipment while second order barriers involve more emotional, fundamental, personal issues related to personal beliefs and attitudes.

Another classification found in the literature centers around teacher-centered barriers versus institution or school-centered barriers. In a report published in 2004 by the British Educational Communications and Technology Agency (BECTA), barriers were grouped according to whether they directly related to the individual teacher such as lack of teacher confidence, lack of time, resistance to change and negative attitudes; or were a direct result of institutional barriers such as inappropriate software or lack of technical support (Table 2.2).

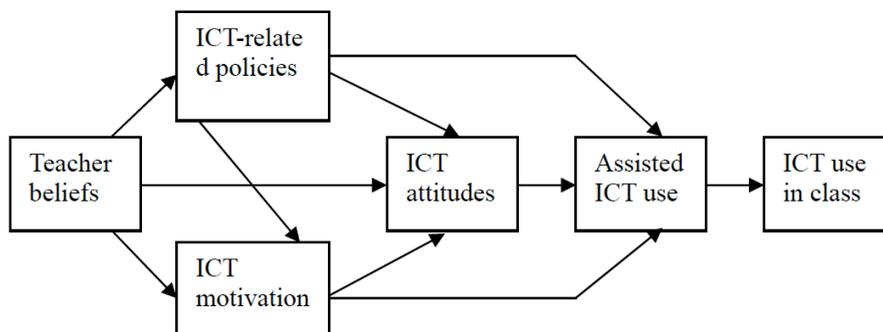
Table 2.2 Barriers to ICT integration into the classroom.

External barriers	Internal barriers
<ul style="list-style-type: none"> • Lack of access to resources • Lack of time • Lack of effective training • Technical problems 	<ul style="list-style-type: none"> • Lack of confidence • Resistance to change & negative attitudes • No perception of benefits

Source: BECTA 2004.

Others researchers however, such as Romeo (2012) believe most barriers to ICT integration focused more on the individual and fit into three (broad) categories; teacher perception, teacher ICT skill and teacher knowledge. In other words, teachers' attitudes towards change (Honey & Moeller, 1990), lack of confidence with ICT and isolation of the 'knowledge of technology' from pedagogical and discipline expertise (Lloyd & Albion, 2009).

Figure 2.5 Integrated model of the impact of Teachers beliefs, ICT-related variables and assisted ICT use, on integrating ICT into the classroom.



Based on Davis, Bagozzi & Warshaw's Technology Acceptance Model (1989, as cited in Kong et al., 2009).

TEACHER CENTERED BARRIERS

Lack of Confidence

One of the most influential factors affecting whether or not a teacher will use ICT in their teaching is their perception of ICT. Teachers have often resisted new technology either because they did not feel confident in using it, they did not see the relevance (or usefulness) of ICT in aiding classroom work or it could not be envisaged how such an innovation could offer 'added value' above and beyond existing practice (Bates, 2001; Cox, et al., 1999; Honey & Moeller, 1990; Judson, 2006; Parr, 2000).

One of the key findings in the BECTA (2004) report cited teachers' levels of engagement in ICT directly impacted on their level of confidence with using ICT. Teachers who had little or no confidence in using computers would try to avoid using them altogether (Bingimlas, 2009; Cox, et al., 1999; Ertmer, 2005; Judson, 2006; Parr, 2000; Romeo, et al., 2012).

In studies that identified teachers' lack of confidence, fear of failure (anxiety at causing damage to equipment and/or anxiety that their students perhaps know

more than they do) due to a lack of ICT knowledge (BECTA, 2004; Bingimlas, 2009; Buabeng-Andoh, 2012; Judson, 2006; Romeo, et al., 2012) was commonly cited as some of the main reasons why teachers did not feel at ease to adopt and integrate ICT into their classrooms.

Lack of Technology-Supported Pedagogy

Teacher integration of technology into their classrooms also relies heavily on their level of technology-supported pedagogy. According to Hew & Brush (2007) integration of technology into learning is often incorrectly applied in practice due to a lack of knowledge or skills in technology-supported pedagogy. Hughes (2005) also suggests that the variation in technology-supported pedagogy is often due to teachers using technology as forms of replacement or amplification in current practice.

Technology as replacement involves using technology to serve in place of a previous, sometimes lower form of technology, to achieve the same instructional goal. For example, using PowerPoint to display a maths problem rather than writing it on a whiteboard. Using technology in a replacement function mode requires no change in teaching practice, student learning processes or content goals. Technology as amplification capitalises on the ability of technology to accomplish tasks more effectively and efficiently, yet the task remains relatively the same (Hughes, 2005). For example, instead of requiring students to publish their writing by hand, word processing functions on computers can be used to accomplish the same task in a shorter time frame and with more pleasing aesthetic results.

In both of the aforementioned technology uses, the focus is often on the delivery rather than the innovative instructional strategies (Yang & Wu, 2012) and are currently used by most teachers as they are the least distant from their teaching practice (Hughes, 2005).

Resistance To Change And Negative Attitudes

Resistance to change is another significant barrier to successful integration of ICT into the classroom, which some say stems more from teachers practice and their belief about teaching. Teachers who are reluctant to take on new approaches tend to be instructors working from more of a teacher-centered perspective (Honey & Moeller, 1990). Cox, et al (1999) highlight that for many teachers, maintaining an orderly and structured learning environment is essential. Therefore any thought of adopting learning techniques which might even suggest losing control of the learning or the possibility of having little impact on students achievement are genuine fears amongst many teachers and further drives their resistance.

Not all resistance to change or negative attitudes towards integrating technology into the classroom comes from a fear of losing control or teacher-centered practice. In some secondary school subjects, teachers believe that technology detracts from student experiences. For example Andrews (2000, in Hennessey, Ruthven & Brindley, 2005) claims that "...the subversive, humanities-based, liberal and book-dominated culture of English ... is undoubtedly a factor in the resistance of English teachers to new technologies" (p. 161). Parr (2000) also cites that some teachers tend to see little use of technology when searches for equivalent content-based textbooks or quality subject-specific software, comes up empty handed. Cox, et al (1999) suggest that resistance to change may also be due to teachers seeing no need to question or change their professional practice or in other words "if it isn't broken, don't fix it!"

Honey and Moeller (1990) describe these types of teachers as 'conservative', viewing technology merely as a means of motivation and an add-on to the curriculum and remarked; "For teachers whose educational beliefs and practices are traditional, there exist different and much more complicated barriers for technology integration. In order to integrate technology into their curricula as the high-tech teachers have done, the very nature of their practices would have to change." (p. 16).

INSTITUTION-CENTERED BARRIERS

Not all barriers to integrating ICT in the classroom can or should be considered as problems that lay solely with individuals. Institutionally-created barriers such as lack of resourcing, time, support and training have been known to impact directly on how teachers perceive and therefore use ICT in the classrooms (Bingimlas, 2009; Cox, et al., 1999; Parr, 2000).

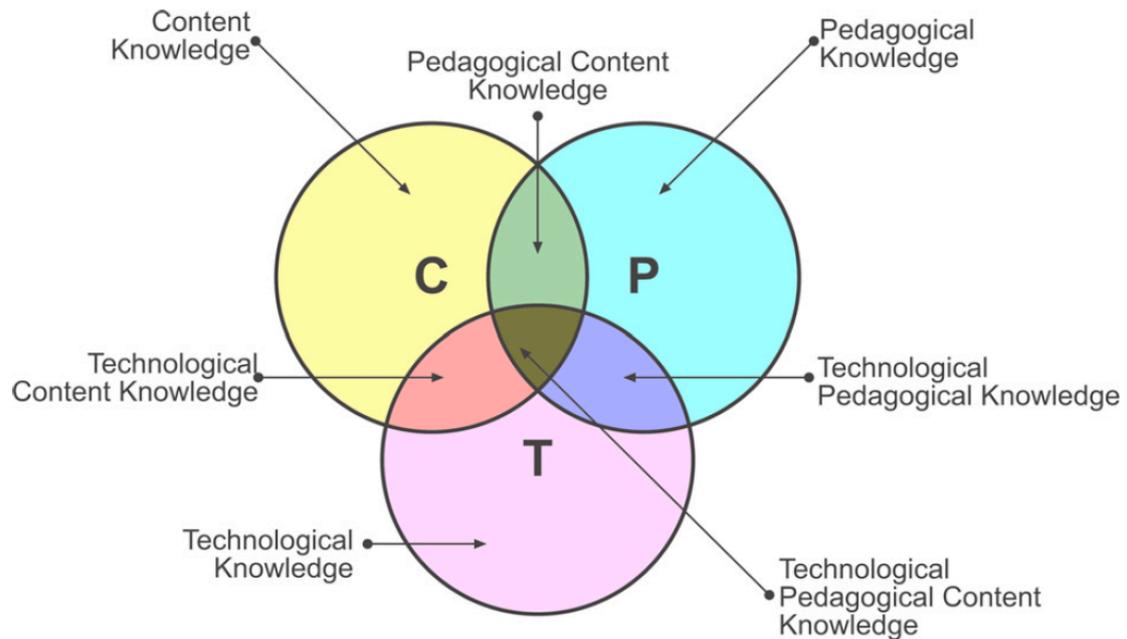
Lack Of Time

Several studies (BECTA, 2004; Bingimlas, 2009; Brand, 1997) indicate that a lack of time, due to heavy workloads, timetabling issues and other administrative expectations, often prevents teachers from being able to fully integrate ICT into their classrooms and learning programmes. Brand (1997) states that in order for teachers to acquire, process and transfer the knowledge and skills effectively into the classroom, teachers must be given substantial enough time *outside* of the normal teaching day. Findings from the BECTA (2004) report support Brand's assertion, adding that practice using the technology, and learning to deal with technical problems are also issues that require time and training, both which vary according to the needs of the individual teacher.

Lack Of Training

Training teachers in the use of ICT is more involved than simply teaching them how to use the tools. According to BECTA (2004) there are several components to consider to ensure the effectiveness of ICT training such as time for training, pedagogical training, skills training and ICT use in pre-service training. Koehler, Mishra and Yahya (2007) further argue that intelligent pedagogical use of technology requires the development of a complex situated form of knowledge, whereby a transactional and mutually reinforced relationship occurs between content, pedagogy and technology (Figure 2.6).

Figure 2.6 Technological Pedagogical Content Knowledge (TPCK)



Source: (Koehler, Mishra, & Yahya, 2007)

Parr (2000) states that teachers need to be equipped to use technology as a standard teaching tool, which Cox, et al (1999), suggest will never happen if the training of teachers continues to focus on the technical aspects of ICT. Brand (1997) further supports this position citing traditional methods of training teachers through workshops and courses are ill suited for developing deeper understanding. This is not to say however, that skills should not be taught. According to Schoepp (2005) teachers need to be trained in specific IT skills, especially when new technologies need to be integrated into the classroom.

Individual differences and strengths also need to be considered and planned for when designing professional development sessions for teachers (Brand, 1997) as inadequate or inappropriate training can lead to teachers being ill-prepared and directly affect the confidence of the teacher to be able to successfully integrate ICT into their classroom programmes (Bingimlas, 2009; Raturi, Hogan, & Thaman, 2011).

Lack Of Access

Several studies suggest that lack of access to ICT resources, either at school or at home can discourage teachers from integrating new technologies into their classroom practice. As Brand (1997) suggests, teachers need time to figure out what works and how, however this is particularly difficult when resources are limited or out of reach. Cox, et al (1999) suggest a direct link between the amount of personal access to ICT a teacher has and the levels of confidence with ICT. While levels of access are significant in determining levels of use of ICT by teachers, a lack of access within a school does not necessarily mean a lack of resourcing. Inappropriate organisation of equipment in schools can also often lead teachers to being less likely to plan the use of ICT within their lessons (BECTA, 2004).

Lack Of Support

Lack of support for teachers integrating ICT into classrooms can come in different forms. Parr (2000) states that a lack of organisational support for teachers either through a lack of reward or recognition for their development, a lack of time allocated for teachers to learn and implement new skills and ideas, or a lack of voice in the decision making regarding the part ICT has to play in the classrooms; all impact directly on the teachers willingness or ability to adopt the new innovation into their teaching.

Lack of support for the integration of ICT also comes in the form of poor technical support. Baytak, et al. (2011) cite that teachers often complain that there is insufficient technical support, which Pelgrum (2001, in Bingimlas, 2009) found to be one of the top barriers to ICT use in both primary and secondary schools. Technical issues such as failing to connect with the Internet, network issues, printing problems or having to work with old computers, often impede the natural flow of the lessons (of which ICT has been integrated into), thus increasing teacher frustration and lowering confidence levels in ICT. Continual

streams of unresolved issues can also affect teachers planned use of ICT, due to teachers fearing equipment failure interfering with lessons (BECTA, 2004).

This research will draw upon issues highlighted by the literature as being significant barriers to the integration of technology into the learning environment. It will also examine to what extent these barriers were present in the attempt to implement the One Laptop Per Child project into the education community in Niue.

LITERATURE RESEARCH SUMMARY

The literature reviewed in this chapter has identified a number of common interconnected factors that are required when attempting to integrate ICT into classroom learning environments, as well as highlighting a number of issues and gaps, which the research will examine.

The first is related to the effect of foreign aid on sovereign Pacific Island nations and their ability to be able to meet the challenges of the digital divide. There is very little literature specific to the digital divide in the context of the Pacific, though literature from overseas provides some insight into the issue as a whole.

The second gap in the literature is around the impact of information and communication technologies on young people within the Pacific region. Most of the literature available to be reviewed for this research made reference to one particular study based on teens within the United States; a cohort with little in common with Pacific region-based teens.

The third gap is the lack of literature available from the perspective of young people regarding the effects of information and communication technology [ICT] on their learning and their impressions on the integration of ICT into their learning environments.

The fourth issue identifies that teachers play a pivotal role in the successful integration of ICT into any learning environment. The literature also highlights

the difficulty teachers from this particular case study may experience in attempting to integrate new technologies, due to broader socio-cultural, economic and political factors outside their control.

Further discussion of these issues and how they relate to the particular context of this case study will occur in chapter five.

