Exploring the Educational Potential of Social Networking Environments for Indigenous K-12 Students in New Zealand

Mark Gilbert Dashper, The University of Auckland, New Zealand

Abstract
The research focused on the factors that promoted e-learning engagement in online social networking sites (SNS) for a small sample of indigenous Māori students (Y9-11) in the rural Northland area of New Zealand. The PhD study helps address a lack of data on how indigenous students, in particular, engaged with e-learning through a series of secure educational social networks (ESN), and how they functioned as a community of online learners operating both inside and outside of their classrooms demonstrating increased bonding and bridging social capital, and incorporating peer group learning relationships. The methodology and process followed a problem-based methodology investigating challenges to practice with a view to changing it within a participatory research framework, to enable teachers to work with a researcher. The use of indigenous pedagogies was an underlying theme in this study to recognise the importance of decolonising discourse in the use of terminology, the process of organising research, and utilising a code of conduct to benefit indigenous people for all research. Students were able to manipulate their online identity by forming their own student led, self-directed learning program that was represented as a "crossover learning framework". Students sometimes chose self-instruction in e-learning, over face to face teacher instruction, as observed in classroom "dual learning pathways" adaptations. The research also identified some of the challenges between SNS and ESN, when developing an understanding of public versus private boundaries.

Keywords: Educational Social Networks; social networks; cross-over learning; flipped classrooms

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Introduction

Over the course of the last decade New Zealand schools have increasingly embraced the digital age. A report prepared for the Ministry of Education in New Zealand (Tiakiwai & Tiakiwai, 2010) noted that there is a dearth of research addressing this area, and a general lack of data on how indigenous Māori students, in particular, engage with e-learning. While there is a large amount of interest in social networking sites (SNS) from many students, there are few indicators in the current research that support understanding of the extent of the use of social networking tools by Māori students in New Zealand schools.

This PhD research (Dashper, 2017) investigated the relationships between e-learning in social networking, and engagement for students in a rural Māori school environment. The study sought to identify how Māori pedagogies and values might be able to be expressed in an e-learning environment, and how this relationship between Māori pedagogies within an e-learning environment may further contribute to engagement with learning in schools.

An Educational Social Network (ESN) was defined as an online community of people, communicating about a common educational theme within a closed social network (such as Facebook). It is a group that is secure and therefore safe for members to discuss topics and not have the conversations available to people outside of the group. It may be time limited (i.e., set up to run for a specified time only) and may have a variety of identifying factors for membership (e.g., within a school it may be a class group, have geographical connections, be topic based or include specific age groups in a cohort).

However, ESN activities in online learning may potentially represent a different environment for identifying student engagement (OECD, 2009). Facilitation of learning may involve changing roles in the educational use of social media (Mason & Rennie, 2008). This project investigated the perceived importance of Māori pedagogies and values to student engagement as measured by their responses and actions. It has also explored the possible links between e-learning and engagement for Māori students, as evidenced by current use in the classroom.

Frameworks were developed to identify characteristics of e-learning practice (illustrating the differences between SNS and ESN usage) for a small group of Northland Māori students in the study. These were used to describe who these learners are, position them as users of technology and identify possible organisational structures or trends in behaviour in the rural Northland area (Stevens et al, 2007).

Methodology

Student questionnaires and teacher interviews, combined with the researcher's experience, were used to identify areas where pedagogies and values might be best incorporated into an ESN (Educational Social Network) to further engage students (JISC, 2009). Research then tested this expression in a particular e-learning context through curriculum-focused ESN interventions. These interventions were collaboratively designed by the researcher and teachers in a focus group environment, and then applied in the case study schools. The ESN environments were constructed

to supplement classroom teaching and learning based on curriculum directions (Boettcher, 2007). Activities and discussions were focused on the students' needs, their prior knowledge and their social capital.

By focusing more on the social capital in e-learning than on cultural capital, the research explored the depth of relationship created by social capital. The research identified the conditions that enable educational social networking community connections to be established between participants and others outside of the immediate community. It pointed to the reciprocal exchange of information and the implicit trust these exchanges are based on within e-learning.

