CELL PHONES IN NEW ZEALAND SECONDARY SCHOOLS: BOON, BANNED OR BIASED

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In this qualitative research study conducted in twelve New Zealand secondary schools data was gathered on policy formation on a range of issues including: cell phone usage at school; mobile technology incorporated into learning; staff development; curriculum development; assessment, school and class management; and registration and enrolment. Participants included: school principals; deans; heads of department; guidance officers; teachers; and prior students. Main findings from this study suggest that: there is limited use of mobile technologies for school-related learning, training and management activities; there exists a complex array of differing responses from school staff ranging from those who classify themselves as 'digital dinosaurs' to 'as-if natives; and there needs to be at least one champion of mobile learning technology within a school for inclusion into formal learning and management activities.

1 Introduction

This qualitative research study on cell phone policy formation has been conducted in twelve New Zealand secondary schools. Six constructs that have been explored are: role, power, cell phone knowledge, social acceptance, technical acceptance and impact knowledge. An interpretive model that is an extension of Prensky's (2001) digital citizenship metaphor has been applied across these six constructs.

The structure of this paper is as follows: literature is discussed that establishes scope for this research including finding relevant gaps. A starting point for constructing an interpretive model is also described. A discussion on the qualitative research method utilized for this study follows including research questions, data gathering techniques and analysis. The paper concludes with a discussion section on the findings from this project.

2 Literature Review

Students take connectivity for granted. The NZ Internet Safety Group (anon, 2005) conducted a survey at a decile 4 high school with 1528 students (schools are ranked on a socio-economic scale of 1-10 with 10 being the highest socio-economic level). 73% of the students owned a cell phone and 66% of the students had one with them in class when the survey was conducted. It was considered that this was typical of most high schools. Educational institutes have the option of embracing the technology or banning the use of mobile phones. Examples of educational institutes that have used the technology to create a more active, relevant learning environment for their students or to form closer alliances with the outside community are discussed by

authors Alexander(2004), Eadie (2004), Farmer (2003) and Maddison and Lorincz (2003).

Many authors have however discussed the negative aspects of connectivity which include addictive behavior (Kamibeppu & Sugiura, 2005) and (Roos, 2001); aggressive behavior (anon, 2002); and safety (Fox, 2001; Haddon, 2000; Henderson, Taylor, & Thomson, 2002; Hope, 2002; Kamibeppu & Sugiura, 2005).

There is a body of academic literature on the use of cell phones and the positive and negative impacts of cell phones by young people. For this project the challenge was to identify a gap in the literature for cell phone usage. This appeared to be the fact that the use of technology by young people was not aligned with the way in which policy makers in schools were viewing cell phone usage.

The NZ Internet Safety Group (anon, 2005) has published guidelines for school policies regarding the use of cell phones. However the authors did not discover any research that was being conducted in this field. The Principal of the private girls' school interviewed said that her school had adopted the internet safety policy for the use of the internet but had not specifically referred to cell phone usage.

Table 1: Digital Classes (based on Prensky, 2001)

Category	Description
Alien (1)	Totally against ICT – feared, never uses
Immigrant(2)[1]	Learned to adapt, will only use ICT if there is no other alternative
Immigrant(3)[1]	Learned to adapt and will use ICT - as a 'second language'
Permanent Resident(4)	Grew up with old ICT (eg land lines phones) will use new ICT – but prefers old ICT
As If Native(5)	Not born with or grew up with ICT. Relates well to natives – on the same wavelength
Native(6)[1]	Grew up with ICT, can parallel process and multi-task. Views "ICT as friend"
[1] (Prensky, 2001)	

Prensky (2001) describes how the current generation of students have grown up with modern technologies such as computers and cell phones. He refers to today's students as "digital natives" (p1) and those of us who were not born to modern technology but who have become enamored of it during our lifetime as "digital immigrants" (p3). The authors have extended Prensky's metaphor to the five categories indicated in Table 2 below. The extensions to Prensky's metaphor are the classes: alien, permanent resident, as if native and a split in the immigrant class to differentiate between those who use ICT as a 'second language;' and those who have learned to adapt but will only use ICT of there is no other alternative.