CHAPTER 3

METHODOLOGY

*your way
objective
analytic
always doubting the truth
until proof comes
slowly
quietly
and it hurts*

*my way
subjective
gut-feeling like
always sure
of the truth
the proof
is there
waiting
and it hurts*

(Konai Helu Thaman, "Our Way")

INTRODUCTION

This chapter introduces and outlines the methodology used in this research. Each subsection seeks to discuss and justify the knowledge claims being made by the researcher, the strategy of inquiry used to inform the procedure followed by the methods of data collection and analysis. Finally the issues of validity, reliability and research ethics within the research process were also addressed in this chapter.

KNOWLEDGE CLAIMS AND THE POSITIONING OF THE RESEARCHER

One of the desires of this research was to investigate and present a piece of work about the people of Niue, by a Niuean. Whilst there is significant body of work in

existence on the Pacific, the majority of the work represents the perspectives and interpretations of non-Pacific peoples (Baba, Mahina, Willams, & Nabobo-Baba, 2004; Gegeo, 2008). Having been raised within the very community that I seek to give voice has meant that the worldview from which I have approached this research is shared with those whom I am representing. The distinct cultural identity, memories and practices that make me Niuean (Vaka'uta, 2012), are innate and have informed and contextualized the interpretation of the stories shared (Creswell, 2002; Helu-Thaman, 2003).

If research is to truly acknowledge the experiences of Pacific peoples, then research methods need to be based on the cultural worldview of the participants (Tamasese, Parsons, Sullivan, & Waldergrave, 2012). The use of *talanoa* (conversational style method) and *tau mena fakaalofa* (reciprocity) are two more obvious examples of how *tau aga fakamotu* (Niuean traditions) were acknowledged throughout this research process. Other considerations as highlighted in the list below (Anae, Coxon, Mara, Wendt-Samu, & Finau, 2001) perhaps better described as *tau mahani* (manners or ways) or more appropriately, *fai mahani* which refers more to ones upbringing and the cultural or contextual appropriateness of ones actions, are fundamental operating principles (Schaaf & Hudson, 2009) that one who shares the knowledge tradition with those being researched '...just knows'.

List 3.1 Pacific values

- Respect
- Reciprocity
- Communalism
- Collective responsibility
- Gerontocracy (respect for the voice of the elders)
- Humility
- Love
- Service
- Spirituality

(Anae, et al. 2001) adapted from 'Pacific Way' (Crocombe, 1975)

Throughout this entire research process, I have viewed and approached it as the product of many factors such as the particular cultural contexts in which I have been socialized, the type of formal education I have had and my beliefs and values (Helu-Thaman, 2003). The choices made in regards to what questions were important (or not), ethical (moral and spiritual) considerations, methods for data collection and even the way in which the literature has been interrogated, have all been judged by my impression of myself as being Niuean.

QUALITATIVE RESEARCH

The focus on the participant experience and perspective is a feature of qualitative research (Crotty, 1998, Denzin & Lincoln, 2005). According to Schutz (1962) people are capable of attributing meaning to their environment therefore the social world must be interpreted from the perspective of those being studied (Bryman, 2008, Greenfield, 1975 as cited in Cohen, Manion & Morrison, 2007).

The advantage of taking the position of those being studied raises the prospect of viewing the issue from a different standpoint and as in this particular case, gives 'voice' to allow those directly affected to be heard (Scott, 2005, Lincoln & Guba, 2005). These 'lived experiences' (Schwandt & Buron, 2006) can provide more than just simple descriptions of actions, activities and feelings for the purposes of informing frameworks for evaluation governed by goals. Through committing to understanding, interpreting and communicating the meaning these actions and events have for those involved in the One Laptop Per Child [OLPC] project, it is hoped that one may begin to make sense of the process as a lived reality for the education community in Niue.

This however, will require a 'situational appreciation' (Pendlebury, 1995 as cited in Schwandt & Buron, 2006) of the distinctive concerns, forms of life, practices and ways of speaking and behaving found in this particular setting. Interweaving qualitative methodological approaches with Pasifika epistemology is likely to enhance this appreciation. An example of one such approach being

talanoa (Vaioleti, 2003), which loosely translated, describes the ability to relate one to another and share experiences.

A qualitative approach also allows for flexibility to adapt methods as the subject changes (Davidson & Tollich, 2003), which when coupled with a semi-structured interviewing approach, gives participants room to more freely express their views (Crotty, 1998) and is more in keeping with the concept of *talanoa*.

CASE STUDY

Case study as a research design has its foundations in anthropology, sociology and psychology and is well situated to education as processes, problems and programmes can be examined and understood. The literature highlights however, that there is little consensus as to what constitutes a case study. Yin (2003) for example, defines case study in terms of the research process, as “an empirical inquiry that investigates a contemporary phenomenon within its real life context” (p. 13), whereas Merriam (1998) defines case study in terms of its end product as “...an intensive, holistic description and analysis of a single instance ...” (p. 21). As a process however, the case study allows for researchers to observe participants in the worlds in which they naturally operate and present an advantage over other forms when answering ‘how’ and ‘why’ questions (Yin, 2003) and does not claim any particular methods for data collection or analysis (Merriam, 1998). Interest in insight, discovery and interpretation are what often drive researchers to choose qualitative case study since by concentrating on the case, interactions between significant factors may be uncovered.

Whilst there are various types of qualitative case studies in education, Merriam (1998) argues that case studies can be described by the overall intent of the study irrespective of discipline. As the overall intent of this research is to hear from the teachers, parents and students directly involved in the One Laptop Per

Child (OLPC) project in order to provide them with an opportunity to share their experiences the evaluative case study best fits this purpose.

According to Guba and Lincoln (1981), the evaluative case study is the best reporting form for evaluations as it provides thick description, is grounded, holistic and lifelike. Evaluative case studies also considers the reader by simplifying the data, illuminating meanings and communicating inferred data. Above all else however, the evaluative case study considers all information from which a judgment is made.

Kenny and Grotelueschen (1980) add that choosing a case study design is important when the future of a programme is contingent upon an evaluation and there are no reasonable indicators of programmatic success. They go on further to state that case study can be supported as the common language approach to evaluation, allowing the results to be communicated more easily to non-researchers such as those who participated in this study.

SELECTION OF PARTICIPANTS

Three distinct groups were decided on for this research; teachers, students and parents of both state primary and secondary schools. A summary of methods used to select participants for each group follows.

Having previously worked as a teacher within the education community in Niue, an established network of contacts from which potential participants could be selected was readily available. Due to the nature of the information required, it was not appropriate to use random sampling. Therefore purposive sampling was employed to select teachers who were in Niue at the time of the roll-out of the One Laptop Per Child (OLPC) project to address the research questions (Bryman, 2008). Teachers who fit this criterion were sent letters prior to my arrival on the island, outlining the research and inviting them to participate. A target of six teachers in total (approximately 10% of total teaching staff from both schools),

three from the primary sector and three from the secondary sector, were sought. Six invitations were accepted, however due to unforeseen circumstances, one teacher was unable to be interviewed and a replacement was not possible due to time constraints.

My connection with the wider community through residing and teaching on Niue also provided me with ready access to a large group of potential parent participants. As with the method used to approach teachers, a wide range of parents were sent letters prior to my arrival on the island outlining the research project and inviting them to participate. A target of six parents was sought; three with children who had attended (at the time of the OLPC roll-out) or were still attending primary school and three from the secondary school. Six invitations were accepted.

Selection of students for the focus groups was approached differently to that used with the other two groups, due to the requirement of seeking parental consent prior to any student participating. Parents were approached personally and an explanation of the research project was given before the request to participate was made. As with the other two groups, pre-existing community ties and rapport (Anae, et al., 2001) assisted in gaining parental consent for student participation.

METHODS OF DATA COLLECTION AND ANALYSIS

Three main methods of data collection were used to collect data; semi-structured interviews, focus groups and document analysis, thus providing triangulation and strengthening the findings and relationships recorded (Bryman, 2008; Fontana & Frey, 2005; Keeves, 1997; Merriam, 1998).

Semi-Structured Interviews

In social research interviewing the aim is to elicit beliefs, values, attitudes and behaviours from the participant either about themselves or others. Semi-

structured interviews provide the interviewer with the flexibility to tailor the sequencing of the questions and enhance the opportunity of genuinely revealing the perspectives of the people being studied (Bryman, 2008). Using semi-structured interviews also reduces the pressure on respondents to give succinct answers thus creating more of a conversational atmosphere more in keeping with the cultural practice of *talanoa* (Vaioloti, 2006). Allowing respondents the flexibility to digress, can also give insight as to what the respondent deems as relevant and important (Bryman, 2008).

Individual semi-structured interviews were conducted with the teacher participants and parent participants. The interviews with teacher participants aimed to get teachers to focus on their perspectives of what impact the OLPC project has had on their teaching practice and the future potential impact of pursuing the integration of such technologies. The interviews with parent participants aimed to seek parents' perspectives on the impact the OLPC project has had on their children's motivation toward learning. Perspectives were also sought concerning the impact of the learning tool on current home life/social structures and the perceived potential future impacts.

All interviews were conducted bilingually allowing the respondents to use whichever language they felt best communicated their thoughts. These interviews were audio recorded and transcribed by the researcher.

Focus Groups

Focus group interviews were conducted with three different groups of students from both the secondary and primary schools. Whilst the intention was to have two groups of six to eight students representing each school sector, the primary school group was interviewed and treated as one large group as the children were somewhat inseparable from each other.

The aim of the focus group interviews was to get the student perspective of the impact of the OLPC learning tool on their attitude toward learning and academic

achievements. As I was already known to the students, rapport had already been established and the students felt comfortable enough to share their opinions with me (Anae, et al., 2001). Though a schedule of questions was created prior to meeting the groups, the sessions were based around a more conversational style, allowing flexibility for the respondents to aid in each others recall of specific events and provide what Cicourel (1974) calls 'indefinite triangulation' by putting individual comments in context (Fontana & Frey, 2005). All sessions were conducted bilingually, audio recorded and carried out face to face (Vaka'uta, 2012).

Document Analysis

The study reviewed a range of documents, which included discussions (email) centered around other One Laptop Per Child (OLPC) projects within the Pacific as well as strategy documents and OLPC teacher notes, in the hopes of putting the research topic into context. These documents did not add to the research process, but provided a better understanding as to the political and regional reference within which the OLPC project lies.

ANALYSIS OF DATA COLLECTED

Data collected from all interviews were collated and analysed question by question, as each question related to a particular theme. Each interview was translated (from Niuean to English – where used) and transcribed in full by the researcher. In cases where the confirmation was required to ensure consistency in translation (including cultural nuances), a second opinion was sought from a more fluent Niuean speaker (Anae, et al., 2001). These transcripts were initially read and different highlighters were used to (broadly) identify related phenomena (Auerbach & Silverstein, 2003; Basit, 2003; Bryman, 2008; Lodico, Spaulding, & Voegtler, 2006) such as recurring words, emerging trends or issues. An issue was defined as a recurring topic or subject that was brought up by two or more respondents.

Each transcription was given a second and third reading to allow further identification of possible sub-themes. These sub-themes were then analysed further to identify whether they could be grouped into themes not identified in the original questions. Issues or sub-themes that did not fit into emerging patterns were set aside.

The transcriptions were then manually sorted into groups according to the underlying focus (theme) of the question. In situations where an individual's response fell under more than one theme, duplicates were made of the response and assigned accordingly. Icons were used to distinguish one respondent's feedback from another. Copies of transcribed interviews were also emailed to participants for validation.

ETHICAL ISSUES.

All research that involves interaction between people will have an ethical dimension (Stutchbury & Fox, 2009). Research done on human beings can offer both benefits and burdens and as researchers we must be mindful of the circumstances in which research can be justified (Bryman, 2008; Wilkinson, 2001). Whilst there are a number of ethical issues to be considered, the physical, social and cultural context of the case itself dictated the order of importance.

Prior to any contact being made with prospective participants, 'permission' (in the Niuean sense) was sought from those in positions of 'authority', in order to give a sense of legitimacy to the overall task and give any prospective participant the 'freedom' to discuss the One Laptop Per Child (OLPC) project. Once this was established, I was then free to invite and engage with participants, with no fear of repercussion (in a loose sense) for the participant or myself. This sensitivity, along with a respect of and adherence to other Niuean social and cultural values and protocols (Vaka'uta, 2012), was vital to the engagement of participants and ultimately to the study overall.

Every effort was made to ensure informed and voluntary participation in this study. Prospective participants were provided with information introducing myself, outlining the purpose for which I was undertaking the study and the added value that hoped to be gained from this research (see Appendix 1A, 1B, 1C). These particular pieces of information were of primary importance to gaining participation, as they were intended to communicate a collective responsibility (Anae, et al., 2001). Further information on data collection and storage and the preservation of confidentiality were also communicated. As this study also included child participants, parents/guardians were provided with the same information made available to prospective adult participants. A verbal explanation was given to the children, primarily to communicate the purpose of the study, what was expected of them and how the information would be recorded.

The small population size and tight knit community in Niue presented difficulties in preserving anonymity of participants. As most people on the island know each other and often frequently discuss daily happenings on the island, it was obvious to me as the researcher that it would be much more viable and ethical to offer the participants confidentiality in regards their responses rather than anonymity. Every effort was also taken to minimise the ability to identify participants when recording the data and presenting the findings.

VALIDITY AND RELIABILITY

The concept of validity in qualitative research has been the subject of much discussion over a number of years (Anderson, 1989; Bryman, 2008). Qualitative research is often criticised as being overly subjective and impressionistic, relying too much on the researcher's views and values of what is significant and important (Bryman, 2008). There are those however who would argue that the researcher *is* part of the researched world, therefore the research cannot be completely objective. Hence other people's perspectives are as valid as our own and it is therefore the task of the researcher to uncover them (Cohen, 2007). Close personal relationships the researcher will often strike up with participants

further add to argument. However, it is precisely this forming of relationships that provides the pathway for any research to take place with Pasifika people in the first instance and is vitally essential for those being researched to feel safe enough to share their experiences and stories with the researcher (Anae, et al., 2001).