This study utilised a participatory research framework (learning with others to effect change) to enable teachers to work with a researcher. Two tools were collaboratively employed in participating schools to help with analysis:

1. Productive Pedagogies (State of Queensland, 2002a, 2002b) were used in this research as a tool to measure engagement and as a theoretical lens to be used to look at practice. They were initially designed as a balanced theoretical framework enabling teachers to reflect critically on their work.
2. The Ladder of Inference (Argyris 1985) was utilized to help teachers to recognise the claims they make that they believe to be true and expect others to accept (Ministry of Education, 2008). The ladder was used in all teacher interviews and as a framework for focus group meetings.

The Intervention: Educational Social Network

For this research in a school environment, the ESN were based on educational topics within a learning area focus and were specific to an invited group of participants. The ESN were designed with the teachers to fit the programmes of study in their participating classes and follow the learning area curriculum. They were designed to be supporting material for classroom topics, curriculum discussion opportunities outside of class, resource distribution and integration of e-learning opportunities into the classroom teaching and learning practice.

The ESN interventions involved different cohort levels, as well as a variety of learning areas. The different ESN tasks were developed by the classroom teachers in the focus groups, over a three-week period, then trialled in their classrooms over the following six to eight weeks. Ongoing data were collected, and continued to inform the research over the following two months of analysis of results. As data were collected, they were discussed and evaluated in the teacher focus groups.

Surveys showed that there was already a large amount of positive student motivation towards e-learning integration into classroom practice. Because of the structure of the ESN, designed to be integrated into existing units of work, the perceived relevancy of the task for students and teachers was high. The collection of data was seen as part of the learning process rather than as an added extra task for teachers, or reliance on self-reported data from students.

Input into the ESN design process was initiated with collaborative work from the focus groups in the three-week design period. Once the ESN became available in the

classroom, students could contribute either in class or out of school time dependent on access. The ESNs were designed to exist for a limited time and have data collected over a six-to-eight-week period. Student engagement was then measured in classroom activity (via the observation tool), ESN contribution (via site analysis) and student/teacher voice (via questionnaires, interviews and focus groups).

The need for decolonising discourse in research with indigenous peoples

In the course of this research, as a non-indigenous researcher working in an indigenous field of knowledge, there is a need to recognise the importance of decolonising discourse in the use of terminology, the process of organising research, and utilising a code of conduct to benefit indigenous people for all research. This project incorporated Kaupapa Māori (Māori code of conduct) practices (Smith, 1999) as underlying rules for all work undertaken:

1. Aroha ki te tangata (a respect for people)
2. Kanohi kitea (present yourself to people face to face)
3. Titoro, whakarongo . . . kōrero (look, listen . . . speak)
4. Manaaki ki te tangata (share and host people, be generous)
5. Kia tupato (be cautious)
6. Kaua e takahia te mana o te tangata (do not trample over the prestige of people)
7. Kaua e mahaki (don't flaunt your knowledge) (p. 120)

The shift of research practices from 'colonising methodology' towards indigenous research principles and methods has had a useful part to play in this research. Acknowledgement of the influences of colonising practices, allows reassessment of the usefulness of some tools and the indigenous perception of their value in working with Māori communities.

As a non-indigenous researcher working in an indigenous field of knowledge, I made every effort to recognise the importance of decolonising discourse in research methods and methodology. This involved applying kaupapa Māori to ensure the benefit for indigenous people in all stages of the research, empowering and building capacity by involving Māori in the organisation, management and conduct of the project, and working towards the Ministry of Education's Māori educational strategies (Ministry of Education, 2012), to enable Māori to enjoy educational success as Māori.