Data was gathered from a representative sample of staff members (principals (2), heads of information technology (1), heads of department (2), teachers (6 and a dean of students (1). Data was not gathered directly from current secondary school students (because of ethical constraints). Data was gathered from 10 students who left school the previous year, however. Six constructs were considered for each role. These were: role within a school, positional power; cell phone knowledge; technical acceptance of cell phones; social acceptance of cell phones; and knowledge about the impact of cell phones in schools (Table 1). Each construct and role was scored in a

range from one to six based on the categories described in Table 1. These categories are an extension of those proposed by Prensky (2001) (digital native/digital immigrant).

3 Research Method

Table 2: Research Design Steps

Step	
1	Source ideas
2	Literature review
3	Design interpretive model
4	Formulate research questions
5	Design data gathering instrument
6	Establish feasibility
7	Conduct pilot study
8	Evaluate results from pilot study
9	Refine data gathering instrument
10	Contact participants for research project
11	Gather data
12	Analyze data
13	Interpret data with interpretive model
14	Report results

Table 2 outlines fourteen research design steps starting with sourcing the ideas that generate a research project. The research design process usually starts well before any formal process is recorded. For the cell phone study the ideas arose from listening to the car radio on the way to work by one of the researchers. The topic for the interview was the use of cell phones on a school campus in South Auckland in which crimes were being committed. The principal at this school responded to this situation by banning cell phones at the school. This seemed to the researcher that this was only one use of cell phones at school and that there must be many more uses that could contribute in a positive way to learning, administration, governance, culture and acceptance both socially and technically. The very recent publicity gained by text bullying resulting in a teenage suicide, gave even more impetus for this study (O'Rourke, 2006).

After the researchers discussed this as a possible research project they both searched the literature to find what the situation in New Zealand was with respect to cell phone usage in schools. This helped to scope the project, find gaps in the literature and to spark further ideas for an interpretive model (Table 3). This was based on an extension of Prensky's (2001) digital citizenship metaphor applied across six categories: role, power, cell phone knowledge, technical acceptance, social acceptance and impact knowledge. This particular research project epitomizes the fast-moving nature of technology and the manner in which schools can capitalize on cell phone technology to improve learning outcomes within secondary schools. Rather than capitulate to the media-driven fears about use of cell phones in schools, this study aimed to gain a deeper understanding of all possible benefits as well as the negative impacts on school culture. Mobile technology is growing rapidly. For teenagers, cell phones have become an essential way of life. To deprive a teenager of a cell phone results in major social trauma. This study explored how school policies aligned with the rapidly changing nature of mobile technology and how these technologies impacted on both the social and technical acceptance within school culture. In order to establish feasibility for the project, interviews were conducted at two schools: a

private boys' secondary school in Auckland and a private girls' secondary school in Wellington. Whilst the researchers realized that the full demographics of cell phone usage within the school system in New Zealand would not be captured by such a small pilot project, the knowledge that was gained provided valuable input into the feasibility process for the project.

The researchers decided that conducting interviews was better than sending a questionnaire to participants. This was confirmed by one of the pilot study participants who said that she was most unlikely to ever fill out a questionnaire no matter how it was delivered to her. Feasibility was established by contacting known people within the secondary school sector who then suggested ways in which schools could be approached to take part in the project.