A further criticism of qualitative research is that of generalisation. According to Bryman (2008), it is often suggested that the scope of findings are too restrictive and argued that it is impossible to generalise the findings to other things. However, this case study, as is arguably the case with most, is “...an intensive, holistic description and analysis of a single instance...” (Merriam, 1998, p. 21) whereby the intention was to highlight the impact of the One Laptop Per Child project specific to the education community in Niue.

Unlike the quantitative view of validity whereby the researcher is concerned with the success to which the instrument measures what it says it would measure through more of a structured, measurable, systemised, ordered, uniform and neutral approach (Bryman, 2008; Davies & Dodd, 2002; Joppe, 2000), more recent views argue that qualitative data might be better defined using terms such as honesty, trustworthiness or quality (Cohen, 2007; Joppe, 2000). Davies and Dodd (2002) extend the above list by suggesting *rigour* (in the general sense of being thorough or accurate) whilst Lincoln & Guba (1994, as cited in Bryman, 2008) offer alternate criteria for evaluating qualitative research, such as authenticity and credibility, transferability, dependability and confirmability collectively classified as *trustworthiness*.

Multiple sources of data or accounts of social reality coupled with good practice can increase the prospect of research credibility (Bryman, 2008; Fontana & Frey, 2005; Keeves, 1997; Merriam, 1998). Having participants validate that the researcher has correctly interpreted the participants' responses is one technique, as is triangulation, a technique used to cross check findings using more than one method or source of data. Both these strategies were employed in this research process. Copies of the transcribed interviews were emailed to

participants for validation and triangulation was employed firstly using responses from the three different participant groups in comparison to one another as one form, and secondly to cross-reference data collected from three different methods; semi-structured interviews, focus groups and document analysis.

CONCLUSION

Throughout this research process an acute awareness of the knowledge system unique to Niue and its peoples has informed the way in which participant selection, data collection and interpretation have been carried out. Though this research and its methods have originated from and will be validated by a Western learning institution, the importance of understanding and being a part of the collective responsibility as well as collective shame, have been the underlying guides in the way in which the project was not only begun, but also how it is completed.

CHAPTER 4

FINDINGS

INTRODUCTION

This chapter presents the findings gathered during the interviews and focus groups sessions from students, teachers and parents of students in Niue. It is presented in four parts starting with background and demographic data providing a summary of participants followed by summary of the data from all three groups presented under three broad categories of questions: the use of digital learning technologies prior to the implementation of the One Laptop Per Child (OLPC) project (Part A), the impact of implementing the OLPC project (Part B) and an overall reflection of the OLPC project (Part C). Direct quotes from participants have also been included to illustrate.

BACKGROUND AND DEMOGRAPHIC DATA

TEACHER PARTICIPANT GROUP

The group of teacher participants consisted of five female teachers from the Early Childhood Education (ECE), Primary and Secondary school sectors equivalent to ten percent of the total teaching population on the island (Vaha, 2005). The group members ranged in age, with two teachers in the 31 to 40 year bracket, two teachers in the 41 to 50 year bracket and one teacher in the 51+ year bracket.

The range and length of teaching experience within the group varied greatly with three members of the group each having over 20 years teaching experience, one teacher with 12 years experience and the fifth member with less than 10 years experience. Two of the five participants stated having worked within other institutes outside of Niue.

All teacher participants stated having varying degrees of personal experience with digital technology outside of their professional lives, with 60% of teachers sampled reported using computers on a daily basis. The majority of the group also stated having a high degree of confidence with using computer technologies.

PARENT PARTICIPANT GROUP

The parent participant group consisted of six participants; four females and two males ranging in age from 30 to 50+ years, with five of the six participants falling within the 31 to 40 year old age bracket, reflecting Niue's median age of 33 years (Vaha, 2010). All parent participants indicated having at least one computer in the home (either laptop or desktop) and access to the free Wi-Fi network. Parents also cited that their children had regular access to a computer (hardware) with 50% of the respondents' children using the computer and Internet on a daily basis.

Part A: Pre-One Laptop Per Child (OLPC)

The following findings represent the experiences of teacher, parent and student participants before the introduction and implementation of the OLPC project. Overall, the teacher participant group had little prior experience with computers or computer-related technology. This was attributed largely to the lack of resources at school and at home, as well as limited access to the computers that were available at the schools. The student group however did not share the same lack in experience as the teacher participant group despite having limited access to computers.

Teacher's Experience With Computers Pre-OLPC

Of the five teacher participants, only one had previous extensive use of computers in their teaching. This was due to having taught in a New Zealand secondary school where the technology was easily accessible. The remaining

four participants indicated very little use of computers in their teaching prior to the implementation of the OLPC project, with most citing a lack of availability and/or access as the main contributing factors. A summary of their responses is presented in table 4.1 and 4.2.

Table 4.1 Reasons for low levels of computer use prior to OLPC project

Responses	Number of responses
Limited availability	3
Limited access	3
Young age of students	2
Poor/limited connectivity to internet	2
Limited knowledge	1

NB - Number of responses do not total to number of participants as respondents could choose more than one option.

Table 4.2 – Use of computers in teaching prior to the implementation of OLPC

Responses	Number of responses
Locating resources on the internet	2
Planning (write up)	1
Locating information for students (NCEA standards)	3
Internal assessments for NCEA	1
Writing up learning stories	1
IT classes	2
Research for professional readings	1

NB - Number of responses do not total to number of participants as respondents could choose more than one option.

As one teacher stated:

There wasn't really much to be used... other than the digital projector which I did not really have good access to...

Parent Observations Of Children’s Use Of Computers Pre-OLPC

Parents were asked to reflect on their observations of the frequency of use by their child (or children) accessing digital technologies to support their schoolwork or learning. Responses from parents ranged from seeing their children use computers three to four times per week through to not seeing them use the computer at all. No parent reported seeing his or her child accessing the computer for learning on a daily basis.

Reasons given by parents for the relatively low use of computers by children included limited access (to hardware and Internet connection) and a lack of general interest (due to the age of their children at the time). A summary of their responses is presented in table 4.3.

Table 4.3 Frequency of use of computers for learning by their children prior to OLPC, as observed by parent participants

Observed frequency of computer use.	Number of responses
Never	1
Rarely	5
Often (3 - 4 times per week)	2*
Daily	0

* Participants had children in both the primary and secondary school sectors.

The following are a cross-section of a range of views expressed by parents:

...before the laptops for the kids came they had no access whatsoever to the internet...

...young age... they just wanted to play outside...

... the other two, they had limited access and also used it only when I bring my laptop home that's when they get to jump on the computer and use it...

One parent did however attribute their children's minimal use of the computer to a deliberate decision to limit access:

...personal choice on our part as parents. We felt that at that particular time in their lives the focus and priority was more towards social... you know we were showing them things from both the Niuean and Palagi side, sending them to the play groups, sending them to preschool.... from our perspective, we wanted them to have more of a relationship with people rather than with computers...

Student Use Of Computers Pre-OLPC

Secondary Student Focus Groups

Both groups had daily access to computers due to the high school having two computer labs. Students of these groups either took Information Technology (IT) as a NCEA subject, or they used the computer labs for research or publishing assignments. Participants also cited accessing information over the Internet using computers at parents' workplaces.

Primary Student Focus Groups

Students from these groups accessed computers less frequently than their secondary school counterparts. The frequency of access varied from participant to participant ranging from three to four times a week to no access at all. Unlike the high school, computers within the primary school were limited to a handful of machines primarily used by teachers for administrative tasks.

Part B: The Impact of the One Laptop Per Child (OLPC) Project

The following section presents the findings on the impact of OLPC project and is based on the responses of teachers, parents and students who were directly impacted by the project.

Teacher Responses: Opportunities

In general, there were increases in confidence and knowledge with technology as well as access to the Internet. Teachers' uses of the laptops were diverse and differed according to specific purposes, with one teacher rethinking their practice in light of the new technology.

As part of the OLPC project every teacher was personally issued with an OLPC laptop. Teachers who had previously cited access issues responded the most positively to receiving a laptop and expressed greater general interest in what the technology could offer, as highlighted by the following teachers' responses:

...well I can get to have my own computer. That was the main thing. Having the OLPC kind of boosted up your interest in the computer. Cause for us I don't have a computer [at home] so I have to use the school's when I get to school and then that's it and then I just go home and wait for the next day to go and use the computer. But with the OLPC it was mine. I can take it home and use it here any time and I could have access to the Internet anytime I wanted to and get more information and there was no time limit... there was no time limit on it.

On me personally? It was exciting! It stimulated interest in what else was there digitally that could be used.

Some teacher participants also recalled a similar increase in their students' interest levels upon each receiving a laptop, as the following quotes highlight:

It was like there was life in the kids again! It's a new toy for them and they were very inquisitive to put their hands on it and try everything and even though the activities were not that age appropriate they would ask "oh, how do you go about doing this activity teacher?"

There was increased interaction, increased participation from the students and of course it just ups the learning level...

The remaining three respondents also expressed gratitude at receiving a laptop, two of which commented that having gained some knowledge of the workings of the laptops through personal experience they were better able to plan how to use them and could assist their students if they needed help. This is a key finding, which will be discussed further in chapter five.

Teachers' inclusion of the OLPC laptops into their planning or classroom programmes were diverse and largely dependent on the age group and/or subject being taught. The primary teacher participants perceived a number of the laptop functions to be of use and deliberate (sector wide) planning was initiated to utilise the laptops effectively. For example the pre-loaded educational content suited the age level and interests of their students and was included into the daily classroom programme as an alternative independent activity. In addition, the onboard camera was used to support students' story writing as highlighted by the following quotes from two primary teachers:

...they type in their words – because the kids in my level already know their initial blends and so they are very keen to hear the words how they sound.

We went as far as taking videos....and when they come back they show us what they did and we try to write stories about it...

Teacher participants from the secondary school responded more favourably to the laptops Wi-Fi capabilities with planned use of the network and Internet capabilities the laptops afforded. These functions enabled NCEA students in

particular to overcome the access barrier to information caused by a lack of computers and the lengthy closure of the school's only library.

One teacher in particular rethought her practice, citing that the laptops complemented the subject being taught and the interconnectivity provided the opportunity to increase student participation.

My classroom practice changed in that it became more interactive ... definitely... the role of the teacher ... as a teacher I took on more of the role as a facilitator rather than the old fashioned adult in the room that knows everything. So lessons became more interactive, students were more interactive in their learning and as a teacher I increasingly took on the role as facilitator.

All teachers also commented that having every student equipped with a laptop created an 'even playing field' where socio-economic divisions were blurred. As one teacher remarked:

... everybody had one! It wasn't just the rich kids.... it just makes such a difference when everybody has access to that level of technology.

Teacher Responses: Challenges

Along with the opportunities came a number of challenges for teachers. There were challenges in linking the pre-loaded content with the school curriculum, technical issues between new and existing technologies, management challenges in regards to ownership as well as unforeseen consequences such as changes in student behaviour.

The only participants to find the pre-loaded educational content of use were the primary teachers. Both the secondary and ECE teacher participants found the content was unsuitable for the age of students in their classes. One secondary

teacher in particular also found the laptops and the pre-loaded content irrelevant to the subject being taught and commented that the laptops had no impact on their planning or classroom practice. This finding is key and will be explored further in chapter five.

The existing network at the time of the implementation of the OLPC project was ill-equipped to accommodate the demands of such a large and sudden influx of machines. Secondary teacher participants remarked that students were constantly charging their laptops at school, causing a significant increase in the power usage of the school. This was identified as a particular concern in a developing country such as Niue where budgets are extremely tight and prices are quite high. Many laptops also began to exhibit technical problems and required to be sent away for servicing. However, the number of laptops needing repairs very quickly became too numerous and the demand for service could not be met.

The issue of ownership created a challenge more for the Early Childhood (ECE) and Primary teachers. Teacher participants from the primary and ECE sectors expressed frustration at being prevented from making decisions on the use and care of laptops, due to the student claims of ownership as reflected in the statements below:

...the presenter told children that it was theirs alone and no one was the boss of it, not teachers, school or Mum and Dad...

...when they gave out the machines for the children the emphasise was... it's the kids property... the child says "that's mine" so you cant do anything about it...

The biggest thing was that they said "oh it's mine". It also changes their manners, attitude, habits ...

I think if they had been managed differently or been managed properly the sky would have been the limit...

One teacher expressed how difficult it was to maintain planned incorporation of the laptops into the lessons due to heavily reliance on children bringing the laptops to school:

...that's the very hard bit... controlling it. Because we ask the kids to bring the laptop to school and only a few bring their laptops to school.

The children tried to 'keep' their computers. Some parents wouldn't allow the children to use them. They kept it so it wouldn't break ... it's a Niuean thing. Leave it so that it looks new. The kid really wants to use it but the parents wouldn't let them [even bring it to school]. It's like you're too young to use it.

Both the issue of ownership and loss of computers due to technical failure, were cited as factors that contributed to the planned use of laptops being dropped from programmes in the ECE and primary sectors.

Changes in student behaviour and attitude were also unforeseen effects of the OLPC project with teacher participants from both schools observing changes in the schools' social environments very early on in the project. Primary teacher participants recalled noticing a shift away from the usual playground activities such as playing ball games and tag. As one teacher recalls:

...they get it from their older siblings. They would bring their music to play and do their dancing. The little ones began acting like teenagers, copying music videos. They would take them out to the field and play it and dance ...

The impact within the primary sector however was not as significant as it was within the secondary school, as use of the laptops was mostly scheduled and the children were not free to access the laptops at will.

Instances of cyber-bullying and accessing prohibited websites began to appear in the secondary school. One teacher recounted:

About three weeks after everyone had one there was an issue. The girls almost got into a fight because they were able to pair; you know that sharing thing [chat]. One student was in one room and one was in the other and one left her laptop on when they were chatting and somebody got on to her laptop and talked bad about this girl because they know who you're chatting to. So it caused a long term problem and they almost got into a fight...