Discussion

The relationship between school and home e-learning was represented as an Existing Online Learning Framework for managing their educational programme (see Figure 1). This illustrates that there was an inability for students to share immediate ideas or access synchronous help (teacher or peer) when they were involved in schoolwork from home. Developing and constructing their learning environment was controlled from school and there was very little opportunity for relative autonomy or self-determination.
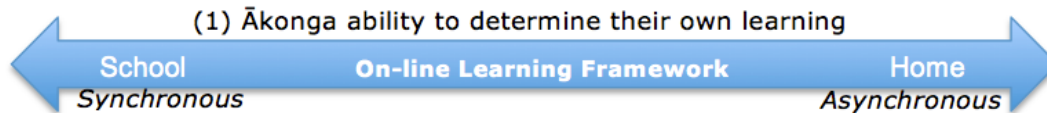
Figure 1: Existing Online Learning Framework

In contrast to this, another framework was created to describe the Existing SNS Communication Framework (see Figure 2). This represented students commenting about their social life in an online environment and was the complete reversal of the existing online learning framework. In this framework, students were able to easily create synchronous conversations and develop their autonomous identity and relationships within an environment of ownership of the process. Because SNSs were not officially allowed at their schools, student school-time communications in this online framework were only able to be asynchronous.
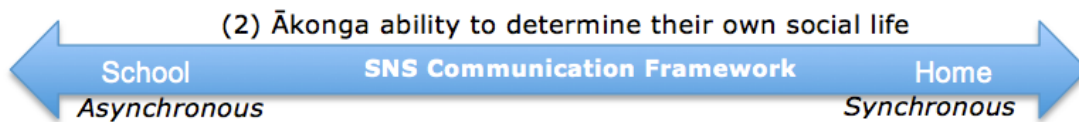

Figure 2: Existing SNS Communication Framework

These results indicated that a third potential framework might be emerging from the student feedback received that could differentiate the ESN communications framework into participatory action on one side and observations on the other (see Figure 3). Student educational needs would determine here which direction to take for them to determine their own learning.
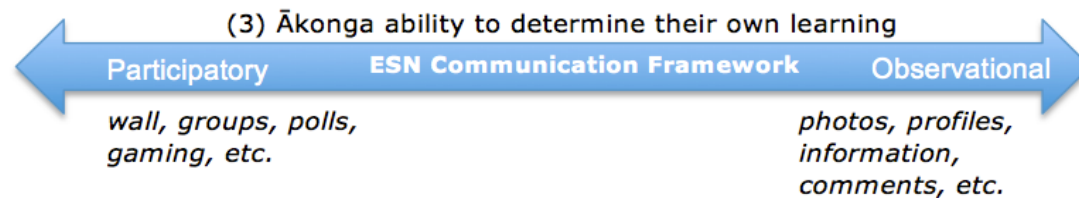

Figure 3: Potential ESN Communication Framework

Management

One of the teachers mentioned how he would like to create a system similar to a flipped classroom framework that linked in with his already successful email resource distribution system:

> *I'd like to use pre-prepping the kids as a strategy for my lessons, by sending them material, and maybe video-cam part of my lesson, so they could upskill themselves the night before. Then I can identify in class those who understand the work and they can carry on digitally, while those that don't—I can work with them in class. (Teacher 1, School 2)*

The ESN membership groups correlated to the class rolls in the school. Once students were members of the ESN, they could invite some of their existing SNS friends who could also choose to join if eligible. In an ESN, students were part of a wider class

group—some might not be friends and others they would not normally communicate with in an SNS environment. The privacy restrictions in place meant that students were not usually able to view other students' SNS pages or profiles (subject to their individual privacy settings) unless they were existing 'friends'. As a result, some students might not have SNS friends in the ESN group and would require a teacher invitation.

A total of 44 students were members of the ESNs constructed over the course of the research. Some of the students (27) were members of two different ESNs, and a small number of students (9) were members of three groups. The learning areas represented in the ESN were science (as science, geology, chemistry and biology), mathematics and statistics (as numeracy and mathematics), technology (design and visual communication), and PE.

Material was posted by teachers onto the ESN for discussion and for students to access resources developed to support class topics or themes. This included the following:

1. resources prepared by the teacher within a learning area;
2. still images or video material supporting classwork, selected by the teacher;
3. review questions for students, based on classwork focus areas;
4. assessment support material for study;
5. motivational material and statements to support student learning.