Table 3: 4-way/6-point Maturity Model

Role	**Power**	**C/Phone Knowledge**	**Tech Acceptance**	**Social Acceptance**	**Impact Knowledge**
Principal	5-6	1-3	1-3	1-3	1-5
Head IT	4	4-5	4-5	1-5	1-5
HOD	4	1-4	1-4	1-3	1-4
Counselor	3	2-4	2-4	3-5	3-5
Teacher	3	1-4	1-5	1-5	1-5
Tech Support	2	4-5	4-5	3-4	3
Admin Support	2	1-3	1-3	1-4	1-3
Students	1	4-6	4-5	4-6	1-2
	Known	Assumed	Unknown	Unknown	Unknown
1-6 scale (1 lowest - 6 highest) (alien = 1, immigrant = 2-3, permanent resident = 4, 'as if native = 5, native = 6) (described in Table 2)					

This appeared to be a better method than 'cold calling'. To test this assumption, participation in the study was invited from members of an ICT listserv of secondary school educators. There was a nil response to the request which is an indicator that the method chosen of personally contacting a representative sample was appropriate for this study. The pilot study was then conducted. The data gathering instrument was then refined before the participants for the whole project were contacted. The data was entered into a spreadsheet for coding manually. This method was chosen to allow the researchers to immerse themselves in the data. Data gathering took place over a period of 6 months and experience from prior research projects suggests that this is indicative of this type of project. Having an established evaluation framework and having written the literature review prior to data gathering meant that the data analysis, interpretation and final reporting were relatively straightforward.

3.1 Research questions

The main research question considered for this project was: What factors influence cell phone policy making and usage within New Zealand secondary schools?

3.2 Data Gathering

Data was gathered in a variety of ways: by interview; from participants at a national conference on applied computing to which information technology teachers from

around the country had been invited; and by email from contacts gathered through an IT school cluster coordinator. Data was also gathered through social networking from students who had just completed their secondary schooling. As this was a qualitative study gathering data in a variety of ways was appropriate. Qualitative research does not attempt to provide unbiased and generalized results, but rather, rich data from a small sample. Therefore it is important to consider findings for this research as adding to the existing knowledge pool.

4 Analysis

When the data was analyzed according to the constructs: role, positional power, cell phone knowledge, technical acceptance, social acceptance and impact knowledge it was discovered that clustering the constructs: positional power, impact knowledge and social acceptance with attitude towards the use of cell phones provided an acceptable measure. It can be seen from Table 4 that schools A and B scored 20/20 for this combined measure. However their scores for technical knowledge (A=6, B=1), digital citizenship (A=5, B=3) and decile ranking (A=10, B=3) were quite different. It seems therefore, for this limited sample that these factors do not influence policy making as much as would have been expected.

It was discovered that school decile ranking was less important than the combination of positional power, impact knowledge and social acceptance of cell phones in schools. For instance, in School B, the principal interviewed described himself as a 'digital dinosaur' who did not know how to use the school-supplied cell phone. However, he did have a full understanding of the importance of new technology and its impact on school culture and policy making.

It can also be seen that whilst decile ranking appears to have little influence on policy making with respect to cell phone usage in schools, it is interesting to note that the for the four top scoring schools two are decile 10 and two are decile 2 – at opposite ends of this socioeconomic scale. The other common factor for the top scoring schools is the positive attitude of the participants interviewed.

Table 4: Interpretive model applied to school data

School	**A**	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**	**K**	**L**
Participant attitude	**2**	**2**	**2**	**2**	**2**	**-2**	**2**	**0**	**0**	**0**	**-2**	**-2**
Positional power	**6**	**6**	**4**	**5**	**5**	**5**	**4**	**4**	**4**	**3**	**3**	**3**
Impact knowledge	**6**	**6**	**6**	**5**	**5**	**5**	**3**	**3**	**2**	**2**	**2**	**3**
Social knowledge	**6**	**6**	**6**	**5**	**4**	**5**	**3**	**3**	**2**	**2**	**3**	**2**
Total P+I +S + attitude	***20***	***20***	***18***	***17***	***16***	***13***	***12***	***10***	***8***	***7***	***6***	***6***
Tech knowledge	6	1	6	5	5	3	3	2	2	3	2	2
Digital citizenship	5	3	5	5	5	3	4	3	3	2	2	1
Decile	10	3	10	3	5	5	9	6	3	5	8	5

One school with a decile ranking of 5 was adversely affected in the way in which policy was formed within the school because of the participant's negative attitude towards cell phones who state that he/she 'hates the things at school and they should be banned'.