Secondary teacher participants also remarked that student learning was being disrupted either by the student themselves or by others students who were more focused on playing music or games, chatting or taking photos of one another.

Overall, the general response from the teacher participant group regarding the initial arrival of the laptops was one of excitement. This feeling however, appeared to change quickly as teachers felt there was little structure or control over the use of the laptops and equally little professional development given to teachers as to how to best use them. One teacher specifically identified that the laptops had virtually no impact on their teaching practice from the outset due to the perceived lack of relevance to their particular subject level. These are key findings and will be explored further in chapter five.

Parent Responses: Opportunities

In general, observed increases in levels of confidence and knowledge with technology accompanied greater access to the Internet. Children were also

observed to have taken advantage of the access to the Internet to support school specific and personal interest topics.

Most parent participants reported noticing significant change in their child's level of behaviour upon receiving the laptop. Comments such as "really excited" and "increased confidence", were frequently used by parents to describe the behaviours they had observed. Parents also recalled observing their child/children interacting frequently and for long periods of time with certain features of the laptop, such as the in built camera, the pre-loaded games and the chat feature. Further increased activity was observed when wireless Internet became more widely available around the island. These findings are key and will be discussed further in chapter five in light of the relevant literature.

All parent participants commented on how they had observed their children growing in technological knowledge and confidence. Parents recalled how quickly their children adapted to the OLPC laptops operating system and navigated their way through the different applications available on the laptop. According to one parent:

...and just their all round build up of confidence of them using IT. Yeah, they've just gone from strength to strength in terms of... learning how to use computers and different software and stuff like that...

Many parents also observed their children using jargon in discussions with their peers and expressed amazement at the speed with which their children transferred their working knowledge of the OLPC laptops to other desktop or laptop personal computers (PCs). One parent recalls:

Within the group of friends ... they always come back with something new... how to do stuff and how to reboot the computer once it crashes and all that. I had a go at it a few times but I just couldn't understand it. But to them it was just easy.

Parent participants of secondary school children expressed a great appreciation for the access to information (via the Internet) that the laptops afforded, especially for their children sitting NCEA. They also observed an increase in their children's general interest in other information, as highlighted by the following comment:

...we saw a really marked increase... a great interest in accessing information and stuff like that just out of interest as well as for school...

A more global benefit of the laptops was acknowledged when one parent expressed that children in Niue "...went from being isolated to not being isolated because they're constantly using it."

Parent Responses: Challenges

Alongside the opportunities came a set of challenges for parents. Changes in children's attitudes and behaviours, as well as issues of ownership and care of the laptops became significant challenges for parents. Further challenges were created by the limited wireless infrastructure and the 'open access' nature of the islands Wi-Fi system.

One of the greatest concerns expressed by parents was the amount of time their children spent interacting with their laptops. Most parent participants observed changes in their children's behaviours and attitudes and conflicts arose over a decline in contribution towards home life such as chores not being done and a general lack of interest (from the children) towards participating in island life. The following are representative of parent views:

Yeah it was a huge conflict! We tell these kids, "oh you should be doing this...leave your laptop".... [but they would say] "Ah you're old fashioned you don't know these things. In your days you had no laptop". I would tell them, "you know we used to come home after school and we would go to the sea

for a swim. We'd go fishing and go pick up rubbish lau mei's [breadfruit leaves] outside" and then [they would say] "Oh that's yours... that's in the past." But in family cultures and stuff like that.... trying to teach them how basic life used to be until things became so much easier.

...too much spending time on it ... they weren't doing their chores ... and the music ... P would have his on and J would have his on and S would have her one on and at times you would just go a bit nuts listening to the whole thing...

Feedback from parent participants of primary aged children suggested however that this level of activity began to decrease in their children within a few months of receiving the laptops due to their children having discovered most of what was on offer in the pre-loaded content as well as deliberate choices by them as parents to disallow access to the Internet. Other parents suggested that incompatibility of operating systems may have been a factor as it made it extremely difficult for any further content to be added.

Concerns were raised by some parent participants about the perceived impact foreign content, ideas and activities were having on the local culture. These participants expressed concerns over the potential loss of cultural identity with the laptops pervading everyday life of their children. One parent commented:

Children are more likely to go and view things or be attracted to things of today's world like laptops, iPads, iPods and stuff like that. But when it comes to something like island cricket they just sit and laugh at the Talipoi asking "what are these runners for... what's their purpose?"

...cause even now I see that the kids are more into, you know how their faces are stuck onto Facebook, then you know they should be out there fishing, taro planting, getting coconuts and stuff like that.

Some parent participants discussed their attempts to use the laptops to teach their children about ownership and responsibility. Respondents recalled that their children initially found it quite easy to take care of the laptops, however the attitude of care and responsibility diminished for most children as the novelty began to wear off and/or the machines began to age or malfunction. The following are a cross-section of a range of views shared by parents:

...but also taking responsibility for what was given to them ... the opportunity given to them, meaning that they needed to learn how to look after it becausethey have that opportunity to get a free laptop which doesn't come everyday. So they needed to learn how to look after that and to appreciate things like that.

Well at first I had high hopes that they would feel responsible for it ... the first lesson would be responsibility to take care of it...and to a point they did until they had difficulties and problems with it and then after that it was just being shelved a lot more...

While the laptops provided increased access to the Internet, parent participants recalled frustration over the lack of infrastructure in place when the laptops were rolled out. Students in most villages had to travel or be transported to open networks towers to access the Internet until more Wi-Fi towers were installed around the rest of the island to meet the demand.

The open network system also created challenges for parents in terms of being able to monitor what their children were accessing. This is a key finding, which will be discussed further in chapter five. According to one parent, reports of increased activity involving visiting pornographic sites and downloading objectionable materials began to filter through the community, prompting calls for more stringent network controls.

List 4.1 Most common challenges of every child having their own laptop:
Parent's perspective.

1. Extremely time consuming.
2. Influence of foreign content/activities on the child's (home) culture and values.
3. Open access; difficult to monitor sites visited

Overall the parent participant group responded positively in the initial period of the roll-out of the laptops, as they witnessed their children accessing information previously unavailable due to the closure of the school library in the secondary school or limited due to the lack of available resources in the primary school library. Over time however, the parent participant group responses to the laptops became less positive with parents identifying change in other areas such as the cultural and social contexts of their families, which the group directly attributed to the introduction of the laptops. These key findings will be explored further in chapter five.

Student Responses: Opportunities

In general, both secondary and primary level focus groups cited access to information as the biggest opportunity afforded by the laptops, with further access to other more compatible technology being cited by secondary school participants as a welcomed spin off.

All participants of the focus groups agreed that the greatest benefit of having their own laptops was the ability to access the Internet and retrieve information for schoolwork or NCEA assessments. This task was previously hampered due to the high school library being closed for renovations. The student participants were quick to add however, that school-related research was generally not the most common use of their laptop, citing other uses such as accessing social

media sites, keeping up with friends overseas and following the latest news and trends in music, technology and fashion as being the biggest uses of their time online. This key finding will be discussed further in chapter five in light of relevant literature.

List 4.2 Use of Internet as identified by focus groups.

1. Accessing social networking sites i.e. Facebook, Bebo, etc.
2. General browsing for latest music updates, technology, social gossip, online games, etc.
3. School related research.

Senior secondary school participants added that a spin off of receiving (and using) the OLPC laptops was that it encouraged their parents to purchase Windows-based laptops for them [the student], which were more compatible with the existing school Operating System (OS) and printing network.

Student Responses: Challenges

Along with the opportunities came a set of challenges for students. The use of laptops for non-educational purposes became a distraction and changes in attitudes and social behaviours also became a significant issue. Increased demand on the school network system and issues with incompatibility created further challenges with accessing information from the Internet.

Primary school students remarked that they and their peers became distracted by the games and music that older siblings or cousins had loaded onto their machines. Older primary participants also admitted spending more time attempting to access the [schools] Internet to download games and music than

they did to find information for projects or class work. The teachers however controlled much of their laptop access during class hours.

Participants from the secondary school cited involvement in similar social activities, but added that their laptop use (time-wise) was not as restricted as the as their primary counterparts.

List 4.3 Most common uses of OLPC laptops by students.

1. Chatting.
2. Internet (see list 4.5)
3. Listening to music and watching music videos.
4. Taking photos of themselves and each other.
5. Playing games (via online platforms such as Facebook).

All students within the focus groups observed a significant drop in physical interaction amongst students, with one student commenting that the effect of the laptops on the school social environment was immediate, affecting students “...on the first day...” and “...lasting for at least 3 weeks”. Secondary students also recalled experiences of face-to-face (verbal) conversation almost coming to a complete halt, being replaced by the interconnected conversation function or otherwise more commonly referred to by the students as ‘chat’. Secondary student participants remarked that ‘chatting’ became “...really addictive...” and “... time consuming...” and was suggested as a factor that led to the emergence of cyber-bullying.

The secondary student participants commented that the fascination with the laptops eventually wore off and students (particularly the NCEA students) began to utilise the laptops Wi-Fi capabilities to access information for their assessments. Unlike their secondary school counterparts however, the primary

student participants had no consensus as to how long the changes in behaviour lasted, though some attributed the decrease in behaviours being due more to hardware failure, than a deliberate change by students.

Unforeseen technical issues were a challenge neither the primary nor secondary participants were able to overcome. Network failure, incompatible operating systems coupled with the inability to print all culminated in a number of students ceasing to use the laptops.

The student participant groups identified experiencing the greatest impact of the three groups. Despite expressing initial scepticism over the capabilities of the laptops based on the laptops appearance, the participants in the student group expressed the greatest impact to be the ability afforded by the laptops to access the Internet. Whilst access to the World Wide Web remained the most perceived value of the laptop, students began to use the laptops in ways not anticipated by the adults, such as downloading and swapping movies, music and games. These findings are key and will be examined further in the following chapter.

Part C: Reflections On The One Laptop Per Child (OLPC) Project

This final section presents a summary of reflections from all participants regarding the OLPC project. It also presents a summary of opinions on what participants think would need to be put in place if projects such as this were to ever take place in Niue again. Overall, participants expressed a strong desire to be consulted on matters that related directly to them. This is a key finding, which will be explored further, in the following chapter.

Teacher Responses

This group was particularly vocal in their thoughts about the OLPC project. Whilst all respondents expressed gratitude at receiving support from outside agencies (especially with resources), and agreed that the laptops provided an opportunity to diversify students' learning experiences, many felt the lack of consultation became a barrier to fully implementing and utilising the laptops. As one teacher recalls:

Yeah, to me there was not enough consultation....and it just came out of the blue. They were willing to just give it out for free and that was the impression. Free and everybody's getting it.

Teacher participants also felt that the OLPC project's standard practice of giving the laptops directly to the students (bypassing parents and teachers) raised concerns over whose responsibility it was to maintain the upkeep of the machines or monitor access. The following are representative of a range of views expressed:

...the philosophy around the OLPC is very good but the practicalities of it anywhere are... you've always got that potential that something could happen to the computer which is totally out of the kids control but then that kid is on the outer for a time...

...there are still parents that want the programme [OLPC] to go ahead but there's no one to pay the person to fix them.

So we had issues of kids finding sites that really should have been blocked and then some really useful sites were blocked as well ... but kids would find their way around it...

The issue of ownership, and therefore control, was more significant in the secondary school. A secondary school teacher commented that the process seemed to be rushed through, leaving no time for the teaching staff to discuss systems necessary to be put in place to manage having all their students equipped with laptops via the project, as reflected in the following comment:

[They] had no user agreement. The kids think it's theirs so they can take it anywhere just to play games.

While teacher participants agreed that projects like the OLPC project have practical benefits, all respondents recommended strongly that future projects should seek proper consultation and be implemented in conjunction with existing educational goals and structures.

Parent Responses

The overall opinion from parent respondents regarding the OLPC project (providing digital technology to the children of Niue) was largely positive. Like the teacher participants, parents expressed gratitude at being afforded the opportunity to be part of the project, with one parent commenting how much more technologically advanced the Niuean children had become in comparison with some neighbouring Pacific nations.

Many participants however, also had concerns about the overall way the project was managed. According to one parent, providing digital learning technologies to the children in Niue was “actually a good thing... very educational too... but

people misuse it”, because the laptops were ‘free’, ergo they must also be cheap (referring to quality).

Some parent participants expressed that there was a general lack of consultation, recalling only vaguely hearing of the project in one broadcast of the island’s national news before their child came home with an OLPC laptop. One parent in particular expressed concerns that they felt their rights as parents to make decisions for their children, were undermined by the OLPC project, as highlighted in the comment below:

I don’t think, as projects go, the parents were given an opportunity to have a position as to whether you wanted your child to have a computer or not. We weren’t given that option.

Despite these concerns however, parent participants were quick to add that lessons had been learned and that other benefits, such as the improvements to the pre-existing infrastructure (i.e. Wi-Fi), had come from taking on the OLPC project. While most are not sure if any other project such as the OLPC project will ever be made available again, parent participants stated that they remain hopeful that future technological developments will be picked up and continued by local government.

Student Responses

As the OLPC projects target group and end users of the product, the student participants commented that they found the project both a hindrance and help.

Responses from the primary student groups were varied and did not focus on any particular aspect of the project. For example, one child commented that the end result “wasted the Palagis’ money” while another expressed concerns about the amount of electricity the laptops used. One child did however comment that the project was “...good caused it helped us with our work.”

The responses from the secondary school focus groups provided more of a reflection on whether they as the target group had benefitted from the OLPC project. All secondary student participants expressed that the idea (behind the project) was good, but felt that it was somewhat misguided.

All secondary students participants commented that the laptops turned out to be more frustrating than helpful. They also remarked that some research should have been done by OLPC about existing operating systems in the high school prior to handing out laptops that were “incompatible” and contained programmes that were “not very useful”. This is a key finding and will be explored further in chapter five.

The older students in this participant group commented that the aforementioned issues coupled with the fact that they were free, made it easy for students to ‘abuse’ the project, using the laptops more for social and entertainment purposes rather than for their intended educational use. They did however observe that the younger students (Year 1 to Year 8) seem to enjoy the educational content and felt that the project should only have been run with those groups.