Summative data in the main engagement period (three months) was collected on a spreadsheet as follows:

1. Membership of each ESN was collected as students applied and were accepted into each group.
2. Students were given an individual ākonga (student or learner) number that could be tracked against the different ESNs on spreadsheet tabs.
3. Each posting was read for content, date and time created, and totals recorded for each ESN.
4. Student postings were recorded separately against individual ākonga numbers, detailing the time the comments were made.
5. Views of each posting were recorded against individual ākonga numbers, accessible in the order that each post was viewed by students (first viewer, second viewer, etc.).
6. 'Likes' for each posting were collected and recorded against individual ākonga numbers.
7. Comments for each posting were collected and recorded against individual ākonga numbers, detailing the time the comments were made.
8. Responses in the ESN environment were differentiated into age groups within learning areas and charted into graphs to show levels of responses.

In addition to this, formative data were collected and sorted into the following groups:

1. Screengrabs were taken of representative examples of student–teacher ESN interaction and engagement.
2. Comments were sorted into groups based on ascribed levels of depth.

3. Examples were collected around the language levels of responses.
4. Examples were collected of positive relationship building in the ESN environment, between teachers, students, other adults and the community.
5. Examples of non-respectful relationships were collected to illustrate any swearing, put-downs, reluctance to participate or name-calling.

When responding to posts or asking questions in an ESN, students did not appear to show any reluctance in commenting on their perceived progress. Student typical postings were mostly by way of a clarifying question such as that shown in Figure 4.

Figure 4: Student question, teacher response, student reply

Bridging Social Capital Observed in ESN

The concepts of 'bridging social capital', or access to newly created information through a wider range of contacts, and 'bonding social capital', or the emotional support students receive from close friends (Ahn, 2012; Burke, Kraut, & Marlow, 2011; Ellison et al., 2007; Ellison, Steinfield, & Lampe, 2011; Steinfield et al., 2008), may also reflect a supportive and caring teaching and learning setting if it occurs in the ESN. Features of both bridging and bonding social capital were observed to be occurring over all of the ESN in the initial engagement period, when students responded to questions in the online environment and supported each other with study and problem-solving experiences.

The example in Figure 5 illustrates two Year 9 students taking responsibility for their own learning and initiating a new topic in an e-learning environment based on high-interest material.
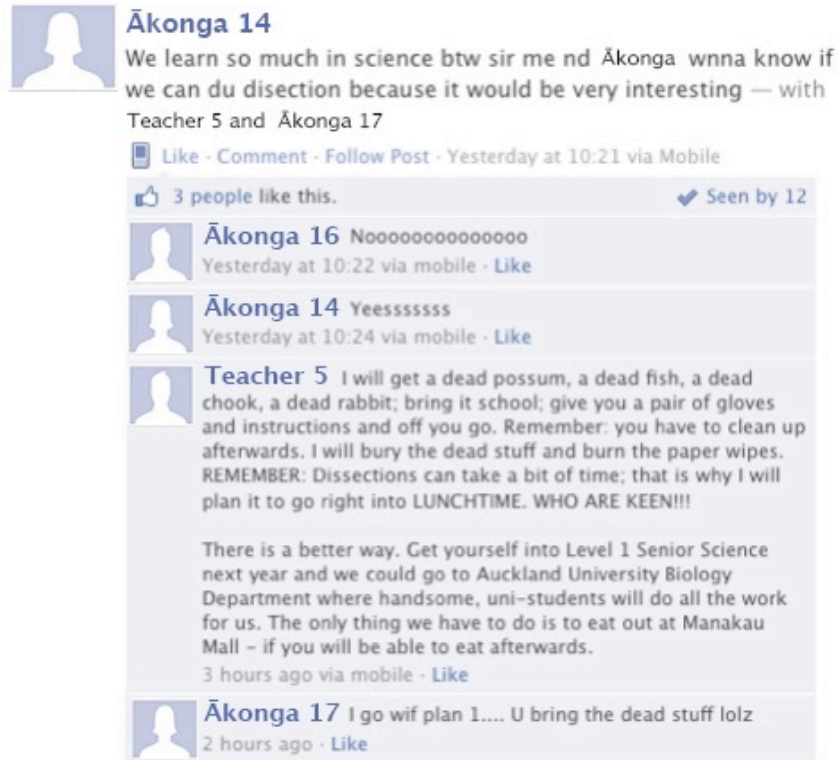
Figure 5: Student engagement and topic initiation