The dean of students at provincial urban school (D) scored 5/6 on all constructs and who had a positive attitude to the use of cell phones in schools (but not highest positional power) stated that it was vital for a school to have 'a champion for ICT use' within the school. At School F the head of department's (HOD) negative attitude was the main influence on policy making and enforcement for cell phone usage. This HOD stated that:

> 'First offence is a warning and confiscation until the end of the period - second is confiscation until the end of the day with the phone being deposited in the office - subsequent offences confiscation and parent/guardian rung to come and collect the phone or the phone is confiscated until the student has been seen by the principal. Trouble is that when the parent comes for the phone the student is there and the parent promptly hands the phone to the student. Then the parent usually has a go at the office staff over having to come in to the school for such a silly reason (in their eyes). I actually had a student's phone go off in my class and it was the parent ringing! I took the phone and asked the parent not to ring her daughter in class time. The parent couldn't see anything wrong with doing it. That student didn't last very long at school after that.'

5 Findings

Data from participants with a negative attitude and low scores suggests that any policy will be rigorously applied further widening the digital divide between students and school. The social constructs of positive attitude, social acceptance, technical acceptance and impact knowledge appear to outweigh technical knowledge and digital citizenship in the ability to form and apply school policy on the use of cell phones at school. Past students interviewed agreed with school staff, in the main that cell phones, as social communication tools should not be distracters in formal school time. Only 6/10 of the students interviewed would have like to have been consulted on cell phone usage policy making when they were at school.

There were some surprising outcomes from two top scoring schools (A and B). Rather than just seeing negative outcomes from cell phone usage within schools (as has been reported widely in the general media) the participants interviewed were happy to use whatever advances mobile telephony had to offer – as long as a positive outcome for student learning was achieved. For school A digital citizenship and technical knowledge scored high on the scale used. For school B this was not the case. Positive attitude, positional power, impact knowledge and social acceptance were the main factors for effective use of cell phones in schools for other uses. Both schools were well equipped technically with one school using PDAs within the classroom and for administrative support. In this particular school 95% of students owned a cell phone. This was viewed as an advantage because it offered yet another means of communication and even access to the internet to augment other technology in the school. It was also noted that students appeared to be in much closer communication within their own circle of friends and could use their cell phones to encourage each other and to offer motivational support. The mixed blessings of advances in technology have been addressed according to these 'as if natives' by training for all

staff and students, and a set of principles adapted from the Netsafe guide (Hope, 2002) for the ethical and proper use of all IT including cell phones.

Limited use is being made of cell phones for formal school activities. Whilst most schools in the small sample considered have a cell phone policy in place, this covers social communication by students and in most cases policies are formed in a punitive manner, rather than from a means of ensuring the best learning outcome for students.

6 Future Directions

This research project is ongoing. It is envisioned that recommendations from this project will be reported back to the secondary education sector for policy making at all schools, not only for students' social communication, but also for formal school activities. It would be advantageous to extend the Netsafe guide for schools to all ICT technologies, especially as forms of technology merge and connectedness with the world can be maintained in a variety of ways.

Mobile telephony has changed radically the way in which teenagers communicate, so much so that learning styles, communication patterns, social interaction, attention span, and teen status in the world have been irrevocably redirected. Mobile telephony has widened the gap between teens and school staff. It is important that researchers in the secondary school sector investigate how mobile telephone could be used to maximize learning opportunities – for both students and staff.

7 Conclusion

This qualitative research study on cell phone policy formation has been conducted in twelve New Zealand secondary schools. Six constructs that have been explored are: role, power, cell phone knowledge, social acceptance, technical acceptance and impact knowledge. An interpretive model that is an extension of Prensky's (2001) digital citizenship metaphor has been applied across these six constructs. Surprisingly, digital citizenship and technical knowledge score lower than positional power, social acceptance and impact knowledge. The importance of a positive attitude towards cell phone usage and policy formation within schools is a vital factor that emerges from the findings for this project.

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