The secondary student participants were quick to express a desire to have input into decisions or projects that involved them directly. One student commented that she would like to have been presented with the facts of the project and then asked if she wanted one. Many of the other students echoed her sentiments, though they all stated that they would still have said agreed to have one if asked. Another suggestion offered by both student participant groups was to give the laptops to the school to keep as class sets and not distribute them to individual students.

The responses given by all groups of the impact post OLPC reflect somewhat a sea change in the attitudes and perceptions of teachers, parents and students. Whilst all participants expressed gratitude at receiving the laptops and upon reflection, identified the OLPC programme as opening opportunities to procure personal laptops and increase IT knowledge, all participants expressed various

levels of dissatisfaction towards the lack of consultation as well as a sense of guilt that the project did not work as they may have perceived it should. These are key findings and will be explored further in the following chapter.

CONCLUSION

This chapter has presented the findings from the data and has noted that overall the participants were very grateful for the OLPC project and would like to have seen it continue. Comments from participants indicated the perceived importance of technology in accessing information for an isolated community such as Niue. However, respondent feedback also highlighted quite clearly a strong desire for self-determination and the opportunity to be able to have an input into their own development and not simply be (aid) recipients. Participant feedback also highlighted a series of unforeseen consequences, which arose directly from the implementation of the OLPC project. The following chapter will explore these themes further in light of relevant literature.

CHAPTER 5

DISCUSSION

INTRODUCTION

In this chapter, findings from chapter four will be discussed with reference to the issues highlighted in the literature reviewed in Chapter Two. The findings related to the implementation of the One Laptop Per Child (OLPC) project and its impacts are considered in some depth. The issues raised are all interlinked and impact on each other and this is recognised in the discussion.

Teacher Responses: Opportunities & Challenges

According to the literature, access is the most basic and important indicator of the digital divide (OECD, 2001) and the lack of access experienced by the teachers in this research is not uncommon in many developing nations and regions like the Pacific. Prior to the arrival of the One Laptop Per Child (OLPC) project, teachers involved in this research used computers largely for administrative purposes such as the writing up of planning and browsing the Internet to find resources or information to use in class. Participants expressed that unless the use of the computer was central to the learning task, such as in the case with the Computer and InfoTech classes, the teacher's range of use of computers was limited mostly because there weren't really any computers to use. Therefore the arrival of laptops via the OLPC project presented the teacher participants with great opportunities but also with a number of challenges.

One of the first significant opportunities provided by the OLPC project for participants in the teacher group was the access to technology. Findings from the interviews with the teacher participants highlighted that having their own OLPC

laptops not only provided a solution to the problem of access, but they also enabled the teachers to gain personal experience, develop some knowledge of the physical workings of the machines and sample some of the pre-loaded software. The teachers asserted that having a working knowledge of the laptops helped them with planning how to use the laptops and enabled them to assist their students with their laptops if they needed help. In doing this teacher participants demonstrated what Romeo, et al. (2012) describe as an awareness of the importance of their personal level of experience or knowledge on their use of the laptops.

A number of literature sources (Bingimlas, 2009; Cox, et al., 1999; Ertmer, 2005; Judson, 2006; Parr, 2000; Romeo, et al., 2012) acknowledge the significance of the actions of the teacher participants in regards their efforts to become more familiar with the OLPC laptops, citing teachers' levels of engagement in ICT as being determined by their level of confidence in using the technology. In other words, teachers who often avoid using technology in their teaching or classrooms do so due to little or no confidence in their ability with ICT.

A report by BECTA (2004) also acknowledges that significant demands are placed on teachers by students who expect their teachers to be knowledgeable in the area of computer usage. By taking the time and initiative to experience the laptops for themselves, teacher participants were able to gain some knowledge of the workings specific to the OLPC laptops, so that they might be able to guide their students in using the laptops or troubleshoot [in proportion with their own levels of experience and confidence] should the need arise.

The extent to which the teacher participants then adopted the laptops into their teaching practice, was dependent on their perceptions of the laptops' usefulness. Findings in the previous chapter identified two teachers who had little or no use of the OLPC laptops within their practice. On review of what the laptops had to offer, one teacher participant determined that the laptop was of no use to her teaching, as the pre-loaded content was pitched at a much younger audience and was irrelevant to the subject and level being taught. The other teacher cited the

laptops had limited usefulness for her students, due to the pre-loaded content being too advanced for her students.

These findings highlight two different factors that impacted on the decision not to fully integrate the laptops. The first and most obvious factor is the teacher's perception of the laptops. According to the literature, perception is one of the most influential factors affecting whether a teacher will or will not integrate computers into their teaching or the learning environment. (Bates, 2001; Cox, et al., 1999; Honey & Moeller, 1990; Judson, 2006; Parr, 2000). In other words, if a teacher perceives a computer to be irrelevant or has little 'added value' to their students' learning, the chances are that he or she will not plan for its implementation. In the case of the teacher who did not use the computers at all, the OLPC laptops and pre-loaded content were deemed to have very little relevance to the subject and level of student being taught and therefore were not used.

The second factor highlighted as having an impact on the teacher participant's decisions not to use the laptops, was the lack of access to technology-supported-pedagogy that the teachers could draw upon to assist them in planning to implement the new technology into their particular learning areas. Findings indicated that though there was some limited training in the use of the laptops prior to the roll out of the OLPC project, there was no access to expertise regarding how the laptops might fit in with or support the existing learning taking place in various subjects or topics within the schools. Mishra & Koehler, (2006) assert that without this, teachers are more likely to treat ICT as an 'add on' or a simple tool for presentation. In this particular case, 'planned use' meant teachers intended for students to use the laptops for word processing or finding information from the Internet.

While the literature points out that it was the value that the teachers assigned to the laptops that ultimately determined the extent to which they were used (Bates, 2001; Cox, et al., 1999; Honey & Moeller, 1990; Judson, 2006; Parr, 2000),

a closer examination of the findings also brings to light a lack of general consultation by the donor organisation.

Findings from interviews with the teachers indicate that in all cases, participants knew very little about the OLPC project or of the project's intended outcomes prior to the arrival of the laptops. The findings also indicate that the teachers were not involved in the decision-making process regarding when and how the laptops were to be used leaving many feeling somewhat less in control over matters. These findings reveal 'precursors' to what eventually became barriers to the successful implementation of the OLPC project.

Insufficient information about the project and time to consider the implications of the arrival of the OLPC laptops are more than likely to have contributed to the 'add on' approach adopted by many participants. Parr (2000) states that a lack of organisational support for teachers either through a lack of time allocated for teachers to learn and implement new skills and ideas, or a lack of voice in the decision making regarding the part ICT has to play in the classrooms, all impact directly on the teachers willingness or ability to adopt the new innovation into their teaching.

Overall the impression given by the participants was that process was rushed through, leaving no time for teachers to discuss necessary systems to be put in place to manage having every student in the school equipped with laptops.

Further issues with control came about with unforeseen changes in student behaviour attributed directly to the introduction of the laptops. Findings from the previous chapter indicate significant shifts occurred in the early stages of OLPC project implementation, in individual student behaviour and social interactions between students. Teacher participants from the secondary school recall an almost immediate drop in student face-to-face interactions during recess, replaced instead with clusters of students 'chatting', playing music or playing games on their laptops. Primary teacher participants also recalled

observing similar behaviours within their student body. In some cases in the secondary school, these behaviours were carried into classrooms, impacting on lessons and distracting other students.

The significance of this finding is that it highlights that student perception and use of the laptops was very different from their teachers. Rosen (2010) cites these behaviours as being typical of the iGeneration, stating that members of this generation are defined by their technology and media use, their love of electronic communication and their increased need to multitask. Other researchers (Salajan, Schonwetter, & Cleghorn, 2009; Zickuhr, 2010) also suggest that generational differences, or more appropriately age-related interface issues exist. This difference in perception caused tensions in the teacher-student relationship to arise over what the function or purpose of the laptop was within the classroom context and led some secondary teachers to simply ban the use of laptops within some classrooms rather than find a way to resolve the issue.

Issues with existing local infrastructures were highlighted as being unable to cope with the added strain of the sudden emergence of such a large number of computers. Comments from teachers indicate that there appeared to be a general failure in ascertaining whether there were adequate systems or services in place to cope with the sudden influx of a large number of Internet-accessible laptops. Regular overloading of the high school's local area network (LAN) coupled with growing numbers of laptops that remained in need of repair further challenged teachers' attempts to implement the OLPC project. Feedback from one teacher revealed a constant string of issues with the slowing down or crashing of the local network as well as frequent interruptions to the flow of lessons by students who needed to go to the office to get their work printed or those who needed to see the Computing teacher for help with compatibility issues. Another teacher expressed difficulty in being able to maintain planned use of the laptops with so many requiring (but not receiving) repairs.

According to findings from the literature, poor technical support is one of the top barriers to ICT use in both primary and secondary schools (Pelgrum, 2001).

Baytak et al. (2011) claim that teachers often report insufficient technical support citing technical issues such as failing to connect with the Internet, network issues, printing problems or having to work with old computers as impedances to the natural flow of the lessons (of which ICT has been integrated into), thus increasing teacher frustration and lowering confidence levels in ICT. Continual streams of unresolved issues can significantly impact teachers' planned use of ICT, as teachers fear equipment failure will interfere with lessons (Becta, 2004).

The significance of this finding is that it signals that potential barriers existed prior to the implementation of the OLPC project, but they were not addressed. It also indicates that a lack of thorough consultation with stakeholders such as teachers, parents and local technician services resulted in tensions over who would maintain the laptops and would foot the bill, resulting in many laptops remaining broken and thus creating further barriers to the successful implementation of the project.

Overall most, if not all, of the findings from the teacher participant group highlighted a number of pre-existing barriers that were not dealt with prior to the integration of the OLPC project. While there were some barriers that could be directly attributed to teachers, a number of barriers remained outside the realm of teacher control.

Parent Responses: Opportunities and Challenges

The most interesting and indicative finding about the perceived impact of the laptops came from a parent participant who commented that the OLPC laptops had in some small way, made the 'tyranny of distance' seem less so. Niue's geographical isolation is a fact not lost on those who reside there and parents with children at NCEA level seemed acutely aware of how important it was that their children be able to access information. This focus on access to information is repeated a number of times in interviews with other parent participants. Whether their children were in the upper primary school or in the senior

secondary school, all parents expressed gratitude with regards the access that the OLPC project provided.

The significance of this finding appears to be that overall, the parent participants were aware of the capacity the laptops had in creating an all important information connection between Niue and the rest of the world.

The literature recognizes geographical isolation as a barrier for many Pacific Island Countries (PICs) like Niue (Guri-Rosenblit, 2009; Tsuchiya, 2012). Some commentators (Slaughter, 2009; Tsuchiya, 2012) argue that in our time, the measure of power is 'connectedness' where "only the connected will survive" and suggest any nation failing to be connected to a network will be left behind, unable to access information and falling behind in all spheres, including politics, economy and culture.

Since its inception in 2003, the Internet Users Society - Niue (IUSN) has always boasted supplying free and nationwide wireless access to the Internet. While this claim may be somewhat exaggerated, in regard to the Internet being available nationwide, Niue does have one of the highest Internet penetration levels per capita in the Pacific. This Internet access has generally been and for the most part, remains open (unmetered) access, meaning anyone with a Wi-Fi accessible device can access the Internet at particular spots around the island.

Findings from interviews revealed that parents considered the openness of the Wi-Fi network to be both a blessing and a curse. On one hand, having open access meant students/children could access the Internet with little added stress on or cost to parents. Apart from the cost of petrol for driving to a Wi-Fi 'hotspot' (if none was available within walking distance), there was no extra financial outlay required, as access was unmetered (free). Parent participants expressed (what could be considered) a feeling of relief, that their children were finally able to access fuller and more up to date information via the Internet. For example, one parent recalled how the library closure at the high school had meant that

prior to the arrival of the OLPC project, his oldest child (in particular) had to make do with using old, out-of-date encyclopedias.

On the other however, the open nature of the Internet access also meant the risk of exposing children to uncensored material and information. At the time of the rollout of the OLPC project, Niue's Wi-Fi system was relatively new and the number of machines accessing the network, relatively low. The influx of Internet-accessible laptops in the hands of extremely curious and information-hungry young people caused a significant shift in social behaviours. Being such a small and tight community, it was not long before reports of increased activity in and around pornographic and other objectionable sites, along with a substantial number of computer viruses, began to circulate. This issue however is not unique to this particular case or community. According to Livingstone and Brake (2009), young people's desire to connect using social media networks greatly increases the probability of them being exposed to pornography, violence and racially-charged content. Parent participants were unable to say with certainty what measures were taken to combat these issues, though some believed broad content filters were applied by IUSN in efforts to curb such behaviours. While parent participants continued to express their appreciation for the increased access to the Internet many continued to express concerns at the lack of content control.

Parents also raised further concerns regarding changes in their children's behaviour. Findings indicate that as time progressed from the implementation of the OLPC project, children began to spend increasing amounts of time interacting with their laptops and less time contributing to the home life (i.e. not doing chores) and the socio-cultural life of the island. In an interview with one parent, the participant recalled becoming annoyed with the amount of time her children were spending on their laptops. She also commented that her attempts to encourage them to get involved in the home and village life merely resulted in her children implying that the island way of life was from a bygone era. This finding highlights the extent to which the change in children's behaviour had begun to impact not just the education community by the wider community in

Niue as children began to withdraw from cultural activities and shun cultural knowledge.

The 'clash of cultures' that developed between parents and their children, was not so much over the laptops themselves, but with western ideas and activities the children had access to and had begun to adopt. Stanley (2003) and Moala et al. (1999) acknowledge this tension as one of the major barriers to the take up of ICT as many within the Pacific still perceive technology as having little relevance to traditional lifestyles of growing plantations, fishing and social control. Moala et al. (1999) also suggest that pacific traditions regard information as being something to guard and hide rather than share and publish. They also state that information is something that is passed down from the elders to the younger generations through the process of sacred rites. While many parent participants may have indicated belief of the importance of their children connecting with the outside world, this finding also indicates that parent participants at some level appear to have perceived the presence and influence of the laptops to be a threat to deep-seated cultural beliefs and customs.