A further example, in Figure 6, illustrates students publicly commenting using an ESN during class time, detailing their perception of progress in their learning process. We see a significantly shorter time differential, in a situation in which students were initially conversing synchronously via the ESN within class time. While they were studying, the teacher has responded asynchronously, addressing the group teaching and learning environment. In this ESN conversation, unlike a classroom situation where oral evidence is often not captured, the ESN afforded step-by-step evidence of student engagement or any disengagement as they articulated their understanding through their comments.
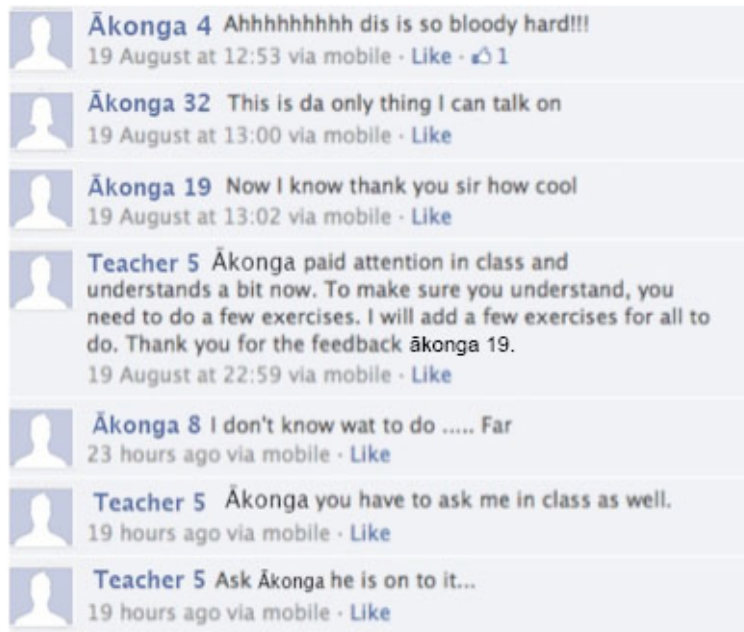
Figure 6: Classroom synchronous ESN Crossover

Analysis of the online behaviours showed that students went back and forth in a number of stages, which I have called the Observed Developmental Stages of ESN (see Table 1). Student responses ranged from 1 – 5:

1. joining the group
2. viewed a post
3. liked a post
4. posted a comment to something existing
5. created their own post in three levels

Relating these Developmental Stages with other research that measures the levels of student engagement, allows us to compare how the proposed developmental stages fit within similar observation tools across e-learning (Richardson 2008), (State of Queensland, 2002b).

This reflected elements of Māori pedagogy, where the traditional teaching relationship of tuakana–teina has been observed to be a complementary relationship (Pihama et al., 2004) allowing students to develop from a teina (less experienced learner) identity into a leadership role and to potentially assume a tuakana (more experienced teaching role) identity.

Table 1: Observed Developmental Stages of ESN

Stage: Developmental Stages of ESN Student Response	Level of e-Learning: observable teacher participation in a learning environment	Level of student engagement	Changing roles for ākonga
1 — ESN group membership but no viewing or response.	• No observation	No student direction.	TEINA
2 — No response apart from data registration that the student has viewed the post.	• No observation	No student direction. All activities for the period explicitly designated by the teacher for students.	
3 — Student uses 'Like' function in a minimal response action.	• Teachers functioning as online experts	Teacher makes initial selection of activity, but student exercises some response.	
4 — Student posts a comment, question, or a reply of some sort, under the teacher initiated posting.	• Synchronous or asynchronous online conversations about content	Teacher makes initial selection of activity, but student exercise some control through a choice of alternative activities.	
5a — Student initiates their own post with a comment in response to a teacher initiative.	• The practice of intelligently and appropriately sharing work with global audiences.	Some deliberation between teacher and student over the activity for the period. Student exercises some control through a choice of alternative activities.	
5b — Student posts a topic question based on their own inquiry within a learning area, asking their teacher's opinion.	• Co-operating and collaborating with others outside the classroom around their shared passions	Some deliberation/negotiation between the teacher and students over the activity for the period, including the range of options and procedures.	
5c — Student independently posts their own in-depth topic investigation, based on their own inquiry, possibly asking their teacher's opinion.	• Engaging in the hard work of shared responsibility and outcomes • Involved in real work for real purposes for real audiences online	Students determine their activity, its appropriateness and context. This may be either independent of, or dependent on, teacher regulation.	TUAKANA