Student Responses: Opportunities and Challenges

Feedback given by participants of the student participant groups was very honest and extremely insightful. As the students were the target audience of the OLPC laptop project, it proved interesting and insightful comparing their feedback to that of the teachers and the OLPC documents outlining the intentions of the project.

As with the teacher participant group, student participants considered the access to technology to be the greatest benefit to come from the OLPC project. Findings from focus group sessions indicate that students were desperate for access to any and all information; from school-related information through to online information about the latest trends in music, fashion and technology, as well as updates on social media networks on the whereabouts of friends and relatives overseas. Students openly admitted that their Internet searches were driven

more by a desire to keep up with their peers socially (in face-to-face discussions and interactions) rather than academically.

The significance of this finding is that it highlights the value that the student participants had placed on information and communication. Socially current and relevant information in particular, became the 'currency' used by the students in their online and face-to-face interactions; therefore much of their time was consumed with activities that could facilitate these interactions. As all of the student participants had either visited a Western country like New Zealand and/or had access to television at home, technology, though limited, was not foreign.

Much of the literature that focuses on young people and technology (Baytak, et al., 2011; Bucholtz, 2002; Lenhart, 2009) indicates that this behaviour or strong desire to connect with peers anytime and anywhere is becoming increasingly normal amongst young people who have grown up surrounded by or exposed to technology. Tapscott (2008) highlights characteristics such as the love of entertainment, the strong desire to collaborate (online and offline) and the freedom to choose, are what drive the way young people perceive and use technology. Therefore using technology for social progression is one of the most common use of digital technology (Zickuhr, 2010). This was certainly the case with the student participants in this research.

Feedback from the secondary school participants indicate however that the social aspect of the laptops quickly became a barrier to their learning. Findings from focus group sessions revealed that while participants enjoyed interacting socially via their laptops, the high level of distraction caused by frequent [social] use was affecting their ability to concentrate on their school work in class. Some students recalled making the deliberate choice not to take their computers with them into the classroom in efforts to minimise the distraction, however not all students were of the same mind thus other students continued to play music and games while in class without the teacher's knowledge or intervention. Interestingly though when the student participants were asked if they would

have wanted the laptops if they were purely educational (with no social application), the resounding response was “no”.

The significance of this finding is two-fold: for one, students independently became aware of the impact of the social effects of the laptops and made the personal choice to eliminate the distraction (by not using the laptops in class if they weren't necessary); and two, it verifies the finding that teachers had issues with controlling students use of the laptops in class.

The first of these points suggests a contradiction to current thinking and literature around young people and technology. Much of the literature sourced and reviewed for this research topic tends to argue that multi-tasking is a strength of the iGeneration and that using technology in education is the best (and sometimes only) way to connect with today's learner. Literature around students becoming aware of the distraction of multi-tasking however seem to be the gap in the current body of knowledge. Though there are those like Lee, Lin and Robertson (2012) however, who believe that multi-tasking interferes with knowledge acquisition as it puts too much of a load on learners working memory.

Distractions caused by the laptops may have just been the tipping point that led to many students losing interest in the laptops. Findings from focus group interviews indicate that students became highly frustrated with the laptops operating system (OS) being incompatible with the school network and home computers. The incompatibility issues meant students couldn't print or transfer files to Windows OS based computers. This finding is significant in that it signals the point at which the student participants might have disconnected from the laptop, or more precisely, perceived the laptop to no longer have any value or usefulness for them. As in the case with of teacher participants, the literature suggests that young people's level of technology adoption depends whether the device can do what the user wants it to do (Baytak, et al., 2011) and in this case of the OLPC laptops, the student participant's expectations were not met. The OLPC teacher documentation however, emphasises that the laptops were never

intended to be office productivity tools like Windows [OS] laptops, but were instead created to be learning tools to encourage hands on learning. This point demonstrates further the lack of understanding of the intentions of the OLPC project.

The feeling of unmet expectations led to another significant finding. Student participants (particularly the secondary school groups) expressed a certain level of annoyance at not being consulted before the laptops were distributed to the schools. According to one secondary school participant, facts about what the project aimed to achieve, or what the laptop could and couldn't do, were never properly presented to them. Others suggested that the idea of giving them out to individual students was misguided and it would have been more beneficial for everyone if they had just been given to the school as sets. This finding ties in with a number of Tapscotts (2008) norms of this generation such as the freedom to have a say in decisions that affect them directly and the integrity to admit and consider that there are others that could probably have benefitted from the laptops more than they did.

POST-OLPC REFLECTIONS

The findings from all three groups reflected a strong and common desire to be participants rather than just recipients, in the development of education on Niue. The literature reflects that foreign aid has long been done to the Pacific rather than being done with the Pacific. In other words, Pacific peoples have long endured what others think is good for them. Throughout all of the interviews participants expressed dissatisfaction at the lack of consultation.

For the teacher and parent participants, the feeling of undermined authority became evident as participants recalled the way in which the children were presented with the laptops. The OLPC principle of child ownership (of the laptop) deemed a basic right by the organisation and promoted strongly at the presentation of the laptops to the children, was not received well by many parents or teachers as it was seen as being in conflict with the hierarchical

nature of Niuean society and the basic rights of parents. As some children attempted to assert their 'right' to use the laptop whenever and however they felt, some parents and teachers attitudes toward the OLPC project became increasingly negative with some teachers taking to banning the use of the laptops in class. Feedback from participants indicates however that the tensions created over the issue of ownership could have been avoided had parents and teachers been involved in the consultation process from the outset.

Reflections from the primary student group also provided insight as to the extent to which the lack of consultation (with parents) had become an issue in the home. Feedback from the session with the primary focus group revealed issues uncharacteristic for children that young to have had considered. For instance, one child raised concerns about the amount of electricity (ergo the cost) the laptops used, while another believed that the Palagis' money was being wasted, as the laptops were being misused, broken or dumped. These comments taken on by the children indicate a strong sense of dissatisfaction would have been expressed often in and around the home.

In failing to discuss the project with prospective recipients from the outset, the OLPC project may have inadvertently caused teacher, parent and student attitudes to become barriers to the successful implementation of the project, by appearing not to value their input. If consultation did in fact take place, then it was likely to have been done with a small group of individuals not directly impacted by the presence of the laptops, thus compromising to the freedom and democratic processes of recipients (Anderson, 2011).

CONCLUSION

This chapter has provided a discussion of the research study findings with link to the relevant literature base in Chapter Two. The findings revealed that overall the Niue education community and indeed the Niue community as a whole, were underprepared for a project of this scale. The findings also reveal that for many participants, the number of challenges associated with the OLPC project far

outnumbered the benefits, thus causing many to abandon the laptops.

The following chapter draws conclusions from this research, discusses the limitations of this study and provides recommendations for future research.

CHAPTER 6

CONCLUSIONS AND RECOMMENDATIONS

INTRODUCTION

This chapter presents and discusses the main findings of this research as well as identifying and demonstrating the implications of these findings. Limitations of the research have also been considered along with recommendations for future work.

AN OVERVIEW OF THE RESEARCH STUDY

The overall aim of this research was to examine the impact of canvassing an entire education population with digital technology. The study objective was encapsulated in three research questions, which have formed the basis for this study:

1. What impact did the OLPC project have on teaching practice?
 - a. Opportunities.
 - b. Challenges.
2. What impact did the OLPC project have on student learning?
 - a. Opportunities.
 - b. Challenges.
3. What are the implications of the OLPC project implementation for the future use of technology in the Niue?

CONCLUSIONS FROM MAJOR FINDINGS

1 - What impact did the OLPC project have on teaching practice?

Opportunities

In general, findings indicate the greatest opportunities to be an increase in confidence and knowledge with technology, as well as gaining access to the Internet. Teachers were able to access a greater range of resources to use with their students as well as diversify their lessons using the laptops. One teacher in particular rethought their practice in light of the new technology.

Challenges

Findings indicate that teachers faced a number of challenges while attempting to integrate the laptops into their teaching practice. In all but one instance, teacher practice remained relatively unaltered by the introduction of the OLPC laptops due to a number of significant first and second order barriers (Brickner, 1995; Ertmer, 2005).

For many secondary teachers, the laptops were limited in their application in certain subjects, thus many secondary teachers simply relegated them to being used for locating information from the Internet. Technical issues between new and existing technologies such as printing issues and poor network capacity meant that teachers did not feel confident that planned use of the laptops in class would be fruitful.

Further challenges in regard to ownership, as well as unforeseen consequences such as changes in student behaviour hampered teachers efforts to incorporate the OLPC laptops into the classroom as teachers were never certain that all students would bring the laptop to school, or use it in a manner that supported learning.

2 – What impact did the OLPC project have on student learning?

Opportunities

In general, both secondary and primary student groups cited access to information as the biggest opportunity afforded by the laptops, with further access to other more compatible technology being cited by secondary school participants as a welcomed spin-off.

Findings indicate that all student participants perceived the greatest benefit of having their own laptops was the ability to access the Internet and retrieve information for schoolwork or NCEA assessments (a task previously hampered due to the high school library being closed for renovations).

Findings from primary teachers interviews also indicate that students appeared more animated when engaged with the laptops during unstructured class time and were keen on exploring the laptops on their own. Anecdotal evidence from parents also highlighted long periods of increased interest while engaging with the laptops in regards what was of interest to them at the time.

Challenges

Findings indicate the use of laptops for non-educational purposes became a distraction, as did changes in student attitudes and social behaviours due to the introduction of the OLPC laptops. Primary school students remarked that they and their peers became distracted by the games and music that older siblings or cousins had loaded onto their machines. Older primary participants also admitted spending more time attempting to access the [schools] Internet to download games and music than they did to find information for projects or class work. Secondary school students also shared similar challenges, however findings indicate that this particular group found separating their social interests from their school activities to be a considerable challenge. Findings indicate however that these challenges began to diminish as technical issues with the laptops increased.

3 – What are the implications of the OLPC project implementation for the future use of technology in the Niue?

Findings from the research indicate that while the OLPC project itself did not last more than a couple of years, there were a number of flow on effects both positive and negative, that came from its introduction into the Niue education community.

Findings show that a number of practical benefits (Anderson, 2011) for groups and individuals have begun to occur as direct results of the OLPC project. The expansion of the wireless network to accommodate the influx of wireless devices continued to benefit the high school even after the OLPC laptops had gone. Senior secondary students also recall being able to procure (more compatible) Windows OS-based laptops from their parents due to having proven the usefulness and importance of the accessing the Internet for relevant and up to date assessment-based information. These same students access the Internet using the aforementioned wireless network.

Findings also indicated a shift in thinking by a number of people within the Niue education community. Overall there appeared to be an increased awareness of the importance of being connected to an external information source, especially for a geographically isolated community such as Niue (Tsuchiya, 2012). While there are concerns over the social and cultural ramifications of bringing the outside world in (Williams, 2005), there is also an appreciation of the need to develop and compete in a global market.

Recommendations

Based on the findings from this research, the following recommendations have been made:

1. It is recommended that regular professional development specifically targeting the development and growth of technology-supported-

pedagogy be implemented in the primary and secondary school sectors. This will assist teachers to be able to tailor the integration of technology into their teaching practice and target student achievement.

2. It is recommended that stakeholders from the teaching, student and parent bodies as well as the private sector, be included in consultation processes that directly affect them.
3. It is recommended that web content be developed in the Niuean language focusing on social and cultural practices, ideas and values relevant to and supportive of the Niue culture.

Limitations of this study

The special features of case study research that provide the rationale for its selection also present certain limitations in its usage (Merriam, 1998). This study is unique not only due to the fact that it is based solely on the island nation of Niue, but also due to the fact that it is the first nation in the world that the One Laptop Per Child (OLPC) project managed to achieve their goal of 'digital saturation' in regard to canvassing an entire education population with OLPC laptops.

The number and selection of participants for this study can also be considered a limitation. Niue's general population is significantly smaller than most Pacific Island countries with only 1,269 (July 2012 est.) residents, of which the Niue education community makes up a very small percentage. The choice of a qualitative approach using three different methods however has helped to minimise the weaknesses from a small sample size.

Prospective participants were identified using the researcher's own network and knowledge of the education community and participation was gained due to pre-existing community connections. While this might be considered in some non-Pasifika communities as being a limiting factor in regards to the quality of data

collected, acquiring participation without any link or rapport with the Niue community would have proved extremely difficult.

Suggestions for further research

This study highlighted a number of gaps in the literature regarding the wider impact of implementing computer technology into Pacific Island countries. Therefore it is suggested that research be conducted on the impact of computer technology on the socio-cultural landscape of the Niuean community. In particular focusing on the impact of accessing information via the Internet, on the cultural practices of disseminating information.

This study also highlighted a gap in the literature regarding the student perspective of the use of computer technology in the teaching and learning process. Therefore it is suggested that further research be conducted into the place of computer technology in learning from the perspective of the student.

Conclusion.

This final chapter has revisited the overall intention of the research and has presented a conclusion of the major findings in light of the specific research questions. Recommendations for further action and research have been made based on those conclusions. Limitations of this research have also been highlighted and discussed.

REFERENCES

- Amituanai-Toloa, M. (2009). What is a Pasifika research methodology? The 'tupua' in the winds of change. *Pacific-Asian Education Journal*, 21(2), 45-53.
- Anae, M., Coxon, E., Mara, D., Wendt-Samu, T., & Finau, C. (2001). *Pasifika Education Research Guidelines*: Ministry of Education.
- Anderson, G. L. (1989). Critical Ethnography in Education: Origins, Current Status, and New Directions. *Review of Educational Research*, 59(3), 249-270.
- Anderson, T. (2011). Aid: is it worth it? *Timor Leste Studies Association*(September 2011).
- Auerbach, C. F., & Silverstein, L. B. (2003). *Qualitative data: an introduction to coding and analysis*. New York NYUPress.
- Baba, T. L., Mahina, O., Willams, N., & Nabobo-Baba, U. (2004). *Researching Pacific and indigenous peoples: Issues and perspectives*. Auckland: Centre for Pacific Studies: The University of Auckland.
- Baser, V. G., Mutlu, N., Sendurur, P., & Sendurur, E. (2012). PERCEPTIONS OF STUDENTS ABOUT TECHNOLOGY INTEGRATION. *e-Journal of New World Sciences Academy*, 7(2), 591-598.
- Basit, T. N. (2003). Manual or electronic? The role of coding in qualitative data analysis. *Educational Research*, 45(2), 143-154.
- Bates, T. (2001). The Continuing Evolution of ICT Capacity. In G. Farrell (Ed.), *The Changing Face of Virtual Education*. Vancouver B.C: Commonwealth of Learning.
- Bayne, S., & Ross, J. (2007). *The 'digital native' and 'digital immigrant': a dangerous opposition*. Paper presented at the Annual Conference of the Society for Research into Higher Education (SHRE).
- Baytak, A., Tarman, B., & Ayas, C. (2011). Experiencing technology integration in education: children's perceptions. *International Electronic Journal of Elementary Education*, 3(2), 139-151.
- BECTA, (2004). *A Review of the Research Literature on Barriers to the Uptake of ICT by Teachers*: British Educational Communications and Technology Agency
- Bennett, S., Maton, K., & Kervin, L. (2008). The "digital natives" debate: A critical review of the evidence. *British Journal of Educational Technology*, 39(5), 775-786.

- Bingimlas, K. A. (2009). Barriers to the Successful Integration of ICT in Teaching and Learning Environments: A Review of the Literature. *Eurasia Journal of Mathematics, Science & Technology Education*, 5(3), 235-245.
- Black, R., & Atkinson, J. (2007). Addressing the Digital Divide in Rural Australia Retrieved 8 September, 2012
- Boone, P. (1996). Politics and the Effectiveness of Foreign Aid. *European Economic Review*, 40(2), 289-329.
- Brand, G. A. (1997). Training Teachers for Using Technology. *Journal of Staff Development*, 19(1).
- Brickner, D. (1995). The effects of first and second order barriers to change on the degree and nature of computer usage of secondary mathematics teachers: A case study. Purdue University.
- Brown, C., & Czerniewicz, L. (2000). Debunking the 'digital native': beyond digital apartheid, towards digital democracy. *Journal of Computer Assisted Learning*, 26(5), 357-369.
- Bryman, A. (2008). *Social research methods* (3rd ed.). New York: Oxford University Press.
- Buabeng-Andoh, C. (2012). Factors influencing teachers' adoption and integration of information and communication technology into teaching: A review of the literature. *International Journal of Education and Development using Information and Communication Technology*, 8(1).
- Bucholtz, M. (2002). Youth and Cultural Practice. *Annual Reviews Anthropology*, 31, 525 - 552.
- Buzzard, C., Crittenden, V. L., Crittenden, W. F., & McCarty, P. The Use of Digital Technologies in the Classroom: A Teaching and Learning Perspective. *Journal of Marketing Education*, 33(2), 131-139.
- Campbell, I. C. (1992). A Historical Perspective on Aid and Dependency: The Example of Tonga. *Pacific Studies*, 15(3).
- Chapman, M. T. (1976). *The decolonisation of Niue*. Wellington: Victoria University Press and New Zealand Institute of International Affairs.
- Chin, G. (2012). Exit Strategy and Managing Transformation - The Why, When and How Of Aid Exits Retrieved October 2, 2012, from <http://www.cigionline.org/print/publications/2012/9/exit-strategy-and-managing-transformation-%E2%80%94-why-when-and-how-of-aid-exits>
- Cicourel, A. V. (1974) *Cognitive Sociology*, Harmondsworth, Penguin.
- Cohen, L., Manion, L. & Morrison, K. (2007). *Research methods in education* (6 ed., pp. 133-161). Abingdon: Routledge.
- Cox, M., Preston, C., & Cox, K. (1999). *What Factors Support or Prevent Teachers from Using ICT in their Classrooms?* Paper presented at the British Educational Research Association Annual Conference.

- Creswell, J. W. (2002). *Research design: Qualitative, quantitative and mixed methods approaches*. Thousand Oaks: Sage Publications.
- Crotty, M. (1998). *The foundations of social research: Meaning and perspective in the research process*. Crows Nest: Allen & Unwin.
- Davidson, C., & Tolich, M. (2003). *Social science research in New Zealand. Many paths to understanding* (2nd ed.). Auckland, New Zealand: Prentice Hall.
- Davies, D., & Dodd, J. (2002). Qualitative Research and the Question of Rigor. *Qualitative Health Research*, 12(2), 279-289.
- Denzin, N. K., & Lincoln, Y. S. (2000). *Handbook of qualitative research*. Thousand Oaks, CA : Sage Publications.
- Downes, T., & Niess, M. (2002). *Models of Teacher Development for the Integration of ICT in the Classroom*. Paper presented at the Proceedings of the IFIP TC3 Seventh IFIP World Conference on Networking the Learner: Computers in Education.
- Dyson, L. E., Hendriks, M., & Grant, S. (2009). *Information Technology and Indigenous people*. Hershey, USA: InfoSci.
- Engels, J. E. (2010). *Aid project exit strategies: building strong sustainable institutions*. Unpublished PhD Thesis, University of Melbourne, Melbourne.
- Ertmer, P. A. (2005). Teacher Pedagogical Beliefs: The Final Frontier in Our Quest for Technology Integration? *Educational Technology Research & Development*, 53(4), 25-39.
- Evans, J. (n.d). Hard digital realities: Teching with technology in the Pacific Islands, 2012, from pcf4.dec.uwi.edu/viewpaper.php?id=192&print=1
- Fontana, A., & Frey, J. (2005). The interview: From neutral stance to political involvement. In N. K. Denzin & Y. S. Lincoln (Eds.), *The Sage handbook of qualitative research* (3rd ed.). Thousand Oaks: Sage.
- Foster, S., & Borkowski, A. (2004). Who coined the term? Origin of 'digital divide' escapes even the experts. Retrieved September 7, 2012
- Gegeo, D. W. (2008). *Shifting paradigms in Pacific scholarship: Toward island-based methodologies, epistemologies and pedagogies*. Paper presented at the Building Pacific Research Capacity and Scholarship Forum 2008.
- Gill T. 2008. Space-oriented children's policy: creating child-friendly communities to improve children's well-being. *Children and Society* 22: 136-142.
- Guba, E. G. & Lincoln, Y. S. (1981) *Effective evaluation*. San Francisco: Jossey Bass.
- Gupta, R. (2007). ICTs and indigenous people. *i4d*(September 2007).
- Guri-Rosenblit, S. (2009). Distance Education in the Digital Age: Common Misconceptions and Challenging Tasks. *Journal of Distance Education*, 23(2), 105-122.

- Hartman, J., Moskal, P., & Dziuban, C. (2005). Preparing the Academy of Today for the Learner of Tomorrow. In D. Oblinger & J. L. Oblinger (Eds.), *Educating the Net Generation*: Educause.
- Hau'ofa, E. (1988). *Oral traditions and writing*. Paper presented at the Commonwealth Institute, Pacific Writers' Conference
- Helsper, E. J., & Eynon, R. (2009). Digital natives: where is the evidence? *British Educational Research Journal*, 36(3), 503-520.
- Helu-Thaman, K. (2003). Decolonizing Pacific Studies: Indigenous Perspectives, Knowledge, and Wisdom in Higher Education. *The Contemporary Pacific*, 15(1), 1-17.
- Henderson, R. (2011). Classroom pedagogies, digital literacies and the home-school digital divide. *International Journal of Pedagogies & Learning*, 6(2), 152-161.
- Hennessey, S., Ruthven, K., & Brindley, S. (2005). Teacher perspectives on integrating ICT into subject teaching: commitment, constraints, caution, and change. *Journal of Curriculum Studies*, 37(2), 155 - 192.
- Herring, S. C. (Ed.). (2008). *Questioning the Generational Divide: Technology Exoticism and Adult Constructions of Online Youth Identity*. Cambridge, MA: The MIT Press.
- Hew, K. F., & Brush, T. (2007). Integrating technology into K-12 teaching and learning: current knowledge gaps and recommendations for future research. *Educational Technology Research & Development*, 55(3), 223-252.
- Honey, M., & Moeller, B. (1990). *Teachers' Beliefs and Technology Integration: Different Values, Different Understandings*. New York, NY.: Center for Technology in Education.
- Howe, N., & Strauss, W. (2000). *Millennials Rising: The Next Greatest Generation*. New York: Vintage Books.
- Hughes, H. (2003). Aid Has Failed the Pacific. *Pacific Economic Bulletin*, 25(3), 232-234.
- Hughes, J. (2005). The Role of Teacher Knowledge and Learning Experiences in Forming Technology-Integrated Pedagogy. *Journal of Technology and Teacher Education*, 13(2), 277-302.
- Iding, M., & Skouge, J. (2005). Educational Technology and the World Wide Web in the Pacific Islands. *TechTrends: Linking Research & Practice to Improve Learning*, 49(1), 14-18.
- Internet Users Society Niue. (2011). Retrieved May 12, 2012, from <http://internetniue.nu/fascinating-niue/big-internet-access/2011/03/>
- Joppe, M. (2000). The research process, from <http://www.uoguelph.ca/htm/MJResearch/ResearchProcess/home.html>
- Judson, E. (2006). How Teachers Integrate Technology and Their Beliefs About Learning: Is There a Connection? *Journal of Technology and Teacher Education*, 14(3), 581-597.

- Keeves, J. P. (1997). Methods and processes in educational research. In J. P. Keeves (Ed.), *Educational research, methodology, and measurement: An international handbook* (pp. 277-285). Pergamon: Oxford.
- Kennedy, G., Dalgarno, B., Bennet, S., Judd, T., Gray, K., & Chang, R. (2008). *Immigrants and natives: Investigating differences between staff and students' use of technology*. Paper presented at the ascilite, Melbourne.
- Kenny, W. R. & Grotelueschen, A. D. (1980) Making a case for case study. Occasional paper, Office for the Study of Continuing Education. Urbana-Campaign. College of Education, University of Illinois.
- Koehler, M. J., Mishra, P., & Yahya, K. (2007). Tracing the development of teacher knowledge in a design seminar: Integrating content, pedagogy and technology. *Computers & Education*, 49(3), 740-762.
- Kong, S. C., Ogata, H., Arnseth, H. C., Chan, C. K. K., Hirashima, T., Klett, F., et al. (2009). *Proceedings of the 17th International Conference on Computers in Education [CDROM]*. Paper presented at the Asia-Pacific Society for Computers in Education., Hong Kong.
- Lee, J., Lin, L., & Robertson, T. (2012). The impact of media multitasking on learning. *Learning, Media and Technology*, 37(1), 94-104.
- Lenhart, A. (2009). *Teens and Social Media. An Overview*: New York Department of Health & Mental Hygiene.
- Lincoln, Y. S. & Guba, E. G. (2005). Paradigmatic controversies, contradictions, and emerging confluences. In N. K. Denzin & Y. S. Lincoln (Eds.), *The sage handbook of qualitative research* (pp. 191-215). Thousand Oaks: Sage Publications
- Livingstone, S., & Brake, D. R. (2009). On the Rapid Rise of Social Networking Sites: New Findings and Policy Implications. *Children & Society*, 24(1), 75-83.
- Lloyd, M., & Albion, P. (2009). Altered Geometry: A New Angle on Teacher Technophobia. *Journal of Technology and Teacher Education*, 17(1), 65-84.
- Lloyd, R., & Hellwig, O. (2000). Barriers to the take-up of new technology. Retrieved Sept 1, 2012
- Lodico, M. G., Spaulding, D. T., & Voegtle, K. H. (2006). *Methods in educational research: from theory to practice*. San Francisco: Jossey-Bass.
- Martineau, P. (2009). Teaching with Technology. *Education Digest*, 74(7), 14-18.
- McKenzie, J. (2007). Digital Nativism, Digital Delusions and Digital Deprivation. *Educational Technology Journal*, 17(2).
- McNeely, B. (2005). Using Technology as a Learning Tool, Not Just a Cool New Thing. In D. G. Oblinger & J. L. Oblinger (Eds.), *Educating the Net Generation*: Educause.
- Merriam, S. B. (1998). *Qualitative research and case study application in education*. San Francisco: John Wiley & Sons.

- Mishra, P. & Koehler, M. (2006). Technological pedagogical content knowledge: A framework for teacher knowledge. *Teachers College Record*, 108(6), 1017-1054.
<http://modallearners.wikis.birmingham.k12.mi.us/file/view/mishra-koehler-tcr2006.pdf>
- Moala, J., Rokovada, J., Kuridrani, L., Nacanitaba, S., Tuimoala, S., Tabe, et al. (1999). *The Challenges of Information Technology in the Pacific*. University of the South Pacific.
- Nielsen Company. (2009). *How Teens Use Media*. Retrieved October 4, 2012 from <http://www.nielsen.com/us/en/reports/2009/How-Teens-Use-Media.html>.
- Niue, G. o. (1982). *Niue: a history of the island*. Suva: Institute of Pacific Studies, University of the South Pacific.
- Nosa, V. (2009). The impact of transnationalism on Niue. In H. Lee & S. T. Francis (Eds.), *Migration and Transnationalism. Pacific perspectives*. Canberra: ANU E Press.
- Oblinger, D., & Oblinger, J. L. (2005). Is it Age Or IT: First Steps Towards Understanding the Net Generation. In D. Oblinger & J. L. Oblinger (Eds.), *Educating the Net Generation*.
- OECD (2001). *Understanding the Digital Divide*: OECD.
- Olutimayin, J. (2002). Adopting Modern Information Technology in the South Pacific: A Process of Development, Preservation or Underdevelopment of the Culture? *Electronic Journal of Information Systems in Developing Countries*, 9(3), 1-12.
- OLPC (n.d.). *One Laptop Per Child*. Retrieved November 12, 2012, from <http://laptop.org/en/vision/mission/index.shtml>
- Palfrey, J., & Gasser, U. (2008). *Born Digital : Understanding the First Generation of Digital Natives* Available from <http://unitec.ebilib.com.au/patron/FullRecord.aspx?p=537915>
- Papert, S. (1980). *Mindstorms. Children, Computers and Powerful Ideas*. New York: Basic books.
- Parr, J. (2000). Extending Educational Computing: The Case of Extensive Teacher Development and Support. *Journal of Research on Computing in Education*, 31(3), 280 - 291.
- Pavlov, V., & Sugden, C. (2006). Aid and Growth in the Pacific Islands. *Asian-Pacific Economic Literature*, 20(2), 38-55.
- Pelgrum, W. J. (2001). Obstacles to the integration of ICT in education: results from a world-wide educational assessment. *Computers and Education*, 37, 163-178.
- Poling, G., & Larsen, E. (2012). The Pacific's New Market: Trading Aid for Votes. *Pacific Partners Outlook*, II(2).