(adapted from Richardson, 2008)

(adapted 'Productive Pedagogies : student direction')

Conclusions

The following findings show the 10 main factors of research that were seen to help promote engagement for student learning in this ESN environment, and how students have adapted their identities to fit an e-learning environment.

1) Understanding Public versus Private

Students initially used an ESN in much the same way as their existing SNS, and gradually came to understand the different operating structures and the identity shifts required. Observation of initial ESN usage showed a potential confusion between their understanding of public and private domains. Students overstepping boundaries in an ESN suggested a confusion over differentiating their relationships between public relationships in their SNS and private relationships in a closed ESN group as they switched between the two networks. As the ESN progressed, students began to either support or conduct their own moderation to maintain a respectful relationship among their peers and show respect for their teacher.

2) Bridging and Bonding Social Capital

Features of both bridging and bonding social capital were observed in the ESNs when students responded to questions in the online environment and supported each other with study and problem-solving experiences. Students working with information and topics in an online ESN environment had access to the capacity of Internet searches and were able to research in their own time out of the classroom. This allowed them to search, cut and paste in a way that classroom time and capacity constraints may not have allowed.

While the SNS bonding social capital relationship lay within family and friendship ties and connections, in the ESN environment this support was observed to work between student and student, and between student and teacher.

3) Flipped Classroom

Students were able to successfully use the ESN as a flipped classroom framework to support classroom teaching and learning focus areas. By overlapping their ESN access between home and school, some students were seen by teachers to increase their independent work at home. The ESN use in class allowed students not requiring individual attention to work quietly in the online environment on their individual learning programmes. In class, they were allowed to review material, work on current topics or investigate new directions in their learning area through the ESN material.

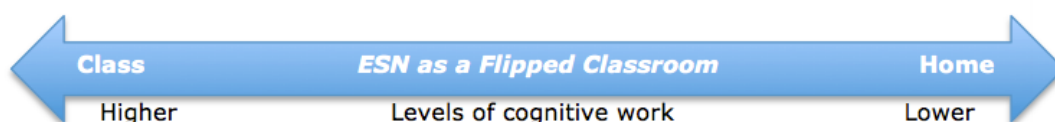| Class	ESN as a Flipped Classroom	Home
Higher	Levels of cognitive work	Lower

Figure 7: Levels of cognitive work in a flipped classroom

Using the ESN out of class time, and in a flipped classroom capacity, involved distinct differences in delivery and levels of cognitive work. This allowed students to participate in the lower levels of cognitive work (gaining knowledge and comprehension) outside of class, enabling them to be focused by their teacher on the higher forms of cognitive work (application, analysis, synthesis and/or evaluation) in class, where they had the support of their peers and instructor (Anderson et al., 2001; Brame, 2013).

They were also able to interact with each other synchronously, or their teacher asynchronously, while accessing the virtual teaching resources as needed. For the teacher, this represented multiple teaching opportunities not previously available and a new focus for digital activity.
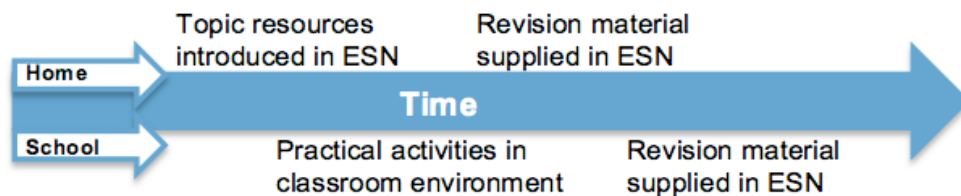

Figure 8: Flipped classroom framework operating in ESN

Online resources were introduced around topics to be covered in class, to offer students material of an interactive nature, potentially high-interest images and resources available both on demand and by replaying. This allowed the ESN to function as an independent e-learning tool to support student learning (Figure 8). Teachers were then free to provide practical application and assistance for their students in class time, supporting the knowledge comprehension gained from home-based viewing. This represented a significant change from non-interactive paper or textbook-based homework exercises that students may have previously completed.

4) Crossover Learning Framework

Students engaged with an ESN 'crossover' learning framework, in order that their ESN might be used during school time as well as accessed from home. In a number of the ESNs, students were allowed to access the online resources and make appropriate asynchronous postings or raise questions during school time. This independent learning utilised the student capacity for choosing self-instruction in an e-learning environment over face to face teacher instruction in the same class. A framework (Figure 9) was developed to illustrate this.

Figure 9: Crossover ESN Framework

As the crossover ESN framework developed in the research, students were able to utilise asynchronous or synchronous communications with their teacher or other ākonga from home.

While the content of material submitted to the ESN was observed to be usually based on related classroom topics or information, students directed the learning to a large extent by their postings and queries. Self-directed learning questions were often answered as a student-initiated post or inside a teacher posting. Their individual inquiry learning processes were available for everyone else in the group to share. This feature made the crossover framework a popular strategy that supported an autonomous operating structure for students.

Students were seen to communicate how they were doing with formative comments both directed to the teacher and identifying with the ESN group. Students in a peer help relationship were able to help each other when required, and these structures were seen to be an effective teaching and learning tool that was easily communicated and organised through the ESN with a crossover framework.

5) Dual Learning Pathways

Students were given the choice to pursue an ESN dual learning pathway in class. This could encompass a crossover framework involving synchronous conversations with other students in the ESN or asynchronous communication with their teacher asking questions or viewing of resource material. Alternatively, they could participate in the normal lesson without e-learning (face-to-face and offline teaching). They could also do both and switch between the two pathways according to their needs. A framework was developed (Figure 10) to show this.

Figure 10: ESN dual learning framework

The teacher in this framework, by necessity, could only participate in two of these processes (face to face or asynchronous ESN). The value added by the ESN allowed an extra element to be included in the teaching and learning process. This was able to operate at school or at home. When it was used in the school environment, it incorporated the crossover learning framework.

Students were observed to access learning materials in the ESN to suit their needs. This included revision material, project content, resources, questioning the teacher, learning community help and focus questions in a forum. Because both the teacher and the ESN were available on demand in a classroom situation, the students were able to determine their own pace and content, and self-review. The dual learning pathway could not operate outside of the classroom, however, because of the absence of the face-to-face teacher.

There were clear indications that students were taking responsibility for their own learning in self-directed learning (Brake, 2008; Chandra & Lloyd, 2008), where teachers are facilitators of change (Harlow et al., 2008).

6) Comparative Practice

Some aspects of ESN teaching practice observed in this study can be compared to pedagogy used in an activator practice (Hattie, 2007, 2010) and discursive practice (Bishop, 2011; Bishop & Berryman, 2009; Bishop et al., 2007). In the learning environment of the classroom, there are similarities across activator and discursive practices relevant to ESN design. In an active and guided instruction environment, where learners are given clear requirements by their teacher (activator practice), there is also a necessity for the boundaries, rules and organisation that are fundamental to effective learning (discursive practice).

The implications for an ESN environment where all instructions are text based in a secure teacher-moderated environment, show that rules may be inherited both from the classroom and from SNS as a form of bonding social capital. Within ESN design, students were seen to be monitoring their own learning progress, from making frequent comments on how well they had understood resource material to requesting help with comprehending the classwork.

In the same way as an activator practice constantly supplies learners with feedback, or like a discursive practice, where students monitor their own progress, ESN design may combine a high degree of feedback and feed forward to online content. The importance of reflection and feedback to students was identified in an activator practice, and when this occurred in ESN design, there were three levels of evidence of supportive feedback in teachers' communications. Level 1 was acknowledgement by the teacher. A second level was specifically responding to a question from a student. A third level was addressed to selected students in a formative feedback response to material the student had posted.

7) Manipulating Online Identities

Students were able to manipulate their online SNS identity to fit into an ESN learning environment. There were some distinct transitions in identity and roles of students and teacher that were observable within the ESN environment, and students were able to build on their existing identity and adapt elements of their prior experience to fit both an online environment and an educational community. Their previous experience in SNS enabled them to transition seamlessly into the ESN with some modifications of their understanding of roles and taking on the classroom rules that did not exist in their SNS.

The dual learning pathways enabled students to process their questions in a text-based environment, cached and available as a resource. Unlike the classroom, where the teacher and student had either semi-private or public synchronous vocal and text-based communication, in the ESN all the online community viewed everything as synchronous and asynchronous text-based cached responses. This created a transparent public environment that functioned both as a resource and as an educational communication tool.

8) Perception of ESN Use versus Actual Use

Student perception of their ESN usage was compared to measurements detailing their actual ESN usage. The results showed that the ESN groups had full class membership despite being optional. A comparison between students' perception of looking at a social network and their actual recorded views of the postings, showed an increase in actual use. This represents some evidence of initial engagement. Student perception of their capacity to 'like' a posting was compared with actual student ESN observations of the use of 'like', and the results showed either a reversed or an inflated perception of their use of this function.

When student perception of posting comments were compared with actual student ESN observations, the perception was generally more than or the reverse of the actual numbers of students commenting. Similarly, students' perceptions of having initiated their own post (as a response, query or investigation) were also generally inaccurate. Almost half thought they responded often or a lot in their own posts, whereas in the ESN observation, a range between 67% to 93% of students did not initiate their own post. In itself, this does not necessarily represent a lack of engagement, but rather inaccurate perception.

These results may potentially be due to students' eagerness to be involved in a new initiative or their confusion, identified in the early stages of observation, between their normal SNS activity and the newer ESN identity. Inflated perception of their participation may show how much students see the potential of this form of e-learning, equating to anticipated rather than actual perception.

9) Use of the indigenous language te reo Māori

Students in this study exhibited only a small amount of usage of the indigenous language te reo Māori in an ESN environment, corresponding to another older Māori students SNS study (O'Carroll, 2013a). Vocabulary from te reo Māori was observed in very few of the responses as the language of communication in ESN. The majority of the language of communication observed was in English. A large group of students reported that using te reo Māori did not work as well as expected in the ESN groups. This may reflect a transition time required for te reo Māori to gain SNS acceptance in the Māori world, or students simply may not have felt comfortable using te reo Māori in an ESN environment. The actual reasons could not be determined in this study and need further research.

The use of te reo Māori was supported by teachers in the initial design and reflected school planning, where the use of the Māori language was actively encouraged in class communication. That the language of communication observed in this ESN research was predominantly English may or may not reflect the actual classroom language or language spoken at home, and further comparative study of this is required. While this is disappointing in itself, it is reiterated in other studies of Māori student use of te reo Māori in SNS (O'Carroll, 2013a, 2013b).

10) Whakamā (shyness or embarrassment)

Student acceptance of ESN postings and conversations being always publicly available to the whole group may lead to a different interpretation of whakamā in an ESN. The digital student identity existing in the online environment, may not be subject to the same pressures or restrictions that the student has in their normal class.

In the ESN, students were seen to be easily able to ask text-based questions of their teacher in front of the whole ESN community (for example, explanations of simple terms not understood or difficulty understanding instructions). Students were equally forward in expressing difficulty or in revealing complete understanding of a topic or task (for example, asking for extra help, voicing confusion or communicating their engagement and comprehension). In an ESN environment, unlike the immediacy of a classroom verbal or written positive comment, individual text-based praise was able to be seen by all members of the group and cached to be observable for as long as the ESN lasted.

Teachers commented on the use of ESN as related to reduced student whakamā, and a differentiation was noted in the relationship between teacher and students in the online environment compared with the face-to-face school environment. Teachers also commented on the perceived reduction of whakamā in face-to-face classroom time when continuing from ESN interaction. One acknowledged that her students were noticeably different after experiencing the ESN, and were more vocal and responsive.

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Contact email: m.dashper@auckland.ac.nz