- Prensky, M. (2001). Digital Natives, Digital Immigrants. *On The Horizon*, 9(5), 1-6.
- Raturi, S., Hogan, R., & Thaman, K. H. (2011). Learners' access to tools and experience with technology at the University of the South Pacific: Readiness for e-learning. *Australasian Journal of Educational Technology*, 27(3), 411-427.
- Ravaga, V., Evans, J., Faasalaina, T., & Osbourne, J. (2001). From Mouldy Discs to Online Fix. In D. Murphy, R. Walker & G. Webb (Eds.), *Online Learning And Teaching With Technology: Case Studies, Experience And Practice* (pp. 99-106). London: Kogan Page.
- Rosen, L. (2010). Welcome to the iGeneration. *Psychology Today*. Retrieved from <http://www.psychologytoday.com/blog/rewired-the-psychology-technology/201003/welcome-the-igeneration>
- Roy, L., & Raitt, D. (2003). The impact of IT on indigenous peoples. *The Electronic Library*, 21(5), 411-413.
- Romeo, G. I. (2006). Engage, empower, enable: Developing a shared vision for technology in education. In D. Hung & M. S. Khine, *Engaged learning with emerging technologies* (pp. 149-175) Dordrecht, The Netherlands: Springer.
- Romeo, G., Lloyd, M., & Downes, T. (2012). Teaching Teachers for the Future (TTF): Building the ICT in education capacity of the next generation of teachers in Australia. *Australasian Journal of Educational Technology*, 28(6), 949-964.
- Sachs, Jeffrey (2001) Macroeconomics and Health; Investing in Health for Economic Development, World Health Organization, Geneva, online at: <http://whqlibdoc.who.int/publications/2001/924154550x.pdf>
- Salajan, F., Schonwetter, D., & Cleghorn, B. (2009). Is Generational Digital-Divide a Myth? A Comparison of Student and Faculty Attitudes Toward Digital Learning Technologies. *Proceedings of the International Conference on e-Learning*, 450-458.
- Sahay, R. (2006). *The Causes and Trends of the Digital Divide*. London School of Economics, London.
- Schaaf, K. M.-, & Hudson, M. (2009). *Negotiating space for indigenous theorising in Pacific mental health and addictions*.
- Schoepp, K. (2005). Barriers to Technology Integration in a Technology-Rich Environment. *Learning and Teaching in Higher Education: Gulf Perspectives*, 2. Retrieved from www.zu.ac.ae/lthe
- Schutz, Alfred (1962): *The Problem of Social Reality: Collected Papers I*. The Hague: Martinus Nijhoff.
- Schwandt, T., & Burgon, H. (2006). Evaluation and the study of the lived experience. In Shaw, I., Greene, J., & Mark, M.(Eds), *The Sage handbook of evaluation*. London: Sage
- Scott, D. (2005). Key ideas in educational research Retrieved from Ebrary database.

- Slaughter, A.-M. (2009). America's Edge: Power in the Networked Century. *Foreign Affairs*, 88(1).
- Stanley, L. D. (2003). Beyond access: Psychosocial barriers to computer literacy. *The Information Society*, 19(10), 407-416.
- Statistics NZ. (2004). The Digital Divide. Retrieved October 4, 2012 from http://www.stats.govt.nz/browse_for_stats/industry_sectors/information_technology_and_communications/digital-divide.aspx
- Stutchbury, K., & Fox, A. (2009). Ethics in educational research: introducing a methodological tool for effective ethical analysis. *Cambridge Journal of Education*, 39(4), 489-504.
- Tamasese, T. K., Parsons, T. L., Sullivan, G., & Waldergrave, C. (2012). *A qualitative study into Pacific perspectives on cultural obligations and volunteering*.
- Tapscott, D. (2008). *Meet the Net Gen Grown Up Digital: How the Net Generation is Changing* (pp. 384): McGraw- Hill.
- Tsolakidis, C. (2004). *ICT in Education: The dawn of an Era or the Development of an Accessory?* Paper presented at the International Symposium on Advanced Technologies in Education.
- Tuhega, L. (1977). Land tenure in Niue. In R. C. S Kalauni, L Tuhega, N Douglas, P Pihigia, G Leonard, E Lipitua (Ed.), *Land tenure in Niue*. Suva: Fiji Times & Herald Ltd.
- Tunca, B. (2002). *Barriers in Using Technology*. Paper presented at the World Conference on Educational Multimedia, Hypermedia and Telecommunications 2002. from <http://www.editlib.org/p/9914>
- Tsuchiya, M. (2012). *Digital Divides in Pacific Island Countries: Possibility of Submarine Cable Installation for Palau*: Keio University.
- Underwood, J. D. M. (2007). Rethinking the Digital Divide: impacts on student-tutor relationships. *European Journal of Education*, 42(2), 213-222.
- Vaha, K. (2005). Education in Niue Retrieved 24 March, 2012, from <http://www.spc.int/prism/Country/NU/stats/Social/Education/Education.htm>
- Vaha, K. (2010). *Niue Population Estimate*. from www.spc.int/prism/country/nu/stats.
- Vaioleti, T. M. (2003). *Talanoa research methodology: A developing position on pacific research*. Paper presented at the Pacific Research Education Symposium.
- Vaioleti, T. M. (2006). TALANOA RESEARCH METHODOLOGY: A DEVELOPING POSITION ON PACIFIC RESEARCH. *Waikato Journal of Education*, 12, 21-34.
- Vaka'uta, C. F. K. (2012). *Cyberspace, place, identity & relationships: Are we digitizing the Va?* Paper presented at the Interbational Conference on ICT & Oceanian Cultures.

- Warschauer, M. (2003). *Technology and social inclusion: Rethinking the digital divide*. Cambridge: MIT Press.
- Whittaker, Z. (2010). Defining the 'iGeneration': Not just a bunch of geeky kids. *ZDNet* Retrieved October 2, 2012
- Wilkinson, T. M. (2001). The core ideas of research ethics. In M. Tolich (Ed.), *Research ethics in Aotearoa New Zealand* (pp. 13-24). Auckland: Longman.
- Williams, E. B. (2005). *Beyond Reasonable Doubt: Practising Law Virtually Only a Click Away*. Paper presented at the 7th Conference on Computerisation of Law via the Internet.
- Wolff, L., & MacKinnon, S. (2002). What is the Digital Divide? *International Journal of Technologies for the Advancement of Knowledge and Learning*, July - September 2002.
- Yang, Y.-T. C., & Wu, W.-C. I. (2012). Digital storytelling for enhancing student academic achievement, critical thinking, and learning motivation: A year-long experimental study. *Computers & Education*, 59(2), 339-352.
- Yin, R. K. (2003). *Case Study Research - Design and Methods*. Thousand Oaks, London, New Dehli: Sage Publications.
- Zickuhr, K. (2010). *Generations 2010*. Washington, D. C: Pew Research Centre.

PARENT INFORMATION SHEET

Participant Information Sheet For A Study Examining The Impact Of The OLPC Project On The Niue Education Communities

Researcher: *Lynette Hay - Department of Education, Unitec, Auckland.*

Fakaalofa atu.

I am a Masters student in Education at Unitec in Auckland. As part of this degree I am undertaking a research project leading to a thesis. The project I am undertaking is examining the impact of the recent implementation of digital technologies (laptops) on the education communities in Niue. The Institution requires that ethics approval be obtained for research involving human participants.

I am inviting parents of children who attended either Niue Primary School or Niue High School at the time of the implementation of the OLPC project to participate in this study. Participants will be interviewed individually about any changes they might have noticed in their child's learning behaviour during and after each child receiving a laptop via the OLPC project. It is envisaged that each interview will last approximately half an hour.

Responses collected from the interviews will form the basis of my research project and will be put into a written report on an anonymous basis. It will not be possible for you to be identified personally. All material collected will be kept confidential. No other person besides my supervisor, Dr Mary Panko, and I will see the interview transcripts.

The thesis will be submitted for marking to the Department of Education and deposited in the Unitec Library.

Any data collected from the project will be held in secure storage then destroyed at the end of the regulated 5-year period.

If you have any questions or would like to receive further information about the project, please contact me at niuhtayan@ihug.co.nz or my supervisor, Dr Mary Panko, at the Department of Education, Unitec, mpanko@unitec.ac.nz.

Fakaaue lahi mahaki.

Lynette Hay.

UREC REGISTRATION NUMBER: 2010-1121

This study has been approved by the Unitec Research Ethics Committee from 10 Feb 2010 to 30 Dec 2012. If you have any complaints or reservations about the ethical conduct of this research, you may contact the Committee through the UREC Secretary (ph: +64 9 815-4321 ext 7248). Any issues you raise will be treated in confidence and investigated fully, and you will be informed of the outcome.

STUDENT INFORMATION SHEET

Participant Information Sheet For A Study Examining The Impact Of The OLPC Project On The Niue Education Communities

Researcher: *Lynette Hay – Department of Education, Unitec, Auckland.*

Fakaalofa atu.

I am a Masters student in Education at Unitec in Auckland. As part of this degree I am undertaking a research project leading to a thesis. The project I am undertaking is examining the impact of the recent implementation of digital technologies (laptops) on the education communities in Niue. The Institution requires that ethics approval be obtained for research involving human participants.

I am inviting students who attended either Niue Primary School (Y4-6) or Niue High School at the time of the implementation of the OLPC project to participate in this study. Participants will be interviewed via focus groups regarding their perspectives on each child receiving a laptop via the OLPC project. It is envisaged that the focus group sessions will last approximately one hour.

Responses collected from the focus group sessions will form the basis of my research project and will be put into a written report on an anonymous basis. It will not be possible for your child to be identified personally. All material collected will be kept confidential. No other person besides my supervisor, Dr Mary Panko, and I will see the interview transcripts.

The thesis will be submitted for marking to the Department of Education and deposited in the Unitec Library.

Any data collected from the project will be held in secure storage then destroyed at the end of the regulated 5-year period.

If you have any questions or would like to receive further information about the project, please contact me at niuhayan@ihug.co.nz or my supervisor, Dr Mary Panko, at the Department of Education, Unitec, mpanko@unitec.ac.nz.

Fakaaue lahi mahaki.

Lynette Hay.

UREC REGISTRATION NUMBER: 2010-1121

This study has been approved by the Unitec Research Ethics Committee from 10 Feb 2010 to 30 Dec 2012. If you have any complaints or reservations about the ethical conduct of this research, you may contact the Committee through the UREC Secretary (ph: +64 9 815-4321 ext 7248). Any issues you raise will be treated in confidence and investigated fully, and you will be informed of the outcome.

TEACHER INFORMATION SHEET

Participant Information Sheet For A Study Examining The Impact Of The OLPC Project On The Niue Education Communities

Researcher: *Lynette Hay - Department of Education, Unitec, Auckland.*

Fakaalofa atu.

I am a Masters student in Education at Unitec in Auckland. As part of this degree I am undertaking a research project leading to a thesis. The project I am undertaking is examining the impact of the recent implementation of digital technologies (laptops) on the education communities in Niue. The Institution requires that ethics approval be obtained for research involving human participants.

I am inviting teachers who were teaching at the time of and directly after the implementation of the OLPC project to participate in this study. Participants will be interviewed individually about their teaching practice pre and post implementation of the OLPC project. It is envisaged that each interview will last approximately half an hour.

Responses collected from the interviews will form the basis of my research project and will be put into a written report on an anonymous basis. It will not be possible for you to be identified personally. All material collected will be kept confidential. No other person besides my supervisor, Dr Mary Panko, and I will see the interview transcripts.

The thesis will be submitted for marking to the Department of Education and deposited in the Unitec Library.

Any data collected from the project will be held in secure storage then destroyed at the end of the regulated 5-year period.

If you have any questions or would like to receive further information about the project, please contact me at niuhayan@ihug.co.nz or my supervisor, Dr Mary Panko, at the Department of Education, Unitec, mpanko@unitec.ac.nz.

Fakaaue lahi mahaki.

Lynette Hay.

UREC REGISTRATION NUMBER: 2010-1121

This study has been approved by the Unitec Research Ethics Committee from 10 Feb 2010 to 30 Dec 2012. If you have any complaints or reservations about the ethical conduct of this research, you may contact the Committee through the UREC Secretary (ph: +64 9 815-4321 ext 7248). Any issues you raise will be treated in confidence and investigated fully, and you will be informed of the outcome.

CONSENT TO PARTICIPATION IN RESEARCH

Title of project:

“Coconut Wireless” – Examining the Impact of the One Laptop Per Child Project on the Niue Education Community: A Case Study.

- I have been given and have understood an explanation of this research project. I have had an opportunity to ask questions and have them answered to my satisfaction.
- I understand that any information I provide will be kept confidential to the researcher, the supervisor and the person who transcribes the recordings of our interview. I also understand that the published results will not use my name and that no opinions will be attributed to me in any way that will identify me.
- I understand that I will have the opportunity to check the transcripts of the interview before publication (only where applicable).
- I understand that the data I provide will not be used for any other purpose or released to others without my written consent.
- I agree to take part in this research.

Signed:

Name of participant (Please print clearly):

Date: